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AGRIBUSINESS MARKET AND SUPPORT ACTIVITY (AMARTA)

FINAL REPORT

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ABBREVIATIONS

AEKI	Association of Indonesian Coffee Exporters
ALKANA	Cocoa Community Alliance in Jembrana
ALMAKOTA	Cocoa Community Alliance in North Kolaka
AMARKATA	Tabanan Cocoa Community Alliance
AMARTA	Agribusiness Market and Support Activity
ASKA	AMARTA Sulawesi Cocoa Alliance
ASKINDO	Indonesian Exporters Association
ASTAKWA	Cocoa Community Alliance North Luwu
BAPPENAS	Indonesian National Development Planning Agency
BPTP	Assessment Institute for Agricultural Technology
CBB	coffee berry borer
COTR	Contracting Officer's Technical Representative
EG	economic growth
GAP	good agricultural practices
GERNAS	National Cocoa Rehabilitation and Revitalization Program
ha	hectare
ICCRI	Indonesian Cocoa and Coffee Research Institute
IVEGRI	Indonesian Vegetable Research Institute
IRRI	Indonesian Rubber Research Institute
kg	kilogram
km	kilometer
LPMAK	Amungme and Kamoro Community Development Association
LPPM-UNPAD	Social Service Institute of Padjadjaran University
MOA	Ministry of Agriculture
MOU	memorandum of understanding
PADA	Papua Agribusiness Development Alliance
PFTI	PT Freeport Indonesia

PSC	personal services contractor
RACA	Regional Agribusiness Competitiveness Alliance
Rp	Indonesian rupiah
SCAI	Specialty Coffee Association of Indonesia
SIKAP MANDAR	Cocoa Community Alliance Polewali Mandar
SME	small and medium-sized enterprise
USAID	U.S. Agency for International Development
VCC	Value Chain Center (Padjadjararn University Institute for Research and Community Services)
VCD	video compact disc

EXECUTIVE SUMMARY

The Agribusiness Market and Support Activity (AMARTA) program's contract tasked it with working with at least eight value chains. After analyzing various options, the program team selected the following nine value chains: coffee, cocoa, high-value horticulture, aquaculture, livestock, biofuels, rubber, seaweed, and floriculture, in addition to working on improving the enabling environment.

Following the U.S. Agency for International Development's (USAID) direction to reduce the number of value chains in order to concentrate program resources, during its last two years, AMARTA focused primarily on three value chains: coffee, cocoa, and high-value horticulture. A fourth component, and somewhat autonomous activity, is agricultural assistance to Papua.

AMARTA's focus on agricultural commodity improvement meant that the bulk of the program's technical assistance efforts were concentrated in rural settings where the agricultural commodities in the relevant value chains were grown. Consequently, AMARTA worked in rural areas on five islands: North Sumatera, West Java, Southern Sulawesi, Bali, and Papua. Frequent and close cooperation with regency and provincial government officials in these locations was essential to effective program implementation. A mark of the program's success is that it provided training and support services to 190,546 farmers in 3,798 farmer groups. Cooperation with local government included providing training to 2,137 extension agents.

As originally conceived, AMARTA was to interact with all stakeholders in the selected value chains. However, it became clear early on that production processes on smallholder farms were very uneven and in need of significant attention. Accordingly, AMARTA changed its primary concentration to improving smallholder farming practices. Linking growers, input providers, and buyers remained important, but providing the buyers with better produce was deemed essential to the growth and sustainability of the value chains. AMARTA initiated a number of pilot projects to demonstrate the value of better and innovative agricultural practices, with the hope that they would be replicated by other stakeholders to spread the lessons learned.

The AMARTA team was thus faced with three basic challenges:

1. What to grow;
2. How best to grow it; and
3. How to improve access to markets.

WHAT TO GROW

As stated above, nine value chains were initially identified as worthy of inclusion in the AMARTA program: coffee, cocoa, high-value horticulture, aquaculture, livestock, biofuels, rubber, seaweed, and floriculture. Faced with financial limitations and issues of impact, USAID determined that it would be most sensible to focus on those value chains where interventions would have the greatest impact. Accordingly, the cocoa, coffee, and high-value horticulture value chains were selected for emphasis.

COCOA

Cocoa is clearly one of the most significant smallholder activities in Indonesia. With more than 1.3 million households producing approximately 600,000 tons of cocoa on more than 1.2 million hectares (ha), Indonesia is currently the world's fourth largest cocoa grower. For years, Indonesia's cocoa (Forestera variety) has been sought after because of the high fat content of its beans. In recent years, however, there has been a significant decline in production, primarily because of old trees and poor planting materials; poor management practices; significant increases in cocoa pests and diseases; limited effective agricultural support, training, and extension services for cocoa smallholders; and little dissemination of research findings of use to smallholders.

Despite these limitations, the demand for cocoa is growing worldwide, and buyers have demonstrated their willingness to pay a premium for quality beans.

COFFEE

Although Indonesians are not generally known as coffee drinkers, the crop has been cultivated in the islands for export for hundreds of years. Today, its significance can be seen in that more than 2.3 million households cultivate coffee on 1.3 million ha. The bulk of these producers (approximately 2 million) produce Robusta coffee; of the 600,000 tons of coffee produced annually, 525,000 tons are Robusta variety. Three hundred thousand farmers focus on cultivating Arabica coffee, producing 75,000 tons of coffee on 236,000 ha.

Why then, did AMARTA choose to focus on the considerably smaller variety? The answer is twofold: world demand and price. World demand for Arabica coffee has been increasing at 5% per year, while production has only been increasing at 2% per year. Demand for Robusta coffee, on the other hand, has remained flat. The March 24, 2010, International Commodity Exchange reflected the price differential resulting from this dynamic. The spot price for Arabica coffee was $2.77/pound, while Robusta was only fetching $1.19/pound.

HIGH-VALUE HORTICULTURE

This value chain includes fruits, vegetables, and cut flowers. Indonesia's horticulture value chain is characterized by two distinct and widely diverging markets. On the one hand there are traditional local markets where farmers can typically sell their crops directly to small-scale dealers or through middlemen. A large majority (80–85%) of fruits and vegetables are being produced to meet traditional food choices of domestic consumers. Moreover, production is still overwhelmingly geared toward sales at traditional wet markets.

Contrast this with the urban experience. The dramatic growth of urbanization in Indonesia is being accompanied by changing needs and tastes of urban consumers and the expansion of an entirely different type of seller—the super and hypermarket—to meet these changes. Horticulture products sold in the urban sector are characterized by greater variety, better quality, consistent availability, and value-added processing, and purchasers expect improved food safety. Supermarket owners, intent on obtaining reliable quantities of high-quality produce, are turning to providers who can guarantee deliveries of this standard. All too often, they find what they are looking for from importers. With increased disposable incomes, and less time to shop, urban consumers are proving willing to pay more to satisfy these new demands.

Faced with these two divergent options, from its inception AMARTA decided to focus on high-value produce, believing that farmers interested in accessing these new markets would be more open to the changes proposed by program interventions. AMARTA introduced new varieties of French green beans and special Sumateran varieties of carrots, onions, zucchini, broccoli, and tomatoes, as well as improved fruit production for jeruk (mandarin oranges), bananas, and pineapples. Special relationships were developed with input providers who were eager to facilitate access to these new urban-based markets. Most noteworthy was a cooperative agreement with the Syngenta Foundation, which provided joint training activities in North Sumatera and West Java. Seed producers, fertilizer companies, and pest control specialists also saw the potential in cooperating with AMARTA and government entities—building a support base that offered extension services that the government counterparts would have difficulty providing. At the same time, AMARTA field team leaders sought out buyers and potential exporters. Pilot areas were identified and developed in North Sumatera and West Java.

HOW TO GROW IT

From its inception, AMARTA based its pilot operations on identifying farmers who were prepared to take a chance in changing their farming methods and produce. In return for receiving assistance, these farmers agreed to open their fields to interested neighbors and to demonstrate their newfound farming skills. In effect, AMARTA built upon the enthusiasm of participants to create an ~~–o~~n-the-ground" farmer-led extension service. Working closely with local/regency and provincial agricultural services, private sector input providers, and participating farmers, the AMARTA field team introduced new varieties of seeds as well as new cultivation practices and technology. Our teams consisted of master specialists who guided a cadre of field technicians. We established offices in the pilot locations to ensure almost daily contact with participating farmers. AMARTA was a tangible and accessible training and support entity.

COCOA

As stated above, the cocoa value chain was characterized by a number of challenges, including old trees and poor planting materials, poor management practices, increasing pest infestation and diseases, and limited support for smallholders. In addition, with falling prices and poor transport, farmers had little access to larger buyers who were willing to pay them more for their produce.

AMARTA launched a plan that placed significant technical support in its pilot communities. Forty-four specialists were located on site in the three major pilot areas (North Kolaka, Polman, and North Luwu); demonstration plots were established in 12 districts and training was extended to 129,625 smallholder farmers in 62 subdistricts; linkages were formed with extension agents and other government agricultural personnel, and support was extended to the government's National Cocoa Rehabilitation and Revitalization Program (GERNAS).

AMARTA identified progressive farmers who hosted demonstration plots on their farms, along with field training schools. Training efforts were launched in improved practices, including side grafting, land preparation, organic pest controls, varietal selection, pruning, and post-harvest handling. More than 38,000 ha of cocoa were exposed to some 32 new technologies and management practices. One of the key objectives in all of these activities was improving cocoa quality. Big buyers, as noted in the Value Chain sections below, indicated that they would pay a premium for better-quality beans—requiring that farmers adopt better post-harvest practices,

including selecting better beans for packing and removing waste material traditionally packed in bags of beans for sale

The results were remarkable: Although the national average of production fell from 550 kilograms (kg) per ha to 400 kg/ha, farmers participating in the AMARTA program actually increased production—from 550 kg/ha to 700 kg/ha—and some actually reached 940 kg/ha over the life of the program. More than 62 million tons were produced for export. The national average volume per farmer was 0.36 tons, while that of the AMARTA-assisted cocoa farmers grew to 0.77 tons; an increase of 114% per capita.

COFFEE

Coffee farmers also faced problems such as aging tree stock, poor management, poor planting materials, coffee cherry borer infestation, poor post-harvest handling, and a lack of access to markets.

A team of 12 specialists led AMARTA's efforts in focusing on Arabica coffee cultivation, working to improve the quality of Indonesia's specialty (Arabica single variety) coffee industry. Fifteen districts and 69 subdistricts were identified for inclusion in the program's activities. More than 11,000 ha of coffee farms were exposed to 21 new technologies and improved farm management techniques, including pruning, varietal selection, organic pest control methods, harvesting, post-harvest pulping, hulling, drying, and storage improvements. More than 19,000 farmers benefited from these interventions, and more than 80 million tons of quality coffee were produced for export.

Another singular activity in quality improvement was AMARTA's effort to promote geographical indication.

HIGH-VALUE HORTICULTURE

In the case of vegetables, affordable drip irrigation and fertigation, substantial reduction in agrichemical inputs, and construction of greenhouses with ultraviolet covering proved very successful. In the case of fruits, AMARTA interventions included introducing double row cropping; substantial cleaning of farmland; sucker and tissue culture selection; pest control for bananas; pruning of jeruk trees and grafting of better, sweeter varieties; improved orchard management; and the MD 2 pineapple to growers in West Java. In the latter case, participating farmers took part in intensive cultivation seminars, which provided them with the capacity to propagate their own plants. Finally, in the area of floriculture, our investigations revealed a significant demand for fresh-cut flowers in Northern Sumatera.

AMARTA was able to incorporate under-employed women who were seeking ways to improve their family incomes by assisting in the formation of nine women's floriculture groups, consisting of 138 women who were trained in commercial flower production. In addition to providing skills training, AMARTA assisted the women in the construction of 15 low-cost greenhouses, the result of which was the introduction of outstanding varieties of high-yielding chrysanthemums. AMARTA also demonstrated low-cost lighting technology to initiate uniform flower production, an extremely valuable change to traditional production methods that resulted in female farmers increasing production by 100% and generating $190,000 in revenue during their first year of operation. Average monthly incomes are now between $227 and $568.

Success has led to other family members joining the business; there are currently 70 men participating in the floriculture pilot activity.

HOW TO IMPROVE ACCESS TO MARKETS

COCOA

Improving access to cocoa markets involved finding ways for cocoa farmers to reach beyond traditional buyers to larger companies. This was only possible if the quality of cocoa beans was improved to the extent that larger companies would seek them out. Improved quality at the farmgate clearly paid off. AMARTA established partnerships with a number of companies—including OLAM, UD, Tunas Jaye, Armajaro, and Big Tree Farm—that set up buying stations conveniently located near participating farmers' farms to collect cocoa beans. Buying agents had clearly posted purchasing figures, along with examples of how much they would pay for different grades of beans. For the first time, farmers understood what prices were being offered throughout the production areas, as well as what standards their sales were being graded on. Over an approximately four-year period, smallholders earned $138,470,755. Premiums paid to AMARTA farmers for quality cocoa varied between Rp 1,400/kg and Rp 4,400/kg.

COFFEE

AMARTA's primary means of improving coffee smallholders' access to markets was through the creation of a stakeholder organization composed of farmers, buyers, roasters, restaurateurs, and café owners—the Specialty Coffee Association of Indonesia (SCAI). Now with 104 members including private enterprises and farmers' cooperatives, SCAI members generated $209,678,000 in sales to smallholders in December 2010. SCAI also hosted the first international coffee auction in Indonesia in 2010. On the day of the auction, the spot price for Indonesian Arabica single variety coffee was $3.75/kg. The quality of the coffee SCAI was offering, however, was such that it fetched $5.25/kg.

HIGH-VALUE HORTICULTURE

As the introduction of new varieties of fresh fruit and vegetables to farmers advanced, the AMARTA team was also busy promoting these farmers' access to markets. A number of agreements were reached with commercial firms that had already become involved in servicing urban markets. Moreover, in a few cases, these relationships extended beyond Indonesia's borders to markets in Singapore and Malaysia. These buyers could not meet growing demand simply by relying on their own operations. Program-assisted farmers benefited because these companies—in addition to buying the farmers' produce—also provided guidance and training in both production and post-harvest handling. Farmers found that, in this market, produce was sold at the farmgate at prices more than 30% higher than those earned when selling to traditional markets. In the case of flowers, linkages were formed with regional wholesalers to expand beyond local markets, particularly in an attempt to penetrate the Jakarta market.

In addition to market linkages to local buyers, participating farmers joined with other value chain stakeholders to form Regional Agribusiness Competitiveness Alliances (RACAs) to lobby both local and provincial government representatives for support and market higher-value fruits and vegetables to hypermarkets. Notable victories were achieved with large grocery store chains such

as Carrefour, which realized the benefit of the reliable, high-quality, high-value supply that the AMARTA-assisted local farmers' groups and alliances provided.

Although they were initially worried about whether their blooms would sell, the female flower growers discovered that their entire first inventory was bought within 30 minutes of the opening of their sales center. So strong was the demand for cut flowers that the women determined that they could further diversify their production to include cut greens and other flower varieties, with the same results. The handful of greenhouses developed with partial program support expanded to more than a dozen self-developed units as local women's farmer groups began replicating successful new technology such as greenhouses and artificial lighting that proved to generate higher prices.

CHAPTER I: INTRODUCTION

PROJECT CONTEXT

Agricultural sector development has been the key to economic growth and jobs in developing countries in the past. Today, high-value agriculture commodities and horticulture products have the potential to drive growth, employment, and incomes. However, the competitiveness of this sector in Indonesia is constrained by low investment, inadequate infrastructure, and underdeveloped agribusiness practices.

USAID designed AMARTA to focus on agricultural value chains, including all of the stakeholders engaged in production and adding value in agricultural commodities, from farmer to consumer. USAID believed that this inclusive approach would maximize the likelihood that sound and mutually beneficial development decisions would be made. The program put in place a set of practical examples for coordinated value chains, cutting across a range of geographical locations and subsectors in the Indonesian agricultural economy.

Key building blocks of the AMARTA program were:

ASSESSMENT AND STRATEGY

A set of country-wide agribusiness competitiveness assessments served as the foundation for understanding the environment in which individual Indonesian agribusinesses operate.

AGRIBUSINESS INDUSTRY ASSISTANCE AND "REPLICATION" OF MODEL FARMS

AMARTA strategically analyzed the constraints and opportunities in each value chain and then carried out priority interventions to ensure that the full range of activities required to bring a product or service from its conception to its end-use and beyond were sustainably in place. Furthermore, model farms and cooperation arrangements were established to generate a greater adoption of changes in the value chains as farmers realized the benefits of these changes.

ADVOCACY FOR IMPROVED ENVIRONMENT AND REMOVAL OF CONSTRAINTS

AMARTA works with stakeholders at the national and sub-national levels to remove policies and regulations that constrain the growth and development of key value chains.

TRAINING/CONSULTANCY AND PARTICIPANT TRAINING

Key to AMARTA, a substantial portion of the program budget was dedicated to the provision of participant training. In implementation, AMARTA ensured that the training content was sustainable, often by training trainers, distributing training modules, and building the capacity of Regional Agribusiness Competitiveness Alliances (RACAs) and governmental counterparts. AMARTA witnessed the willingness of beneficiaries to invest in successful technology and continue to foster successful partnerships with local buyers and exporters established during the program, beyond AMARTA's facilitated efforts.

PUBLIC AWARENESS, PUBLIC AFFAIRS, AND COMMUNICATION

AMARTA completed a well-respected communication and public awareness campaign, including publications in newspapers, magazines, newsletters, and internet-based media, to support heightened public and private perceptions and promote a common message.

VALUE CHAIN SUPPORT ACTIVITIES

A grant component supported value chain activities and further enhanced competitiveness with grants from $5,000 to $100,000. Grants were awarded to local organizations involved in coffee, aquaculture, livestock, cocoa, and high-value horticulture. The grants were accessed by lead firms that created opportunities to broaden market opportunities for smallholder producers, while creating added value that increased farm incomes and improved rural livelihoods

PROJECT OBJECTIVES AND APPROACH

USAID (OR OTHER CLIENT) OBJECTIVES

- **USAID Assistance Objective:** Increased Employment
- **USAID Intermediate Result:** Increased Production of Selected High-Value Crops

PROJECT OBJECTIVES, DELIVERABLES, AND GOALS

The primary goal of the AMARTA program was to support Indonesia's efforts to create prosperity and increase income by improving the ability of Indonesian agribusinesses to compete in both the domestic and global marketplaces. The program worked predominantly with the private sector (including agribusiness organizations), but also with national and local government and civil society.

AMARTA's work in the agribusiness sector assisted Indonesia in generating growth, increasing jobs, and increasing household incomes, while also advancing the Government of Indonesia's goals and supporting U.S. policy priorities and interests. It contributed to USAID's Economic Growth (EG) strategic objective, which seeks to spur growth and create more and better jobs through improved business and investment climates. AMARTA improved the agribusiness systems for high-value commodities by addressing quality, marketing, investment, and support service constraints. AMARTA put in place a set of practical examples of coordinated supply chains cutting across a range of geographical locations and subsectors in the Indonesian agricultural economy, stimulating replication of similar efforts that will continue after the completion of the program.

Key technical deliverables included the following:

- Eleven agribusiness value chain, and six additional, assessments.
- Training/consultancy courses including training of trainers on topics such as good agricultural practices (GAP), reaching international quality and consistency standards, production technologies, quality assurance and certification, post-harvest handling, processing packaging, and strategic planning.

- Workshops, seminars, and trade shows that brought together small and medium-sized enterprises (SMEs), markets, and producers to promote value chain development, new product opportunities, and customer-service orientation within value chains.
- Establishing 13 RACAs composed of producers to leverage local government funds, pool resources, and draw on the skills of both the public and private sectors. These alliances significantly improved the regulatory environment's conduciveness to national and local competitiveness in agriculture. Not only were the RACAs established mainly by producers, but they were expanded to include local government support (especially in Sumatera), where previously there was a wide gap between producers and the government regarding how to collaborate to improve rural livelihoods.

AMARTA focused on increasing public support for and understanding of necessary reforms and initiatives for increased competitiveness of the Indonesian economy indicated by more businesses and business associations adopting practices promoted by the value chains. The program also increased the capacity of Indonesian professionals and firms to carry out public education campaigns in support of economic reform and public-private dialogues.

Finally, AMARTA focused on developing public-private alliances. More than $4 million of funding from PT Freeport Indonesia (PTFI) and Lembaga Pengembangan Masyarakat Amungme dan Kamoro (LPMAK) through the Papua Agribusiness Development Alliance (PADA) programs, as well as PT Olam, UD Tunas Jaya, and Armajaro's partnerships in establishing cocoa buying stations, resulted in cocoa purchases from smallholders totaling $138,961,261 and exports of $151,554,650.

PROJECT MANAGEMENT

PROGRAM TEAM

The AMARTA team included the original Chief of Party, David Anderson and his successor, Dr. William Levine, who took over Chief of Party responsibilities in March 2010. The Deputy Chief of Party, Mark Birnbaum, began working with AMARTA in February 2008. Technical staff throughout the program included Kornel Gartner, PADA Coordinator; Simon Badcock, Senior Commodities Advisor in cocoa; and Dietrich Fischer, Senior Commodities Advisor in coffee. A team of 80 Indonesians worked on AMARTA throughout the life of the program.

The key local staff included Togar Napitupulu, Senior Agriculture Economics Advisor; Hasrun Hafid, Regional Office Manager/Cocoa Specialist; Pantjar Simatupanang, Senior Agriculture Economics Advisor; and Sjaiful Bari, Horticulture Value Chain Specialist.

DAI's subcontractors on AMARTA were Winrock International, Michigan State University, Wilbur Smith Associates, National Cooperative Business Association, The QED Group, LLC, and Training Resources Group, Inc. The subcontractors provided technical experts in a number of value chains, monitoring and evaluation guidance, and training support for partners and staff.

COUNTERPARTS

AMARTA's contractually mandated counterparts included USAID's Office of Economic Growth, the Indonesian National Development Planning Agency (BAPPENAS), and the Indonesian Ministry of Agriculture (MOA). However, given the nature of AMARTA's design,

its day-to-day counterparts were actually regency, regional, and provincial agricultural and political leaders situated in the 36 districts and 227 subdistricts where AMARTA worked over the life of the project. Counterparts also included Indonesian Government agricultural research entities including the Indonesian Coffee and Cocoa Research Institute (ICCRI) and the Indonesia Vegetable Research Institute (IVEGRI); local universities such as Bogor Agricultural University, Padjadjaran University's Institute for Research and Community Services and its Value Chain Center (VCC), Udayana University, and North Sumatera University; PT Freeport Indonesia (PTFI), which established a special public-private partnership with USAID to help fund activities in Papua; LPMAK, created by PTFI to provide development assistance to the two Papuan tribes most directly affected by the presence of its mine; numerous agribusinesses; and the Syngenta Foundation, with which AMARTA signed a memorandum of understanding (MOU) to jointly fund and implement horticultural improvements training.

USAID SUPPORT

AMARTA worked directly under the guidance and direction of the USAID Indonesia Economic Growth (EG) Office, which in turn served as the Office of Procurement's technical officers. John Pennell was Director of EG at the start of the program. He was replaced by Paul Deuster, a personal services contractor (PSC) who served on an acting basis until the appointment of Michael Nehrbass, who became Director in March 2010. The COTR at AMARTA's inception was Rafael Jabba, who was replaced by Anna Juliastuti. Jacky Hendrawan served as COTR while Ms. Juliastuti was on maternity leave. Ms. Juliastuti was assisted by S.K. Reddy, a PSC Agricultural Specialist who joined the EG Office in March 2010.

The Director of the Office of Procurement at the start of AMARTA was William Reynolds, who was replaced by Dale Lewis. AMARTA's chief Contracts Officer was Dale Gredler at its inception. Mr. Gredler was replaced by Mrs. Asuncion L. Juico in the middle of 2009.

VALUE CHAIN ACTIVITIES

ADVOCACY FOR IMPROVED ENABLING ENVIRONMENT

Introduction

A robust agribusiness enabling environment is necessary to support the participation of Indonesian farmers so that they experience market efficiency and access. An unfavorable business environment at the farm level in particular has hindered agricultural development in Indonesia and has been characterized by the following constraints:

- Underdeveloped farm roads, irrigation, logistics systems, markets, and electrical supply.
- Disordered extension and research and stagnant innovation.
- Inefficient distribution, high prices, and low quality of inputs.
- Underdeveloped farmers' organizations, disorganized value chains, and weak membership organizations.
- Lengthy, costly, and complicated administrative processes, constraining regulations, and weak regulation enforcement, particularly in licensing and property rights.

- Burdensome taxes that are biased against agriculture and are frequently arbitrary, with little discussion from stakeholders.
- High-cost bureaucracy and a risky social environment.
- Lack of involvement of stakeholders in government planning and budgeting, resulting in top-down-driven policies that were weak and often misdirected in terms of the real needs of the agriculture sector.

Farm road hardening construction in Tj. Barus Villages, one of the central production villages for citrus in Karo District

One of the causes of such an unfavorable business climate is the lack of communication between private sector actors and the government. In order to enable farmers to pursue effective participation, AMARTA facilitated the formation of Regional Agribusiness Competitiveness Alliances (RACAs) of farmers and other stakeholders. AMARTA developed the capacity of these RACAs to carry out policy advocacy. RACAs participated in the existing policy-making process, in national and regional development planning forums' yearly meetings (for example, MUSRENBANG), and in conducting government-business-academic-civil society forums, holding hearings before local parliaments, conducting lobbying efforts with government agencies, and carrying out a targeted public information campaign.

These activities support the strengthening of AMARTA's existing interventions under cocoa, coffee, and high-value horticulture. Below are details on the progress made during the duration of the program.

Major Accomplishments

AMARKATA officials present proposals to the Governor and Vice Governor of Bali

- The Karo Highlands Community Alliance leveraged Rp 50 million ($5,263) for an access road for citrus farmers that included 350 meters of rehabilitated tarmac, making it accessible for cargo trucks. This access road saved the farmers approximately Rp 150/kg in transportation costs.
- AMARTA, in collaboration with the University of North Sumatera, trained the Deli Serdang Alliance on how to identify pressing problems and write proposals. As a result of this initiative, Parliament, through its chairman, Hj. Fatmawaty, and one of the leaders, Alinatar Siregar, accepted the proposals and promised that they would be included in the 2011 Deli Serdang budget with a total of Rp 280 million in funds committed.
- The Tabanan Cocoa Community Alliance (AMARKATA) in Bali raised its concern over the cocoa market area segmentation ~~–~~*Rayonisasi"* policy (which forces farmers to sell their crops to specific traders in specific areas) directly to the Governor of Bali in the monthly dialogue

on April 25, 2009. The Governor said that the Government of Bali will not impose any policy, including *Rayonisasi*, that is counter-productive to farmers and removed the rule.

- Padjadjaran University's Institute for Research and Community Services and AMARTA created a Value Chain Center that has developed a network of almost 500 high-value horticulture producers, produce-purchasing companies, and exporters. The VCC has emerged as a conduit for government assistance to smallholder farmers, enabling farmers to acquire over Rp 1 billion in grants and loan funds. The VCC also became a sustainable business development services provider that helped increase the value of horticulture exports in West Java by Rp 2.1 billion.
- AMARKATA was able convince the Tabanan Regency Government to provide three solar dryers worth Rp 84 million ($9,000) for three cocoa farmers' groups through the Office of Forestry and Estate Crops Services to resolve quality problems faced by farmers.
- On September 23rd, 2010, the Pro-Agribusiness Alliance of Pak Pak Bharat received a prestigious $12,500 grant award from the British Council. The competition included more than 600 participants from all over Indonesia with only 45 organizations selected, including only three winners for start-up entrepreneurship development.

Inauguration of 12 women's farmer groups represented by each group's chairwoman

- The Deli Serdang Barangan Banana Community Alliance inaugurated 12 Women's Farmer Groups consisting of 223 members on January 21, 2010, in coordination with the Department of Agriculture of Deli Serdang.

During the life of the AMARTA program, 13 RACAs were formed in the various regencies:

1. The National Horticulture Board: Established on December 13, 2007, in Jakarta through collaboration with the Directorate General of Horticulture Indonesia. AMARTA supported this effort, though the Government led this initiative from inception.
2. Karo Horticulture Community Alliance: Created on December 22, 2007, in Karo, North Sumatera.
3. The Deli Serdang Barangan Banana Community Alliance: Formed on May 29, 2008, in Medan, North Sumatera.
4. AMARKATA: Formed on October 27, 2008, in Tabanan, Bali.
5. The Cocoa Community Alliance in Jembrana (ALKANA): Formed on June 18, 2009, in Jembrana, Bali.
6. The West Java Agribusiness Action Group: Established on January 27, 2009, by AMARTA in collaboration with the Social Service Institute of Padjadjaran University (LPPM-UNPAD) in an effort to fill gaps in agribusiness policy.

7. The Simalungun Agribusiness Community Alliance: Formed on January 12, 2010, in Pematang Siantar, North Sumatera.
8. The VCC: Formed in 2010 in collaboration with LPPM-UNPAD.
9. The Pak Pak Bharat Pro-Agribusiness Community Alliance: Formed in February 2010, in Salak, Pak Pak Bharat, North Sumatera.
10. The Cocoa Community Alliance Polewali Mandar (SIKAP MANDAR): Formed on June 18, 2010, in Polewali, West Sulawesi.
11. The Cocoa Community Alliance in North Kolaka (ALMAKOTA): Formed on July 8, 2010, in Lasusua, North Kolaka, and Southeast Sulawesi.
12. The Cocoa Community Alliance North Luwu (ASTAKWA): Established on July 6, 2010, in Masamba, South Sulawesi.
13. The North Sumatera Coffee Forum: Formed on September 30, 2010, in Medan, North Sumatera.

"AMARTA has given me the spirit to fight and work for cocoa farmers. I am aware that nothing can change the fate of cocoa communities unless we fight for ourselves. Thank you to USAID/AMARTA, this training really helped me to understand the role of our Alliance and working together with the government."

—Mr. Usman, a member of the SIKAP MANDAR Cocoa Community Alliance in Polman, Sulawesi

RACA Sustainability

Plans are in place for several of AMARTA's initiatives to continue operations after the program ends, showing that activities contributed to a sustainable impact on Indonesian agribusiness. Some instances include:

- AMARTA assisted the Deli Serdang Barangan Banana Alliance in establishing long-term contracts delivering bananas to Carrefour Medan. Following the first delivery in November 2010, regular orders continue.
- North Sumatera Senator Parlindungan Purba, who serves on the executive committee, pledged to continuously support AMARTA's alliances and the Coffee Forum. In the past, he has provided in-kind support such as transportation and office costs for the alliances.
- The Coffee Forum of North Sumatera signed an MOU with the Government of Pak Pak Bharat and the University of Trisakti in order to continue social entrepreneurship development activities beyond the AMARTA contract end date.

The Minister of Cooperative and SMEs, Syarifudin Hasan, visited the Alliance's booth where the women farmers' groups had the opportunity to offer him banana cake

- The Parliament of Deli Serdang, pledged by Chairwoman Mrs. Fatmawaty, will support the Deli Serdang Banana Alliance with material and in-kind resources and will include the alliance in its annual budget planning activity.
- Cooperation with Polman Alliance SIKAP MANDAR has established a long-term partnership with Ecom, a cocoa exporter, which will provide ongoing training and buying opportunities for members.

RACA Lessons Learned and Recommendations

Below are some of the key lessons that AMARTA staff learned about working with RACAs during the program, and recommendations for future donor work in this area:

- Most farmers lack awareness and understanding of the basic function of cooperative organizations. As a result, individual or outside group interests are sometimes imposed on the organization, including politically motivated decisions.
- RACAs have difficulty obtaining outside investment, particularly government support, for expanding their activities and ensuring that members invest time and resources into developing a strong association that represents members' interests.
- Many RACAs will not become independent and self-sustaining without motivation and continued support. The challenge could potentially be mitigated if the RACAs were to align their interests with those of key political leaders. The political system has become a source of growth and support for the alliances, which will be important in their sustainability. However, to avoid conflicts of interest, clear rules should be stipulated in the alliances' bylaws regarding political affiliation.
- Deriving sustainable funding sources through members' contributions will only be successful if the members perceive that there are benefits for them in joining the alliance. Short-term funding options should be explored and continued government collaboration is essential.

Dr. Sabam (third from left) through Pak Pak Bharat alliance won a grant from the British Council to provide organic fertilizer to the farmers in Pak Pak Bharat

- To continuously improve the capability of members to perform policy analysis and present proposals to government agencies, the RACAs should focus on continuing partnerships with universities.

COCOA

Introduction

Historically, cocoa development in Indonesia was extremely productive compared to development in other cocoa-producing countries. Indonesian cocoa farmers achieved higher yields due to a favorable soil-climate combination, inexpensive and partially subsidized inputs, zero taxation, competitive markets, and good roads. Smallholder farmers reached yields of 1,000

kg/ha to 1,200 kg/ha after only four to five years in areas with good soil. These factors resulted in growth of the crop from 1970 to 2001 from about 30,000MT to more than 500,000MT. In 2007, mature cocoa covered approximately 923,968 ha and, of this, the vast majority- 91%- was managed by smallholders (Estate Crop Statistics, 2007). Since the introduction and expansion of cocoa in locations outside historical production areas like East Java and Sulawesi, cocoa has assumed a significant role as a source of rural employment and cash income.

However, in recent years, there have been significant declines in Indonesian production. Between 2006 and 2008, production declined by 12%- from 590,000 to 520,000 tons (2006–2007) according to the Indonesian Exporters Association (ASKINDO). An even greater decline of 39% was reported for cocoa bean exports, representing a drop from 490,000 to 300,000 tons (2006–2007). Indonesian cocoa bean exports are expected to fall further, from 304,353 tons in 2007 to 274,995 tons in 2008.[1] ASKINDO also revised national cocoa production down from 520,000 tons in 2007 to 480,000 tons in 2008, with the spread of vascular streak dieback (VSD) cited as the main reason for the decline. The decrease from 590,000 tons in 2006 to 480,000 tons in 2008 represents a shortfall of 110,000 tons with a market value of approximately $275 million. With up to 92% of Indonesian cocoa produced by smallholders, much of this lost production affects poor farmers directly. The major reasons for decline include old trees that are more prone to disease and produce lower yields, in addition to significant climate change.

Before the AMARTA intervention: The demoplot in Pulliwa village had unhealthy cocoa trees

After the AMARTA intervention: Much healthier cocoa trees generate more income for farmers

Indonesia currently has negligible governmental intervention in the cocoa sector because usually between 70% to 85% of the cocoa Freight on Board (FOB) price is received by farmers. For smallholder farmers who access up-country buying stations operated by exporters, there is minimal price reduction because cocoa is purchased in a transparent and quality-based manner.[2] The impact of declining production of the magnitude witnessed over the past two years effectively translates into a reduction of more than $200 million annually for rural farmers in Sulawesi.

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[1] Reuters (October 22, 2008) reported that buyers had defaulted on as much as 50,000 tons of cocoa beans sourced from Indonesia with discounting on Sulawesi cocoa increasing to $250/ton from $200 over a period of several months.

[2] A key difference in daily prices is based on differential prices paid for cocoa which can be as low as $120/ton up to more than $400–450/ton (December 2009). At the time of writing, differential prices had increased to $500–$550/ton. Establishing differential prices by exporters/large traders is linked with market dynamics, present stock, buyer demand, and seasonal conditions, as well as other local factors (operational costs, staff, fuel etc.) and national and international variables.

At the farmgate level, the declining productivity is having an impact on smallholder cocoa farmers who are unable to remain profitable because they cannot produce cocoa beans that are competitive in the international cocoa market today. Many farmers are forced out of business and find alternatives such as maize and other food crops. Farmers who have only recently planted their land with cocoa in newly expanding areas like Mamuju and North Mamuju (West Sulawesi) and East Luwu (border region between South and Southeast Sulawesi) are in a position of high risk because of their remote location, which entails poor infrastructure, particularly roads- they are removed from national/provincial roadways. Farmers growing cocoa early on in the history of Sulawesi production benefited from several years of high yields prior to cocoa pod borer attack and have recovered their development capital costs, but are now barely remaining profitable with lower yields. The international cocoa price has been very good during the past 18 months, in excess of $2,500/MT, offsetting lower yields. When prices decline to what economists consider normal for today's supply and demand, around $1,800–$2,200/MT the economic impact will be greater and transition from cocoa to other crops will accelerate.[3]

Motivating cocoa farmers to work together for better results

There are a myriad of issues that affect cocoa production, including physical, both on- and off-farm challenges like access to inputs, access to finance, pests, and diseases, as well as institutional and bureaucratic regulations impeding the successful development of the Indonesian cocoa sector. Traditionally the center of production for Indonesian cocoa has been Sulawesi; however, a combination of factors has diminished growth, including:

1. Old trees and poor planting materials.
2. Poor management practices, low production per hectare (63% of farmers surveyed in 2007 were only able to produce 500 kg/ha of dried cocoa beans), and poor understanding of export-grade quality demanded.
3. Damage by pests and diseases (phytopthora, cocoa pod bores, and vascular streak dieback). Increased prevalence and severity of cocoa pests and diseases have seen a decline in production for 2007/2008 growing seasons.
4. Limited effective agricultural support, training, and extension services for cocoa smallholders.

[3] In March–April 2009, cocoa prices were hovering between $2,400–$2,500, with a favorable U.S. dollar to rupiah exchange rate of Rp 10,000 per US$1. Smallholders were comparatively well protected from the drop in commodity prices than what otherwise might have been the case if the rupiah had been stronger against the U.S. dollar.

5. Research activities that are not necessarily tailored to farmer needs and are restricted in terms of meaningful dissemination to farmers.
6. Lack of transparency regarding price and quality for cocoa producers.
7. Limited farmer access to cocoa export markets—only 8% of farmers surveyed in Sulawesi accessed transparent markets.

AMARTA initially focused on developing public-private partnerships with major exporters such as PT Olam Indonesia and PT Tunas Jaya in order to create a transparent system with buyers willing to locate buying stations near AMARTA pilot areas, participate in training activities, and pay a premium for quality beans.

AMARTA focused on several key goals through a range of training and extension support activities for smallholders that helped to address the following: 1) improving on-farm production, 2) reducing pest and disease damage, 3) helping smallholders improve the quality of cocoa that they produce, 4) improving market access via transparent buying stations operated by AMARTA private sector partners, and 5) training and extension support for cocoa garden rehabilitation, replanting, and intensification based on the concept of a garden evaluation learned during training as a basis for farmer decision making in replanting or rehabilitation. These are activities that have strengthened—and will continue to strengthen—the Indonesian cocoa sector. A core aim of AMARTA was to demonstrate pilot projects where cocoa stakeholders were encouraged to replicate achievements through improved training materials, techniques, and methodologies.

Major Accomplishments

- 39,844,689 kg of cocoa beans meeting export standards were sold to PT. Olam through buying units with a total value of Rp 873,504,104,070; 19,710,012 kg from Tunas Jaya valued at Rp 471,822,870,697; and 3,861,255 kg from JBP Armajaro valued at Rp 71,577,861,726 for total exports from these three firms and other smaller buyers of $151 million over the life of the program.
- Total purchases from smallholders through AMARTA partners (PT. Olam, JBP Armajaro, Tunas Jaya, and Big Tree Farm in Bali) were 61,435,425 kg, valued at $138,961,621.
- 28,100 cocoa farmers from 1,126 farmer groups (986 farmer groups in Sulawesi and 140 in Bali)were trained; their farms covered 38,399 ha (35,086 ha in Sulawesi and 3,313 ha in Bali).

AMARTA trainers assist a women's cocoa group in Polman, North Sumatera

- AMARTA farmers' average production in 2009 was only 462 kg/ha (466 kg/ha in Sulawesi and 437 kg/ha in Bali). Based on post-line training surveys in 2010, the average production of AMARTA farmers was 1,077 kg/ha (1,182 kg/ha in Sulawesi and 561 kg/ha in Bali). AMARTA farmers increased their production by an average of 133%.

- Based on survey results, AMARTA farmers' average income per ha in 2009 was Rp 9.3 million (Rp 9.9 million in Sulawesi and Rp 5.6 million in Bali); however, after receiving training and access to exporters, income increased to Rp 20.2 million (Rp 21.8 million in Sulawesi and Rp 8.1 million in Bali), an increase in average income per ha of 117%.
- 7,878 farmers have adopted side-grafting in their cocoa gardens, resulting in the grafting of 14,809,355 trees, or about 126,143 ha (assuming that 1 ha equals 1,000 trees), representing the potential for 1.5 kg/ha in additional production total volume—an increase of 189,215 tons.
- 18,180 farmers adopted replanting, including 1,179,930 trees on 59,487 ha.
- 3,762 farmers established nurseries that produced 1,403,962 new high-quality seeds.

AMARTA Sulawesi Cocoa Alliance (ASKA) farmer with side-grafted cocoa trees

- 614 solar dryers were constructed by AMARTA; 30 solar dryers were built by the Estate Crops Department in Sulawesi and in Bali, and farmers replicated the technology by building 90 units using their own resources.

Solar dryer with rack model that allows for double the capacity in Polman

Solar Dryer in Sulawesi provides better incomes for farmers

- 55 superior local clones were identified in Sulawesi and Bali (North Kolaka 7, North Luwu 29, Polman 5, and Bali 14.)
- 24,692 video compact disc (VCD) films and 1,277 cocoa posters were distributed to farmers and cocoa stakeholders, and approximately 1,776 farmers' groups or more than 46,000 farmers have benefited from the materials through the Indonesian Government National Cocoa Rehabilitation and Revitalization (GERNAS) program, which received AMARTA training materials and used them for training farmers.

"With AMARTA introducing us to PT Olam Indonesia and Blommer Chocolates, farmers are very grateful to sell our export-quality cocoa beans directly to the exporters and increase our income. Thank you USAID/AMARTA for changing our lives."

—Mrs. Welah, cocoa farmer from Southeast Sulawesi

"On behalf of my colleagues in the Ulul Albab Farmer's Group, I would like to express my deepest gratitude to USAID/AMARTA who selected our group to participate in field school training. We have learned about a variety of new practices and a lot of beneficial information on improving the quality of our cocoa beans. With AMARTA's assistance, our group has evolved into a viable business entity."

—Mr. Lisman, Ulul Albab Farmer's Group, Sulawesi

"With solar dryers my job is easier, and I have increased revenues from cocoa sales due to improved quality, moisture levels, waste reduction, and better color of beans that were more uniform when I sold them to a trader for Rp 21,000 per kg, while other farmers only received Rp 19,000 per kg."

—Mr. Sahabuddin, a 42-year-old farmer from Polman

Cocoa Sustainability

The following results contribute to ongoing learning and future improvement in cocoa efforts:

- 706 Indonesian Government staff participated in AMARTA cocoa training (Sulawesi and Bali).
- 1,444 farmers in Sulawesi (North Kolaka, North Luwu, and Polman) were contracted in the GERNAS program as grafters, providing them with income of Rp 1,104,150,000.
- 96 farmers in Bali were contracted in the GERNAS program as grafters, providing farmers with income of Rp 245,600,000 for their products.
- 1,277 farmers have built nurseries containing about 271,300 new seeds valued at Rp 1,059,600,000.

Participants observe excellent local clones exhibited by farmers' groups

- 30 solar dryer units were replicated and constructed by the Estate Crops Department in Bali and Sulawesi and 90 units were created by farmers with their own resources.
- 4,206 farmers received training from AMARTA's VCDs with 130 farmers as trainers.
- Through partnership with four private sector cocoa buyers, each partner has established cocoa buying units as a source of information and access to transparent markets. Before the AMARTA program, only 8%[4] of farmers accessed a transparent market; after the program, 54% of farmers have access to a transparent market.

Cocoa Lessons Learned and Recommendations

[4] AMARTA conducted a baseline survey in 2007 with 5.103 respondents; the post-line survey in 2010 had 1,094 respondents.

A variety of opportunities exist to enhance the sustainability of AMARTA cocoa value chain program achievements, including:

Mrs. Hasnah received premium prices after AMARTA training improved her bean quality

- AMARTA has trained 8% of the cocoa farmers in Sulawesi and 26% of the cocoa farmers in Bali. Government agricultural extension support at the provincial or district level in Sulawesi should utilize AMARTA's training materials to expand the reach of training.
- Efforts should be made to continue fostering public-private partnerships to improve quality and open access to transparent markets with other Indonesian Government stakeholders and multilateral and/or bilateral donors. The GERNAS program intends to improve partnerships with the private sector to produce fermented cocoa beans, and this initiative is worthy of ongoing USAID support.
- Several activities have been selected for future USAID support: farmers' group empowerment, linkages between applied research from university or research institutions and farmers, support and facilitation of certification for bud wood and nurseries, rainforest certification, access to finance, strengthened alliances and continued training to enrich farmer capacity with GAP, and expanded access to markets.
- Demonstration plots are an excellent medium to teach and show farmers and cocoa stakeholders advanced technology. All of the AMARTA cocoa demonstration plots are worthy of continued support from the government or USAID.
- Working with many private sector firms is better than selecting one partner, particularly in Sulawesi where new partners that specialize in purchasing fermented beans should be explored. The geographic coverage of different partners helps provide more farmers with opportunities. In addition to AMARTA's current partners, there are a number of strong potential partners, including Cargill, Ecom, Mars, and Bumi Tangerang.

COFFEE

Introduction

The main production areas of coffee in Sumatera include Aceh, North Sumatera, and Lampung. In North Sumatera, the focus is on Arabica coffee, while Lampung tends to grow Robusta coffee. AMARTA's interventions focused in North Sumatra on higher-value Arabica coffee- working in the two districts of Simalungun and Pak Pak Bharat. The major challenges facing Arabica coffee cultivation in these areas are a high incidence of pests and diseases, especially the coffee cherry borer (CCB); limited shading trees to protect the coffee plants; poor knowledge of pruning practices; and lack of access to good-quality seedling materials. In an effort to address these constraints, AMARTA provided technical assistance and training beginning in February 2010, emphasizing higher productivity, quality, and access to better markets for smallholder farmers.

Map showing Arabica production regions

To support the effort, AMARTA produced materials to promote GAP, such as training manuals and posters. AMARTA also promoted hypotan[5] and *Beavaria bassiana* to combat CCB attacks, which have severely damaged most of the coffee in the area. Coffee productivity improved by 30% compared with production before AMARTA's intervention.

In total, 5,646 farmers with 2,577 ha of land were trained. AMARTA observed improved knowledge and new techniques used by farmers directly in their coffee gardens, improving production and ultimately increasing their incomes. To support the AMARTA activities and strengthen the partnership with the government, district government extension agents participated in training and helped disseminate training models and purchase hypotan with local government funds.

Major Accomplishments

AMARTA interventions brought changes and provided access to new technologies that contributed to the following successes:


Sumateran farmer with coffee seedling trees

- 629 farmer groups, including eight women's farmer groups—totaling 5,646 farmers consisting of 3,889 (68%) men and 1,807 (32%) women covering 2,577 ha—participated in training.
- Production at the demonstration plots increased by 30% due to new technologies decreasing pests and diseases.
- 60 extension agents were trained in coffee GAP.
- Annual production costs were reduced from around Rp 5 million to Rp 2 million, or by 60%.
- Jobs were created for 48 people who developed coffee nurseries and now sell seedling materials; three entrepreneurs now sell hypotan and Beavaria bassiana.
- Two sustainable partnerships were formed with the governments in Simalungun and Pak Pak Bharat.

Coffee Sustainability

AMARTA collaborated closely with extension agents in Pak Pak Bharat and Simalungun to empower the new regime of trainers working for the government. In addition, the program held regular monthly coordination meetings with the government to evaluate and improve coffee

[5] Hypotan is a pheromone attractant invented and produced by ICCRI that attracts CCB into a trap made of a plastic bottle filled with water, capturing and killing the female pest.

interventions. Each individual training result, as well as appropriate reports and surveys, were also shared with government officials. Ultimately, the AMARTA training manual and methodology were adopted and replicated by Pak Pak Bharat staff, who conducted coffee training on their own, and subsequently allocated funds in the 2011 budget to purchase hypotan. AMARTA is confident that the efforts made in establishing close relationships with the government will pay dividends in terms of ongoing efforts to support coffee farmers.

Coffee Lessons Learned and Recommendations

- Extra effort should be made when introducing new technologies and training to combat CBB, including a firm commitment and support from the government.
- Coffee practices in North Sumatera lag behind that in central Aceh, particularly in pruning and shading trees. Continuation of activities involved in shading trees and coffee pruning is strongly recommended to improve overall quality.
- More than 60 extension agents have received AMARTA's training of trainers. Further efforts should continue to emphasize training of trainers and capacity building.
- Emphasis should be placed on introducing more buyers to the region in order to help farmers understand the requirements of traders and sellers in order to continue to improve the quality of marketed coffee.

COFFEE: SPECIALTY COFFEE ASSOCIATION OF INDONESIA

Introduction

Another major component of AMARTA's work in coffee was creating the Specialty Coffee Association of Indonesia (SCAI). Demand for specialty coffee in Indonesia is very high, and the inability to increase production is a constraint reported by a number of suppliers and buyers. Concerns regarding coffee traceability were also identified at all levels of the supply chain. Mixing coffee from various regions in order to satisfy customer contracts has compromised the integrity of coffee from specific regions and obfuscated taste profiles. The importance of defining the origin of coffee using geographic boundaries and establishing taste profiles for those "*terroirs*" is well understood at institutional levels, though only starting to be implemented through pilot projects at the farm level.

At the beginning of the program there was an absence of any organized professional marketing and promotion of the specialty coffee of Indonesia. The Association of Indonesian Coffee Exporters (AEKI) was ineffective at creating more direct linkages between specialty coffee buyers and sellers. In an effort to mitigate many of the lingering issues, form a national trade association, and increase Arabica coffee promotion throughout Indonesia, SCAI was created by AMARTA with USAID support to congregate all specialty coffee stakeholders together to establish and work toward the common goals of promoting quality and creating a market image.[6] SCAI was launched on February 12, 2008, at an event attended by more than 70 Arabica coffee farmers, exporters, and retailers. The organization now has 103 members from all segments of the industry. The largest segment continues to be exporters, followed by individuals, farmers' cooperatives, and retailers. The 13 coffee cooperatives that have joined the association represent 22,000 members. SCAI members export or roast 50% of Indonesia's total Arabica coffee, worth more than $100 million per year. SCAI serves as an effective forum, bringing together all industry members involved with Indonesia's specialty coffee to promote and set standards for the growing, processing, exporting, and retailing of Indonesia's specialty coffee. In total, SCAI has generated over $70,000 in membership fees and other revenue from national and international events.

Barista competition is part of an SCAI effort to promote Indonesian specialty coffee

Major Accomplishments

- Through international and domestic events, as well as its website, SCAI increased awareness about Indonesian coffee among more than 80,000 interested parties. Visitors to the website demonstrated their interest in SCAI and its activities by visiting multiple pages, resulting in more than 700,000 ~~h~~its" over the past two and a half years.
- SCAI has attended 13 international trade shows and events since 2008. Six of the events were in collaboration with the Indonesian Tourism and Culture Ministry. The international exposure introduced 7,400 contacts to SCAI.
- Based on members' active participation, SCAI directly assisted at least 29 members by linking them with buyers, providing additional knowledge, and increasing sales.
- SCAI members exported $116 million of Arabica coffee in 2010 alone. The cumulative export value of all SCAI members from 2008 to 2010 was more than $328 million.

The 22 cupping judges along with international buyers at the Specialty Coffee Auction in Bali

[6] *A Rapid Assessment of the Specialty Coffee Value Chain in Indonesia*, prepared by DAI, January 2007, for review by USAID.

- SCAI organized the First Indonesian Specialty Coffee Auction. On October 9th and 10th, 2010, in Bali, 59 auction lot samples were received from exporters and farmers from across Indonesia. The highest-scoring lot of Arabica coffee was sold for $10.50/kg, compared with the price on the New York commodity index of $3.75/kg, a record price for green Arabica coffee from Indonesia. In total, the auction sold 7,385 kg of coffee valued at $42,696 or an average of $5.80/kg- 55% above the New York commodity price.
- SCAI members from cafés and retailers created jobs for more than 80 baristas, while the exporter members created or supported at least 22,000 jobs in farmers' cooperatives.
- Seven partnerships with governments were developed, all with the goal of promoting Indonesia's specialty coffee. Six events were held with the Tourism and Culture Ministry and one with MOA.
- Forty-four Q-graders were certified to evaluate Arabica coffee quality, becoming part of 636 Q-graders in all major coffee producing and consuming countries worldwide (before 2008, Indonesia had no certified Q-graders). One hundred six baristas have sharpened their skills to serve top-quality cappuccino and espressos, improving the coffee-drinking experience for many Indonesian consumers.

- SCAI arranged origin tours to Toba, Takengon, Aceh, and Toraja for U.S. and European buyers in 2008, and to Sumatera and Flores in 2010. As a result of the trips in 2008, the buyers purchased $609,000 worth of Indonesian coffee.

SCAI Sustainability

To sustain the operations after the AMARTA program ends, SCAI has established several funding options, including:

- The development of SCAI's on-line store to sell merchandise and tools related to specialty coffee, which went live on March 1, 2011. The store will support SCAI members in obtaining unique, high-demand merchandise including cupping apparatus, Agtron (eight industry standard disks designed to enhance consistency and ensure that both roasters and their customers are in agreement regarding the degree of roasting), barista books, maps, and other merchandise supplied by SCAI, other SCAI members, and suppliers.

Coffee pruning training in North Sumatera

- The creation of unique SCAI products such as quality training and skill development, skill certification, origin tours, and consultancy will be conducted in cooperation with members who have the skills, such as ICCRI, roasters, and consultants. These services are expected to begin in May 2011. SCAI's website will be used to create more interest among members, participants, and buyers of SCAI services.
- Thirteen farmer members have developed contacts with other donors. The Ford Foundation is interested in working with those groups through SCAI to improve livelihoods. A proposal was prepared and the program is expected to start in May 2011 with a $139,000 grant from the Ford Foundation.
- Additional fundraising activities in conjunction with companies' corporate social responsibility activities and proposals seeking sponsorships for supporting SCAI have been prepared and are expected to result in additional funding by the second half of 2011.
- The wide variety of member categories of SCAI has also created links with different departments of the Indonesian Government. Currently, SCAI has built a strong relationship with the Ministry of Agriculture (MOA), and exporter and wholesaler members are closely linked with the Trade and Industry Department. In addition, Café owners and retailers coordinate with the Tourism and Culture Department. Because of the variety of members, SCAI's relationships should go well beyond MOA and can create an opportunity for SCAI to act as the coordinator for all departments with regard to specialty coffee development.

SCAI Lessons Learned and Recommendations

- The website and other social media have proven to be powerful tools to promote SCAI. With a minimum budget, more than 4,000 visits per month can drive increased membership and more business for members. Improvements will be made in developing systems and adding human resources to follow up on the leads from the website, connect with necessary members, and measure the results.
- For SCAI to develop, a strong pool of leaders is necessary. Assistance is needed in the areas of managing resources, creating a positive culture, and overcoming challenges. Because the executive committee positions are voluntary and many leaders are not based in Jakarta, communication also becomes an issue. SCAI must determine if it will spend funds to hire an executive director or improve the leadership skills of the senior staff.
- The formation of SCAI has changed the dynamics of the specialty coffee market. However, if it also creates a threat for AEKI that leads to a defensive posture to challenge the future growth of SCAI it could be harmful for both organizations. The leaders from both associations must work cooperatively to share ideas and responsibilities so the funds available can be used efficiently.
- It is time for SCAI to adopt the Specialty Coffee Association of America exposition model that manages a combination of symposiums, trade shows, auctions, and barista competitions in the same place at the same time in the form of the First Specialty Coffee Exposition. This event would not only increase the visibility of Indonesian specialty coffee in the international society, but would also advertise SCAI's role in improving the quality. Such an initiative would require a strong management effort and collaboration with several departments and private sector partners.

- The First Specialty Coffee Auction created interest and support from the MOA. The Vice Minister of Agriculture, Bayu Krisnamurthi, in his opening speech, encouraged SCAI to arrange a yearly auction. Farmers also suggested that the auction could be expanded to serve them, which would immediately show them the impact of improving quality to receive a higher price.
- This is the time for Indonesia to establish a Coffee School that offers courses ranging from producing to retailing. SCAI does not need to establish a school by itself, but should collaborate with all of its members. SCAI can be a coordinator to establish standards and act as an auditing organization to monitor the quality of the school.

Sidikalang Brocap training to reduce CBB pest attack

HIGH-VALUE HORTICULTURE IN WEST JAVA

Introduction

AMARTA's high-value horticulture activities in West Java started in April 2008. A number of successful interventions were introduced that will likely revolutionize the vegetable industry in West Java and have already drastically improved the quality of fresh produce in supermarkets throughout Jakarta, Bandung, and surrounding areas. AMARTA initiatives in this area increased productivity and quality, which increased revenue for both growers and produce middlemen and provided import substitutes in supermarkets. Most importantly, participating farmers have learned new technologies and techniques that have provided them with greater quality and quantity of fruits and vegetables.

Training and technical assistance efforts focused on production, post-harvest handling, and marketing of 10 crops. AMARTA staff and their partners, IVEGRI, the Syngenta Foundation, and the VCC, along with government institutions, worked with growers and produce companies to introduce improved practices and link growers into high-value markets through specific buyers who were also willing to work with small farmers.

New technology to protect broccoli from excessive rain proved very useful in West Java

Major Accomplishments

- 3,000 farmers' incomes increased by an estimated total of $600,000 per year following implementation of AMARTA production practices.
- The income of growers served by the VCC increased by an estimated total of $500,000 per year through improved business practices.

- Program initiatives created 120 new jobs in rural areas of Garut, Lembang, and Cibodas.
- Purchases from smallholders by produce buyers increased by $393,000.
- AMARTA provided training for 3,207 individuals (79% men and 21% women) in short-term agriculture sector productivity training.
- The program facilitated the establishment of 97 producer organizations, trade/business associations, and community-based organizations.
- The program worked with 37 agriculture-related firms in West Java to improve yields and quality.
- AMARTA facilitated the formation of 10 public-private partnerships and nine women's organizations/associations.
- The program supported construction and training for local growers at the DT Eco Pesantren broccoli pack house to supply high-end markets, fetching 25% more- from Rp 15,000 to Rp 20,000- at supermarkets in Bandung and Jogjakarta. Currently, more than 120 farmers have adapted production of broccoli on 60 ha and increased yields by 50%.
- AMARTA contributed to improved quality and quantity of carrots for growers who are collectively working on 42 ha, which will increase revenue by about $150,000 for the farmers.
- The strawberry activities resulted in growers receiving an average of Rp 23,000/kg for "Red Ripe" strawberries, while other growers were only receiving Rp 10,000–13,000. This amounted to a 100% increase in income with similar input costs for Rancabali strawberry growers.
- AMARTA facilitated farm management training to explain the concept of farm record keeping, farm budgeting, and cash flow. A total of 50 tutorials were delivered for 618 people, 425 (69%) male and 193 (31%) female.

AMARTA's "Red Ripe" strawberries received a premium based on quality


Farmers witness demonstrations at IVEGRI

"The value of our farmer group sales of broccoli with the same growers producing on the same land has increased from Rp 27,600,000 in July 2010 to Rp 62,600,000 in December of 2010. This is due to our adaptation of better transplant practices and better production practices supported by AMARTA. We had broccoli when other growers did not and were able to capitalize on the high prices offered by CV Bimandiri during the height of the rainy season."

—Mr. Supriatna, a broccoli grower from Cigugur, West Java

"A family can have a good life growing strawberries on only 1500m^2 if they follow AMARTA's good practices and have access to markets. We need many more AMARTA like institutions if we want farmers' income and welfare to improve."

—Mr. Sumarna, an ASGITA strawberry grower

West Java High-Value Horticulture Sustainability

AMARTA supported the establishment of the VCC in West Java tasked with expanding networking, conducting policy and competitiveness analyses, maintaining a database of organizations, and, most importantly, acting as a service provider for agribusiness companies. AMARTA conducted ongoing coordination efforts with 20 exporters in the West Java and Jakarta area. As a result, participants agreed to establish the Indonesian Fruits and Vegetables Exporters Association, which subsequently developed a five-year work plan to increase exports and the overall quality of fruits and vegetables in Indonesia.

As of 2011, the VCC had a network of approximately 500 vegetable and fruit farmers and eight produce-purchasing companies and exporters. The VCC became a conduit for government assistance to small farmers and, by the end of AMARTA, has channeled more than Rp 1.2 billion in grants and loan program funds to grower organizations and agribusiness entrepreneurs throughout West Java.

The VCC sponsors and supports the efforts of regional planners and organizations that work to improve Indonesian horticulture competitiveness. In attendance are representatives of Rabobank, the Ministries of Agriculture and Trade, BAPPENAS, and farmers' groups and associations, as well as traders and extension staff.

The VCC was a vital partner to AMARTA and became a strong business development service provider and champion of Indonesian vegetable and fruit farmers. The VCC has the funding and management capacity to carry on interventions long after the completion of AMARTA. It is now truly a strong, indigenous, university-based organization that not only helps the horticulture industry but provides a venue for learning for hundreds of graduate students from all over Indonesia.

In an effort to sustain successful interventions, AMARTA continually focused on partnering with companies and organizations based in West Java that will continue their businesses and services long after the program is completed. AMARTA also worked to see that financial incentives were in place in the value chain to keep all parties focused and vested in the success of the products they were selling. Going forward, the presence and professional management of the VCC and the vested interest of MOA at both the provincial and district levels in maintaining support for small vegetable growers will help ensure that growers get the technical assistance they need to expand production, packing, and marketing using best agriculture and agribusiness practices.

West Java High-Value Horticulture Lessons Learned and Recommendations

- Financial management training should be provided to each of the program beneficiaries in the early stages. This enables growers and agribusiness entrepreneurs to know how to evaluate the financial benefit of new interventions. More importantly, it sets the beneficiaries up to prove bankability of their operations and will ultimately allow them to access financial services.
- High-value horticulture requires many inputs such as seed, water, irrigation development, greenhouse construction, seedling grafting, and adaptations in mechanization and fertilizer formulations. It is important to work closely with input and service providers who can provide these inputs to small growers and, in some cases, to develop these input providers and services so they can work directly with farmers.
- Significant improvements in providing planting materials, post-harvest handling, and cold storage facilities resulted in improved yields and quality of strawberries and other vegetables. Accessing new markets created sustainable relationships for farmers.
- Universities can often be excellent partners in providing services to growers, as can many of the government departments, but it is critical to choose enthusiastic partners that want to work and have the same goals and vision as the project.
- It is important to facilitate packing and pre-cooling systems experts to help with setting up both central and satellite packing facilities (satellite being those close to the farm gate for handling delicate produce).

HIGH-VALUE HORTICULTURE IN NORTH SUMATERA

The major constraints faced by farmers in North Sumatera horticulture are low productivity and high production costs due to inefficient growing practices, significant pest and disease attacks, low-quality planting materials, lack of information regarding proper GAP, and low-quality produce. All of these factors have resulted in lower prices and a weak bargaining position for farmers. After conducting several assessments, producing recommendations, and introducing innovative technology, AMARTA designed activities to solve several problems by implementing pilot projects in five key commodities and locations. The activities were implemented in partnership with stakeholders such as private sector firms, farmers' associations, the Government of Indonesia, and universities. The main objective was to develop the agribusiness sector from the farm to market and convince partners to replicate successful pilot initiatives.

In North Sumatera, implementation began in 2007 and ran through December 2010. The activities included dissemination of new technologies learned in the classroom and practiced in the field through demonstration fields and farmer field days, and linking farmers to local, regional, and export markets. AMARTA selected bananas, citrus, broccoli, carrots, and floriculture for assistance. The achievements over four years were substantial in terms of increased quality and productivity, access to new markets, collaboration with local governments, and creation of sustainable farmers' associations. Below additional details are provided by crop.

Citrus

Major Accomplishments

- 974 farmers' groups, totaling 17,882 farmers including 12,160 (68%) men and 5,722 (32%) women, participated in citrus cultivation training covering 10,424 ha. Production increased 76% from 6,900 kg/ha to 12,133 kg/ha.
- Sales prices increased from Rp 2,533/kg to Rp 3,266/kg, or 29%, due to increased quality.
- Average monthly income increased from Rp 1.5–2 million to Rp 2–2.5 million, or about 25–33%, while monthly production costs decreased from Rp 2–2.5 million to Rp 1.5–2 million, or about 25–33%.
- Average production yields of 12,133kg/ha per year resulted in a total volume sold of approximately 37,528 tons. Assuming a price of Rp 3,500/kg, total revenue was approximately $14,594,510 annually.
- Assuming that for every ton of citrus produced, one laborer is needed for harvesting, approximately 37,000 jobs were created directly (harvest labor) and indirectly (driving, weighing, and sorting).
- Sixty-eight government extension agents and staff were trained: 12 men and 56 women in Karo and Pak Pak Bharat regencies.

A female farmer group attends training

"After AMARTA came to our village last year and provided training and assistance I was able to revitalize my citrus cultivation and started harvesting higher quality fruit that I was able to sell in the local market for a higher price than I had ever received. Our hope in the future is that USAID/AMARTA will continue its program helping us in the Karo Highlands because it helps all the citrus farmers."

—Herman Tarigan, citrus farmer in Karo Highland, North Sumatera

"The entire USAID/AMARTA team not only helped me in improving my technical knowledge of GAP in citrus, but also showered me with motivation so that I believed that I could do it! A million thanks to AMARTA who changed my life from no one to become someone. I have earned the respect of my family and can now provide food and clothing for them."

—Ardi Tarigan, citrus farmer from Karo Highlands

"I can now sell my citrus at a premium price and my production has increased more than 100%. My life has improved and I am able to help my neighbors by hiring them to work in my field and teach them how to produce high quality citrus. I never would have been able to succeed without USAID/AMARTA assistance."

—Mr. Jufriend Kemit, citrus farmer from Karo Highlands

Bananas

Major Accomplishments

- AMARTA conducted intensive training for 11,901 banana farmers in Deli Serdang, Karo Highland, and Simalungun Districts, including 6,875 men (58%) and 5,026 women (42%), with 293 farmers' groups covering 9,156 ha of land under improved technology.
- Production increased 125%, from 693 bunches/ha to 1,560 bunches/ha based on utilizing double row planting, improving the quality and quantity of bananas, and finding new markets.

A diligent banana farmer practices post-harvest handling techniques

- Average monthly income from banana fields increased 118% from Rp 1,119,116 to Rp 2,445,238.
- Average sales prices increased 27% from Rp 3,750 to Rp 4,750 per hand.
- Total production of Barangan bananas was 750,000 hands with a total value of Rp 3.75 billion ($416,666).
- 101 government extension agents—73 men and 28 women—were trained in Deli Serdang and Simalungun regencies.
- In collaboration with PT. Sewu Segar Nusantara and the Deli Serdang Cooperative, approximately 3,960,000 hands (assuming production capacity was 1,320,000 hands per year) were sold in Jakarta and Medan. With an average price ranging from Rp 4,000 to Rp 6,000, total revenue was approximately Rp 4,221,608,000 ($469,068).

Mr. Besman Napitupulu, a BPTP Department Manager demonstrates double row technology

- By producing 1,320,000 hands per year, banana activities created approximately 4,400 jobs (including daily labor, harvest labor, and shipping labor)
- The Assessment Institute for Agricultural Technology (BPTP) in Medan—a government agency—replicated double-row banana planting and Besman Napitupulu, one of BPTP's Department Managers, established his own model garden to transfer knowledge to farmers.

"I was amazed at the impact of replicating USAID/AMARTA's double row system on my own land since I have grown bananas for many years using the same strategy. I realized that this new system of cultivation is very profitable since it produced double the amount of stems using the same amount of land, which means double the profit for me ."

Sudarman Tarigan, banana farmer in Deli Serdang, North Sumatera

Floriculture

Major Accomplishments

- AMARTA conducted intensive training for 208 flower farmers—70 men (34%) and 138 (66%) women—in Raya Village, Karo Highland, with nine women's farmer groups covering 104 ha of land under improved technology.
- The AMARTA assisted female farmers harvested a total of 54,222 cut flowers directly from new greenhouses valued at more than Rp108 million ($90,000).
- Average monthly income from growing flowers inside greenhouses increased from Rp 2 to 5 million.
- Average sales price increased 100% from Rp 1,500 to Rp 3,000 per stem.
- The total number of flowers sold by the entire community during the first AMARTA sponsored village market day in 2010 exceeded 855,000 stems, resulting in total revenue of $190,000.
- Greenhouse prototypes provide significant benefits for floriculture farmers in Berastagi and are being replicated by local growers since cultivating flowers in open fields has produced extremely poor results due to weather conditions, soil quality, pests, and diseases.

Female farmers with AMARTA staff help with greenhouse construction

The women's farmer group during construction of the first greenhouse

Carrots and Broccoli

Major Accomplishments

- AMARTA conducted intensive training for 376 vegetable farmers in Karo District with 44 farmers' groups covering 566 ha of land under improved technology.
- Carrot production increased 17% from 30 tons/ha to 35 tons/ha.

- Average sales price of broccoli increased 25% from Rp 1,200/kg to Rp 1,500/kg sold conventionally with the stem and leaves at the farm level.
- Total volume sold was 84,000 kg of carrots at an average price of Rp 5,500/kg and 12,000 kg of broccoli sold at an average price of Rp 3,500/kg resulting in total revenue of Rp 504 million or $56,000 for farmers.
- With the assumption of five laborers working each ha in vegetable activities, AMARTA created approximately 2,800 jobs.

Mrs. Surbakti in her garden with other farmers

"This is tremendous: growing carrot seed is far more profitable compared to only growing carrots. AMARTA has opened our eyes to this exciting opportunity, especially since we have superior carrots. Thank you USAID/AMARTA we hope you continue to help us!"

—Mrs. Surbakti, carrot farmer in Gonsol Village

"Thank you to USAID and AMARTA for helping me to become empowered as both a mother and a farmer. I now produce more carrots that are higher quality than what I grew before. My family can now afford to buy more food and my children have new clothes and books to study. You have changed my life, helped my family, and helped farmers in the Tarigan's Damai Sejahtera Bunuraya Farmer's Group."

—Maria Br. Tarigan, carrot farmer from Bunuraya Village

North Sumatera High-Value Horticulture Sustainability

The success of AMARTA's efforts in North Sumatera, especially in horticulture, were influenced by the Government of Indonesia, particularly from provincial and local governments in the regency. Simalungun and Pak Pak Bharat regencies committed to providing resources, extension agents, and office space to support training activities and participated in field demonstrations. Direct collaboration also occurred with Deli Serdang and Karo government officials through socializing banana double-row planting and technology practices; the extension service was active in 22 banana study fields. During the AMARTA program, there were 169 extension agents trained and directly participating in activities. The involvement of the BPTP in improving Barangan bananas has significantly raised awareness among farmers of the benefits of using the double-row planting system. BPTP utilized the technology in its own banana demonstration fields and distributed the AMARTA training information and manuals.

Mrs. Maria Br. Tarigan from Karo District increased revenue from carrots by 127% by increasing productivity and quality

Mrs. Sabar Kita, the Secretary of the Wanita Sejahtera Women's Farmer Group in Deli Serdang kept her daughter in school with additional revenue she earned from improving her banana practices

The continued involvement of local governments in the regency was very important in achieving maximum results and program impact because they have resources to continue the program in the future. Collaboration with established private stakeholders was also essential because of their ability to reach target participants in training sessions by working with local associations or local non-governmental organizations that have proved to be extremely efficient in organizing farmers for training.

Collaboration with strong and experienced farmers' groups helped to ensure the sustainability of knowledge distributed, while AMARTA's significant investment in training materials and VCDs leaves tangible and helpful information behind. The existence of model farmers perpetuated learning even after training activities ended at the village level. VCD films also provided easy dissemination of information to more farmers who learned by watching new technology practices even without classroom training sessions.

North Sumatera High-Value Horticulture Lessons Learned and Recommendations

- The Karo Government Extension Service Agency and other institutions such as the Karo Horticulture Community should continue citrus training to expand GAP for their neighboring farmers and communities, taking advantage of the 20 existing demonstration plots to ensure the application of citrus GAP by farmers in AMARTA locations.
- Obtaining high-quality seed is a serious constraint. The government and other interested stakeholders should ensure carrot seed certification from the North Sumatera Seed Inspection Authority so that Berastagi carrot seed can be supplied throughout Indonesia using the existing distribution channels.
- The government and other interested stakeholders should provide training to strengthen local farmers' group's capabilities in financial management, production management, and marketing. Many farmers do not have basic financial management information such as profit or loss figures.
- Raya Village stakeholders should establish a flower market and teach standardized post-harvest handling so flower farmers are able to supply new markets in Sumatera and Java.

PAPUA AGRICULTURE DEVELOPMENT ALLIANCE (PADA)

Introduction

PADA was a public-private partnership between USAID/Indonesia, PT Freeport Indonesia, and Lembaga Pengembangan Masyarakat Amungme dan Kamoro (LPMAK) that aimed to provide resources, expertise, and experience to implement coordinated, tangible, focused, and sustainable

agriculture programs to help the people of Papua improve their livelihoods. In many cases, the assistance provided food security for farmers who live in extremely remote areas, have little economic opportunity within their villages, and spend significant time and money on transportation.

The objectives of PADA were to:

- Increase revenues and jobs for Papuan communities through the development of agriculture and agribusiness
- Combine shared funding, resources, personnel, and materials to ensure that development funds are used effectively and transparently to maximize the participation of local communities
- Provide demonstrations of adaptable technology through implementation of pilot projects in selected communities as agreed upon with all stakeholders
- Encourage improvements in farming and fishing livelihoods to discourage migration from villages to Timika
- Create local capacity to manage similar initiatives beyond the life of the project.

This partnership alliance operated under an MOU signed on August 30, 2007, between USAID/Indonesia and PTFI, to be implemented by AMARTA. The original PADA activity included technical assistance, training, and grant funding to four villages: Wamena, Moanemani, Aramsolki, and Kokonao. Capacity-building efforts centered on developing two coffee cooperatives and one fishery cooperative. In 2010, DAI was requested by the Coordinating Committee to submit a revised and reduced program budget and technical proposal for three service points for calendar year 2010. Ultimately, a one-year budget including $1 million from LPMAK, $369,000 from USAID, and $500,000 of in-kind support from PTFI was approved. The total USAID support was later modified in conjunction with a four-month extension of the AMARTA and PADA I projects and a six-month extension of the PADA II expansion project. Timika, three sub-districts, and eight villages were added to PADA II's fisheries activity, along with the design and construction of a fish processing plant; horticultural and food security-related activities were extended to Faka Fuku and villages in Jila District. PADA I activities noted above were also expanded and included in the second phase of this activity.

Major Accomplishments

- 24 MT of specialty Arabica Coffee exported
- 12 MT of specialty Arabica Coffee per year sold domestically
- 48 MT of specialty Arabica Coffee in sales contracts for 2012
- 225 new jobs created
- $90,000 of export sales
- $63,000 of domestic sales
- 887 additional hectares under improved technologies or management practices

- 35 producer organizations, trade and business associations, and community based organizations receiving assistance
- 25 agriculture related firms benefiting directly from supported interventions
- 1,436 individuals receiving short-term agriculture sector productivity training
- 100% increase in value of domestic and international sales of targeted agricultural commodities
- 50-100% change in value of purchases from smallholder of targeted commodities
- 31 new technologies or management practices made available for transfer
- 7 public-private partnerships formed to assist development efforts

Achievements and Results

Fisheries Activities

Ice Factory and Fish Production

Two young fishermen from Kokonao weigh their fresh fish and receive an immediate cash payment

PADA supported the community in Kokonao, West Mimika, Papua with an ice factory, resulting in the first 200 blocks of ice produced on April 24, 2008. The ice factory became fully functional—producing 3,000 kg of ice per day—and was overseen by a full-time manager from the Maria Bintang Laut Cooperative. Fishermen were previously paying Rp 15,000- 20,000 for 15 kg of ice from a Timika-based ice plant, a substantial amount since they only make Rp 30,000 for the largest fish that they sell. The Cooperative only charged Rp 12,500 per block of 15 kg ice.

In the past, the price of fish was determined by size or length and not necessarily by weight. After discussions with the fishermen organized by PADA, the Cooperative decided that it would pay Rp10,000 per kg of Baramundi fish and Rp 8,000 per kg of other fish varieties. Having

The newly established cool storage site

A happy crowd with the first blocks of ice produced

access to ice for storing their catch, and completing sales based on weight rather than size, participating fishermen saw a dramatic increase in their income, from Rp 20,000 to Rp 75,000, beginning in 2009. In total, $218,748 worth of fish was purchased from local fishermen since 2008. At PADA II's end, six hundred twenty-one fishermen from 20 villages were engaged in the fisheries program and selling fish to Maria Bintang Laut Cooperative.

In 2009, to combat new challenges from local traders who were taking their boats to small villages and enticing fishermen to sell to their mobile operation, the Cooperative and PADA rehabilitated the five-ton boat previously granted by PADA. In 2010, PADA, with additional funding from LPMAK, completed the construction of cold storage facilities in five locations: Otakwa, Timika Pantai, Amar, Pece, and Pomako Villages. The new storage system saved fishermen time, energy, and fuel costs. The result of this initiative was that, beginning in 2009, total purchases increased on average to seven tons per week, while the Cooperative continued paying Rp 10,000/kg for fish with the addition of these new buying stations.

Newly rehabilitated boat for the Cooperative collecting fish from different villages along the coast

The facility in Pomako Village was near the market in Timika so it also served as a docking facility and initial processing and staging area for Maria Bintang Laut Cooperative. On July 26, 2010, USAID/Indonesia's Mission Director, Walter North, visited the Pomako facility and witnessed fish being delivered from coastal villages via Otakwa and Timika Pantai.

As PADA II nears its conclusion, over 620 fishermen are capable of supplying over 10 tons of fish per week to buyers in Timika through the supply chain of bunkers and purchasing stations established by the project. In order to absorb this capacity, a new fish processing facility is under construction in Timika. This new unit will be operated by trained Maria Bintang Laut staff and will produce both frozen and fresh chilled fish cutlets and guarantee buyers the highest standards of food safety. To date, over 120 fishermen and potential processing facility staff have attended food safety training sessions. Market demand is growing and ensures that this operation will be profitable and sustainable. In addition to Pangansari Catering Company, who requires 36 tons of fish each month, public institutions, and markets in Timika have stated their interest in purchasing fish from the new facility.

USAID Mission Director Walter North, LPMAK Executive Secretary, Emanuel Kemong (center), and PT. Freeport-SLD Department Vice President Arief Latif handling fish delivery at the new docking and fish collecting point

The significant increase of fish supplied from collecting stations provides empirical evidence that the Kamoro fishermen were motivated and actively participating in the expanded fish supply chain. The Cooperative and the AMARTA office in Timika received weekly requests from villages along the coast to extend the supply chain and to open new collection points.

Coffee Development

Wamena

The Baliem Arabica Cooperative, with USAID assistance through the PADA program, managed to achieve several major objectives. It exported the first-ever container of coffee from Papua to Paragon Coffee Trading Company in the United States in early 2010. This initial 12 ton shipment earned $43,000 dollars. Paragon has provided a firm commitment to buy virtually the entire supply of coffee from the Cooperative at a premium price going forward. The second shipment was completed in December 2010; this time, 13.2 tons of coffee were sent to Paragon with a total value of $49,950. Paragon has requested a significant increase in tonnage for 2011-12 for which it is prepared to increase its purchase price by 40%.

The original supply line was established early in 2008, and today farmers are generating income up to Rp 1,875,000/month/hectare of coffee, where they previously received an average of only Rp 400,000—an increase of 370%.

In September 2010, the Cooperative successfully achieved Rainforest Alliance certification, which acknowledges the Cooperative members as organic coffee farmers and helps increase the value of coffee for export. The Cooperative also passed inspection by the Certificate of Environmental Standards GmbH organization to renew organic certification originally achieved in 2009. These certifications were reconfirmed in 2011. This achievement is significant—the coffee farmers who are members of the Cooperative successfully demonstrated their comprehension and compliance in growing their coffee organically and meeting international standards.

Organic certification training participants from Baliem Arabica Cooperative

There are 883 coffee farmers selling their beans to the Cooperative, including 583 organic farmers and 300 non-organic farmers. The Cooperative purchases coffee cherries from the community at a price of Rp 5,000/liter. In addition, the Industry, Trade, and Cooperative Department of Jayawijaya Regency donated a new vehicle to Baliem Arabica Cooperative in 2010. The estimated cost for the vehicle was Rp 120 million ($13,333). The vehicle was provided to help the Cooperative improve its efficiency in program outreach, oversee quality control for member farmers, and expand the reach of coffee purchases for thousands of farmers in the Baliem Valley.


Selion Karoba, Chairman of Baliem Arabica Cooperative (left with hat), receives the car documents and keys from Wiklif Wakerkwa from the Jayawijaya Regency

Arabica Coffee for Freeport Employees

The Cooperative gained a new customer: PT Pangansari Utama, the catering company at PTFI. PT Pangansari agreed to buy 12 tons of roasted coffee from the Cooperative per year, or 1 ton a month, at a price of Rp 54,000/kg. Two tons of processed coffee for Pangansari were delivered to Timika in November 2009 and each subsequent month. In the beginning of January 2010, the Cooperative delivered 750 sixty-kilo bags of coffee, with a second delivery made in mid-January 2010. This delivery schedule has continued into 2011.

In 2009, the Cooperative added another customer interested in purchasing Baliem Valley Arabica coffee: Amungme Gold Coffee, which owns a roasting and packaging facility in Timika,

Baliem Arabica staff preparing samples at the Sentani warehouse in Jayapura

Baliem Arabica Cooperative makes their its first coffee delivery to Pangansari's warehouse

completed a deal with the Cooperative to purchase 1 ton of green bean coffee.

On December 11, 2008, the Estate Crops Department in Jayawijaya Regency hosted a ceremony to officially inaugurate the first shipment of 12 tons of Arabica coffee from the Baliem Valley. The Estate Crops Department of the Jayawijaya Regency contributed Rp 104 million ($10,947) to the Cooperative to help pay for transportation and coffee buying, while the Cooperative Department of Jayawijaya Regency provided Rp 20 million ($2,105) to the Cooperative to run the processing unit. The pilot project received government funding to replicate the successful initiative, as well as a promise to continue to provide public funding for the benefit of coffee farmers throughout the Baliem Valley.

Ms. Lena, a PADA beneficiary, shows off her coffee cherries

On April 7, 2011, the Baliem Arabica Cooperative held its first Annual General Meeting. Attendees included the Directors of Jayawijaya Regency's Trade, Industry and Cooperatives and Estate Crops departments, Cooperative leadership and members from seven regencies in the Baliem Valley.

The agenda included a general report of activities, a financial report, marketing activities completed in 2010, and plans for 2011 and 2012. A Work Plan for 2011-12 was developed and significantly, the membership voted to roll over its earnings to strengthen the financial base and capacity of the cooperative.


Student interns participating in business training, along with Cooperative members, sorting beans


Equipment has been maintained extremely well, and the local Jagara office is the hub of activity

Moanemani and Bomomani

The San Isodor Cooperative processed and sold 1,050 kg of green coffee beans to domestic buyers during 2010 at Rp 35,000/kg, which provided a total profit of Rp 36,750,000 ($4,083). Total purchases by the Cooperative were 1,747 kg at Rp 35,000/kg that provided Rp 30,572,500 worth of income to farmers, and the Cooperative sold the 1,747 kg for Rp 61,154,000. The retained earnings were used to continue purchasing coffee from local farmers, providing additional income and also helping the Cooperative to continue processing the coffee and expand its market beyond Timika, with the goal of reaching customers in Jayapura and in Java.

Local women in Bomomani received basic training in coffee cupping

A church leader with farmers overseas coffee drying on plastic tarp

The PADA team also assisted the Catholic Church in Bomomani Village to rebuild a coffee cooperative. The license for the Santo Isodorus Cooperative expired and a new license was secured for San Isodor in October 2009. Initially, there were only 20 members, but there are now 141 coffee farmers participating in Bomomani activities, including 31 farmers from Timika with 1,930 trees, 86 farmers from Bomomani with 3,629 trees, 9 farmers from Modio with 652 trees, 12 farmers from Idakebo with 172 trees, and 3 farmers from Moanemani with 456 trees.

The head of inspection explaining organic certification in Moanemani

In 2009, San Isodor focused on completing an internal control system that includes a farmer registration process. Afterwards, the Cooperative was able to guide the registered farmers in complying with the regulations of organic and fair trade certification awarded to the Cooperative in 2009. Prices paid to farmers have risen from Rp 5,000 to Rp 17,500, increasing income by 250% since the beginning of the program. In 2009, the first 250 kg of unsorted green coffee from Moanemani was sold to the Amungme roasting facilities in Timika for Rp 30,000/kg. Amungme Gold Co. has already inquired about the purchase of an additional 500 kg. By the end of May, 2011, San Isodor will have sold an additional 1.1 tons of coffee at a 15% premium over 2010 sales.

PADA Coordinator Kornel Gardner provides rice huller training to Aramsolki women

Agriculture and Livestock

Agimuga – Rice Production

Farmers receive training on using a hand tractor

PADA worked in Aramsolki with the Catholic Diocese of Timika generating excellent results- farmers improved cultivation techniques, resulting in the production of 4.5 tons of rice per hectare. The rice is still mainly for local consumption, though some farmers successfully sold rice to civil servants in the village. The demand for locally grown rice is on the rise, especially in the district of Agimuga. The renovation of the building for the rice processing unit was completed and a test run of the rice processing unit was conducted successfully. The rice hulling equipment was installed in 2009, and farmers in Agimuga were able to process rice that had been sitting idle waiting for processing since the 2005 and 2006 seasons. Two tons of rice were immediately processed using the new equipment and were added to the local food supply. Each farmer is now saving approximately 50% on his or her monthly living costs due to the new machinery and technology.

Previously, villagers were forced to purchase imported rice at Rp 350,000/25 kg bag; today they can produce 25 kg of rice for only Rp 80,000. This was the first time that the people in Agimuga processed their own rice and did not have to transport the raw product all the way to Timika. Initially, one ton of rice was processed for local consumption and the farmers sold the excess at an affordable price to the neighboring villages. The market price of rice was Rp 20,000/kg in remote areas, and the rice farmers from Agimuga calculated that they can sell their excess yield at Rp 12,000/kg and still make a profit.

The transport boat helps generates more income

Agimuga – Transport Boat, Tractor, and Establishing New Buying Stations

The community-owned boat, which was provided by PADA, brings passengers and goods to and from Agimuga to provide easy access for villagers to transport their rice and pigs to sell in nearby villages, districts, and even the market town of Timika. On the way back from Timika, the boat transports needed goods and fuel to the villages. The boat also transports cargo and passengers at a small cost and the profits are returned to the community cooperative account to be used for fixing bridges, schools, health clinics, and other public works projects.

AMARTA Chief of Party David Anderson handing over the John Deere tractor in Agimuga

A John Deere tractor and trailer were also provided by PADA and used to transport goods throughout Agimuga District. Sometimes local contractors chartered the tractor and trailer to complete government projects. All of the money made from the boat and tractor operations went directly to the community and were used to support the farmers' needs, including local development and health programs. The new tractor and boat provided significant benefits for improving farming and transportation throughout the district of Agimuga.

The construction of buying stations in Aramsolki, Amungun, Kiliarma, and Faka Fuku was completed in June 2010 and they immediately opened for business. The buying stations were shops owned by the community and served the daily needs of the locals. The trade volume was high, requiring all of the kiosks to be restocked twice a month. The kiosks or trading centers purchase rice, vegetables, and fruit from farmers to be marketed in Timika and sell farmers daily subsistence items, creating healthy economic activity and healthier citizens in the District.

A farmer plants rice in Agimuga in 2009

Agimuga – Swine Farm

PT Freeport donated one boar and two sows to the Aramsolki pig farmers in November 2009. The farmers immediately put the boar in a mating house with a sow. The farmers were trained on breeding techniques and the way to care for their pigs, including the application of vitamins and immunization for disease prevention. The swine farmers' group in Agimuga—Bomogomaki—saw positive results in August 2010. The two sows gave birth to a total of 13 piglets that were distributed to members of the group who have been most active working at the swine farm. The farmers are raising the piglets in the manner introduced by PADA in order to rear healthy pigs with good-quality meat. In Papua, pigs are a very important commodity for the community. The price of pigs can reach Rp 10 million. The construction of a swine farm was also completed in 2009. Breeding efforts have continued through the life of PADA, and are being pursued in Jila District as well.

New piglets in Aramsolki village, Agimuga


Training on pig vaccination from PADA staff and the completed swine farm in Agimuga

Recently, the pig farmer groups went a step further and agreed to write up a plan and allocate some of the government assistance to local villages (RESPEK) funds from the provincial government of Papua to continue funding the rice and swine production activities.

Agimuga –Road Construction

PADA completed reconditioning of the 12 kilometer (km) supply road between Aramsolki and Kiliarma, and the 2 km road to the new site for the swine farm. PADA also constructed two small bridges to improve transportation. Aramsolki Village is located far away from other towns and villages. Currently, the people of Aramsolki depend heavily on the market in Timika for daily subsistence and to reach Timika, they have to first travel 12 km by foot to Kiliarma Village, where they then board a wooden boat and travel for 8–12 hours to Timika, depending on the tide.

The reconditioned supply road between Aramsolki and Kiliarma

PADA activities in Agimuga extended from Aramsolki Village to the neighboring villages of Amungun and Kiliarma during 2010. AMARTA recently introduced chili to the people in Kiliarma and Amungun. Although the local villagers in Agimuga do not consume chili, it was selected because it grows well in the area and has a high value in the market. The current chili supply in Timika comes from Java and Sulawesi, and the price in Timika is quite high, Rp 35,000-100,000/kg. The first harvest in Kiliarma took place in February, 2011, generating Rp 500,000 per week in revenue. The success of this pilot project has convinced some 30 additional farmers to engage in chili production. For many, this is their first foray into market-driven farming, and they are integrating entrepreneurial skills into their formerly subsistence-oriented livelihoods.

Faka Fuku

In Faka Fuku Village, in the Agimuga District, bananas are plentiful; however, the locals have historically had difficulty marketing the product. They initially received seedlings from the government and began planting in 1995, although no one provided technical assistance or training or helped them build capacity to access markets. Because the locals do not have any

Faka Fuku banana farmers loading the boat to send the bananas to market in Timika

Two and a half tons of bananas from Faka Fuku ready to be shipped to Timika

investment capital, PADA funded the initial purchase of bananas to begin the operation. On June 28, 2010, PADA transported the initial purchase from farmers. The shipment sold for $1,630—a 25% increase in price premium and represented the first sale of the crop from Faka Fuku since 1995. On August 6, PADA set up a trade station and integrated village shop that produced total sales of Rp 64 million through the middle of December 2010. Total profit for the villagers was Rp 6.4 million. The initial sale of bananas to the market in Timika included 9.2 tons purchased at the farmgate for Rp 5,000/kg. The farmers generated income of $ 5,111 (Rp 46 million) from August through December 2010, with total income per family during this period of Rp 3.8 million. Twenty-nine banana farmers, 28 men and one woman, participate in the program in Faka Fuku.

In addition to this activity, PADA also provided training to seven peanut farmers, six men and one woman, in Faka Fuku. AMARTA provided them with improved seeds, prepared the land for planting, and taught GAP for improved production and quality. The demonstrated impact of chili production has also reached Faka Fuku; farmers have asked PADA to assist them in acquiring seeds and cultivation practices. This village, on the cusp of abandonment when PADA arrived, is today demonstrating a commitment to sustainable growth.

Jila

The PADA team assisted Jila in building infrastructure to support economic activity, including the construction of a trading post, a traditional meeting house, and a demonstration plot for high-value horticulture products. Jila can only be reached by airplane or helicopter, so shipment of materials and supplies is difficult. The trading post, which provided daily necessities in the kiosks, generated sales of Rp 10 million for the community the first week it opened.

Newly constructed trading post in Jila

In an effort to diversify activities in Jila, the program created two new fish ponds. Construction is currently under way, and PADA is coordinating with the local government Fisheries Department. The government agreed to provide two specialists who are currently working in Tembagapura on a similar effort to support AMARTA in Jila, including performing water and soil analysis to ensure that the correct foundation is in place and the proper species of fish are provided. This program aimed not only to increase income for villagers in Jila, but to also provide an important source of nutrition and protein for villagers who often face food insecurity. In 2011, activities extended to duck and pig breeding, solar power utilization, and chili farming. These efforts are being undertaken in cooperation with the regency government which is providing freshwater catfish, ducks, and pigs for stocking. Over 120 farmers have been trained in chili cultivation.

Fish pond constructions in Jila

PADA also laid the groundwork for introducing coffee cultivation in this highland community.

MOU Signing Ceremony Inaugurates Expanded PADA Programs

Based upon outstanding results achieved during the first phase of PADA, the alliance partners—USAID, PTFI, and LPMAK—agreed to extend support activities for a second year. On July 27, 2010, a new MOU detailing the extension of this relationship was formally signed at the Mimika Regency Bupati's house in Timika. The document ensured continued assistance for Amungme and Komoro communities, in addition to launching new agricultural support activities in the Jila community. The signatories of the MOU were Walter North, USAID Mission Director; Abdul Muis, Vice Bupati of Mimika Regency; Arief Latif, Vice President, PTFI; and Emanuel Kemong, Executive Secretary, LPMAK. The appreciative audience attending the ceremonies was treated to speeches by the signatories as well as traditional ceremonial dances and chants by a Komoro ensemble.

MOU signing between USAID, PTFI, and LPMAK

Timika SSB Radios Provide a Simple Communication Solution

The villages where PADA works did not have telecommunication services when program activities began, neither fixed telephone lines from PT Telkom nor mobile phone networks from Telkomsel or Indosat. To facilitate coordination in the field, PADA required tools

that would allow the exchange of information between AMARTA's office in Timika and the field coordinators in the villages. To overcome communication barriers, and in accordance with the existing work plan, PADA built a communication system using single-side band technology. Almost all equipment was installed using solar cells to solve the electricity supply constraint. More than 1,400 villagers benefited from the solar arrays and radios that PADA installed.

Radio communication installed at Pireme

Solar cell installation at Pireme

Government Partnerships

AMARTA Chief of Party David Anderson, PADA Coordinator Kornel Gartner, and Baliem Arabica Cooperative Chairman Selion Karoba met with Governor Barnabus Suebu in Jayapura on February 17, 2010, to discuss PADA's efforts. Melkias Monim, Head of Estate Crops of Papua Province, and Agus Sumule, the Governor's Advisor, also participated. The governor agreed to support the attendance of Selion Karoba and the Director of Estate Crops of Papua at the Specialty Coffee Association of America convention and exhibition held in Anaheim, California, from April 15–19, 2010.

AMARTA and PADA meet with Papua Governor Barnabas Suebu

Lessons Learned

- Pre-implementation surveys and assessments with many outsiders participating creates extremely high expectations at the village level- project goals and activities should be explained early on to temper expectations and create realistic goals for beneficiaries.
- It is critical to involve villagers in construction and maintenance work within their community so that they take ownership of projects and activities and show them that they are actively involved in the program, increasing the likelihood of sustainability.
- Developing robust supply chains from the villages to markets is necessary, cooperatives should be trained to run this supply chain and organize transport between villages and markets.

- Due to the environment and remoteness of villages, working strictly to the established work plan and time frame can be too rigid, more flexibility is necessary to react to spontaneous social and tribal issues.
- One year programs at new locations need to be expanded in terms of time and scope; socialization and organization take about four to six months depending on the location.

GRANTS PROGRAM

A. Objectives

The AMARTA team designed a Value Chain Support Grants Program to augment the project's hands-on technical assistance and training. The grants program sought to foster improvements in productivity, quality, and public awareness by supporting the development of innovative solutions to Agribusiness Value Chain problems. Recipients included agribusiness enterprises (firms and farms), cooperatives, business service providers, universities, research institutes, trade or producer associations, and industry leaders. Grants supported marketing, quality management training, advocacy, business plan implementation, and technology improvements.

The actual strategic interventions were designed to encourage the adoption of new technology and management practices to strengthen stakeholder capacity and competency in order to increase productivity, improve quality, and provide access to better markets to improve rural livelihoods.

B. Activities Examples

The following were conceived as potential types of activities that could be supported by grant funds:

- Provision of technical assistance and training
- Transfer of technology to enhance new production and/or post-harvest handling technologies to improve productivity, quality, and market access through demonstrations and pilot projects
- Development of new or improved products and access to better markets
- Establishment of production and quality demonstrations by small-holder production cooperatives or farmer groups to aggregate group production
- Institutional strengthening by providing products and services to strengthen the institutional capacity of NGOs in areas such as management services

Representative grant examples:

1. Attendance at local, regional, or international trade shows to exhibit Indonesian products for sale, to view the offer of competing products, and learn about trade show participation
2. Financial assistance to construct physical facilities such as an ice plant in Papua to facilitate processing and distribution of fish products
3. Provision of improved planting material for coffee growers to introduce higher yielding or improved flavor varieties
4. Provision of new technology for demonstration on productivity and quality improvement

5. Introducing new technology or better agricultural practices, including improved post-harvest handling

C. Program Implementation and Administration

The AMARTA grants program interventions and awards were based on the guidelines and policies of the USAID approved grants manual. It was administered by one Grants Manager and all grant awards were determined and recommended by a Grants Committee, with final grant awards reviewed and approved by USAID's COTR.

The majority of the grant interventions were determined during the value chain assessments conducted in the first months of the AMARTA program start-up. Consultants who were hired to conduct these assessments identified important constraints to competitiveness which could be solved by demonstrating solutions in collaboration with value chain stakeholder, in most cases a private producer, processor, or marketing actor.

Most of the grants were awarded in poor, rural areas where AMARTA had limited or no presence of on-site personnel, and the grant awards resulted in significant leverage of USAID funds to reach outlying areas and poor farmers or fishermen that increased household income, generated additional rural employment, and addressed gender equality. During program implementation, AMARTA personnel identified further grant opportunities that expanded on the grants program objectives, particularly assistance to the Indonesia Vegetable Research Institute, UNPAD, and the SCAI.

Field days, visits, and other means were utilized to invite public and private stakeholders to view the grants activities with the purpose of publicizing the results obtained for possible replication by others.

D. Contribution to the overall success of the AMARTA program

The AMARTA grants program supported the overall program goal of assisting the Government of Indonesia to promote a robust Indonesian agribusiness system that significantly contributes to gainful employment, growth, and prosperity. The $1,225,000 grants program for AMARTA and PADA supported quality management training, advocacy, business plan implementation, and technology improvements.

SUMMARY OF THE VALUE CHAINS ASSISTED IN THE GRANTS PROGRAM

Value Chain	Number of Grants	Budget
Aquaculture	10	$510,000
Biofuels	1	$26,000
Cocoa	1	$65,000
Coffee	9	$395,000
Horticulture	4	$34,000
Livestock	2	$145,000
Food Crops	1	$50,000
Total	**28**	**$1,225,000**

PADA provided 12 grants:

	Grant Number	Grantee	Grant Purpose
1	G-1000237-09	Baliem Arabica Coops	Coffee; set up production unit, training, equipment
2	G-1000237-10	Baliem Arabica Coops	Coffee; Buying coffee and processing
3	G-1000237-13	St Isodorus Coops	Coffee; set up production unit, training, equipment
4	G-1000237-14	St Isodorus Coops	Coffee; Buying coffee and processing
5	G-1000237-011	Maria Bintang Laut Coops	Aquaculture; Build ice factory, fiberglass boat training, new wooden boat, crab fattening training
6	G-1000237-16	Maria Bintang Laut Coops	Aquaculture; Generator set
7	G-1000237-21	Maria Bintang Laut Coops	Aquaculture; Labor cost to build ice factory, material, and transport cost
8	G-1000237-17	Catholic Church	Livestock; swine farm
9	G-1000237-18	Catholic Church	Food Crops; rice farm
10	G-1000237-29	Maria Bintang Laut Coops	Aquaculture; Building ice bunkers at key supply chain locations
11	G-1000237-30	Baliem Arabica Coops	Coffee; Buying coffee and processing
12	G-1000237-31	Maria Bintang Laut Coops	Aquaculture; Constructing a fish processing facility and purchasing equipment in Timika

AMARTA provided 16 grants:

	Grant Number	Grantee	Grant Purpose
1	G-1000236-01	PUSKUD NTT	Livestock
2	G-1000237-02	GMC	Coffee
3	G-1000237-07	KARAMBA, PT	Aquaculture; construct hatchery nursery including: fiberglass tanks, concrete tanks, plumbing, jetty, and boat
4	G-1000237-004	KARAMBA, PT	Aquaculture; floating cages completed with equipments, fish feed and maintenance cost for 1 cycle; and training
5	G-1000237-012	KARAMBA, PT	Aquaculture; generator and concrete flooring
6	G-1000237-005	Big Tree Farm	Cocoa; construct CCPU and solar dyer
7	G-1000237-03	Lion Lestari, CV	Coffee
8	G-1000237-08	Lion Lestari, CV	Biofuels
9	G-1000237-20	Aceh Windu Lestari, PT	Aquaculture; lab equipments (laminar, reagent, etc), generator, A/C
10	G-1000237-15	Aceh Windu Lestari, PT	Aquaculture; set up shrimp laboratory; office equipments; staff salary
11	G-1000237-19	SCAI	Coffee; Int'l exhibition
12	G-1000237-26	SCAI	Coffee; Advance cupping training
13	G-1000237-22	Bimandiri, CV	Horticulture
14	G-1000237-23	IndoCafco, PT	Coffee; Coffee maps

15	G-1000237-24	IVEGRI	Horticulture
16	G-1000237-25	LPPM UNPAD	Horticulture

E. Program Impact

Despite its relatively small size, the AMARTA grants program achieved some notable successes, including those highlighted below:

The cattle and livestock value chain was identified at the outset of the AMARTA Project as deserving of substantial support. Puskud NTT, cattle rearing organization in Kupang, West Timor was identified in 2007 as a worthy grantee. Working with the Koperasi Temak Sapi Potong, and supported through a USAID-funded cattle fattening activity being implemented by the National Cooperative Business Association (NCBA), this grant—AMARTA's very first—leveraged multiple resources to provide 300 heifers along with training on breeding best practices including artificial insemination, feed reproduction, and compost management. The program also supported twice weekly visits by a livestock extension agent to assist the farmers in dealing with cattle health issues. The success of the breeding and fattening activities resulted in the original fifteen farmers' groups being joined by an additional eight groups, and Puskud itself augmented the original complement of cattle with an additional 60 breeding stock. At the end of 2008, Puskud NTT was awarded "Praja Mukti Satwa Nughraha (Excellence for Animal Breeding and Management Award)", by the MOA's Director General of Livestock Services who describes it as "a excellent model for cow calf production that should be replicated elsewhere in Indonesia."

Padjadjaran University's Community Service Institute (LPPM) understood the need to identify and organize agricultural value chain stakeholders in West Java. Working with AMARTA it used a grant to help establish a Value Chain Center (VCC). The VCC launched a series of training programs with AMARTA focusing on topics such as farm management, ASEAN Free Trade opportunities and challenges, post-harvest handling procedures, and market linkages. One focus of these efforts was training trainers among businesses, farmers, and the provincial extension service. Training activities were held at the VCC as well as in the field in Garut and Bandung.

The VCC and AMARTA also hosted a series of roundtable discussions on strengthening and expanding West Java's horticultural value chain. Four formal roundtable sessions were held bringing together stakeholders including agribusinesses, the MOA, provincial government leaders, banks, farmers, international donors, and universities. Subject matter included: access to technology, access to finance, agro-inputs, and access to markets. In the process of hosting these training and roundtable activities, the LPPM VCC established a solid reputation for being the place to go to get information and assistance for horticultural value chain involvement. Agribusinesses in particular, regularly accessed the VCC staff for information and advice regarding promoting both import substitution and export opportunities. With a network of over 500 fruit and vegetable farmers and eight produce purchasing companies and exporters, the VCC has become an assistance provider in its own right, channeling over Rp 1.2 Billion in GOI grants and loan funds to grower organizations and agribusiness entrepreneurs throughout West Java.

The development and expansion of a sustainable fisheries value chain was the direct result of a partnership between PADA, the Catholic Church in Papua, LPMAK, and Maria Bintang Laut, the fisheries cooperative established in Mimika Regency, Papua. The Catholic Church provided land for the ice factory, fish processing factory, kiosks, as well as significant leadership and organizational expertise. With grant resources provided by AMARTA and LPMAK, the cooperative was able to establish an ice factory, bunkers, and kiosks in villages along the regency's coast where ice and other commodities can be bought and fish sold and stored, before larger boats come to collect the fresh fish stocks and provision kiosks with ice and other commodities. The fish processing plant will have the capacity to prepare fillets and steaks for local consumption and export. AMARTA/LPMAK resources were also used to provide business development, sanitary fish processing and storage, and boat and engine maintenance training. Fish production expanded from two tons a month to eight tons per week, during the high season, and fishermen's incomes doubled.

Another activity in Papua with a bright future that was facilitated by AMARTA's grants program focused on coffee development. Working with the Catholic Church, AMARTA/PADA helped develop a coffee bean value chain that included training for farmers in improved cultural practices, coffee bean purchasing, improved and expanded collecting, processing, and access to markets, including the first direct shipment ever from Papua to an international buyer, and cooperative strengthening through improved business and financial development services, management practices, and communications. The chief recipients of this grant activity were two cooperatives: The Baliem Valley Baliem Arabica Cooperative (KSU) and the Kamuu Valley San Isodor Cooperative.

In the case of the Baliem Valley Cooperative, which was established in 2007 with a grant from PADA, production has grown from a few hundred kg of beans per year to over twenty tons per year involving 883 coffee farmers from 14 villages. Collection kiosks have been established in these villages, eight of which also sell basic items such as cooking oil, rice, and batteries, that farmers can purchase locally after selling their beans. Coffee quality has increased as a result of coffee GAP training provided by PADA, and cooperative supervision of value added activities of drying, sorting, and storage. Four pulping stations were developed to improve post-harvest handling. The cooperative presently has domestic as well as international clients. KSU's international buyer has agreed to buy 36 tons of coffee for the 2011-12 harvest. The proceeds from this international sale will be sufficient to make KSU financially sustainable. Another notable achievement has been KSU's receipt of organic certification from CERES and the Rainforest Alliance. These certifications have helped drive up the price and the attractiveness of KSU's coffee.

Overall, the grants program achieved significant results, although there were some challenges in providing institutional capacity development for all grantees due to the numerous locations of the projects that were implemented from Papua to Aceh and included other remote locations such as Flores, West Timor, and Garut. AMARTA learned that the more successful grantees were able to cultivate relationships with farmer's groups and government agencies to ensure sustainability of activities and leverage ongoing support.

CHAPTER II: BEST PRACTICES AND LESSONS LEARNED

BEST PRACTICES

1. Training-of-trainers activities for field trainers and government staff in all commodities proved to be extremely valuable- knowledge was provided to numerous participants and expanded through traditional training events and ongoing dialogues among farmers, private sector organizations, and government extension agents.
2. Demonstration plots for all commodities were invaluable—they provided models for farmers to replicate as they saw first hand the success of their friends and neighbors.
3. Integrated cocoa training responding to market demand in conjunction with private sector partners resulted in improved production, quality, and income.
4. Garden evaluations, farmer field days, and model gardens where farmers viewed optimum conditions and alternatives helped farmers improve the quality of their own cocoa trees.
5. Cocoa clone trials in six locations in Sulawesi and two in Bali helped to identify and improve superior local clones, resulting in improved production. The clones will ultimately provide healthier trees that live longer and produce higher yields.
6. Solar dryer training and construction improved quality and reduced the time necessary to dry cocoa beans; the technology is also applicable for coffee beans.
7. Training in grafting techniques (side-grafting and top-grafting) and budding techniques improved the quality of new cocoa branches and trees.
8. Developing cocoa tree nurseries provided higher-quality trees for farmers and generated additional income for the individuals who created the nurseries.
9. Pheromone traps for coffee have proven to reduce infestation and improve production.
10. Greenhouses for flower growers and for seed propagation have improved quality and yields and allow for year-round harvesting. In the case of flowers, internal artificial lighting can alter the timing of flowers to meet high-demand seasons.
11. The monthly AMARTA newsletter *AgroCulture* provided information and technical strategies for beneficiaries, partners, and the general public that proved to be extremely valuable in disseminating AMARTA's message.
12. Partnering with the private sector was essential in order to access new markets, teach farmers about business operations, and gain premium prices for higher-quality produce.
13. The introduction of new technology- particularly activities such as double-row banana planting, which is free- was critical in helping farmers to expand their production.

14. Working with local governments and extension agents is absolutely necessary to institutionalize GAP and new technology. By training field extension agents, the probability of sustainability is greatly increased.

15. Establishing contact with champion government officials and leaders provided a strong foundation and legitimacy for AMARTA's efforts immediately. As efforts continued, other government officials were more likely to join in the program based on key partnerships.

16. Public-private partnerships allowed significant leveraging of costs and access to markets that would not have been possible in a purely public-driven program.

LESSONS LEARNED

COCOA

1. The model of improved quality and market access has proven to be effective. Private sector partners operating buying stations in up-country areas can be transferred to other regions.

2. Market for fermented and organic cocoa is more challenging, particularly linked with perception regarding quality and partner capacity to access fermented cocoa exports to specialty niche markets (U.S. and Europe).

3. A number of district agencies have recognized the impacts of ASKA and the AMARTA Bali Cocoa Alliance and have requested collaboration and training for their personnel. Responding immediately to these requests provides momentum for sustaining successful initiatives and allows cocoa GAP to become institutionalized through government extension agents who participate in training activities.

4. The capacity of estate crops in several districts is limited because of funding constraints, recent administrative divisions (new districts), lack of access to quality training materials and methodologies, and the limited number of qualified estate crops personnel. Future efforts should focus on supporting underutilized extension agents.

5. Farmers have had limited agricultural extension and are generally highly receptive to organized, technically relevant training support for cocoa. Understanding of basic skills and technical capacity to replant or rehabilitate their cocoa gardens is limited and additional model gardens should be created to prove the effectiveness of investing in upgrades.

RACA

1. Most farmers lack awareness and understanding of the basic function of organizations. As a result, individual or outside group interests are sometimes imposed on the organization, including politically motivated decisions. Efforts should be made to establish groups centered on improving the enabling environment and livelihoods rather than interest groups that can be politically driven.

2. RACAs have difficulty in obtaining outside investment, particularly government support, for expanding their activities and ensuring that members invest time and resources. Future efforts should focus on institutionalized government support, including funding from local government budgets to establish permanent RACAs.

3. Deriving sustainable funding sources through members' contributions will only be successful if the members perceive that there are benefits for them in joining the alliance. Short-term funding options should be explored and continued government collaboration is essential.
4. To continuously improve the capability of members to analyze policy and present proposals to government agencies, the RACAs should focus on continuing partnerships with universities. AMARTA was able to work very effectively with universities who are willing to support local government initiatives in expanding successful initiatives to farmers.

COFFEE

1. Extra effort should be made when introducing new technologies and training to combat CBB, including more effort and support from the government. Farmers often get extremely frustrated with pest and disease attacks and need continual support.
2. Coffee practices in North Sumatera lag behind those in Central Aceh, particularly in pruning and shading trees. Continuation of activities involved in shading trees and coffee pruning is strongly recommended to improve overall coffee quality.
3. More than 60 extension agents have received AMARTA's training of trainers. Further efforts should emphasize training of trainers and capacity building, while the extension agents already trained should be leaders in their community in training additional farmers and other government agents.
4. Emphasis should be placed on introducing more buyers to the region in order to help farmers understand the requirements of sellers in order to continue to improve the quality of marketed coffee.
5. SCAI's website and other social media have proven to be powerful tools to promote SCAI. With a minimum budget, more than 4,000 visits per month can drive increased membership for SCAI and more business for the members. Improvements will be made in developing systems and adding human resources to follow up on the leads from the website, connect with necessary members, and measure the results.
6. The formation of SCAI has changed the dynamics of the specialty coffee market. However, if it also creates a threat for AEKI that leads to a defensive posture to challenge the future growth of SCAI, it could be harmful for both organizations. The leaders from both associations must work cooperatively to share ideas and responsibilities so the funds available can be used efficiently. SCAI has already received a $139,000 commitment form the Ford Foundation to sustain operations, while continuing to work closely with the GoI on promoting specialty coffee within, and outside, Indonesia.
7. The First Specialty Coffee Auction created interest and support from the MOA. Farmers also suggested that the auction could be expanded to serve them, which would immediately show them the impact of improving quality to receive a higher price.

HIGH-VALUE HORTICULTURE

1. Financial management training should be provided to each of the program beneficiaries in the early stages. This enables growers and agribusiness entrepreneurs evaluate the financial benefit of new interventions. More importantly it sets the beneficiaries up to prove

bankability of their operations. Further efforts should be made to ensure that farmers are following up on maintaining their records as agricultural lending has continually been mentioned by a number of large banks as a significant product that will expand in the future.

2. High-value horticulture requires many inputs, such as seed, water, irrigation development, greenhouse construction, seedling grafting, and adaptations in mechanization and fertilizer formulations. It is important to work closely with input and service providers who can provide these inputs to small growers and, in some cases, to develop these input providers and services.

3. Universities can often be excellent partners in providing services to growers, as are many of the government departments, but it is necessary to choose enthusiastic partners that want to work and have the same goals and vision as the program.

4. It is important to facilitate packing and pre-cooling systems experts to help with setting up both central and satellite packing facilities (satellite being those close to the farmgate for handling delicate produce) in order to ensure that the technology operates optimally and the investment is seen as profitable.

5. The Karo Government Extension Service Agency and other institutions such as the Karo Horticulture Community should continue citrus training to expand GAP for their neighboring farmers and communities, taking advantage of the 20 existing demonstration plots to ensure the application of citrus GAP by farmers in AMARTA locations.

6. Obtaining high-quality seed is a serious constraint. The government and other interested stakeholders should ensure carrot seed certification from the North Sumatera Seed Inspection Authority so that Berastagi carrot seed can be supplied throughout Indonesia using the existing distribution channels.

7. The government and other interested stakeholders should provide training to strengthen local farmers' groups with skills such as financial management, production management, and marketing. Many farmers do not have basic financial management information such as profit or loss figures.

8. Raya Village stakeholders should establish a flower market and teach standardized post-harvest handling so flower farmers are able to supply new markets in Sumatera and Java.

FUTURE CONSIDERATIONS

As stated, USAID is preparing to launch a second five-year phase of AMARTA. Below, we list some of the challenges that remain, which this and other assistance efforts can have an important and positive impact upon.[7] As an implementing entity, DAI does not speak for USAID. The challenges are based upon experience in AMARTA.

[7] The horticulture sector is confronting a number of challenges that are beyond the capacity of development assistance projects to significantly affect. The sector needs improved infrastructure; greater investment in research and development, including bringing government-sponsored and university-directed research into greater harmony; strengthening of training and coordination of national and regional extension services; improved agricultural education; and rationalized land policies. The new Horticulture Law recognizes many of these issues, but until ministerial regulations are elaborated, these will remain aspirational rather than effective.

FARM MANAGEMENT TRAINING

Most of Indonesia's smallholder farmers have little if any training in business. Few keep accounting records, or even know how to, and most are unfamiliar with basic profit and loss, breakeven, cost of inputs, or other calculations. AMARTA introduced basic farm accounting courses in North Sumatera and were overwhelmed by their popularity and the demand for them. This lack of management training extends to farmers' organizations such as cooperatives as well, and represents a significant roadblock to the development of a modern farming sector. Business development services support and training should be an important new challenge for the next phase of AMARTA.

ACCESS TO FINANCE

This area is vastly underdeveloped, and virtually every farmer we have dealt with mentions it as an issue. At the banking level, we are only beginning to witness the appearance of banks in rural Indonesia that are willing to make small loans to farmers. Collateral is hard to define when secure title to land does not exist. Bankers see farming as somehow much riskier than other borrower businesses. Farmers themselves, lacking the management skills mentioned above, do not know what instruments such as bankable business plans are, or how to draw them up. A number of both formal and non-formal access to finance options exist and need to be explored and tested to determine their relevance and efficacy for Indonesian farmers.

EXTENDING AMARTA'S IMPACT

The success of AMARTA's pilot areas has not gone unnoticed. Farmers from communities nearest to these areas watched their development, visited project demonstration plots, and asked for the same assistance. This interest has now extended far beyond the pilot areas to include areas such as Aceh, Central Sumatera, and Central and East Java. Extending project efforts to ever-widening areas without exponentially increasing the size and cost of these activities will present a significant challenge for the next phase of AMARTA. It will almost certainly require even more intense cooperation with Indonesian Government stakeholders.

POST-HARVEST HANDLING

Indonesia's food losses beyond the farmgate are unacceptably high. Produce that reaches markets is often bruised and unattractive so that, if it can be sold, it fetches very low prices. Farm-to-market roads are undeniably part of the problem, but traditional packing, lack of storage, especially cold storage, and varietal selection also bear strongly on this challenge. These issues will require central attention in USAID's future project.

ENABLING ENVIRONMENT TRAINING

Working closely with local governments, private sector partners, and farmers is essential because weak or inappropriate government policies and regulations are still an impediment to agriculture growth and profitability in Indonesia, ultimately affecting foreign direct investment.

MOVING UP THE VALUE CHAIN

AMARTA's horticulture value chain efforts in improving access to markets focused primarily on linking producers and buyers of primary products. Substantial room exists, however, to promote linkages with food processors. Composed of some 130 industries, fruit and vegetable companies

generated Rp 169,151 billion in 2009 and employed approximately 85,000 workers. Sales are growing at approximately 10% per year. One of the key challenges to accessing these processors is the result of the smallholder nature of the horticulture value chain. Processors need large quantities of produce of reliably consistent quality and at affordable prices, and Indonesian farmers are not used to thinking in these terms. Still, with growing emphasis on buying domestic, and an import imbalance of five-to-one, establishing and consolidating these linkages is a challenge definitely worth pursuing.

Although AMARTA focused on improving quality and yields at the farm gate, future efforts can add value moving up the chain. In particular, processing can be improved with minimal investment, as witnessed in North Sumatera where some of the women's farmer groups made banana bread out of the lower quality bananas not accepted by Carrefour. Citrus in North Sumatera could easily be processed into fresh juice, along with tomatoes and other vegetables. Transportation issues are also an area where a small investment can provide substantial returns. Group marketing provided many cocoa farmers in Bali and Sulawesi with additional income as they pooled their resources together and transported cocoa beans directly to exporters. Working together and educating local traders can also help improve the chain as more knowledgeable and entrepreneurial distribution actors will improve demand for the higher quality products as buyers will pay a premium for cocoa, coffee, and horticulture that can be exported or placed in supermarkets in regional centers. Larger wholesalers and distributors can be leveraged once the quality, quantity, and consistency of products is reached. AMARTA has had some success exporting fruits and vegetables to Singapore, and future efforts should focus on both the export market and supplying larger supermarkets who can add efficiency and support to farmers and traders.

EXPANDING OPPORTUNITIES FOR WOMEN

AMARTA was able to integrate women in virtually every activity as approximately 18% of the 190,881 individuals trained were women. AMARTA was able to establish 61 women's farmer groups in cocoa and horticulture, while all of the flower activities were specifically designed for women. AMARTA observed that women were frequently more motivated, organized, and adapted new technology quickly- specific successes were noted ion flowers, cocoa, bananas, citrus, and PADA activities. Efforts should be made to expand the opportunities for women to work together and, ideally, in accessing loans.

CHAPTER III: TARGETS AND RESULTS

TARGETS AND RESULTS

Whom Have We Served? USAID established a target population of more than 179,706 farmers to become actively involved in AMARTA's pilot efforts. In total, the program provided training to more than 190,881 farmers, who have received productivity training focusing upon high-value horticulture.

Have We Expanded Production? Our target was to expand production by 66,841 ha. AMARTA-supported farmers have in fact expanded production by 72,610 ha under improved technologies or management practices.

Have We Strengthened Networking along the Value Chains? AMARTA was tasked with working with 2,855 producer organizations, trade and business associations, and community-based organizations in its value chain strengthening efforts. Over the life of the program, 3,798 such entities have been supported.

How Many Agribusiness Firms Have Benefited from Program-Related Efforts? USAID asked AMARTA to establish access linkages with at least 207 agribusiness firms. The program succeeded in developing 202 such linkages.

Financially, What Was the Percentage of Change of Purchases from Smallholders Who Committed to High-Value Horticultural Commodity Production? The target for vegetables was set at 50%. Fruits and flowers, it was hoped, would achieve a 26% positive increase in earnings. In the case of vegetables, farmers improved their earnings by 84%, and producers of fruits and flowers increased their earnings by 96%. The target for coffee over the life of program was 59%, and AMARTA was able to increase purchases by 69%; the cocoa target was 30% with an actual increase of 58%.

How Many New Technologies or Management Practices Were Made Available as the Result of AMARTA? Our original target was 212 innovative technologies; ultimately 242 such technologies and practices were made available.

How Many Women's Agricultural Organizations Have Been Assisted through the Program? AMARTA, while sensitive to gender issues, was not, until 2009, specifically tasked with working with women's organizations. Instead, it included female farmers as part of the farmer-based entities that it was working with. A target of 59 such organizations was set and AMARTA was able to exceed that goal by identifying and assisting 61 women's organizations.

Below is the AMARTA Final Indicator Results based on targets and actual achievement:

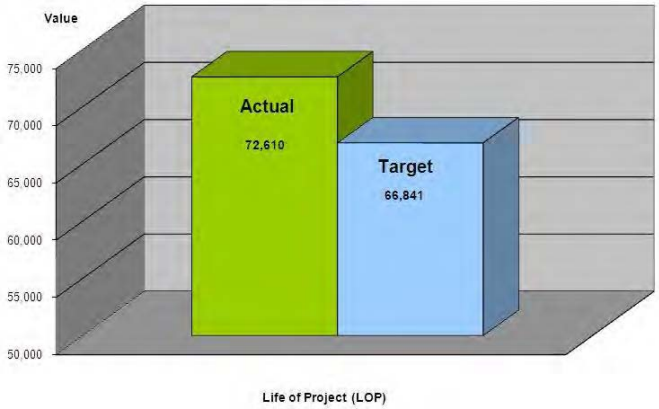
INDICATORS		Aqua culture	Natural Rubber	Cocoa	Coffee	Beef Livestock	Vegetables	Tropical Fruit & Flowers	Biofuels	Seaweed	RACA	Total
Number of additional hectares under improved technologies or management practices as a result of USG assistance	Actual 2007	-	-	1,220	-	-	-	1,137	-	-	-	2,357
	Actual 2008	-	535	20,804	7,200	-	659	3,425	40	-	-	32,663
	Actual 2009	-	1,782	9,528	1,099	-	132	2,899	-	-	-	15,440
	Actual 2010	-	-	6,846	2,156	-	96	7,667	-	-	-	16,765
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	-	-	-	740	-	114	4,531	-	-	-	5,385
	Target 2010	-	0	4,958	4,135	-	272	7,016	-	-	-	16,381
	LOP Actual	-	2,317	38,398	11,195	-	1,001	19,659	40	-	-	72,610
	LOP Target	-	2,317	36,510	12,434	-	1,063	14,477	40	-	-	66,841
Number of additional units of animal, fish and other aquaculture products under improved technologies or management practices as a result of USG assistance	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	54,152	-	-	-	300	-	-	-	2,203	-	56,655
	Actual 2009	184,736	-	-	-	38	-	-	-	1,866	-	186,640
	Actual 2010	64,568	-	-	-	16	-	-	-	-	-	64,584
	Q3 2011	10,691	-	-	-	-	-	-	-	-	-	10,691
	Actual 2011	27,316	-	-	-	8	-	-	-	-	-	27,324
	Target 2010	58,868	-	-	-	23	-	-	-	-	-	58,891
	LOP Actual	330,772	-	-	-	362	-	-	-	4,069	-	335,203
	LOP Target	350,000	-	-	-	361	-	-	-	4,069	-	354,430
Number of producer organizations, water user associations, trade and business associations, and community-based organizations (CBOs) receiving USG assistance	Actual 2007	-	-	-	9	-	-	-	-	-	-	9
	Actual 2008	3	19	860	290	17	107	273	2	15	69	1,655
	Actual 2009	-	4	42	5	22	4	233	-	-	122	432
	Actual 2010	-	-	224	571	-	18	558	-	-	5	1,376
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	-	-	-	106	-	13	203	-	-	4	326
	Target 2010	-	-	224	146	-	21	287	-	-	81	759
	LOP Actual	3	23	1,126	981	39	142	1,267	2	15	200	3,798
	LOP Target	3	23	1,126	450	39	132	793	2	15	272	2,855
Number of agriculture related firms benefiting directly from USG supported interventions	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	12	11	22	10	1	15	11	4	2	2	90
	Actual 2009	-	-	4	9	-	3	8	-	-	-	24
	Actual 2010	2	-	1	41	-	19	-	-	-	3	66
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	-	-	-	4	-	1	2	-	-	15	22
	Target 2010	2	-	11	55	-	14	3	-	-	8	93
	LOP Actual	14	11	27	64	1	38	21	4	2	20	202
	LOP Target	14	11	37	74	1	32	22	4	2	10	207
Number of individuals (men and women) who have received USG supported short-term agriculture sector productivity training	Actual 2007	-	79	17,428	128	-	60	5,520	-	-	186	23,401
	Actual 2008	453	445	32,155	12,670	446	1,497	3,942	1,436	216	1,387	54,647
	Actual 2009	192	384	20,114	1,257	-	859	4,483	-	218	972	28,479
	Actual 2010	-	-	59,928	4,210	-	1,035	9,145	-	-	2,039	76,357
	Q3 2011	-	-	-	130	-	-	-	-	-	-	130
	Actual 2011	19	-	-	1,351	-	1,212	5,324	-	-	91	7,997
	Target 2010	55	-	60,303	5,610	4	837	4,915	-	-	1,455	73,179
	LOP Actual	664	908	129,625	19,616	446	4,663	28,414	1,436	434	4,675	190,881
	LOP Target	700	908	130,000	19,665	450	3,253	18,860	1,436	434	4,000	179,706
Percent change in value of international exports of targeted agricultural commodities as a results of USG assistance	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	-	-	100	100	-	-	-	-	100	-	100
	Actual 2009	-	-	104	69	-	-	-	-	100	-	91
	Actual 2010	-	-	17	70	-	-	-	-	-	-	43
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	-	-	(6)	100	-	100	-	-	-	-	65
	Target 2010	-	-	45	89	-	18	-	-	100	-	63
	LOP Actual	-	-	54	85	-	100	-	-	100	-	85
	LOP Target	-	-	45	89	-	18	-	-	100	-	63

Percent change in value of purchases from smallholders of targeted commodities as a result of USG assistance	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	100		100	100	-	-	87	-	100	-	97
	Actual 2009	184	-	125	25	-	100	100	-	200		122
	Actual 2010	(34)	-	13	-	-	61	-	-	-	-	13
	Q3 2011	(3)	-	-	63	-	-	100	-	-	-	53
	Actual 2011	(37)	-	(7)	82	-	92	100	-	-	100	55
	Target 2010	100	-	30	59	-	50	26	-	150	-	69
	LOP Actual	53	-	58	69	-	84	96	-	150	100	87
	LOP Target	100	-	30	59	-	50	26	-	150	-	69
Number of new technologies or management practices made available for transfer as a result of USG assistance	Actual 2007	-	-	-	-	-	-	9	-	-	-	9
	Actual 2008	24	14	25	12	2	26	27	5	4	-	139
	Actual 2009	2	1	3	-	1	19	1	-	2	8	37
	Actual 2010	-	-	2	4	4	19	-	-	-	-	29
	Q3 2011	-	-	-	4	-	-	-	-	-	-	4
	Actual 2011	-	-	1	9	-	13	5	-	-	-	28
	Target 2010	-	-	4	14	1	6	4	-	-	-	29
	LOP Actual	26	15	31	25	7	77	42	5	6	8	242
	LOP Target	26	15	32	26	2	51	41	5	6	8	212
Number of additional surveillance and/or control systems in place for agricultural threats	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	6	2	4	3	1	-	1	-	1	-	18
	Actual 2009	4	-	1	-	1	1	-	-	2	-	9
	Actual 2010	-	-	-	1	-	1	-	-	-	-	2
	Q3 2011	-	-	-	1	-	-	-	-	-	-	1
	Actual 2011	-	-	-	4	-	1	-	-	-	-	5
	Target 2010	-	-	-	-	-	1	-	-	-	-	1
	LOP Actual	10	2	5	8	2	3	1	-	3	-	34
	LOP Target	10	2	5	3	2	2	1	-	3	-	28
Number of public-private partnerships formed as a result of USG assistance.	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	3	3	4	3	1	5	-	-	-	-	19
	Actual 2009	2	-	-	4	-	5	-	-	-	-	11
	Actual 2010	-	-	-	4	-	4	1	-	-	2	11
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	1	-	-	1	1	2	-	-	-	-	5
	Target 2010	-	-	-	9	-	10	3	-	-	-	22
	LOP Actual	6	3	4	12	2	16	1	-	-	2	46
	LOP Target	5	3	4	16	1	20	3	-	-	-	52
Number of women's organizations/associations assisted as a result of USG Supported Interventions	Actual 2010	-	-	10	6	-	6	9	-	-	16	47
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	-	-	-	1	-	8	1	-	-	4	14
	Target 2010	1	-	10	8	-	10	14	-	-	16	59
	LOP Actual	-	-	10	7	-	14	10	-	-	20	61
	LOP Target	1	-	10	8	-	10	14	-	-	16	59

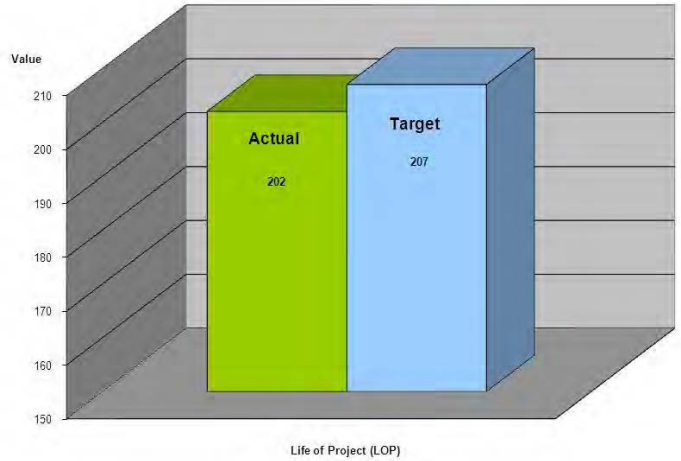
INTERPRETATION OF RESULTS

AMARTA met or exceeded eight indicator target numbers. For the two indicators where AMARTA did not reach the target, the program still managed to achieve 98% of the target in the number of agriculture-related firms benefiting from assistance, and 88% of the intended public-private partnerships formed. The 10 bar charts below represent graphically the program's success against the 10 indicators:

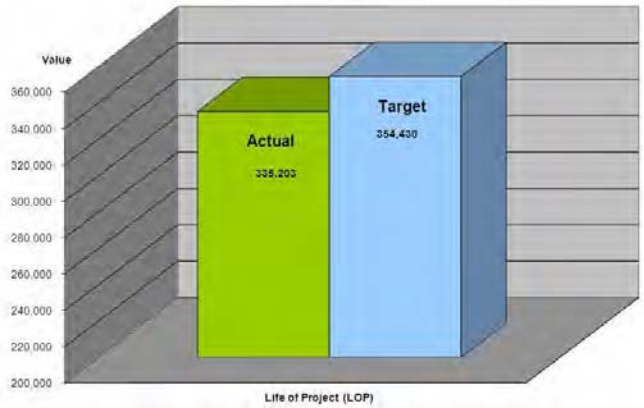
Indicator No. 1A
Additional Hectares Under Improved Technologies or Management Practises



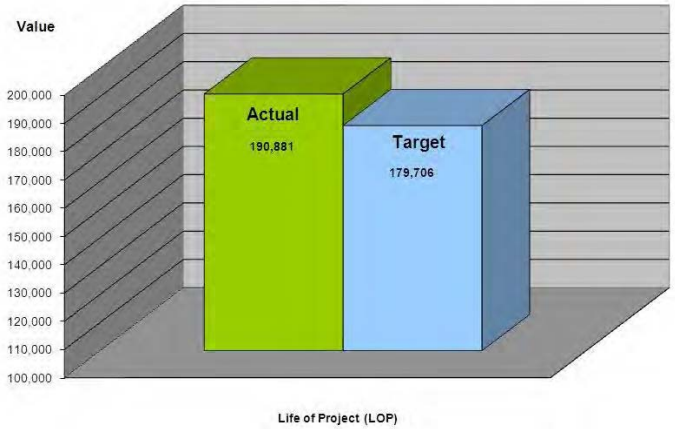
Indicator No. 3
Number of Agriculture Related Firms Benefiting Directly from USG Supported Interventions



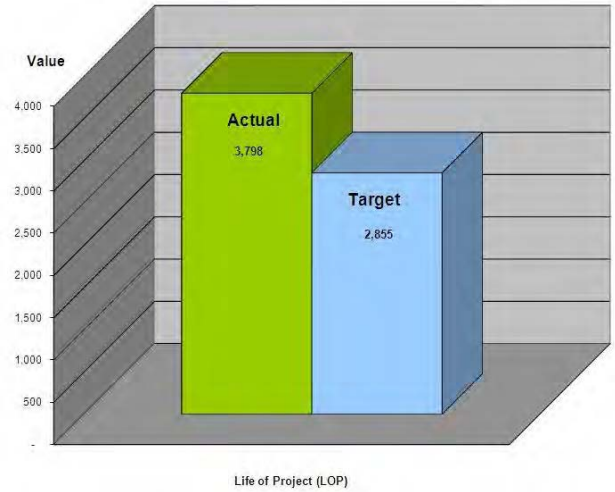
Indicator No. 1B
Number of Additional Units of Animal, Fish and other Aquaculture Products under Improved Technologies



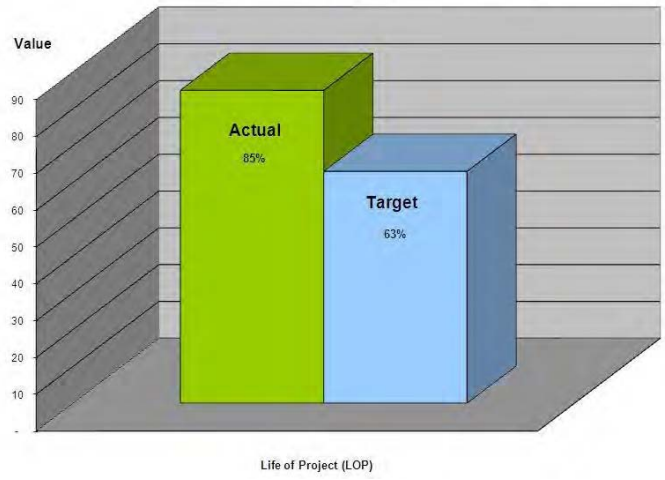
Indicator No.4
Number of Individuals (men and women) Who Have Received USG Supported Short-term Agriculture Sector Productivity Training



Indicator No. 2
Number of producer organizations, water user associations, trade and business associations, and community-based organizations (CBOs) receiving USG assistance

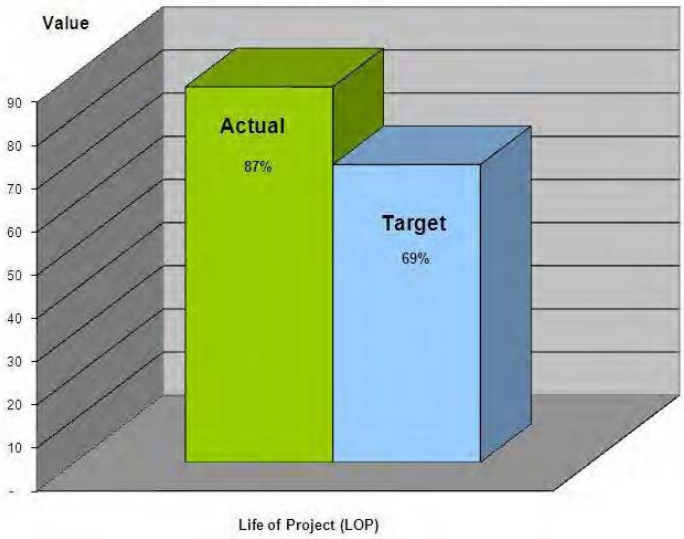


Indicator No. 5
Percent Change in Value of International Exports of Targeted Agricultural Commodities as a Results of USG Assistance

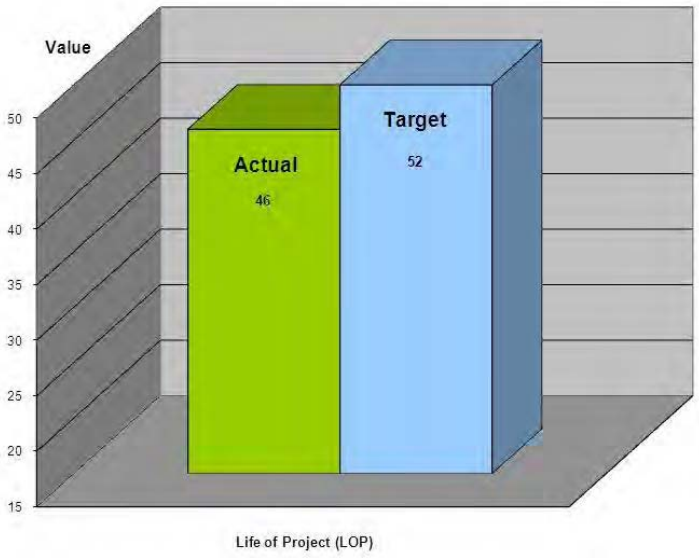


CT

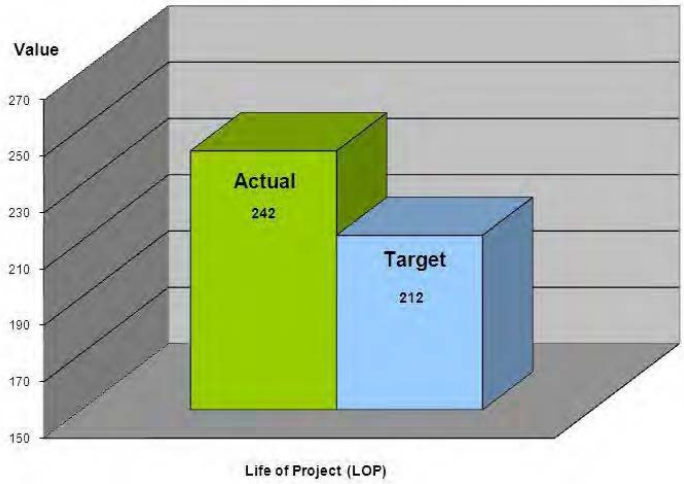
Indicator No. 6
Percent change in value of purchases from smallholders of targeted commodities as a result of USG assistance



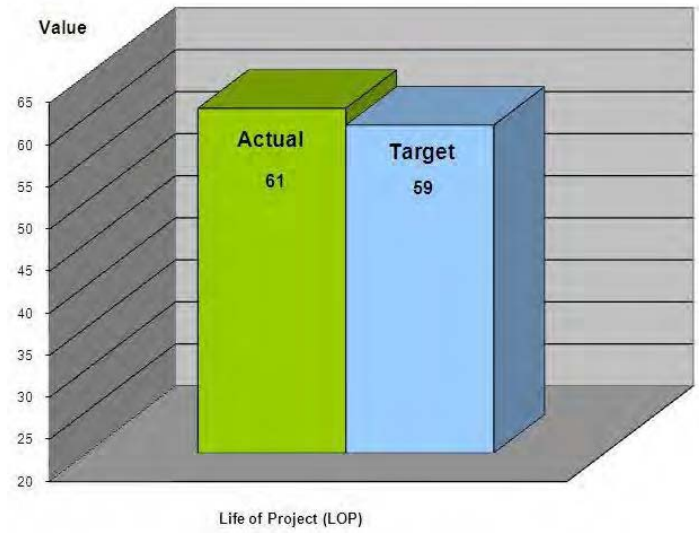
Indicator No. 9
Number of additional surveilance and/or control systems in place for agricultural threats



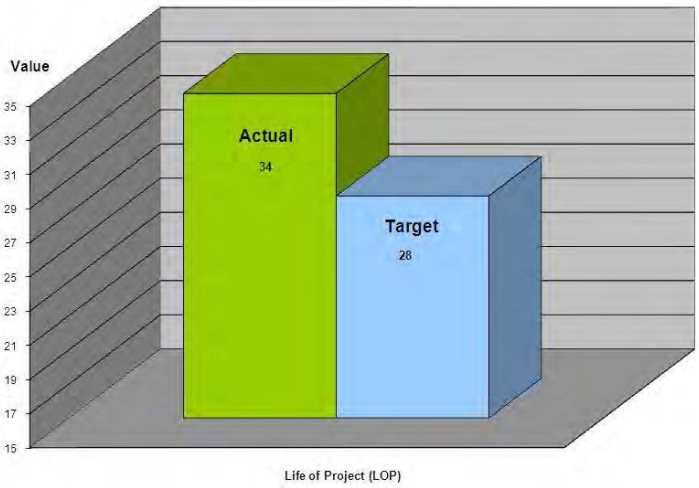
Indicator No 7
Number of new Technologies or Management Practices Made Available for Transfer as a Result of USG assistance



Indicator No. 10
Number of women's organizations/associations assisted as a result of USG Supported Interventions



Indicator No. 8
Number of additional surveilance and/or control systems in place for agricultural threats



FURTHER DISCUSSION OF RESULTS

AMARTA was able to exceed anticipated results in many indicators based on USAID's extension of project activities and the economies of scale that were ultimately produced by focusing on three value chains. One of the most encouraging signs of sustainability and impact of AMARTA project activities occurred during a field trip to Sulawesi in December 2010 where Maju Bersama Farmer's Group in Pinrang continued to increase their cocoa production, working in groups, and accessing PT Olam's buying stations after completing work with AMARTA in 2008. Two years after receiving the last training assistance and guidance from AMARTA, proper GAP, positive cultivation techniques and habits, as well as access to PT Olam's buying stations continued to have a dramatic impact in helping cocoa farmers to thrive. There are many more examples of sustainable activities based on AMARTA's interventions, including grantees who continue to work with farmers and increase the quality and value of coffee, cocoa, and high value horticulture.

Although smallholder and export values were somewhat beyond AMARTA's control due to international prices based on markets and exchanges, buying stations increased their activities, additional super markets and hyper markets were reached, which ultimately increased volumes of purchases, and farmers have received significantly higher revenue based on higher prices of coffee, cocoa, and fruits and vegetables.

CHAPTER IV: IMPACT

IMPACT

BROAD RESULTS AND IMPACT

Significant impact in terms of increased income, jobs, changes in attitude, and the contributions of RACAs have been noted above; however AMARTA is extremely proud of the total return on investment (ROI) of USAID, PTFI, and LPMAK's budget contribution to the program of $20.4 million. Purchases from small holders and export sales have helped improve livelihoods and returned 18 times the initial investment of $20.4 million through over $367 million in purchases from smallholders, while exports for private sector leaders have resulted in over $462 million in transactions and revenue.

AMARTA VALUE OF SALES AND PURCHASE FROM SMALLHOLDERS – SUMMARY LIFE OF PROGRAM 2006–2010

Activities	Volume (kg) exported)	Value of export ($)	Volume (kg) of purchases from smallholders	Value ($) of purchases from smallholders
Cocoa	61,889,997	$150,955,972	61,889,997	$138,470,755
Coffee	80,142,000	$311,504,384	72,764,365	$212,704,692
Seaweed	76,316	$ 144,538	168,759	$ 313,284
Floriculture	-	-	-	$ 190,777
Aquaculture	2,500	$95,000	223,270	$205,301
Vegetables	18,527	$33,307	1,166,452	$449,049
Tropical Fruits	-	-	38,373,336	$15,064,277
RACA	-	-	1,024	$690
Total	**$142,129,340**	**$ 462,733,201**	**174,587,203**	**$ 367,398,825**

Cocoa Activities

In order to improve market access for cocoa farmers, AMARTA established partnerships with PT Olam, UD Tunas Jaya, and Armajaro in Sulawesi and Big Tree Farm in Bali. These companies set up buying stations to collect cocoa beans from farmers who received AMARTA training. Each quarter, these companies, along with AMARTA field staff, reported the volume and value of cocoa purchased from AMARTA farmers, as well as export values. Backup documentation includes sales figures, container shipment bills of lading, and purchase contracts. From program inception in September 2006 through December 2010, AMARTA partners contributed the following:

LIFE OF PROGRAM COCOA PURCHASES

Company	Volume (kg) exported)	Value of export ($)	Volume (kg) of purchases from smallholders	Value ($) of purchases from smallholders
PT Olam	34,807,170	$83,136,663	34,807,170	$76,380,818
Tunas Jaya	23,890,211	$60,923,666	23,890,211	$55,842,193

Armajaro	3,060,325	$6,509,669	3,060,325	$5,938,223
Big Tree Farm	132,291	$385,974	132,291	$309,521
Total	**61,889,997**	**$150,955,972**	**61,889,997**	**$138,470,755**

From the data collected in South Sulawesi Bappeti (the supervisory board of the commodity future trading), in 2008 total national average export per farmer was 0.36 tons while AMARTA exports were 0.77 per farmer/ton or **114% greater per capita.** [8] Also, based on AMARTA's survey in 2009, there is a 22% price premium received by AMARTA cocoa smallholders. Farmers usually received 70% of the average price paid in Makassar from exporters or Rp 17, 829/kg, though now they receive Rp 21,088 IDR/kg or 85% of the export price- Rp 24,699.

2008 INDONESIAN NATIONAL COCOA STATISTICS

2008	National	AMARTA
Total Tons Exported	515,523	17,521
Total Farmers	1,431,260	22,500
Average Export /Farmer	0.36 tons/farmer	0.77 tons /farmer

Coffee Activities

In order to strengthen and empower coffee farmers, AMARTA coordinated marketing and technical support with Gajah Mountain Coffee in Aceh, Lion Lestari in Flores, Baliem Arabica Cooperative in Wamena, San Isidor Cooperative in Bomomani, and worked with SCAI partners and members who sold coffee. Each quarter, these companies reported the total volume and value of coffee purchased from farmers, as well as export values. Backup documentation includes sales figures, container shipment bills of lading, and purchase contracts. From project inception in September 2006 through December 2010, AMARTA partners contributed the following:

2008–2010 SCAI MEMBER COFFEE PURCHASES

Company	Volume (kg) exported)	Value of export ($)	Volume (kg) of purchases from smallholders	Value ($) of purchases from smallholders
GMC	214,500	$2,884,520	214,500	$2,637,539
Lion Lestari	108,000	$410,400	108,000	$307,800
Baliem Arabika Cooperative	24,500	$85,464	39,410	$78,765
SCAI members	79,795,000	$308,124,000	72,401,000	$209,678,000
Bomomani	0	$0	1,455	$2, 588
Total	**80,142,000**	**$311,504,384**	**72,764,365**	**$212,704,692**

In December 2010, SCAI members exported $308,124,000 of coffee and purchased $209,678,000 from smallholders over a three-year period (2008–2010).

[8] Assuming 10% export growth in 2008–2009.

Vegetables

LIFE OF PROGRAM VEGETABLE PURCHASES

Company	Volume (kg) exported)	Value of export ($)	Volume (kg) of purchases from smallholders	Value ($) of purchases from smallholders
CV. Bimandiri	-	-	1,026,496	$350,719
PT Momenta Agrikultura	-	-	845	$464
PT Alamanda	18,527	$33,307	-	-
Baby French FG	-	-	33,527	$32,484
Tauhid FG	-	-	9,584	$9,382
Carrot and broccoli from North Sumatera	-	-	96,000	$56,000
Total	**18,527**	**$33,307**	**1,166,452**	**$449,049**

AMARTA worked closely with local buyers CV Bimandiri and PT Momenta, as well as exporter PT Alamanda in high-value horticulture in the West Java area. The total value of purchases for CV Bimandiri was $350,719 from 1,026,496 kilograms of vegetables. PT Alameda reported exports of 18,527 kg valued at $33,307. AMARTA also assisted farmer's groups in making local purchases from smallholders valued at $33,527 from July-December 2010.

Tropical Fruits and Flowers (Non-Export)

LIFE OF PROGRAM FRUIT PURCHASES

Company	Volume (kg) exported)	Value of export ($)	Volume (kg) of purchases from smallholders	Value ($) of purchases from smallholders
Banana in Faka-Fuku				$699
Banana in North Sumatera			844,596	$469,068
Citrus in North Sumatera			37,528,740	$14,594,510
Total			**38,373,336**	**$15,064,277**

ANNEXES

ANNEX A: INDICATORS AND TARGETS

INDICATORS		Aqua culture	Natural Rubber	Cocoa	Coffee	Beef Livestock	Vegetables	Tropical Fruit & Flowers	Biofuels	Seaweed	RACA	Total
Number of additional hectares under improved technologies or management practices as a result of USG assistance	Actual 2007	-	-	1,220	-	-	-	1,137	-	-	-	2,357
	Actual 2008	-	535	20,804	7,200	-	659	3,425	40	-	-	32,663
	Actual 2009	-	1,782	9,528	1,099	-	132	2,899	-	-	-	15,440
	Actual 2010	-	-	6,846	2,156	-	96	7,667	-	-	-	16,765
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	-	-	-	740	-	114	4,531	-	-	-	5,385
	Target 2010	-	0	4,958	4,135	-	272	7,016	-	-	-	16,381
	LOP Actual	-	2,317	38,398	11,195	-	1,001	19,659	40	-	-	72,610
	LOP Target	-	2,317	36,510	12,434	-	1,063	14,477	40	-	-	66,841
Number of additional units of animal, fish and other aquaculture products under improved technologies or management practices as a result of USG assistance	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	54,152	-	-	-	300	-	-	-	2,203	-	56,655
	Actual 2009	184,736	-	-	-	38	-	-	-	1,866	-	186,640
	Actual 2010	64,568	-	-	-	16	-	-	-	-	-	64,584
	Q3 2011	10,691	-	-	-	-	-	-	-	-	-	10,691
	Actual 2011	27,316	-	-	-	8	-	-	-	-	-	27,324
	Target 2010	58,868	-	-	-	23	-	-	-	-	-	58,891
	LOP Actual	330,772	-	-	-	362	-	-	-	4,069	-	335,203
	LOP Target	350,000	-	-	-	361	-	-	-	4,069	-	354,430
Number of producer organizations, water user associations, trade and business associations, and community-based organizations (CBOs) receiving USG assistance	Actual 2007	-	-	-	9	-	-	-	-	-	-	9
	Actual 2008	3	19	860	290	17	107	273	2	15	69	1,655
	Actual 2009	-	4	42	5	22	4	233	-	-	122	432
	Actual 2010	-	-	224	571	-	18	558	-	-	5	1,376
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	-	-	-	106	-	13	203	-	-	4	326
	Target 2010	-	-	224	146	-	21	287	-	-	81	759
	LOP Actual	3	23	1,126	981	39	142	1,267	2	15	200	3,798
	LOP Target	3	23	1,126	450	39	132	793	2	15	272	2,855
Number of agriculture related firms benefiting directly from USG supported interventions	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	12	11	22	10	1	15	11	4	2	2	90
	Actual 2009	-	-	4	9	-	3	8	-	-	-	24
	Actual 2010	2	-	1	41	-	19	-	-	-	3	66
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	-	-	-	4	-	1	2	-	-	15	22
	Target 2010	2	-	11	55	-	14	3	-	-	8	93
	LOP Actual	14	11	27	64	1	38	21	4	2	20	202
	LOP Target	14	11	37	74	1	32	22	4	2	10	207
Number of individuals (men and women) who have received USG supported short-term agriculture sector productivity training	Actual 2007	-	79	17,428	128	-	60	5,520	-	-	186	23,401
	Actual 2008	453	445	32,155	12,670	446	1,497	3,942	1,436	216	1,387	54,647
	Actual 2009	192	384	20,114	1,257	-	859	4,483	-	218	972	28,479
	Actual 2010	-	-	59,928	4,210	-	1,035	9,145	-	-	2,039	76,357
	Q3 2011	-	-	-	130	-	-	-	-	-	-	130
	Actual 2011	19	-	-	1,351	-	1,212	5,324	-	-	91	7,997
	Target 2010	55	-	60,303	5,610	4	837	4,915	-	-	1,455	73,179
	LOP Actual	664	908	129,625	19,616	446	4,663	28,414	1,436	434	4,675	190,881
	LOP Target	700	908	130,000	19,665	450	3,253	18,860	1,436	434	4,000	179,706
Percent change in value of international exports of targeted agricultural commodities as a results of USG assistance	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	-	-	100	100	-	-	-	-	100	-	100
	Actual 2009	-	-	104	69	-	-	-	-	100	-	91
	Actual 2010	-	-	17	70	-	-	-	-	-	-	43
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	-	-	(6)	100	-	100	-	-	-	-	65
	Target 2010	-	-	45	89	-	18	-	-	100	-	63
	LOP Actual	-	-	54	85	-	100	-	-	100	-	85
	LOP Target	-	-	45	89	-	18	-	-	100	-	63

Percent change in value of purchases from smallholders of targeted commodities as a result of USG assistance	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	100		100	100	-	-	87	-	100	-	97
	Actual 2009	184	-	125	25	-	100	100	-	200		122
	Actual 2010	(34)	-	13	-	-	61	-	-	-	-	13
	Q3 2011	(3)	-	-	63	-	-	100	-	-	-	53
	Actual 2011	(37)	-	(7)	82	-	92	100	-	-	100	55
	Target 2010	100	-	30	59	-	50	26	-	150	-	69
	LOP Actual	53	-	58	69	-	84	96	-	150	100	87
	LOP Target	100	-	30	59	-	50	26	-	150	-	69
Number of new technologies or management practices made available for transfer as a result of USG assistance	Actual 2007	-	-	-	-	-	-	9	-	-	-	9
	Actual 2008	24	14	25	12	2	26	27	5	4	-	139
	Actual 2009	2	1	3	-	1	19	1	-	2	8	37
	Actual 2010	-	-	2	4	4	19	-	-	-	-	29
	Q3 2011	-	-	-	4	-	-	-	-	-	-	4
	Actual 2011	-	-	1	9	-	13	5	-	-	-	28
	Target 2010	-	-	4	14	1	6	4	-	-	-	29
	LOP Actual	26	15	31	25	7	77	42	5	6	8	242
	LOP Target	26	15	32	26	2	51	41	5	6	8	212
Number of additional surveillance and/or control systems in place for agricultural threats	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	6	2	4	3	1	-	1	-	1	-	18
	Actual 2009	4	-	1	-	1	1	-	-	2	-	9
	Actual 2010	-	-	-	1	-	1	-	-	-	-	2
	Q3 2011	-	-	-	1	-	-	-	-	-	-	1
	Actual 2011	-	-	-	4	-	1	-	-	-	-	5
	Target 2010	-	-	-	-	-	1	-	-	-	-	1
	LOP Actual	10	2	5	8	2	3	1	-	3	-	34
	LOP Target	10	2	5	3	2	2	1	-	3	-	28
Number of public-private partnerships formed as a result of USG assistance.	Actual 2007	-	-	-	-	-	-	-	-	-	-	-
	Actual 2008	3	3	4	3	1	5	-	-	-	-	19
	Actual 2009	2	-	-	4	-	5	-	-	-	-	11
	Actual 2010	-	-	-	4	-	4	1	-	-	2	11
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	1	-	-	1	1	2	-	-	-	-	5
	Target 2010	-	-	-	9	-	10	3	-	-	-	22
	LOP Actual	6	3	4	12	2	16	1	-	-	2	46
	LOP Target	5	3	4	16	1	20	3	-	-	-	52
Number of women's organizations/associations assisted as a result of USG Supported Interventions	Actual 2010	-	-	10	6	-	6	9	-	-	16	47
	Q3 2011	-	-	-	-	-	-	-	-	-	-	-
	Actual 2011	-	-	-	1	-	8	1	-	-	4	14
	Target 2010	1	-	10	8	-	10	14	-	-	16	59
	LOP Actual	-	-	10	7	-	14	10	-	-	20	61
	LOP Target	1	-	10	8	-	10	14	-	-	16	59

ANNEX B: METHODOLOGY

PROJECT MONITORING AND EVALUATION SYSTEM

THE PERFORMANCE MONITORING SYSTEM

INDICATORS

There were 10 indicators used to monitor the progress of AMARTA. Seven of these indicators were drawn from the USAID/State Department standard indicator list, while the remaining three additional indicators AMARTA believes accurately reflect program activities.

DATA COLLECTION AND ANALYSIS

The main part of the data collection system was project records maintained throughout the program by project staff, depending on location and commodity. For data related to the farm level (i.e., hectares under improved technologies), activity managers stated the manner in which they collected data. The COP, DCOP, and Monitoring and Evaluation Specialist were ultimately responsible for ensuring the compilation of accurate data. Data collection requirements for grantees and partners were written into agreements, activity proposals, and Agro-enterprise profiles; the exception to this system is cocoa, which required a survey of farmers to gather baseline and yearly data on cocoa production by smallholders. Analysis, in the case of eight out of the ten indicators, was a simple count. In the case of two of the indicators, starting figures were compared to end of year figures to determine a percent change in value, reported as US dollars ($). Reporting to USAID occurred quarterly in conjunction with the submission of the AMARTA/PADA Quarterly Report, with Annual Reports submitted in October of each year.

ANNEX C: PROJECT DOCUMENTATION AND SUPPORTING DETAILS

REPORTS PROVIDED TO USAID

- Annual Work Plans
- Quarterly Progress Reports with Participant Training Information and Indicators
- Quarterly Participant Training Information Summary
- Quarterly Accruals and Government of Indonesia Contribution List
- Annual Reports
- Success Stories

SUPPORTING DOCUMENTATION AND INFORMATION

Further description of specific project activities and successes are included below for the four major areas of concentration: RACAs, Cocoa, Coffee, and High Value Horticulture.

RACA KEY ACTIVITIES

AMARTA trained each of the assisted Alliances in basic organization and management concepts, communication skills, policy analysis, and proposal writing. A key role AMARTA played was facilitating meetings and forums, often between farmers' groups and local government entities, designed to improve the policy environment for farmers in selected value chains. Below are some of the major achievements completed by these organizations in reaching their goal of improving the agriculture enabling environment and farmers' livelihoods at the local level:

Karo Highlands RACA Lobbies Parliament to Construct a Rural Road

On April 9, 2008, a public hearing was conducted at the Karo Regency House of Representatives, and attended by 67 people, including five media outlets. The hearing was led by Mr. Joy Harlem Sinuhaji, Chairman of B Commission of the local House of Representatives. During the event, the alliance presented a policy paper titled „Potency, Constraints, and Policy for Agriculture – Horticulture Competitiveness in Karo District.' Among others, a proposal in the paper to the commission resulted in successfully approving funding from the Public Works Agency on a project for hardening two kilometers of road to a central production site for farmers in the Tanjung Barus Sub-District.

The Rp 50 million ($5,263) access road led to citrus orchards, and included 350 meters of rehabilitated tarmac, making it accessible for cargo trucks. This access road saved the farmers approximately Rp 150 per kg in transportation costs.

According to Mr. Harlem Sinuhaji: *"USAID and AMARTA have succeeded in establishing and equipping MHK and its members with a coherent policy plan. The representatives were impressed with the analysis and policy paper that helped the government resolve problems within the Karo Horticulture Community."*

Alliance Members in North Sumatera Accesses Credit from Banks

On June 26th, 2010 a dialogue on "Farmers Access to Credit" was held at Senator Parlindungan Purba's office in North Sumatera and attended by the representatives of two alliances, the Karo Horticulture Community (KHC) and the Deli Serdang Barangan Banana Community (DS-BBC). The meeting was also attended by banking representatives from four national banks and the local media. As a result of the dialogue, BRI bank pledged to help facilitate horticulture farmers' access to the subsidized „Food and Energy Security Credit Program' that had never been utilized by alliances in North Sumatera. Senator Purba also sent a letter to the Minister of Agriculture describing the constraints that hinder farmers' access to credit. This initiative was instrumental in linking KHC and DS-BBC with the banks, particularly BRI's local branch office. Palmae Jaya Farmer's Group (FG) submitted a completed credit application document immediately after the event and another FG in Tanjung Barus Village completed and submitted an application that resulted in 15 farmers receiving Rp 20 million ($2,222) in loans from BRI.

Deli Serdang Banana Alliance Secured Funding from the Deli Serdang Parliament

The Deli Serdang Barangan Banana Alliance met with the Parliament of Deli Serdang on November 11th, 2010 in Lubuk Pakam. The Alliance submitted three proposals expected to be incorporated into the 2011 fiscal year budget. AMARTA, in collaboration with the University of North Sumatera, trained the Alliance on how to identify pressing problems and write proposals. As a result of this initiative, Parliament, through its chairman Haji Fatmawaty and one of the leaders, Mr. Alinatar Siregar, accepted the proposals to support banana farmers and promised that they would be included in the 2011 Deli Serdang budget with a total of Rp 280 million in funds committed.

The Director of Deli Serdang Parliament, Mrs. Hj. Fatmawaty and Mr. Alinatar Siregar, discuss the budget allocation

Deli Serdang Alliance Influences District Government Policy

Facilitated by North Sumatra Senator Purba, a meeting between Deli Serdang Banana Alliance (DS-BBC) representatives and Mr. Zainuddin Mars - Vice-Regent of Deli Serdang, Mr. Wirdan Rangkuti - Director of the Agriculture Office, and Mr. R. Refis - Director of Natural Resource Management was held on June 11th, 2009. As a result of this meeting, the Vice-Regent ordered the Head of Agricultural Services to coordinate efforts, particularly with the Assessment Institute for Agricultural Technology (BPTP), in disseminating and replicating AMARTA's double row banana planting technology, organic fertilizer production and utilization, and intensification of extension services, as well as coordinating with the Indonesia Rubber Research Institute (IRRI) on tissue culture production of banana seeds. The Vice Regent also promised to include DS-BBC in policy and regulatory dialogues, as well as in the regional (village, district, regency) development planning and budgeting dialogue, the Musrenbang.

The Pro-Agribusiness Alliance in Pak Pak Bharat influenced the District Parliament and Government Policy

Following up on the establishment of the Pro-Agribusiness Alliance in Pak Pak Bharat in February 2010, AMARTA facilitated activities to assist the newly formed Alliance through training on communication for farmers, writing proposals, and training of problem identification, before holding a dialogue with the District Parliament and District Government on April 14th, 2010. There were three policy papers submitted to Commission C; the first requesting improvement of farm main roads and bridges to farms, the second requesting remedies for the high cost of fertilizer and difficult access to organic fertilizer, and the third requesting access for the Alliance to financial facilities provided by the local government. The C commission committed to accommodating the Alliance's needs, as well as requesting that the Alliance work closely with the government on those issues proposed.

The Pro-Agribusiness Alliance in Pak Pak Bharat after meeting with the Regent to discuss improving infrastructure, access to fertilizer, and financial services

Pak Pak Bharat Pro Agribusiness Community Alliance Wins a Grant from the British Council

On September 23rd, 2010, the Pro-Agribusiness Alliance of Pak Pak Bharat received a prestigious $12,500 grant award from the British Council. The competition included more than 600 participants from all over Indonesia with only 45 organizations selected, including only three winners for start-up entrepreneurship development. The Alliance submitted a proposal to stimulate the organic fertilizer market in Pak Pak Bharat, which is an entirely new idea and business concept. The award was formally presented by the English Ambassador in Jakarta to the Alliance, which used the grant to establish an organic compost fertilizer production site to support farmers in the area.

DR. Sabam (third from left) and other winners of the Community Entrepreneurs Challenge 2010

Simalungun Parliament Supports Three Alliance Policy Proposals

The Simalungun Agribusiness Alliance received training on identifying constraints to agribusiness growth from April 20-22nd, 2010 in Pematang Siantar, and continued to cooperate with Commision II of Simalungun Parliament. Ultimately, the alliance submitted three policy papers on the following topics: post-harvest handling, access to finance, and transfering technology. In response to the post-harvest handling paper, the parliament promised to increase the budget for rural road improvement. Regarding access to finance, the parliament sponsered banks in the district to provide access to credit for farmers resulting in the Pak Pak Bharat and Duma Regencies distributing direct credit and laons to farmers of Rp 5 million per farmer with no interest required. For technology transfer, the Parliament provided resources to the local government agency to improve extension services. Subsequently, the local extension agency provided its land for AMARTA's coffee nursery and the Agriculture Service Agency provided office space for AMARTA staff.

Dialogue for Coffee Stakeholders in North Sumatera

On September 30th, 2010, AMARTA held a workshop on improving the coffee value chain in North Sumatera with coffee stakeholders in cooperation with the North Sumatera Senator's Office, represented by Mr. Parlindungan Purba. The Workshop was attended by 270 participants. As a result of this event the North Sumatera Coffee Forum was formed to create partnerships, solicit opportunities, and function as an advocacy group for coffee. The formation of the forum has already stimulated ideas and mobilized resources from the public and private sector. It was during this dialogue that many stakeholders, including the provincial government, came to realize the vast infestation of coffee berry borer (CBB) in the region that, conservatively estimated, has already caused total losses of Rp 380 billion ($42,200,000) to coffee farmers in the major producing districts in the province. During the meeting stakeholders pledged to organize and mobilize resources along with the government's contribution to fight the CBB problem.

The Karo Horticulture Community Alliance and Barangan Banana Alliance of Deli Serdang Accesses New Markets through Carrefour

After several meetings, negotiations, and quality assurance verification, a contract was signed between Carrefour and both North Sumatera RACAs in June 2010. The agreement was followed by a small and medium agriculture enterprises exhibition conducted by Carrefour Gatot Subroto Medan from December 11th to 17th, 2010. Both Alliances joined the exhibition along with 50 other exhibitors. Carrefour ultimately selected the Alliances as one of five qualified participants who were provided an immediate contract to work with the supermarket, rather than having to wait for the usual 12 month assessment period. The Alliances also received an award for their outstanding success from the Ministry of Cooperatives and SMEs.

The Ministry of Cooperative and SME's, Mr. Syarifudin Hasan, visited the Alliance's booth where the women farmer's groups had the opportunity to offer him banana cake.

Radio Show Stimulates Interest in Karo Horticulture Community

AMARTA facilitated the Karo Horticulture Community (MHK) on-air interactive dialogue on the popular local radio station named "Ersena" on February 28th, 2009. The show discussed horticulture production, emphasizing citrus, potatoes, chili, and other vegetables. Listeners enthusiastically participated, not only those who live in Karo, but also in the neighboring regencies such as: Simalungun, Asahan, Dairi, and Deli Serdang. There were more than 100 inquiries raised by farmers through cell-phone short messages (SMS) during the first program. Some questions also came from government field extension workers. The program strengthened the alliance's existence and its members proudly claim that their organization is gaining more popularity in the farmer communities in Karo District. Regularly scheduled programs broadcast twice a month continued after AMARTA's interventions ended, and it was witnessed that many farmers who did not participate in AMARTA activities have adopted the technology implemented by the Alliance.

Chairman of AMARKATA, Wayan Suarma, presenting the Rayonisasi case before the Governor of Bali

AMARKATA Protects Farmer's Rights to Sell Cocoa

The Tabanan Cocoa Community Alliance (AMARKATA) in Bali raised its concern over the cocoa market area segmentation "*Rayonisasi"* policy (which forces farmers to sell their crops to specific traders in specific areas) directly to the Governor of Bali in the monthly dialogue on April 25, 2009. The Governor said that the Government of Bali will not impose any policy, including *Rayonisasi* that is counter-productive to farmers. He asked the Director of the Estate Crops Service to abandon the policy. From that date on, farmers were free to sell their cocoa to whomever and wherever they like. The head of the Bali Estate Crops Service promised that no regulation would be imposed that would create a restrictive market segmentation policy, which would be against farmers' best interests.

Pheromone Trap

AMARKATA was also able convince the Tabanan Regency Government to provide three solar dryers for three cocoa farmer's groups worth Rp 84 million ($9,000) through the Office of Forestry and Estate Crops Services to resolve quality problems faced by farmers. AMARKATA lobbied the Office of Forestry and Estate Crops in July 2008 to introduce funding for pheromone traps. The proposal was approved by the Bupati who immediately provided 200 pheromone traps worth Rp 12 million ($1,263) that were distributed to participating farmer's groups. In addition, the construction on additional solar dryers was supported by the head of the Tabanan Estate Crops services.

Initial meeting of the Alliance in North Luwu attended by various cocoa stakeholders

Establishing Three New RACAs in Sulawesi

From April through June 2010, AMARTA helped establish three new RACAs in Sulawesi: ASTAKWA, SIKAP MANDAR, and ALMAKOTA. Critical goals for all three organizations

included: conducting an assessment of the cocoa export tax policy- which has adversely impacted cocoa farmers throughout Indonesia- to be completed by the Trade and Industry Agency and parliament representatives, combat the high incidence of disease afflicting cocoa plants, provide superior clones for rehabilitating old trees used by farmers, create a local movement to encourage cocoa farming, leverage funding support from the banking sector, and establish a specific export port for cocoa. As a result of this initiative, the Alliances were all officially created and registered, and a formal appeal to the government requesting the repeal of the export tax was finalized and sent to the Central Government. Numerous training and advocacy activities occurred after the official inauguration ceremony, resulting in greater advocacy throughout Sulawesi.

West Java Agribusiness Action Group Alliance Helps Secure over One Billion Rupiah from Donors to Develop Horticulture Agribusiness

AMARTA supported the establishment of the Value Chain Center (VCC) under the Padjajaran University in Bandung West Java, which was tasked with networking, conducting policy and competitiveness analyses, maintaining a database of organizations, and most importantly, acting as a service provider for agribusiness companies. AMARTA conducted a dialogue with 20 exporters in the West Java and Jakarta areas. As a result, participants agreed to establish the Indonesian Fruits and Vegetables Exporters Association, which subsequently developed a five-year work plan to increase exports and the overall quality of fruits and vegetables in Indonesia.

The Value Chain Center (VCC) ultimately created a network of approximately 500 vegetable and fruit farmers, and eight produce purchasing companies and exporters. The VCC has become a conduit for government assistance to small farmers and channeled well over Rp 1 billion ($111,000) in grants and loan funds to grower organizations and agribusiness entrepreneurs throughout West Java. In addition, it helped increase the value of fruits and vegetables exported by Rp 2.1 billion ($233,000). The VCC grew to become a strong business development service provider and champion of Indonesian vegetable and fruit farmers. The VCC has the funding and management capacity to carry on for years after the completion of the project. It is now truly a strong indigenous, university-based organization that not only helps the horticulture industry, but provides a venue for learning for hundreds of graduate students from all over Indonesia.

COCOA KEY ACTIVITIES

To improve knowledge, skills, and in an effort to change cocoa farmer's attitude in implementing good agriculture pratices and post-harvest handling, AMARTA conducted training cycles through farmer field schools known as basic training, follow up training, and strengthening farmer groups through garden evaluations.

Cocoa Basic Training

The AMARTA Sulawesi Cocoa Alliance (ASKA) and Bali Cocoa Alliance (SKA) cocoa basic training program in Sulawesi and Bali trained 28,100[1] farmers from 1,126 farmer groups (FGs). In South Sulawesi trainings were held throughout the Mamuju, Polman, Pinrang, North Luwu, East Luwu, and North Kolaka Districts. Each field trainer supervised 10 farmer groups (FGs).

[1] Number of farmer trained was 28,100 in both Sulawesi and Bali (if we calculate attendance of farmers from different training periods the number farmers trained will be 55,750 participants . Furthermore, another 46,000 were trained by the GERNAS program (using AMARTA materials) and 27,875 assuming that one out of every two for every ASKA/SKA trainees provide training to their own community, so total participant was received benefit from AMARTA cocoa program is 129,625

The 28,100 farmers participated in training sessions including: garden evaluation, prunning and sanitation, fertilizing, clone selection and grafting, pest and disease control, nursery development, harvest and post-harvest handling, and defining cocoa quality. The goal of basic training was to improve knowledge to farmers regarding good agriculture practices (GAP) and post-harvest handling.

Success Story: ASKA Training Improves Farmer's Income

Mrs. Welah, a 32 year old member of Gender Farmer's Group, has been working as a cocoa farmer with her husband for the last ten years. She lives in Latawaro Village, Southeast Sulawesi. Mrs. Welah tends two hectares of cocoa orchard divided into two different locations in the mountainous area. In the last two years, productivity of her orchard has been decreasing, due to pests and diseases and inappropriate post-harvest handling. The results changed in the middle of 2008, when Mrs. Welah participated in the AMARTA Sulawesi Cocoa Alliance (ASKA) training. She actively participated in the training and immediately practiced the knowledge that she acquired on her 2,400 trees. The results were superb; in 2008 she was able to increase her orchard productivity from 900 kg to 1,200 kg (33%). Mrs. Welah also experienced improvements in marketing her crops, which significantly increased her income. Since participating in the training, Mrs. Welah only sells her quality cocoa beans directly to exporter PT Olam Indonesia, and she receives a much higher price than selling to local traders who previously bought her beans for Rp 18,000 per kg. PT Olam Indonesia now buys them for Rp 20,000 per kg plus a premium of Rp 150 – Rp 200 per kg for export standard beans. The difference translates into increased income from Rp 16,200,000 to more than Rp 24,000,000 (50%).

ASKA Garden Evaluation, Rehabilitation, and Replanting Training in Mamuju

The decline in productivity linked with Vascular Streak Dieback (VSD) *Oncobasidium theobromae*, trunk kanker, and black pod (*Phytophthora palmivora*) has been severe in some locations with production declines dropping to 200 kg per hectare per year. The AMARTA team identified and conveyed the extent of the issue to key stakeholders in April 2008, particularly ASKINDO, who upon consultation and confirmation with its industry members, began to lobby for government support. The Indonesian Government has responded to this issue by declaring a $137 million, three year rehabilitation and replanting program (Rp 1.3 trillion).

TABLE 1: NUMBER OF SMALLHOLDERS AND AREA OF COCOA FARMERS PARTICIPATING IN THE ASKA/SKA PROGRAM

Table 1

Province	No. of ASKA/SKA farmers	ASKA/SKA farmers cocoa area (ha) 2007-2009	ASKA/SKA area (ha) during AMARTA extension
Southeast Sulawesi	9,750	15,573	1,566
South Sulawesi	6,500	6,271	2,157
West Sulawesi	8,350	7,612	1,904
Bali	3,500	2,095	1,217
Total	**28,100**	**31,551**	**6,844**

Farmer Field Day in North Luwu, North Kolaka, Polman, Tabanan and Jembrana

Farmer Field Days are events where farmers meet, learn, and share experiences with other farmers at AMARTA demonstration plots. Visiting successful gardens that have applied new cultivation techniques allow farmers first-hand exposure to their peers who have increased productivity and quality. AMARTA conducted six Farmer Field Days in North Luwu, North Kolaka, Polman, and Bali in 2010. As a result of this activity, farmers have increased their skills and knowledge relating to intensification, replanting, and rehabilitation, and were motivated by other farmer's successes in pre-harvest methods and post-harvest handling. In total, 657 farmers participated in these events.

Discussions between farmers and the demonstration plot owner

Participants observe some excellent local clones exhibited by farmer groups

Cocoa Model Garden Demonstration Plots

Demonstration plot gardens also provide farmers with convenient access to learn by seeing a model garden nearby their gardens. The plots are located in strategic locations close to the training sites for access by all training participants. These model gardens are managed by field trainer coordinators and illustrate good practices and the development of technological research and studies. AMARTA established six demonstration plots in Sulawesi and two in Bali. Approximately 525 farmers visited the sites in Sulawesi, while 122 farmers saw these models in Bali. In addition, other cocoa stakeholders visited the sites including: NGOs, government extension agents, officials from the Estate Crops Department, and cocoa alliances.

Demonstration plot garden in Batualang Village, Wotu District, Polman

Plot intensification at the demonstration plot in Cendana Hijau Village, North Luwu

Collaboration with ICCRI to Conduct Clone Trials and Observe Superior Local Clones

During 2010, in an effort to improve the overall quality of cocoa trees and prepare farmers for the future, significant clone trials were conducted with the Indonesian Cocoa and Coffee Research Institute (ICCRI), Jember District, East Java on testing six cocoa clones (ICCRI 03, ICCRI 04, SCA 6, Sulawesi 01, Sulawesi 02, ICCRI 05). The collaboration aims to provide better planting materials and serves as the basis for wider distribution to farmers in Sulawesi and Bali. The clone trials are also intended to produce good planting materials with high productivity that is resistant to pests and diseases.

According to Dr. Agung W. Susilo of ICCRI, when he conducted monitoring in October 2010, local clones (Sulawesi 01 and Sulawesi 02) seemed to show better growth than the original ICCRI local clones and had strong adaptability. In the selection of cocoa clones for future development ICCRI will use the results to evaluate VSD resistance.

A seven months old local clone after grafting

Dr Agung (from ICCRI) visiting an AMARTA demonstration plot

Cocoa Training Materials developed

To support training efforts, AMARTA develoved a number of materials like cocoa films, posters, and fact sheets, all with the goal of helping farmers understand specific topics and techniques. In total, 24,692 video compact discs (VCDs)- with three series of trainings and 1,277 cocoa posters

were distributed to farmers and cocoa stakeholders, Approximately 1,776 farmer groups, or over 46,000 farmers, have benefited from the materials through the government's national cocoa program, GERNAS.

New Cocoa Practices and Technology Introduced: Solar Dryer Development

In an effort to help farmers dry cocoa and improve quality and sanitation, 614 solar dryers were provided by AMARTA to participating farmer's groups. The new technology received positive acclaim from farmers and government officials who replicated the successful pilot initiative using their own resources and funding. Thirty solar dryers were built by the Estate Crops Department in both North Luwu District, Sulawesi and in Bali. Farmers also replicated the technology by building 90 units using their own resources. AMARTA introduced a simple solution for farmers to achieve better results. The overall cocoa quality is greatly improved and the post-harvest loss from animals and vehicles running over beans has been dramatically reduced.

Solar dryer with rack model that allows for double the capacity in Polman

Roll up top model in Luwu

Nursery Development

AMARTA introduced training in nursery development to improve knowledge and skills for farmer groups to empower them to create their own improved planting materials. The training included establishing a nursery, selecting beans, providing maintenance, and grafting (top, side, and budding techniques). Initially, farmers replanted cocoa due to unproductive trees that were too old, however many farmers used the same clonal materials that were low quality and the new planting materials were simply a repetition of the existing poor quality trees. This obstacle can be overcome by combining generative and vegetative techniques through grafting in nurseries to produce better planting materials. AMARTA assisted 3,762 farmers in establishing nurseries with 1,403,962 new seeds.

Additional Income Provided from Cocoa Nursery Gardens

Cocoa farmers in Jabal Kubis Village, North Kolaka embraced nursery gardens as a way to earn more income. The Padaelo Farmer Group's Mr. Andi Syamsudin, a 58 year old farmer, was receptive to receiving nursery garden assistance. His garden produces cocoa and planting grafts for sale to other farmers. The seed prices depend on the age of the seeds and varieties, and cost from Rp 6,000 – Rp 9,000. After successfully piloting the activity, the Padaelo Farmer's Group received orders from the Estate Crops Agency of North Kolaka District.

Before The structure construction was modest, only using coconut leaves to cover the seeds. The size of polybags was small- only 17x20 cm and the availability of clone varieties included only S1 and S2. There were 2,500 seeds in each line of the nursery totaling 15,000 seeds that only used the soil without seedlings and a conventional treatment without applying organic fertilization.

After The greenhouse construction consisting of wood and a UV plastic roof that can cover all of the seeds significantly improved production. The size of polybags is now 20x24 cm and there are more clone varieties than before including: S1, S2, M01, M04, and Panther. There are now 10,500 seeds in each row of the nursery garden totaling 250,000. The nursery uses soil combined with sand and organic fertilizer. The garden treatment uses liquid fertilizer to control phytoptora and VSD, and natural materials like garlic and turmeric spray.

"We hope that the nursery garden that provided us additional income can be developed further in the future. Thank you USAID/AMARTA for all of the technical guidance, inspiration, and motivation. We are very proud as we have succeeded beyond our expectations and achieved excellent results from our nursery garden."

— Mr. Andi Syamsudin from the Padaelo Farmer's Group

Collectively Farmers can Earn More

Situju Farmer's Group is located in Baru Village, North Luwu, South Sulawesi with 25 members covering 40 ha of cocoa fields, and is chaired by Mr. Matthew Tato. By working together and conducting joint marketing to sell their beans to PT Olam the group gained excess profit of around Rp 1,500-Rp 2,000 per kg compared to what they would have received from local traders. Mr. Tato stated, *"Today we sold 420 kg for Rp 21,700 per kg earning Rp 8.7 million even after discounts for moisture content, whereas if we had the same quantity sold to local traders the price would have been reduced by 15%, so for the 420kg we would have only received Rp 7.8 million. We will use the extra income to help other members of our farmer group who have not been able to sell together with us because they were tied to a loan from local traders and cannot sell their cocoa beans except to these local traders who provided the loans, despite the low prices paid. Hopefully, all of our members can pay off their debt by taking advantage of premium prices from PT Olam and other exporters."*

Situju members negotiating with PT Olam

Training Development for Government Trainers in South Sulawesi

On August 15th, 2010, AMARTA met with the Center for Agriculture Extension (BBPP) of Batangkaluku, South Sulawesi, and developed a module for harvest and post-harvest technology traning. The initiative aimed to seek input from related stakeholders and improve the curricullum for a comprehensive training program. AMARTA generated revisions on training curriculum then proceeded to deliver the updated training topics on September 1st at at the BBPP office in South Sulawesi. As a result, AMARTA has updated five modules on Harvesting and Post- Harvest Handling and trained 35 field extension agents in Sulawesi. The improved training modules will be used by district extension service agents to deliver training to cocoa farmers in Sulawesi.

AMARTA staff conducted training to extension services

COFFEE KEY ACTIVITIES

Coffee Training of Trainers Increases Farmers' Knowledge

AMARTA conducted a training of trainers (TOT) for extension agents in Simalungun and Pak Pak Bharat on March 30th and 31st, 2010. Over 60 extension agents participated, and these trainers then took a leading role in subsequent activities to disseminate knowledge to farmers. This event resulted in selecting five master trainers who confidently delivered additional coffee trainings to AMARTA farmers. The government also appreciated the benefits of the program and responded by establishing their own coffee training center in Pak Pak Bharat. On November 23rd, 2010 the North Sumatera Provincial Government requested two trainings that AMARTA delivered for their staff and farmer beneficiaries.

Coffee Productivity Training

To strengthen coffee value chains, increase productivity and improve quality, AMARTA conducted coffee productivity trainings in collaboration with the previously trained government extension agents in Pak Pak Bharat and Simalungun District. The event covered GAP, seed selection, coffee nurseries, planting, maintenance, pruning, disease identification, and improving post-harvest handling. Farmers noted that AMARTA's coffee training is the first and only training they received and were grateful for the easy to understand training manuals. In total 5,646 participants increased their knowledge through the training. These farmers cultivate 2,577 hectares of land. The results are noticeable as practices have improved, most visibly where farmers have begun to prune their coffee 30 cm from the ground and on top of the trees to avoid excessively high stems and leaves. There is now tree regeneration where old trees were stumped to sustain new shoots as new plants. There is also an approximately 60% decrease- from Rp2,500 to Rp,1000 per tree- cost savings in fertilizing based on lowering the quantity and increasing the frequency. Pruning is also an essential practice for sustainable production and higher quality, and was underutilized before AMARTA began working with farmers. In response, AMARTA promoted coffee pruning practices in conjunction with distributing hand tools. Over 2,500 farmers have received pruning shears that are expected to improved quality and serve as a model for other farmers to follow. This specific program has now resulted in top pruning to avoid trees

growing too tall and farmers trimming lower branches to avoid direct contact of the tree branches with the ground that can transmit pests or diseases.

Success Story: AMARTA Coffee Training in Pak Pak Bharat Improves Livelihoods

The lack of information on improving coffee production has caused low productivity, which has been exacerbated by pest and disease infestation and poor quality trees coming from deficient seeds. Mr. Luther Manik, a farmer with a 0.8 ha coffee farm was one of the participants in AMARTA's trainings held in Kuta Jungak in July 2010. He was dismayed because about 80% of his trees were attacked by pests and diseases, causing the leaves to dry, which produces rotten cherries. He planned to replant his land with other crops due to low productivity. In the past, Mr. Manik used 75 kg of fertilizer; 50 kg of urea that cost Rp 2,000 per kg and 25kg of Sp that cost Rp 2,500 per kg. The total cost of fertilizing his garden was Rp162,500, while his maximum harvest was 10 liters of beans.

Mr. Luther Manik in front of his coffee garden

After joining AMARTA's training, he changed fertilizer application to follow AMARTA's coffee manual recommendations. He now only uses 35 kg for his 0.8 ha, of which 25 kg is organic. His new total cost is only Rp 82,500, 50% less than his previous total, and more importantly he is seeing tremendous quality improvements in his productivity. All of his trees have recovered and are healthy and producing higher quality cherries. His ten liter harvest of parchment coffee from his 400 productive- out of 800- trees has increased 600% as he recently harvested 70 liters. Mr. Manik appreciates the benefits from AMARTA's training and is now able to produce more at less cost, including seed selection, pruning, and fertilizing. He plans to expand his garden and plant additional coffee trees, he stated, "*USAID/AMARTA has changed my life and given me back my pride as a farmer. I am now happy to work in my productive land and look forward to planting new trees.*"

Farmers Find New Business in Helipng Others Improve Coffee Yields

Hypotan was introduced at a training session advocating environmentally friendly technology. Mr. Darmansan Haloho, one of the farmers from Bagot Raja, Simalungun, adopted the technology and received three samples from AMARTA to install on his one hectare coffee farm. During several observations, Mr. Haloho witnessed a number of coffee cherry borers caught in the traps. As a result of the positive tests he purchased 20 sachets from an extension agent in Purba Sub-district supplied by ICCRI, and then sold the traps to coffee farmers in the area. In addition, he prepared 20 traps using 20 plastic Aqua bottles for his one hectare coffee farm. It improved the quality of beans during harvest. Mr. Amri Purba, one of the extension agents AMARTA has mentored to deliver coffee training has completed three separate purchases of hypotan attractant with ICCRI. In total, by the end of the program he purchased 1,200 sachets at Rp 7,200 per sachet or a total of Rp 8,640,000. Based on his successful trials he established a

budding business and distributed the attractant to more than 150 farmers. As a result of this initiative farmers in North Sumatera now have a low-cost environmentally friendly way to combat pests and diseases and improve production.

Shade Grown Nursery Development

One important practice lacking in North Sumatera coffee farms is providing a canopy of shade above the coffee trees. As a result, coffee typically receives too much sun and produces an overabundance of cherries, resulting in trees aging prematurely and decreasing production. Trees aging with dried leaves are common in Simalungun, which is due to the lack of shade. This ultimately requires replanting after only 10 years, compared to areas in Aceh where trees remain productive for 30 years.

In an effort to mitigate this problem, AMARTA introduced shading trees using the best variety seeds imported from ICCRI, and developed shading tree nurseries in Simalungun. Over 30,000 planting materials in polybags were distributed to 12 villages. The long-term goal of this activity was to strengthen and create more sustainable production by improving the quality of trees and reducing labor required for weeding. The effort has been enhanced by excellent collaboration with local government agricultural extension officers who continue to maintain the nurseries and distribute planting material to farmers.

Opening Ceremony of the Pak Pak Bharat Coffee Nursery

In coordination with farmer's groups, AMARTA built two coffee nurseries in Pak Pak Bharat to address the limited supply of good planting materials in the region. Prior to the arrival of the nurseries, most farmers were only able to obtain poor quality seeds and planting material. Construction of these nurseries was aimed at supplying local farmers as well as other villages in Pak Pak Bharat. On September 8th, 2010 Mr. Remigo Yolanda Berutu, the Bupati of Pak Pak Bharat District officially inaugurated the Dusun Pangkalan location by planting the first seeds. The facility was a collaborative program between AMARTA and the villagers, who made significant contributions in developing the nursery. AMARTA also established a quality-control system to ensure good practices would be upheld and so that the nursery would produce and distribute only the highest quality seedling material. The capacity of the site is 100,000 poly bag seedlings, and thus far 30,000 have been sold at Rp 2,000 per poly bag. The nurseries provided a sustainable small business opportunity for local farmer's groups.

Distributing Coffee Manuals and Posters

In March 2010, when AMARTA began implementing the coffee training program in Simalungun and Pak Pak Bharat, substantial training materials were provided to farmers, including coffee manuals and posters. In total these resource materials were disseminated to nearly 5,000 coffee farmers, extension agents, government agriculture offices, NGOs, businesses, and coffee traders.

Specialty Coffee Association of Indonesia (SCAI) Key Activities

Support to SCAI for improving the Quality of Indonesia's Arabica Coffee

The improvement of Indonesia's Arabica coffee quality was achieved by establishing and promoting the Q-Grading system, as well as the introduction of World Barista standards. SCAI, together with the Coffee Quality Institute (CQI) in the United States, introduced a new certification system used in many countries where highly trained coffee tasters called "Q-Graders" evaluate the quality of Arabica coffee. This system forms an understanding and

uniform criteria to evaluate the quality of specialty coffee. This certification is voluntary and can help exporters market their coffee by providing buyers with objective information on green grading and flavor profiles. SCAI has helped certify 44 Q-Graders during two training sessions. Participants had to pass 22 different taste tests and one written test. The first training in Jakarta on January 2009 saw 24 Q-Graders accepted and the second one in Medan added 20 Q-Graders.

In 2010, Q-Graders supported research to improve the quality of Arabica coffee from Eastern Indonesia prepared by the Australian Centre for International Agricultural Research (ACIAR) and ICCRI from Toraja, Enrekang, and Flores.

The 22 cupping judges along with international buyers

The First Indonesia Specialty Coffee Auction

A further effort to improve the quality of Arabica Coffee using the Q-Grading system occurred at the First Indonesian Specialty Coffee Auction. From October 9th through 10th, 2010 in Bali, SCAI organized the event to increase the quality and quantity of Arabica coffee in four ways: 1) introducing international and domestic buyers to a wide range of the best Indonesian coffees; 2) demonstrating to farmers and exporters that premium prices can be achieved through quality and traceability; 3) calibrating Indonesian Q-Graders to international standards; and 4) generating favorable publicity for Indonesian specialty coffee, both internationally and domestically. A total of 59 auction lot samples were received from exporters and farmers from across Indonesia and each lot was graded by Q-cuppers, with the highest quality coffees eventually cupped by 22 judges. Fifteen out of 22 lots in the auction were sold to buyers from the United States, Australia, Taiwan, Thailand, and Indonesia. The highest scoring lot of Arabica coffee was produced in Aceh Gayo from the Atu Lintang Regency and 600 kg of green beans sold for $10.50 per kg by Tony's Coffee in Seattle. Comparing the price to the New York commodity index on Friday, October 8th that closed at $4.04 per kg, this is a record price for green Arabica coffee from Indonesia. In total, the auction sold 7,385 kg of coffee valued at $42,696 or an average of $5.80 per kg, 44% above the New York commodity price.

SCAI Invited to Yemen to Participate in International Coffee Conference

The Yemen Small and Micro Enterprise Promotion Service (SMEPS) acknowledged SCAI expertise on improving the quality of Arabica Coffee, and invited Muhammad Rasid, a farmer member from Aceh, I Made Rida Atmaja, a farmer member from Bali, and Resianri Triane, SCAI Coordinator, to the 2nd International Arabica Natural Coffee Event in Sana'a, Yemen on December 13th and 14th, 2010. SCAI was invited to the conference with all costs being paid by the organizers. Ms. Triane, who is a Q-Grader, also served on an international cupping panel that graded all of the participating coffees. An Indonesian coffee sample from Papua finished in fourth place overall, while many visitors stopped by SCAI's booth to find out more information.

Establishing Geographical Indications to Protect the Local Value of Coffee

Geographic Indications (GIs) are an intellectual property right that protects farmers and consumers through certifying the origin of specific agriculture products. Supported by AMARTA, SCAI successfully mapped seven GI areas that can be used to fulfill one of the requirements of final certification. This mapping process was completed with the stakeholders of the industry from each area. Workshops were held in Jember, Ruteng, Flores, Siborong, Sidikilang, Medan, Takengon, and Toraja.

GI maps showing unique regions in the Lake Toba area of North Sumatera

Funded by AMARTA, SCAI and the French Agricultural Research Center for International Development (CIRAD), SCAI worked to develop scientific methods of identifying coffee from different origins. During the 2008-2009 season, 32 type samples of Arabica coffee were collected in the origins of Sidikilang, Lintong and Gayo. Importantly, CIRAD had developed a method of analyzing coffee samples using infrared light by looking at a range of chemicals, the method detects extremely small differences between samples. The results showed that it is possible to scientifically distinguish between Arabica coffees from different origins in Sumatera. In the future, these methods could be used to market Indonesian coffee and enforce GIs.

In recognition of its role in the development of GIs, SCAI was asked to present its activities at a meeting organized by the Directorate General for Intellectual Property Rights and the World Intellectual Property Organization (WIPO), which took place in Bali from December 10th to 13th, 2009. SCAI also partnered with the Department of Agriculture and the Directorate General of Processing and Marketing on May 24th, 2010 and June 17th, 2010 focusing on the needs from the GI protection community from Bali Kintamani and Aceh Gayo to develop their brand names. SCAI also represented the Gayo Community on a national TV discussion on GIs in July 2010. AMARTA and SCAI were also involved in supporting the Toraja community to prepare the "Book of Requirements" - the first step for submitting the GI Registration to the GOI.

Expanded Promotion of Specialty Coffee in the Domestic and Global Marketplace

From its inception in early 2009 through January 2011, SCAI's website has had more than 80,000 unique visitors and received 845,409 hits (an average of 33,816 hits per month) from all over the world. In 2010, the SCAI website received more than 4,000 visitors per month, 42% who were Indonesian, 27% from the USA, 12% from China, and 18% from various other countries including Germany, Russia, Romania, England, Australia and Malaysia.

International and Domestic Events

Between 2008 and 2010, SCAI staff and members attended 13 international events and seven domestic events that resulted in 5-10% of visitors converting into sales leads that were followed up by members. Every year the Specialty Coffee Association of America (SCAA) holds the

biggest coffee trade show in the world. This event brings together every part of the coffee industry, including: The US Barista Championship, Symposium, Cup of The Year, and independent courses and training. SCAI attended this event three years in a row. On average, the SCAI booth was visited by 200 visitors who requested more information about Indonesian coffee and provided high quality sales leads. Besides the exposition, SCAI members also entered coffees in the Cup of The Year contest. In 2010, total contracts closed during the event totaled at least 12 containers or approximately 216 tons of coffee worth approximately $800,000.

The other international events attended by SCAI included the Specialty Coffee Association of Japan, as well as partnering with the Indonesian Department of Tourism and Culture, occupying the Indonesian Pavilion Coffee Corners in Brunei, Berlin, London, Singapore, Malaysia and Korea.

Facilitating Origin Tours

An excellent way to promote Indonesian coffee is through origin tours. SCAI arranged origin tours to Toba, Takengon, Aceh and Toraja for United States and European buyers in 2008, and a Sumatera and Flores tour for both SCAI members and international buyers from Russia and the United States in 2010. The buyers were interested in working with Indonesian farmers and exporters to improve the product quality. In 2008, a reception to introduce the buyers to all of SCAI's members was held at the Sultan Hotel. As a result of facilitating these trips in 2008, the buyers purchased $609,000 worth of Indonesian coffee.

SCAI leads an origin tour in Toba

WEST JAVA HIGH VALUE HORTICULTURE KEY ACTIVITIES

Broccoli

AMARTA, in collaboration with the USAID Support for Food Securities Activities (SFSA), set up broccoli demonstration plots in Desa Cikole, Cikidang, and at the Tani Tauhid Farmer's Group (FG) in Daarut Tauhid to demonstrate best broccoli farming techniques, including drip irrigation, crop protection, post-harvest handling and modern and export market access. These initiatives involved 78 members of the FG in Lembang plus an additional 60 growers in Pengalengan, West Java. AMARTA introduced better nursery systems, and replacing seed-bed based nurseries with tray based nurseries to reduce the risk of club root disease resulting in reduction of seedling production cost, drastic reduction in losses of plants transferred to the fields, and a significant reduction in club root infestation in the transplants. The clean nursery system is being adapted by more than 200 broccoli and tomatoes growers in Garut and Lembang.

Flusulfamide treatment has been applied to the plants on the right

AMARTA was also able to work with local growers at the DT Eco Pesantren broccoli pack house to supply high-end markets with topped ice broccoli, fetching 33% more in price from Rp 15,000- Rp 20,000 at supermarkets in Bandung and Jogjakarta. Currently over 120 farmers have increasingly adapted production of broccoli on 60 hectares by more than 100% conservatively, from 6 to 12 tons per day, at an increase of 10% in price. AMARTA expects that broccoli growers' incomes are rising by well over 50%, resulting in the total number of broccoli producers in West Java growing rapidly.

Tomatoes

AMARTA, working with SFSA, Zwaan Seed Company, Tani Horti Seed Company, and PT. Daya Irrigation Company introduced interventions that address the key constraints in specialty tomato production, particularly the beefsteak variety. AMARTA developed systems for erecting inexpensive bamboo greenhouse structures without screens at a low price of only Rp17,000 per m^2. The new technology allows much better light penetration properties than traditional bamboo greenhouses. In addition, a ToT of 15 farmers was carried out in greenhouse construction and grafting tomato plants onto disease resistant root stock, construction of underground water tanks for water collection from houses and greenhouses for growers who do not have access to clean water, and production practices that guarantee the maximum marketable tomatoes. AMARTA's partner, SFSA, provided recommendations on disease and pest control. The farmer trainers have returned to their production areas, generally around Garut, and are transferring knowledge to other growers in their farmer groups.

Construction training of rain catchment tanks

AMARTA networked and partnered with buyers that supply high end supermarkets to produce and market tomatoes that receive a premium price in Jakarta and Singapore. PT Momenta was instrumental in providing support to growers, supplying grafted tomato plants and technical assistance to help farmers produce higher grades of tomatoes, and paying a minimum of Rp 5,000 per kg for beefsteak tomatoes. In June 2010, training on production techniques was held at Desa Sukahurip, Cigedug. During this event, PT. Momenta proposed a contract grower scheme to the farmer group and committed to continuing to supply 5,000 grafting transplants per month. AMARTA introduced technology that resulted in growers producing tomatoes year round with far less fluctuation in production yields between seasons. The demonstration plot had harvested and sold a total of 1,446 kg at the end of 2010. These tomatoes sold for Rp 5,000 per kg, twice the value of the normal semi-roma field grown tomatoes, resulting in sales amounting to Rp 7,230,000 ($800).

Healthy tomatoes grown by AMARTA farmers in West Java

Over 600,000 tons of tomatoes are sold in Indonesia every year, with 30% of the production coming from West Java. This makes tomatoes one of the most valuable crops to small growers in

West Java. When AMARTA began tomato activities, project employees estimated that if these growers were to double their yields using the AMARTA production system, even to equal Thailand's average yields per ha of 20 tons, the total value for small farmers would be in excess of $72 million, not taking into account that the improved varieties will fetch much higher prices.

New Green Bean Varieties Introduced

Green beans are becoming a significant export commodity from West Java to Singapore and Malaysia. Indonesia is currently exporting approximately four metric tons of green beans per day, with more than half the volume from West Java. AMARTA aimed to respond to an increase in demand for green bean from buyers in Singapore and Malaysia, which was for more than could be supplied from West Java.

AMARTA designed a system of cultivation that translates to very large savings for vegetable growers. In fields where light plowing and bedding is required in preparation for planting, the average cost of preparing fields is about Rp 2.6 million per hectare, (assuming 15 people working for five days at Rp 35,000 per day). Many times during the year it is not possible to find people that are willing to hoe land at that price. The total cost of cultivating with a rotary hoe on the same land is Rp 910,000. The major advantage, however, is that setting up rows on 800 mm spacing using the tiller allows growers to use the Hex Rotar 700 cultivator attachment to plow out the crop and save well over 750 hours of manual labor in weeding per ha per crop.

In August of 2010 AMARTA partnered with PT ALAMANDA, IVEGRI, and the Department of Agriculture West Java to import Kenyan French Green Bean seeds. PT ALAMANDA imported the bean seed with support from the West Java Department of Agriculture and plant quarantine office. Seeds were provided to IVEGRI for testing and propagation of the variety and subsequent distribution to growers. This is the premier green bean variety sold in Singapore and Malaysia and will soon be produced and exported by Indonesian growers that AMARTA has supported.

Farmers managing their Kenyan Green Bean plot

On December 2nd AMARTA set up and conducted training on producing, harvesting, and marketing Kenyan French Beans. The Managing Director of PT Alamanda came to Cibodas for the training to talk to his collectors and key growers. He made the commitment to the growers to pay at least 12% more for young Kenyan French Beans that AMARTA introduced. Another commitment that PT Alamanda made to growers and collectors in the AMARTA green bean meeting was to invest in pre-cooling operations closer to the farm gate.

The green bean program was very successful and will result in a long term increase in market share of Indonesian green beans in international markets. It is likely that during 2011, Indonesia, using the improved variety and more profitable production practices introduced by AMARTA, will double exports of green bean achieving an increase of $500,000 a year in West Java grower

income, creating at least 60 new jobs in small packing operations and the transportation sector, providing higher income for an expected 400 new pickers.

Berastagi Carrots Introduced in West Java

When AMARTA first began implementing activities the quality of local carrots planted by farmers in Garut was no longer able to compete with imported carrots. AMARTA introduced new Berastagi carrots from North Sumatera to farmers in Girijaya Village, Cikajang, Garut. The reason for selecting the Berastagi variety was the similarity of characteristics with imported carrots in size, color, and taste. On August 12th, 2010 one of AMARTA's carrot demonstration plots on 400 m^2 of land produced 839 kg of carrots. In total, 20% of the carrots met export or super market standards, 60% were sold to local markets, and the remaining 20% were wet market grade. AMARTA partner, Bimandiri bought the highest grade carrots at a price of Rp 3,500 per kg, almost 100% higher than the price of local carrots that sell for Rp 1,800 per kg. If only 50% of the crop reaches export standards, which AMARTA believes is easily attainable, farmers will receive increased revenue of 60%-70% compared to local carrot prices currently being paid. In total, carrot growers are collectively working 42 hectares, which will increase revenue by about $150,000 for the group of AMARTA- assisted farmers. Market demand for Berastagi carrots was found to be extremely high. As of 2010, the market for locally produced carrots was approximately 350,000 metric tons in total per year. The Berastagi variety will likely take over the market within three years.

New Berastagi carrots introduced in West Java

AMARTA Introduces the MD-2 Pineapple Variety

AMARTA partner PT Mandiri Jaya Flora (MJ Flora), a floriculture and agriculture producer firm that supplies export and domestic markets, developed techniques to transplant the MD-2 variety of pineapple through tissue cultures at their sophisticated tissue culture laboratory. AMARTA and MJ Flora coordinated with the West Java Provincial Office of Agriculture to develop a pineapple plant nursery. In preparation for AMARTA's distribution of 20,000 MD-2 pineapple seedlings, beneficiaries were required to complete farmer training on propagation and production by February 2011. A total of 15 pineapple production technicians were trained and are poised to expand the pineapple industry in Indonesia. AMARTA supported the initiative because this particular variety is sweeter than most pineapples and has an attractive yellow skin color preferred by consumers. It has low active water content and skin and a very unusual balance of sugar and acid that extends the shelf life of the fruit making it an excellent choice for shipment and sale in export markets. The total number of stems that can be planted on one hectare of land for nursery production is about 99,000. One stem can produce six new shoots per year.

MD-2 pineapple is an expensive variety in the local supermarkets, selling for more than twice the

AMARTA staff show MD2 planting techniques

Demonstration Plot of Pineapple MD-2 from tissue culture production in West Java

price of local varieties. Indonesia produces and trades approximately 2.2 million metric tons of pineapple per year. If MD-2 can attain even 10% of the existing market share, which is very likely, it will result in $220 million in additional income to growers and suppliers per year.

Red Ripe Strawberries

Indonesian-grown strawberries sold in supermarkets in 2008 had low yields and low prices for growers. Because of the poor quality of local berries, imported berries sold much faster than local varieties even at three times the price. As a result of the work completed by AMARTA, this situation has changed dramatically. As noted by Mr. Tristian the produce supervisor of Senayan area Food Hall Supermarkets, *"Two years ago local berries were so green and tasteless that no one would buy them in this store until the imported berries were sold out. Within two years the quality of locally grown strawberries has improved so much that the local berries can be placed side by side and now sells faster than imported strawberries. Total sales have also increased significantly over these last two years. People actually buy strawberries to take home and eat now."*

The growers that AMARTA and VCC LPPM-UNPAD started working with in early 2008 were in the process of completely abandoning production in favor of other crops; however as of 2010 the industry is back and supplying a growing market. "Red Ripe" quality picking has become the standard for strawberries going to supermarket. The first step towards improving the quality of local berries was to redesign post-harvest handling practices. Berries cannot be picked ripe and shipped unless they are chilled, and berries cannot be chilled unless there is a chiller. The Bandung Department of Agriculture provided a 28 m^3 chiller (approximately $11,000) that could be used for pre-cooling and storing strawberries. AMARTA consultants worked with the Ministry of Agriculture to provide specifications for the chiller.

PT Momenta developed a labeling and branding concept and printed labels and flats for the berries. AMARTA then introduced a complete "Red Ripe" harvesting and post harvesting system that resulted in locally grown strawberries being sold for the amazing price of Rp 60,000 per kilogram in high end supermarkets. Some of the supermarkets would not take the strawberries at first because they thought the they were altered with some kind of chemical to make them so shiny and sweet. The growers received an average of Rp 23,000 per kilogram for red ripe strawberies, while other growers were only receiving Rp 10,000 to 13,000. This amounted to a 100% increase in income with similar input costs for Rancabali strawberry growers. The ASGITA Farmer's group was selling approximately two tons of berries a month in the infancy stage of sales when AMARTA finished the intervention. The quality has apparently multiplied since that time based on produce buyers and supermarket buyers feedback. At least half of the 300 growers trained, covering about 30 hectares of production, have adapted the AMARTA red ripe standard, thereby doubling their income and providing import substitution.

Support From Local Governments and Universities

The strawberry program also received enthusiastic support from the Bandung Local Government, including the Regional Agricultural Service. Padjajaran University, using funding from the regency, has provided business training and cooperative management to growers. The Bandung local government also provided cold storage resources worth Rp 130 million, plus an additional Rp 120 million in material support, as well as Rp 50 million for the ASGITA institutional development training program. Through efforts in linking growers with buyers and supermarkets up the value chain forging business alliances between

Mr. Agus, one of ASGITA's Chairmen explains the "Red-Ripe" Strawberry program to the Governor of West Java

growers and businesses, AMARTA succeeded in effecting permanent change in the strawberry industry. Linkages with development partners like VCC LPPM-UNPAD and government institutions formed during the project are likely to help to ensure sustained assistance to growers after the project end date.

Screen House for Vegetable Nursery in Garut

To complement Bimandiri's expanded procurement from farmers in Garut, and in an effort to develop export grade horticulture, AMARTA provided the Cipelah Farmer's Group with a vegetable nursery screen house. The nursery operated by the farmer group produced transplants (seeds) in response to orders from Bimandiri. The operators of the screen house also received training from AMARTA in grafting tomatoes. Grafted tomatoes have the capability of doubling yields in greenhouses and field planting. This screen house is a working model for other entrepreneurs that want to enter the bedding plant business. As a result of this imitative three small businesses have begun supplying grafted tomato and other bedding plants to commercial growers.

The screen house at Cipelah Farmer's Group

Farm Management Training

The goal of farm management training is to change farmers' behavior from subsistence to commercial-oriented, including sound basic financial documentation. Very few farmers have activity records that show expenses and revenues from their efforts. During April – June 2010, 10 FGs were selected to participate; five in Garut, two in Bandung, and three in West Bandung. Trainings were conducted in two phases: The first phase was an introduction explaining the concept of farm record keeping, farm budgeting, and cash flow. The second was a tutorial on farm record application. A total of five tutorials, conducted every two to three weeks, totaling 50 tutorials, were delivered for 618 people, 425 (69%) male and 193 (31%) female. Confidential feedback forms from participants were extremely positive and the farmers understood the importance of keeping detailed and accurate financial records in order to understand cash flow, working capital, recording all activities to monitor performance, and preparing documents required by financial institutions to apply for loans. The second phase of training began in August 2010 through the implementation of farm management training, with new materials on marekting, bussiness mangement, and accesing financial services. The training was conducted for 107 people including 61 men and 46 women. To support the training, AMARTA has created a handbook that includes a number of important topics and examples that allow farmers to begin to

Farm management training for women in West Java

manage their farms like profesional bussinesses.

NORTH SUMATERA HIGH VALUE HORTICULTURE KEY ACTIVITIES

Citrus

Increased Productivity and Reduced Input Costs through Citrus GAP Training

There were significant difficulties related to citrus production during the program, including a drop in citrus prices due to high pest and disease attacks and high operational costs, which adversely impacted citrus production. AMARTA initially determined that promoting citrus GAP to improve farmers' knowledge and increase production would be extremely beneficial. Citrus cultivation training was conducted in four districts: Karo Highlands, Simalungun, Pak Pak Bharat, and Dairi. In total, 974 FG's, totaling 17,882 farmers consisting of 12,160 men (68%) and 5,722 (32%) women participated in training covering 10,424 hectares. In order to enhance farmers' skills, AMARTA conducted field schools directly in demonstration plots. Through direct exposure in the study gardens using basic materials, farmers more readily adapted successful practices in their own citrus fields. AMARTA determined that participants were able to reduce pesticide use by 50%, as well increase production by more than 100%, meaning lower expenses and significantly higher revenue.

Improving knowledge for leading farmers and government extension agents was the first step in establishing the program. A training of trainers (TOT) produced trainers equipped with knowledge to assist other farmers. In total, AMARTA conducted three ToTs in Karo, Simalungun and Pak Pak Bharat in 2009 and 2010. These events involved agriculture extension agents and lead farmers from each regency. Eventually, 60 agriculture extension agents and lead farmers were trained and expected to provide future trainings to farmers at the village level.

TOT Trainings in Simalungun

TOT Trainings in Pak Pak Bharat

"Thank you USAID-AMARTA, I'm free from debts and have a better life. I hope AMARTA can continue the citrus training program in Tanah Karo,"

—Mrs. Rossi Sembiring, Citrus farmer

Success Story: Citrus Rejuvenation Provides New Opportunities

Before Ardi Tarigan, a 29-year-old citrus farmer participated in AMARTA's training he was jobless and a self described reckless young man. Every day he

Ardi Tarigan's effort in rejuvenating his parent's citrus field provide a bright future

would spend time with his friends and did not accomplish much toward creating a better life for himself and his family. Although his parents owned a one-half hectare citrus field, it was damaged and not productive. AMARTA conducted on-going training directly in villages to assist citrus farmers in the Karo Highlands. Ardi joined several training sessions in his village, Ujung Bandar, Barus Jahe Sub-district, and the staff and facilitator motivated him to have the courage to rejuvenate his parent's citrus field so that he could be proud of himself and help his family by earning more money.

After following the recommended practices in his citrus field, Ardi began to see the results of imparting GAP, observed immediately by spending less money through minimizing the usage of pesticides and fertilizer.

Eventually, after two years of dedicated effort, he began harvesting citrus from the previously barren land. From zero production he transformed his trees to become a profitable source of income. With only around Rp 3 million of investment capital, he gained Rp 10 million in revenue, which he expects to increase as he expands his plot.

Citrus Demonstration Plots and Field School

AMARTA believed that demonstration plots would enable a deeper understanding for farmers after they attend citrus training. Thus, AMARTA supported citrus orchard owners who were energetic and eager to apply all of the new citrus knowledge and recommendations to achieve optimal results and improve yields and quality in their orchards. The impact from these model farms was tremendous, and the owners agreed to allow neighboring farmers to visit their gardens at any time to learn directly in the field how to improve their own gardens by applying AMARTA's recommendations.

AMARTA supported 20 citrus demonstration plots, including Karo (9 plots), Simalungun (5 plots) and Pak Pak Bharat (6 plots). Every month field school activities were conducted at each demonstration plot where farmers improved their understanding on a variety of topics such as: Application of foliar fertilizer, pest and disease control, pruning, insect traps for fruit miners, making compost from bacterial fermentation, and side grafting. All of the farmers who attended these field schools applied what they learned in their own citrus orchards.

A female farmer group attends training

Success Story: Discipline and Hard Work in Citrus Cultivation Results in Higher Profits

In 2007, Mr. Jufriend Kemit never dreamed of being able to sell his citrus at a premium price with regular buyers who appreciated the taste of his product. When he heard about the

AMARTA program, he joined citrus training out of curiosity, and proposed that his citrus field of 450 trees from 5- 8 years old should serve as the official study garden. His request was approved, and his one hectare garden in Mulawari Village was selected in 2008. Before working with AMARTA, his garden only produced about 20-25 kg of citrus per tree, while after implementing recommended practices, combating pests and diseases, and working diligently to improve the quality of his trees, within two years his production increased to 50-100 kg of citrus per tree, or 150% - 300%. He also learned to produce five stages of citrus that enabled him to harvest four times a year, whereas before he only harvested twice a year. By following GAP, Mr. Kemit produces higher quality citrus and received a premium price of about Rp 5,000 per kg.

Jufriend Kemit in front of his rejuvenated citrus field

Today, he can harvest four times a year with gross annual income of approximately Rp 500 million ($55,000), selling to regular buyers who come directly to his orchard, as well as selling to local markets in Pekan Baru, Jakarta, Batam, and Bandung.

Improved Farmers' Knowledge in Karo Highland in Berastagi

AMARTA assisted citrus farmers for four years in four regencies by providing technical assistance and establishing demonstration plots. To more effectively distribute knowledge gained by farmers, AMARTA also distributed VCDs, training manuals, posters, and booklets. In total, 5,000 VCDs, 5,000 manuals, and 3,000 booklets were distributed to extension agents and citrus farmers in the four regencies, often during formal ceremonies.

VCD, Books and leaflets

VCD delivered to representatives from FGs in Kabanjahe

Sustainability of Citrus Production, a Collaborative Program With Syngenta Foundation

Syngenta Foundation operates in agriculture throughout Indonesia. After seeing a number of challenges in Karo Regencies, it partnered with AMARTA to work together to help farmers utilize more effective techniques in pesticide application, specifically using the fogging method that can reduce input costs. AMARTA and Syngenta Foundation were able to accomplish three activities in three different locations:

1. Kabanjahe Study Garden, Training on Identification of Common Pests and Diseases
2. Tiga Panah Study Garden, Training on Pesticide Application Using Fogging
3. Simalungun study garden, Training on Horticulture Planting Methods

Bananas

Double Row Technology for Double Income Using Only Half the Ususal Land Area

Previously, the low productivity and high infection of diseases resulted in lower income for banana farmers in North Sumatera. Hampered by an inability to control *Fusarium* diseases, which attack almost all banana plantations, improving production of bananas in North Sumatera was challenging. However utilizing GAP and a new technology- double row planting- AMARTA achieved incredible results while improving the quality and quantity of bananas, and finding new markets to enter. AMARTA introduced a double-row planting system that significantly increased yields- effectively doubling banana production from 7,200 hands per ha to 15,000 hands per ha for one harvest season through implementing technology practices such as using clean planting materials, creating a good fertilizing system, proper pruning, and managing diseases. AMARTA completed intensive training for 11,901 banana farmers in Deli Serdang, Karo Highland, and Simalungun Districts, including 6,875 men (58%) and 5,026 women (42%), with 293 farmer's groups covering 9,156 hectares of land under improved technology.

Citrus fogging training and Citrus Field School

Banana training in demo plot

To improve post harvest handling, AMARTA constructed and utilized the packing house in Tiga Juhar. The Deli Serdang Agribusiness Cooperative delivered 30,000 hands of Barangan bananas to a local prison, 60,000 hands to the Medan local market, and 3,600 hands of the highest quality to PT Sewu Segar for hypermarkets in Jakarta every month. Total sales from these buyers were approximately $39,000 per month. (30,000 hands at Rp 5,000; 60,000 hands at Rp 3,000; and 3,600 at Rp 6,000)

Reaching High-end Markets through Public- Private Partnerships

PT. Sewu Segar Nusantara was a partner of AMARTA's in banana marketing. The company is one of the largest fruit distributors in Indonesia providing both a domestic supply and importing fresh fruit. By linking with this major partner, and utilizing their existing marketing channels, the banana farmers in North Sumatera and the Deli Serdang Cooperative managed to sell 3,960,000 hands (with the assumption production capacity was 1,320,000 hands per year) in Jakarta and Medan. Throughout the project, the total amount delivered to Jakarta through PT. Sewu Segar Nusantara was 886,996 hands, earning revenue of Rp 4,221,608,000 ($469,068). Farmers received significant price premiums per hand; previously they were paid Rp 3,000 - 4,000, while the new deal increased the price from Rp 4,000 - 6,000 per hand based on grading quality. The grading system is based on weight and visual quality with the highest quality grade requiring more than 1.7 kg per hand and having no visual defects.

Realizing the importance of using high quality and clean planting material, AMARTA linked banana farmers with PT Tamora Stekindo to supply new tissue culture seeds. During the program, AMARTA delivered 30,000 clean tissue culture seeds from PT Tamora Stekindo to banana farmers who had shown a willingness to participate and who had adapted the recommended GAP and technology. Packing house facilities were built to support farmers to collectively market their bananas. In these two facilities in Tiga Juhar Village and Talun Kenas Village, farmers learned post-harvest handling skills.

A packing house facility run by Deli Serdang Cooperative

Success Story: Mrs. Sabar Harvests Double the Bananas in Deli Serdang

Mrs. Sabar Kita was the Secretary of the Wanita Sejahtera Women's Farmer Group in Peria Ria Deli Serdang. Having received AMARTA assistance in the double-row demonstration, she replicated the technology on her own land. In March 2009, she began planting on 0.12 ha consisting of 600 stems, double the 300 stems she used to plant. Mrs. Sabar patiently applied the new knowledge she gained in trainings with AMARTA about GAP. As a result of her hard work her first harvest was a complete success. She explained that with initial capital of only Rp 7,000,000 she doubled her previous income. Each of the 600 stems produced around six hands and were sold for Rp 4,000 per hand earning her over Rp14,000,000. In addition, only five stems were infected by fusarium compared to more than 50 during her previous efforts.

Mrs. Kita with her oldest daughter who was able to remain in school due to the income earned on the double row plot

Based on the successful trial Mrs. Sabar plans to change almost four hectares of her land into double row fields. She stated, *"Soon my husband will retire and we will rely on banana cultivation to take care of our three children. We are not worried about our future anymore. I believe that we can do it! I am really satisfied, and thankful for USAID/AMARTA assistance."*

Government Officials Replicating Successful Technology

A vital component of the AMARTA program was to provide advanced technology to farmers and government officials in an effort to replicate successful pilot initiatives. Developing the capacity of local beneficiaries, who in turn, transfer that knowledge to others provided sustainable and far reaching consequences- particularly when projects became institutionalized through government agencies. In an effort to build local capacity, AMARTA invited a host of participants including the Assessment Institute for Agricultural Technology (BPTP) in Medan- a government agency- to a training event in Medan in July 2007 where AMARTA introduced double row banana planting technology to all of the participants, including Mr. Besman Napitupulu, one of BPTP's Department Managers.

Mr. Napitupulu working on the new double row technology in his own banana field

As a result of the training, Mr. Napitupulu adopted the double row technology and planted Lankantan bananas in Talun Kenas at BPTP's demonstration plot. According to Mr. Besman "*The double row system adopted by BPTP from USAID/AMARTA will improve the banana production up to 80% compared to the system currently available. The system in place has only*

produced 1,100 to 1,300 banana trees per hectare, however by implementing the double row system yields can increase up to 2,000 to 2,200 banana trees per hectare."

Flowers

Greenhouse Prototype Provide Significant Benefits for Floriculture Farmers in Berastagi

Women farmers and AMARTA staff help with greenhouse construction

Growing flowers in open fields has frequently produced extremely poor results due to weather conditions, soil quality, pests, and diseases. In addition, farmers are unable to schedule harvesting times to maximize volumes and demand. Meanwhile, replanting old flower varieties makes it extremely difficult to remain competitive with the substantial number of imported flowers. To solve some of these problems, AMARTA introduced a new technique of growing in greenhouses using local materials. The program was implemented in Raya Village, Berastagi with women comprising a majority of beneficiaries. A total of 15 greenhouses were constructed, with labor and material contributions from participants, and AMARTA supporting them with UV plastic, planting materials, and technical assistance in construction. These 15 greenhouses covered approximately 2,500m^2. Female farmers eagerly replicated the successful technology by constructing another five greenhouses covering approximately 500m^2 with their own resources. The numerous benefits of the greenhouses include year round cultivation- even during the rainy season- the ability to time the harvest to meet increased demand by modifying the light on the stems, and lower operational costs. The farmers have harvested a total of 54,222 cut flowers valued at more than Rp 108 million ($90,000). Growing new flower varieties in the greenhouses have had a tremendous impact on production and quality, resulting in higher prices. Female farmers can increase production by 80% compared with conventional growing methods, earning an additional Rp 2 million of income each month or approximately $2,600 annually. Nine types of flowers with a total of 41,269 seeds were planted in the 11 greenhouses.

Flower farmers realized the need for a strong farmer organization to remove negative and self-defeating competition. They understood that some within the group should start specializing in providing starter plants from cuttings and seeds, and continuously produce new planting material year round other than chrysanthemums, such as lilium, lisianthus, gerbera, statice, snap dragon, ruskus and leafy green ornamentals. They have also organized themselves to form a nursery for cut flowers and are collectively marketing among 174 growers who initially received training from AMARTA. These efforts helped sustain the group after AMARTA ended its activities and allowed the group to grow while maintaining higher prices from buyers since they are offering new varieties in Berastagi.

Discipline and Diligence are the Keys to Flower Production

Mrs. Bangun and Mr. Hudson in their new greenhouse

When AMARTA began interventions in flowers, some of the major constraints in North Sumatera included a

shortage of greenhouses to protect the stems against inclement weather, minimal harvests per year, and high pesticide costs. Working in a greenhouse is a dream for many farmers, and AMARTA assisted some of those who were committed to providing a 50% cost share and allowing other farmer group members access to the facilities. Mrs. Liani Br Bangun and her husband, Mr. Hudson Ginting, who had witnessed the success of AMARTA's efforts, were selected to receive UV plastic and seedlings, including some new varieties: lilium, snap dragons, crysants, gebras, and liliantus. In 2009 they collected a bountiful first harvest, producing 10,000 stems and earning an average price of Rp 2,000 per stem they generated revenue of Rp 20 million in just four months. Since they are now able to harvest three times a year they anticipate earning Rp 60 million annually. Their success inspired them to build two additional greenhouses using their own funds where they plan to produce high quality flower seedlings to supply other local farmers.

Improving the Raya Village Flower Market, Production, and Marketing

To improve the flower infrastructure for farmers, AMARTA supported a program to rehabilitate the existing market including promoting the village to flower buyers and providing post-harvest handling tools. Significant improvements were made to the building and operations of the wholesale flower market helping total sales increase to an impressive Rp 990 million ($110,000) in 2009 or 38% increase over the previous comparable sales period.

Flower farmers inside their green house during a training event

AMARTA supported farmers selling their flowers in the new market space

Carrots

Carrot Intervention Stimulates Entrepreneurship in Gongsol Village

Working together with local champions, AMARTA assisted farmers to produce carrot seeds to improve inputs. In Gongsol Village, AMARTA's intervention focused on improving the cultivation knowledge of farmers, pest and disease control, post-harvest handling, and linking farmers to markets in order to receive price premiums. AMARTA's efforts helped farmers improve propagation methods, and demonstrated that the carrot variety in Berastagi is superior to the

Mrs. Surbakti in her garden with other farmers

Lembang variety. This fact made farmers proud and aroused interest from the Juma Lepar Women's Farmer Group, led by Mrs. Binaria Br Surbakti, to expanded the group from 24 members to over 30 and divide into seven smaller groups to produce high quality seedlings. The first harvest of seedlings from Gonsol Village utilizing 1,500 m^2 of land produced 50 kgs of carrot seed that sold for Rp 300,000 per kg, earning Rp 15 million in four months. Since the farmers are now able to harvest three times a year they estimate they can earn at least Rp 45 million annually. The women created their own brand called "Mergo Tani" in order to supply seedlings for carrot farmers in Karo Highland.

Success Story: Carrot Production Increases with Cultivation Training

Mrs. Maria Br. Tarigan is a 50 year old farmer living in Bunuraya Village, Tiga Panah Sub-district, Karo District who took on the duty of both running a household and becoming a carrot farmer. She farms a 0.5 ha carrot field, which she established in 2005, learning from other farmers in her neighborhood and her own experience. Previously, maximum production in her field reached only four tons with an average selling price of Rp 800 per kg, providing her earnings of Rp 2.2 million after deducting maintenance fees of Rp 1 million.

Starting in April 2008, AMARTA supported Mrs. Tarigan's Damai Sejahtera Bunuraya Farmer's Group. The assistance was provided through theoretical and practical trainings, including establishing a group demonstration plot. According to Mrs. Tarigan, she immediately applied lessons from the carrot demonstration plot in her own garden. The results were remarkable: since participating in carrot cultivation training, and implementing recommendations on land preparation, seedlings preparation, fertilizing, maintenance, and harvesting, Mrs. Tarigan was able to increase productivity by 50%, totaling six tons per 0.5 ha, sold at Rp 1,000 per kg, her income increased by 127% to Rp 5 million excluding the same Rp 1 million maintenance fee.

Mrs. Tarigan shows off her improved carrot production in her field

Improving Local Carrot Seed Using a Greenhouse Prototype

AMARTA trained 376 carrot and broccoli farmers in Karo, covering 566 ha. In April 2009, AMARTA supported a carrot seed association made up of 25 motivated farmers. The main objective was to create an association to continue producing carrot seeds and fresh carrots. In an effort to enhance the marketing of the new and improved seeds, AMARTA worked with local agencies to receive a certificate and label from the North Sumatera Seed Inspection Authority. The operation of growing and maintaining the seeds was directly managed by the Karo Carrot Association who is encouraging farmers to use superior quality local seeds to compete with imported fresh carrots. To maintain the continuity and quality of production, AMARTA supported five leading growers who can produce 30kg of carrot seeds per month that sell for

Inspecting carrot mother plants

$110 per kg, providing approximately $40,000 of revenue annually.

Tomatoes

Protecting and Increasing Tomato Productivity Using Greenhouses

Tomatoes are another high-value horticulture product that AMARTA worked with in North Sumatera beginning in the middle of 2010. During this time, AMARTA assisted in helping farmers learn GAP and proper post-harvest handling using a greenhouse in Merdeka Village, Berastagi, Karo. Working with the Jumah Juluh Farmer's Group and their 25 members, technical assistance focused on planting tomatoes inside greenhouses to reduce the cost of pesticides by 50% and allowing the farmers to secure their harvest year round. One of the major benefits was avoiding the substantial rain that has been plaguing the region. With initial capital of Rp 8 million, the farmers can generate income of Rp 19 million, based on an average selling price of Rp 4,000 per kg.

Mr. Markasta in the tomato greenhouse

"Thank you USAID/AMARTA for providing us technical assistance and information on greenhouses. We already see the impact of this new technology and we thank you for helping us improve our livelihoods."

—Mr. Markasta Sinulingga, the Jumah Juluh Farmer's Group Coordinator

Broccoli

Broccoli Demplot is a Showcase for Replicable Technology

Broccoli is another recently established activity in North Sumatera. Even though the price in Medan is high, farmers in Berastagi and Simalungun receive lower prices for broccoli due to poor quality caused by insufficient knowledge of proper cultivation techniques and the way they market the product with the stem and leaf still attached. To address these issues, AMARTA created two demonstration plots (one in Karo district and one in Simalungun district) to introduce cultivation methods and technology that included proper cultivation, fertilization, and pest and disease control. AMARTA recommend tillage in order to have loose soil to allow good rooting of plants. Beds are spaced 75cm between each other and the distance between plants is 30cm x 30cm so farmers are able to maximize land utilization.

In Rumah Rih Village, AMARTA again worked together with Jumah Juluh Farmer Group, this time with Efendi Bangun, the head of the group, to run a broccoli demonstration plot. Initially, Efendi had problems with dried broccoli sprouts, however with AMARTA's support he tried a second time to apply AMARTA's recommendation. Efendi and 16 other farmers planted approximately 3,000 planting materials on 1,500 m2 of land. After implementing all of

Broccoli farmers ready to sell their harvest

the recommendations, they harvested approximately eight tons of broccoli and sold it for Rp 1,500 per kg. This price is relatively high considering they sold the broccoli in the conventional way, with the stem and leaf attached. With this price, they generated Rp 12 million in revenue in 2010 and split the proceeds among members to help buy more planting material for next season.

TERMINATED VALUE CHAIN ACTIVITIES

The following activities were terminated on February 23, 2009 in conjunction with Contract Modification #11; however significant achievements were made in increasing production and quality, resulting in higher incomes for participants.

RUBBER

Rubber Cultivation Training and Delivering Planting Material in North Sumatera

AMARTA collaborated with several partners including Bridgestone and the Madina District and Deli Serdang District Estate Crops Services. Bridgestone provided 50,450 planting materials, while the Madina Estate Crop Service provided transportation costs for rubber planting materials from Dolok Marangir to Mandailing Natal amounting to Rp 118,750,000 ($12,500), and the Deli Serdang District and the farmers groups in the area contributed Rp 16 million ($1,685) for transportation costs to support the effort. AMARTA trained 214 rubber farmers and government extension personnel on 293 hectares under management in 2008.

Clone purification and Certified Budwood Gardens in South Kalimantan

From November 18th-24th, 2008 AMARTA's clonal nursery rubber component, in collaboration with the Indonesian Rubber Research Institute (IRRI) GETAS, facilitated clonal purification of 1.5 hectares including 10,128 rubber trees in smallholder nurseries in South Kalimantan. AMARTA, Bridgestone, and the provincial estate crops agencies worked together on this pilot project to help smallholders develop rubber nursery businesses that provided high quality clonal materials in the market, for which there is high demand, but ongoing uncertainty regarding the quality of materials.

IRRI Getas at the Sutijab budwood garden

As a result of this clonal purification process, smallholder rubber nurseries have an average purity of 97%. Based on the IRRI GETAS's experience, this result is the highest purity that has ever been produced in inexperienced nurseries. This is a great success and ultimately impacts the demand for rubber throughout the region. The results are superior to a private run estate in Central Kalimantan as graded by IRRI GETAS, an astounding feat considering the resources and capacity of the farmers.

Market Access for Rubber Planting Material in South Kalimantan

Karya Mufakat Farmer's Group from Bentok Darat Village sold their rubber planting materials to the Indonesia Rubber Association (GAPKINDO) starting in May 2008. In November 2008, they provided 10,000 rubber planting materials in

Mr. Sutarjo, the head of Karya Mufakat FG monitors planting material distribution

polybags ordered by GAPKINDO, and sold 75,000 budded stumps at a price of Rp 1,100 per unit. In addition, they signed a contract with PT DAI SALUM, the winner of the Government of Indonesia tender to supply 25,000 units of rubber planting materials.

Certified Rubber Nurseries Produce Improved Planting Material in South Kalimantan

On July 29th, 2008 in the South Kalimantan Provincial Estate Crops Office, AMARTA and Bridgestone Kalimantan Plantation, together with the South Kalimantan Estate Crops Office, provided rubber nursery business registration licenses (*Tanda Registrasi Usaha Pembibitan - TRUP*) to four farmer's groups. The event was opened by the Director of Estate Crops Services of South Kalimantan with representatives from the South and Central Kalimantan Branch of GAPKINDO, Bridgestone Kalimantan Plantation, Greenyield Malaysia, the East Kalimantan Forestry Training Center, and other farmer's groups.

Newly certified rubber farmer's groups

> "I also want to thank USAID/AMARTA and Bridgestone for facilitating TRUP certification for rubber farmers in our area and explanting the importance of clone purification. After so many years of doing things wrong, I am happy to finally be doing things right."
>
> *—Mr. Sugeng, a rubber farmer from Bentok Darat Village, South Kalimantan*

In August 2008, farmers produced 25,000 budded stumps and covered 50 hectares with new clonal rubber planting materials. In March 2009, bud-wood gardens produced 50,000 budded stumps covering 100 hectares. As a result of this initiative, farmers reduced the cost of rubber planting material by Rp 750,000 per hectare (budded stump is Rp1,500 per unit). The budwood garden program provided participants with a complete package including training in management of rubber nurseries, grafting techniques, clonal identification and certification, as well as sharing technical information between members. YPKM as a partner transferred the technology from Bridgestone and AMARTA to farmers and other institutions.


Rubber farmers learn proper planting methods

From the budwood garden interventions by AMARTA and Bridgestone, the Sari Murni, Karya Baru, Karya Mufakat and Karya Bersama farmer groups sold a total of 218,000 budded stumps with certified clones receiving 50% higher income based on the quality of material. The effort produced Rp 327 million of revenue in 2008 compared to the previous transaction for the same quantity that only provided Rp 218 million.

Establishing Market Linkages and Business Skills

AMARTA assisted rubber smallholders by linking them to markets and providing access to sell the rubber planting material to a crumb rubber factory member of GAPKINDO in an attempt to create a sustainable purchasing contract. In May 2008, GAPKINDO in Kalimantan ordered 40,180 rubber planting materials in poly-bags and in July 2008, GAPKINDO ordered 25,000 trees based on the upgraded quality. By adhering to AMARTA's training practices, rubber nursery farmers increased the sales price of rubber planting material: Baseline data showed the average price for participants before the AMARTA project was Rp 900 per stump and Rp 3,000 per poly-bag. After participating in AMARTA activities where farmers were able to obtain good planting materials, training, and certification of clonal purity, participating farmers were able to sell budded stumps for Rp 1,500 each (an increase of 66%) with poly-bags selling for 4,500Rp (an increase of 50%).

Farmers extract rubber from trees during a training event in Kalimantan

BIO-FUELS

AMARTA's pilot program in bio-fuels assisted farmer's groups in the villages of Legu and Uluwae, on the island of Flores, Nusa Tenggara (NTT) to demonstrate technologies that can substitute jatropha oil for fossil fuels. A total of 100,000 jatropha seedlings were planted to supplement existing hedges.

AMARTA worked with Bosch Siemens Hausgerate (BSH), a German manufacturer of small appliances, to introduce a cooking stove that burns crude jatropha oil. BSH has developed the Protos stove for households in developing countries. It can use palm, coconut, jatropha and other plant oils. The stove was demonstrated by BSH in both locations in April 2009 and farmers collected seeds to provide fuel for 30 stoves during a one month pilot test. The results were very positive and the villagers were willing to use the stoves in their homes.

Clean burning jatropha oil floating lamp

AMARTA also introduced a simple technology for household lighting in two villages in Flores. The technology is a floating oil lamp, costing only Rp 2,100 each. The lamps consume very little oil, so they are inexpensive to operate, although they provide more light than a candle. AMARTA has distributed 1,000 of these lamps in the villages of

Jatropha plants growing in Legu

Legu and Uluwae in Flores. This will make the villagers less dependent on kerosene from outside the village, helping them become energy self-sufficient.


Demonstrating the oil lamp in a classroom

Although the lamps can burn any kind of vegetable oil, farmers in Flores are using jatropha oil, made from the seeds they planted in 2008. Indoor air pollution is a serious problem for households that use wood, charcoal and kerosene for cooking and lighting. Oil lamps produce less smoke than these kerosene lamps. In Legu, a demonstration of the lamps was conducted at the Junior High School in an effort to encourage students to speak to their parents about the new technology and begin harvesting Jatropha seed to light their homes.

A total of 718 farmers received training in jatropha production. These farmers, as well as others, also received training in the uses of jatropha oil. The farmer's associations built small warehouses in each village, using materials provided by AMARTA. Oil expellers and manual filters were installed, along with welding machines, and jatropha crude oil processing machines. Production demonstrations were conducted on March 25th and 26th, 2008 attended by villagers, cooperative members, local government staff, CV. Lion Lestari, AMARTA staff, and USAID CTO Rafael Jabba. Initial tests of the machines resulted in an extraction efficiency of 25% (filtered oil volume divided by seed weight). The processed oil can produce a number of useful products including the following: 1) Using jatropha oil or briquettes made from jatropha seed cake for cooking; 2) lamps for lighting; 3) production of soap; and 4) operating a diesel engine on jatropha oil for electricity, using the dual fuel tank system where the engine is started and stopped using diesel fuel, while the rest of the time it operates on crude jatropha oil.

AQUACULTURE

Improving PT Karamba's Loh Mbongi Facility

The rehabilitation of grantee PT Karamba's facility in Loh Mbongi, Labuan Bajo, Flores, NTT was completed in March 2009, and produced 20,000 humpback grouper fingerlings per month to support Warloka Village. PT Karamba began supplying new customers in September 2009, in conjunction with guidance from the local Fisheries and Marine Affairs Department. The overall goal of the project was to integrate private sector development, nature conservation, and socio-economic development into one sustainable growth model for marine protected areas. The main activities included: designing and


PT Karamba's new boat takes its first trip at sea

building six additional hatchery tanks, a nursery facility, 32 fiberglass tanks, obtaining two 60 KvA generators, and a boat to transport the grouper. Production at the facility helped supply the village-based grow-out operations in Warloka and private customers, creating more job opportunities and increasing income for local fishermen.

AMARTA inaugurated a new boat in March 2008 for PT. Karamba to support the distribution of fingerlings to the grouper grow-out fishing villages. Also, the old and unstable jetty (wooden dock) was replaced by a new jetty with higher quality timber, allowing easier distribution of fingerlings. The hatchery and nursery rehabilitation improved the capacity of tanks, while the electricity supply and buildings were refurbished in order to ensure the target production of 20,000 grouper fingerlings per month.

The hatchery building during construction (left) and after (right)

Construction of six new additional concrete hatchery tanks and the nursery building, including the plumbing for both facilities, was completed along with new concrete live feed (rotifer) tanks. The final structural work was completed in January 2009. PT Karamba installed a new filtration system that included a new UV system, different sizes of sand filters, and carbon active devices in order to prevent disease and virus outbreak.

Another aim of the project was to be the first private hatchery and nursery facility of humpback grouper certified as eco-friendly by the Fisheries and Marine Affairs Department of Indonesia. PT Karamba was inspected by two officers from the Department in Jakarta and, after only three days of inspection, was deemed qualified to apply for the formal certification process. The certification was granted in 2010, allowing PT Karamba to sell the fingerlings at a higher price

New fiberglass tanks at the nursery

Seven inspection officers from the Fisheries and Marine Affairs review procedures

and utilize the certified quality product label.

The Warloka fishing village net cage fingerling grow-out activity started in March 2008 to support Warloka Village fishermen willing to participate in the pilot project. The grant achieved success beyond what was imagined; 5,000 mouse grouper fingerlings averaging 500 grams were sold in December 2009 and January 2010- for the Chinese New Year- in order to receive substantial price premiums**.** The 2,500 kilograms estimated weight received a price between $38-42 per kilogram, representing substantial income to the village of approximately Rp1.1 billion ($115,789). The growth rate of the fingerlings was faster than projected, and it is now estimated that the grow-out time to 500 grams will only take approximately 14-15 months, instead of 18 months. As a result of this initiative, Warloka Village saw major changes in their livelihoods as participating fishermen and their families earned significant profits from the first sale of fish, and re-supplied fingerlings to sustain the operations and earn additional income in a shorter amount of time than previously envisaged.

Warloka Village net cages expanding production

The funds received by the villagers were reinvested in fingerlings and net cages and additional fishermen participated in training activities. A significant indirect benefit of the project was the willingness of other villages in the area to conduct grow-out activities instead of catching fish in the sea, using destructive methods and adversely impacting the Komodo National Reserve. The Labuan Bajo Fisheries and Marine Affairs Department, Komodo National Park Authority, and other related stakeholders are extremely happy and grateful to AMARTA because it has proven that local development can be successful and the villagers have improved their standard of living. In addition the project has helped reduce illegal fishing on the coral reefs and over-fishing that previously caused a shortage of fish.

AMARTA COP, David Anderson, and USAID CTO, Rafael Jabba, providing the first fingerlings

Warloka fishermen welcome AMARTA and USAID to the newly constructed net cages in March 2008

At the start of the initiative, the grouper pilot project delivered 1,800 fingerlings to Warloka Village net-cages were distributed on March 24th, 2008 to officially launch the project. Subsequently, every four months approximately 2,500 fingerlings were distributed to the village to sustain a harvest of one ton every four months. Selected members of Warloka Village received intensive training and have established the Warloka Mariculture Business Association. The opening ceremony was attended by local government officials, fishery service officers, national park representatives, more than 50 villagers, grantee PT Karamba, AMARTA, and USAID.

Touring the newly opened facility

Rehabilitating Shrimp in Aceh

In January 2008, the hatcheries laboratory in Biruen, Aceh officially opened as grantee PT Aceh Windu Lestari (AWL) began operations with equipment donated by AMARTA to ensure that post larvae sold to shrimp farmers in the region are pathogen free. The objective of the project is to revitalize the black tiger shrimp, a species native to Aceh. Shares in the company were issued in exchange for capital, and shareholders currently consist of hatchery owners, shrimp farmers,

traders, and other stakeholders. AMARTA provided assistance to the company in an effort to ensure they could operate independently and profitably as a commercial entity.

On December 11, 2008 the laboratory was officially inaugurated and opened for commercial use. During the ceremony, Mr. Razuardi a representative from the Bireun Bupati's office mentioned that this laboratory and its services will be a valuable local economic resource since the region has at least 5,000 hectares of productive shrimp ponds. The local government also emphasized their commitment to support the rehabilitation of aquaculture in the area. AWL also promoted available services and conducted laboratory testing activities for clients, such as: examining water samples, shrimp fry, parent shrimps for hatcheries, and completing PCR tests and reagent connections.

During 2009, AMARTA continued working with AWL on completing and operating a testing laboratory. All of the equipment, including: the PCR system, auto clave, microscope, oven, and incubator were installed, while chemicals and glassware were also provided. Staff was trained by AMARTA's aquaculture consultant on selecting appropriate samples, performing tests, and completing analysis. As part of the cost sharing agreement AWL provided a hatchery facility that was renovated into a quarantine station; this new facility will provide high value overall support to the project. As of 2011, 2,300 samples were tested and analyzed providing $20,000 in revenue for AWL. In addition, the quality of post larvae sold to shrimp farmers in the region has improved dramatically, reaching an 80% survival rate. The quality has been recognized by local shrimp farmers and buyers who have continued using AWL's services.

The PCR installed and ready for use

LIVESTOCK

AMARTA grantee Puskud NTT provided training and technical assistance to 20 participating farmer's groups in Kupang, West Timor who were engaged in cattle breeding activities. Due to the lack of breeding cattle, AMARTA provided support to purchase 300 cows distributed to 235 male farmers and 65 female farmers, and Puskud added an additional 54 from their own funds to bring the total to 354. The project was able to increase the income and welfare of participants, illustrated by the increase in revenue that farmers generated from selling the calves. At the optimum leveling 2010, there were 300 cows and 89 calves being tended to by 275 farmers from 39 farmer group locations. Births had a 60% survival rate, which is significantly higher than other programs in Indonesia, according to leading experts.

A mother and new calf in Kupang, West Timor

Secretary of the Directorate General for Livestock Services (DGLS) and the Director of Livestock Breeding Visit the Beef Cattle Program in Kupang

On September 11th, 2008 the Secretary of the Directorate General for Livestock Services (DGLS), Professor Syamsul Bahri, and the Director of Livestock Breeding, Dr. Gunawan, along with other government officials, visited the beef cattle breeding program in Kupang, West Timor. After receiving a briefing and visiting the site, the Head of Dinas Peternakan NTT, Professor Syamsul Bahri promised to invite the Director General of Livestock Services to also visit Kupang, and agreed to make a video recording supporting the project that was distributed to farmers throughout Indonesia. The previous Vice President of Indonesia, Mr. Josef Kalla, was also updated about the progress of the activity and visited the project in 2009.

The delegation from DGLS, Livestock, and other officials visit the cattle program in Kupang

In 2010, seven representatives of AusAid visited the AMARTA office in Jakarta to discuss their new program initiatives in Eastern Indonesia. They noted that the livestock program in Kupang was a resounding success according to government officials and participants and requested advice on expanding the project in the future.

SEAWEED

AMARTA assisted farmers in beginning and expanding existing seaweed production at two locations in Northern Sulawesi, Lemito in Pohuwatu District and Kwandang in North Gorontalo District. This program was implemented in conjunction with the Makassar-based NGO, SeaPlant Net, which provided technical assistance and planting material. During 2009, AMARTA worked with over 390 farmers in 39 FGs who planted over 600 km of line, with a monthly production of approximately 92 tons. At the time, prices reached $.80 per kg, which translated into $220,800 of farmer income for one quarter, or $212 per month per household. About two thirds of the harvest was processed for domestic markets, with the remaining one third reaching export markets.

A farmer removing silt from his crop

Farmers in Lemito Bay experienced crop losses due to illegal fishing. The illegal fishermen use poisons and explosives, which are detrimental to seaweed farms and nearby reefs. To halt this activity, 10 seaweed farmers formed a monitoring committee called POKMASWAS, to document and report illegal fishing to the relevant government authorities. This group presented itself to the Marine and Fisheries Affairs Department (DKP) in October 2008 and received strong support. DKP funded POKMASWAS operational costs in the 2009 budget.

The seaweed nurseries established with assistance from AMARTA continued to operate after formal activities ended, since they are owned and managed by the farmer groups who immediately saw the benefits and financial success of the activity. The local government continued to provide equipment, such as ropes and floats. Farmers are able to access on-line technical assistance from other farmers through the web site www.jasuda.net. This web site, which was established by SeaPlant Net, has more than 2,600 members across Indonesia.


A new way to dry seaweed

AMARTA also designed a new drying technology that improved production. Rather than removing the seaweed from the lines and spreading it on bamboo platforms, farmers were shown the advantages of leaving the seaweed on the line using a wooden frame, where it dries faster, saving time and improving quality.

Success Story: An Expanding Seaweed Business Helps a Farmer Pay Off Debts

Mr. Yusef Rahim, who is known as Ka' Ote, began growing seaweed in 2000. Using his savings, he built a farmhouse on stilts (called a pondok) and bought lines, floats, and planting material. He faced difficult times in 2002, when his crop was damaged by high water temperatures and stagnant water. In March 2008, AMARTA provided planting material to the lead farmer in Gemar Indah to establish a nursery for the group. In April, this nursery provided Ka' Ote with a „loan' of 150 kg of seed to expand his farm. By May, the seaweed had grown so rapidly that he was able to repay the loan by providing three more members of his group with a total of 350 kg of seed so that they could expand their activities and increase their yields.


Ka' Ote selecting planting material

Mr. Rahim also adopted AMARTA's new method of drying his seaweed that reduced the drying time from three days to two days. After he repaid his seed loan, he continued selling both planting material and dried seaweed. In July 2008, he sold 400 kg of seed to two farmers outside his group for Rp 1,500 per kg and 200 kg of dried seaweed at Rp 12,000 per kg. This seaweed, which came from 175 meters of line, earned him a total of Rp 3 million ($326). Every 45 days he can harvest another 350 meters of line. Using the money he earned, Ka' Ote was able to pay for his son Imrawan's wedding. Imrawan currently lives in Gorontalo, but he is planning to come back to Lemito to join the growing family business.

"Growing seaweed now allows me to easily fulfill my family's needs. For example, it has paid for my wedding and helps us buy more food and clothing."

—Mr. Yusef Rahim, seaweed farmer from Gorontalo

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