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INDONESIAN AGRIBUSINESS INCUBATOR DEVELOPMENT: PROGRAM REVIEW and RECOMMENDATIONS

Contract No. 497-0368-C-00-3102-00

for

Development Alternatives, Inc. (DAI)
and
The United States Agency for International Development (USAID)

Prepared by

Peter J. Bearse
Micro-Enterprise Development/
Agribusiness Incubator Specialist

March 1996

University of Idaho
College of Agriculture

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Any shortcomings of this document, of course, should not be attributed to any of these many sources of assistance. They are the author's alone.

List of Acronyms/Abbreviations

ADP	Agribusiness Development Project
ASEAN	Association of Southeast Asian Nations
BA	Badan Agribusiness
Bapak Ankat	The Government of Indonesia's (GOI) "Father-Son" policy by which large stated-owned "father" companies are encouraged to assist small "son" enterprises
BAPPEDAA	National Planning Agency of Indonesia
BUMN	State owned companies, who are required to devote up to 15% of their earnings to assist small scale enterprises
CEO	Chief Executive Officer
DOA	Department of Agriculture
DOC	Department of Cooperatives
DOK	Department of Cooperatives and Small Scale Enterprise
GOI	Government of Indonesia
HoDeNS	Horticulture Development in North Sumatra (a specific paper)
INI RADEF	Indonesia International Rural and Agriculture Development Foundation
IPM	Integrated Pest Management
IPS	Institute of Public Service
ITS	Institut Teknologi Sepuluh Nopember Surabaya
KADIN	Chamber of Commerce
KUD	Village Cooperative
kg	kilogram

km	kilometer
IIA	Indonesian Incubator Association
LAN	Local Area Network
MOA	Ministry of Agriculture
NGO	Nongovernment Organization
PJPII	Second Long Term Development Plan
Rp	Rupiah, Indonesian currency The exchange rate used in this report is Rp2,313 = US$1.00
SBDC	Small Business Development Centers
SME	Small- and Medium-size Enterprises
UNDP	United Nations Development Programme

EXECUTIVE SUMMARY

The five agribusiness incubators initiated with the support of Badan Agribisnis (BA) and sponsored by universities have established a good foundation for agribusiness incubator and business development in each case. Our assessment elicited many indications of beneficial results after only one year of experience. Yet, all the incubators are embryonic. The accomplishments thus far have only been preludes--preparatory for the serious work of agribusiness incubator development and the agribusiness development that could result.

In order to actually become what they are called--agribusiness incubators--the incubators need to broaden the scope of their market and their activities to include not only small, young farmers but a wide range of agribusiness entrepreneurs and enterprises which embrace the "commodity chain(s)" of forward and backward linkages that connect farmers to the rest of the agribusiness sector.

The embryonic incubators also need to gradually introduce and effect more of the features of successful incubators which international experience shows to be important. These include:

- facilities and equipment for the shared use of agribusiness entrepreneurs and their enterprises;
- diversification of the menu of agribusiness support services that can be accessed and utilized in or through the incubators, including:
    - more assistance with financing, including establishment of micro-loan funds that would be managed by incubators themselves, if necessary;
    - better market information and more direct assistance with marketing;
    - more help for farmers and others who would like to establish processing or trading enterprises, especially training and other assistance in the areas of postharvest handling and quality assurance; and
- identification, recruitment, and/or construction of private sector support services networks, including linkages and contracts between farmers and "nucleus" firms or other business partners.

With respect to the "networking" aspect, it is also important for Badan Agribusiness and the agribusiness incubators to recognize that (1) they are not isolated projects and (2) there is a need for interministerial coordination of Indonesian incubator development.

Several other business incubators have already been developed in Indonesia under the auspices of various agencies. Several more are under development, including other agribusiness incubators. An Indonesian Incubator Association has been formed. Besides the Ministry of Agriculture, the agencies involved include the Ministry of Industry and Trade and the Ministry of Cooperatives and Small Scale Enterprise. There is a good prospect of forming a business incubation network in Indonesia that would help any of the projects. Indonesian incubator managers can begin to learn from each other as well as from foreign experts and study tours.

Finally, it would be a mistake to use the results of this paper to make a decision that some of the five projects should be supported from Badan Agribisnis's budget while others should be cut. The terms of reference of the mission that led to this paper did not call for such decision-making input. There are two reasons, however, why it would be inadvisable for Badan to cut support from the projects it has already started. One is that, even though the projects apparently were initiated as experiments, they have not been afforded adequate time to demonstrate the extent to which they can succeed. The time horizon for business incubation is not short-term (one year budget cycles); it is long-term (at least five years).

Another reason is that, if any of these "experimental" projects are cut, then the money already invested in them has been effectively wasted. The "matching grant" mechanism described in section VIII, however, offers a way of "leveraging" existing resources or allocating reduced resources for incubator program development.

The various sections of this paper are designed to provide information both to Badan and to incubator management--information which can assist those who are determined to develop their incubators and fulfill their considerable agribusiness development potentials.

Note: The exchange rate used in this report is the following: Rp2,313 = US$1.00

INDONESIAN AGRIBUSINESS INCUBATOR DEVELOPMENT: PROGRAM REVIEW and RECOMMENDATIONS

The substantial increase in agriculture production in Asia and the Pacific . . . is primarily due to improvement in various farming technologies with increased inputs and reliable support services . . . (but) as government and public agencies increased their responsibilities, farmers developed a dependency syndrome which . . . undermined their capacity for self-reliance. For effective implementation with limited funds, more emphasis should be given to the involvement of farmers in the operation and management of farm-level infrastructure. Out of this development also grows the need for greater local resource mobilization and for the allocation of cost-sharing between public sectors and beneficiaries . . . .

K. Yanagi, Secretary General
Asian Productivity Organization, as quoted in
Asia-Pacific Business Report

Long regarded as a traditional industry, agribusiness is rapidly being transformed into a global, technology-driven, highly competitive industry.

International Finance Corporation:
Investing in Agribusiness

I. INTRODUCTION

The challenge of adapting the incubator concept to help small farmers as well as other agribusiness entrepreneurs and their enterprises.

This paper is the result of observations made in five locations in Indonesia where pilot agribusiness incubators have been started within the past year (1995), interpreted in light of the author's 10 years of experience with micro-enterprise development and business incubation projects throughout the U.S. and seven developing countries including Indonesia. During three previous missions to Indonesia, over the period 1991-1993, the author helped to plan business incubators in Solo, Surabaya and Serpong. See Bearse and Lalkaka (1992, 1993).

The paper aims to assess the five existing projects, make recommendations to put them on a sound incubator development path, and provide information to new agribusiness incubator projects as well.

The major challenge posed by the Indonesian projects is a unique one in the field of incubator development even though incubators have been applied to implement

entrepreneurial development strategies in many industries and in dozens of nations worldwide. This is the challenge of designing incubators to assist farmers. There are no existing models of such incubators that Indonesia can look to for guidance. The problems that this poses can be viewed as an opportunity for Indonesia to innovate and provide its own models for other developing countries.

The power of the incubator concept lies in its adaptability to local needs and circumstances. Indeed, one of the keys to successful incubator development and operations in Indonesia is tailoring and customizing the concept to Indonesian circumstances, not trying to adopt a foreign model.

II. PROGRAM DESCRIPTIONS

The Indonesian agribusiness incubator development program is an expression of goals set forth in the Agricultural Development Plan component of the Second Long Term Development Plan (PJP II). For example, objectives specified in the Sixth Five Year Development Plan (Repelita VI) include the following:

- develop an appropriate methodology for the stimulation of small scale agribusiness at the farm and village levels;
- increase incomes and productivity among the small farmers that comprise a major part of Indonesia's economic base;
- increase self reliance;
- expand employment and business opportunities in villages; and
- develop agriculture toward agroindustry.

These are to be accomplished through a "resources based and integrated agribusiness development approach" (Ministry of Agriculture, 1995).

Thus far, these goals have been primarily pursued through a program of training which is viewed as the first step in the establishment of agribusiness incubators. Select sets of young farmers (maximum age 35), in groups of 20, receive a full month of classroom training, one half of which is focused on the technology of farming, the other half on how to establish and operate an agribusiness; that is, how to be a farmer-entrepreneur and businessperson. The classroom training is then supplemented by one to three months of "practicum" --training via "learning by doing," "hands on" exercises, field visits, and attempts to apply the farmers' new knowledge to their farms.

The classroom training itself has a practical and not just theoretical bent, featuring guest presentations by visiting bankers, CEOs of estates, managers of hotels or other large enterprises that the farmers might seek to win as customers, and entrepreneur role models who have already established successful agribusinesses.

The training is followed by several interventions designed to help farmers apply their training. These include:

- occasional visits by extension agents of the regional Department(s) of Agriculture (DOA), which fall under the national Ministry of Agriculture (MOA);

- periodic visits by staff of the agribusiness incubator or by faculty from the sponsoring university; and

- periodic returning of trainee groups to the incubator to meet together and discuss problems and solutions among themselves and with incubator staff and university professors.

On-site interviews and observations indicate that these activities have already borne fruit. See section VI for details.

The first questions put to incubator sponsors and staff were: What is your vision for further development of the incubator as a tool to provide on-going assistance for enterprise development in the agribusiness field? Is your incubator program to be limited to its current menu of training plus technical assistance and/or business advisory follow-ups?

Responses to these questions indicated that most of the universities lacked a plan for development of the incubators that they had started. This is ironic, for they all reported that preparation of a "proposal," a business plan by their farmer entrepreneurs-in-training, was a basic requirement for successful completion of their training. By analogy, what is lacking among incubator sponsors is a concept which has found acceptance elsewhere--the concept of the incubator as itself an enterprise designed and operated to nurture other enterprises. See Lavelle and Bearse (1992).

This has direct implications for the recruitment, selection and training of incubator managers. Incubator managers, like farmers and other agribusiness entrepreneurs which the incubator elects to help, need to have entrepreneurial qualities, and they should manage their incubator enterprises in businesslike ways. The study tour is likely to open their eyes in this regard.

Though some of the universities were helping farmers as part of their "community service" activity prior to the incubator program, most appear to have started their

incubators in response to encouragement and funding from the Department of Agriculture. If such funding is discontinued, it is likely that most if not all of the incubator programs would also be discontinued. Presumably, universities' community service activities to assist farmers would continue. At this very early stage of the development of incubator programs, it has sometimes been hard to distinguish their "incubator" activities from those which might otherwise be conducted under "community service" mandates.

DOA extension agents have been "asked to participate," but it's "still just an idea" for them to redefine their role and assist incubators in ways that take them beyond their traditional technical assistance role and toward business development. Perhaps we need to define a new type of extension agent able to combine business and technical intelligence.

The latter suggestion is supported by recommendations made in a 1993 report on "Strategies for Broad-based Agribusiness Growth." Specifically:

> [P]olicy and support programs must adapt to the business of agribusiness . . . . This requires significant and sometimes difficult adjustments in both approach and substance. Governments and other actors often must make efforts to break down well-established bureaucratic routines and programmatic boundaries. (Boomgard, 1993, p.1)

Late in 1995, with support from the Agribusiness Development Project (ADP), Badan Agribisnis (BA) sponsored a four-day training course in agribusiness development for extension coordinators. As a result, 45 coordinators were trained to train extension agents in agribusiness activities. Field visits at the five incubator locations, however, left the distinct impression that the farmers' interest in business development still outstrips the agents' ability to help them with their business plans.

Market information is currently received via newspapers. There is a program of the MOA to establish a "local area network" (LAN) which would connect local DOA offices to Jakarta for the receipt of market information on agricultural commodities. Universities and incubators should connect to this network. The DOA could provide equipment to enable them to do so. A computer network to provide ready access to market information by universities and agribusinesses does not yet exist. Universities have computers but most lack modems and networking software. They may need help in this area before they can be very effective at providing timely market information.

Lack of interministerial coordination or cooperation was cited as another major problem for the incubator program. Universities fall under the Ministry of Education. Badan Agribisnis is in the Ministry of Agriculture. The Ministry of Trade

and Industry issues a weekly market information periodical. The Ministry of Youth and Sport may help support at least one of the incubators. There is overlap with activities of the Ministry of Cooperatives and Small Scale Enterprise. This suggests that an Interministerial Coordinating Committee for Agribusiness Incubator Development is needed.

One of the most valuable reported features of the incubators' training has been farmers learning how to conduct business as a group. Farmers in each group share raw materials, purchase from each other and do some joint marketing. This focus on conducting business as a group distinguishes the Indonesian agribusiness incubators from most incubators in other countries. It also raises an important organizational question: cooperative or incubator? They can be viewed as substitute forms if an agribusiness incubator's clientele is limited only to small farmers.

One familiar feature of business incubators--a physical facility (premises and equipment) dedicated to incubator use--was not in view in most locations. This is a deficiency that can be remedied, however, as an incubator is developed.

Another feature not seen very often, though not entirely missing, is private sector involvement in the incubator programs except for farmers who are, of course, in the private sector. It is a mistake to view incubators as just government supported projects. Private sector involvement is also a feature that should be expanded as incubators are developed.

Among the universities and farm locations, there are some variations from the common-denominator features we have noted thus far. The most relevant site-and project-specific features can be highlighted as given below.

Ujang Pandang - Universitas Hasanuddin

University/incubator staff describe their program as "pre-incubator" or as an incubator "embryo." Their farmer training program is in its final stages. The participants are just now in the process of finalizing their proposals.

Some of the farmers produce cacao, but they are not yet suppliers to a large local estate which processes cacao. The chairman of the estate was one of the business people invited to speak to the class. He asked them to supply cocoa product to the estate. The estate is willing to purchase whatever proportion of farmers' output satisfies export standards. This would mean better prices for the farmers, since they would be selling directly to the estate, not through middlemen. The estate is private, so it is possible that a contract between the estate and the farmers could become a "nucleus/plasma" arrangement of the type that the Government of Indonesia (GOI)

has been encouraging. Apparently, there are no state companies in the region that could sponsor "Bapak Ankat" arrangements between them and farmers.

The farmers' distances from the university, as in the case of this incubator, illustrate the distance problem faced by all the agribusiness incubators to some degree. The average distance for the first group is 60 km; for the second group, 250 km.

About 40 percent of the farmers in the incubator are interested in being able to do some postharvest processing. Thus, the vegetable farmers are being encouraged to clean, grade and package their vegetables (cabbages and potatoes) and the other farmers are encouraged to ferment cacao and/or process coconut oil. It would help the university to focus its efforts on one commodity group or the other so that the costs of technology, equipment, processing and other requirements could be broadly shared and thereby reduced for each participating farmer.

Simulation games provide one mode of training to help farmers get to know their own capacity as entrepreneurs. Bankers are also invited to make presentations to farmers, who are taught how to apply for loans. The bankers, however, are not yet part of any cooperative network. They come only to provide information. They do not loan to start-ups.

The coconut growers in the group are extracting coconut oil using traditional hand tools. This is just one example where an incubator could help farmers become more productive through affording access to new technology. Coconut oil processing technology developed in the Philippines is available in Indonesia but it is apparently not affordable by Indonesian small farmers.

The provincial governor is aware of the incubator program but has not yet announced his support of it. The provincial government's official goals, however, are consistent with the program. These include specializing in certain crops, postharvest processing and marketing; and changing farmers' thinking, attitudes and habits.

The training indicated the possibility of farmers selling outside of their immediate locale, but it did not explore export markets. The vegetable growers are selling to local markets. One of the cacao farmers stated that his goal is to sell cacao of fine quality to international markets in ASEAN countries.

Two Small Business Development Centers (SBDCs) have recently been started at the university. One was begun by the Department of Cooperatives and Small Scale Enterprise (DOK), with support from the German foundation Konrad Adenauer Stiftung. This SBDC would "train trainers" for other Indonesian SBDCs. The other provides training and business assistance to small business owners. Last year, 37 small businesses were helped. Nearly all were businesses that were already well established in lines of business other than the agribusiness sector. Thus, as yet, there

appears to be little overlap in the respective clientele of the incubator and the SBDCs.

Training was provided for 45 unemployed university graduates, 30 of whom were considered up to the challenge of starting their own business. One hopes that some of these would want to establish an enterprise in the agribusiness sector. If so, they should be referred to the incubator. Unfortunately, this training appears to have been a one-time project for which, as of now, there is no budget for continuation.

Cooperation and collaboration between the SBDCs and the incubator have been established. They are sources of referrals, each to the other. The SBDC can refer clients to the incubator, and vice versa. The SBDC providing business assistance is staffed by economists, but there is only one person in either program who is or has been building a business on his own account. The SBDC director is also director of the universities' extension service.

Two of the 20 farmers in the program are women. The expressed goals of the farmers include:

- production of vegetables with longer shelf lives;
- product diversification;
- producing "organically grown" potatoes;
- coconut processing;
- sale of poultry to supermarkets;
- providing postharvest processing of potatoes;
- producing improved, high quality, packaged coconut oil for sale to supermarkets; and
- building their own poultry business apart from parents, and providing better quality eggs with good service to customers.

The farmers are all near a city (Boliwali) and can draw power from the Indonesian electricity grid. Also, most have generators.

The farmers need access to equipment but what equipment is most needed is not entirely clear. Those farmers closer to the university agreed that it would be useful to be able to access equipment and facilities at the university. Those farthest away recommended that equipment be accessible at the district level. Most would like access to a computer but they are not computer literate. Computer skills were not covered in the training, but the university has fifteen computers for use by students. Two farmers cited a need for a tractor. Even though there is a tractor factory nearby, there does not seem to be a tractor rental outlet. There is also a need for a place for farmers to meet periodically, to interact with each other and obtain market information. A few farmers cited a need for transportation.

Yogjakarta - Universitas Gadjah Mada

This incubator is farther along in its program, which is in the midst of working with a second group of 20 farmers. The first group, salata fruit growers, has been working to improve farm output and productivity by more intensive farming, increased use of fertilizers, selective diversification, and product grading. They have no interest in processing. The market price of fresh fruit provides more profit than processed product. The university has been able to monitor this group closely.

The second group is processing as well as farming and wants to do more. They are processing the seeds of empling mlinjo into chips that they sell to those who fry the chips to make crackers.

A new, formal cooperative has been formed devoted to salata fruit farming. One third of the members are graduates of the incubator program. Formation was difficult. The cooperative took six months to establish. Local leaders and the KADIN had to be enlisted among the founders. Its goal is to increase farmers' market power. They are now "price takers" dependent upon traders. The incubator farmers' group also wants to establish a cooperative. They are self-organizing and they have identified a leader among them.

The incubator has helped the second (processing) group obtain business licenses. This is no small matter, as getting a license is a time-consuming, cumbersome process. The requirements include a license fee of Rp40,000, an examination, and an official visit to the place of business. The incubator shortened the approval process from an average of six months to two to three months by lobbying officials, bringing officials in to meet with the farmers, and in other ways.

One goal of the incubator is to get the salata farmers to upgrade their crops to produce and sell salabando, a higher price variety. Salabando sells for Rp2,000-5,000/kg compared to the average Rp700/kg for the prevailing variety of salata fruits.

Market information is difficult to obtain and better market information is needed, especially since the salata farmers are anxious to sell to non-local markets. Information from government sources is problematic. Some of the farmers are anxious to export, but they realize they need to know much more about export standards and channels. Professor Masyhuri has been trying to access the Internet.

Both groups return monthly to the university to meet and discuss their businesses. These occasions also provide opportunities for social interactions and informal exchanges of business information among the participating farmers. They provide the occasion, too, for the farmers to conduct a "lottery" which has become a form of micro-financing. Each farmer puts Rp5000 into a pot, lots are drawn, and one of

them gets the total proceeds (Rp100,000). The winners usually use the proceeds to buy raw materials and tools. Transformation of this lottery scheme into a savings and loan plan is under consideration by at least one of the groups.

The university's agricultural technology unit has designed and built a machine to increase the second group's productivity at stamping seeds into chips. Chips are now stamped by hand using metal hand pestles and concrete anvils. It should be noted, however, that these implements are improvements over what had been used before the farmers entered the incubator program. The improvements are credited to the program.

The machine relies upon a horizontal-action stamping arm linked to a lever which also turns a drum from which the chips are removed by a blade as the drum turns. This machine was tested by the farmers' group at one of the farms during our visit. Unfortunately, the machine stamps one seed/one stroke, in contrast to the multiple seed/multiple stroke mode of hand stamping. Thus, the machine-made chips are too small and too rough.

Nevertheless, the effort at developing such a machine is a good example of two features which all agribusiness incubators should emulate:

- efforts to introduce appropriate, cost-effective technologies to increase agribusiness productivity; and

- involvement of university personnel from units outside of the faculty mainly involved with the incubator who can assist agribusiness development in various ways.

Besides engineering (for the design, construction, and testing of new tools), one can imagine university laboratories (for new technologies), university offices (for access to telephone, computer and other office equipment) and business faculties (for management assistance) having relevant capabilities to contribute to agribusiness development efforts. For example, a technology most needed by the chip producers is a drying technology. The university should be able to help with this.

Both farmers and a university professor acknowledged that farmers could be helped by having access to university facilities, even if some of them might not use the facilities immediately. Some farmers would like to be able to share the use of a computer, for example, if they received some basic user training, especially since they have reason to visit the university on a monthly basis anyway. A computer would help farmers correspond with potential customers, keep their accounts, and access market information networks.

The incubator has the full support of the dean of the faculty of agriculture, and the dean has the support of the university president (rector) for his plans. The dean's vision is to establish a Center for Agribusiness Development and Planning which would include the incubator. The Center and incubator would be located in a three-story facility, already designated, which would also include an experimental market and the Department of Agricultural Socio-economics.

The dean's remarks also highlighted the problem of incubator financing. In his view, the government appears to have too narrow a view of incubators--that it is sufficient to train farmers and send them back to their farms to develop their businesses. The view is also too short-term, so that incubators' funding is at risk from budget to budget. These problems are aggravated by education and university budgeting priorities. The priority order is teaching, research, and public service. Incubators are viewed as public service projects, but the Institute of Public Services is typically funded at a low level. The dean says that he committed the equivalent of about US$30,000 from his own budget to start the incubator program.

Bandung - Universitas Padjadjaran

Twenty faculty are involved in the incubator program, 10 of which periodically go into the field. The rector of the university designated those to be involved, including the incubator manager. Instructors include local practitioners as well as university faculty. Alumni are another source of help. Some of them are unemployed. They, too, can be viewed as potential entrepreneurs. Some of them might be willing and able to establish non-farm agribusiness enterprises that could become part of the support system for farmers. Budgeting faculty time for the incubator is not a problem, but budgeting money apparently is. As yet, the university has budgeted no money for the program from its own resources.

The 20 farmers in the program are fish farmers--either pond fish (aquaculture) or paddy fish (fish raised in the waters of flooded rice paddies). Two of them are graduates of the university. They help to provide advice and technical assistance to the others.

The incubator primarily aims to help farmers through changes in their tools, behaviors, and knowledge. Increases in knowledge and changes in behavior are thought to be especially important for increasing yields in the absence of changes in technology; e.g., through improved pond structures, better stock management, and "not throwing fertilizer on fish."

Lack of oxygen tanks to aerate water tanks used to transport fish was reported to be a problem.

The stay in Bandung included a visit to an agribusiness that was not helped by the incubator but which represents one of the many non-farmer enterprises which an agribusiness incubator could assist. The business is a vegetable wholesaler selling to supermarkets. It began only three years ago with Rp500,000 of start-up capital. Currently it is engaged in the following activities:

- employs 8 full-time staff and 65 laborers;
- sells Rp 200 million of vegetables per month;
- has recently received a loan of Rp 65 million; and
- features a fully equipped office with two state-of-the-art computers, telephones, and a fax machine.

The owner said that he would have welcomed help from an incubator if he had known such help was available. He spent two years of trial and error trying to get his business off the ground. The major obstacles he faced, which an incubator might have helped to surmount, included:

- no background in the industry (he was formerly a religious teacher);
- little knowledge of relevant technologies (e.g., basic references, growing techniques); and
- marketing difficulties.

With respect to market information, it may be worthy to note that the entrepreneur subscribes to the DA publication "Buletin Pasar Agribisnis" and to some of the trade press, including "Warta Pertanian."

The enterprise sources a variety of horticulture products from 50 farmers located 2 to 70 km away. The labor force then grades, cuts, trims, cleans, husks, labels, and packages the produce for delivery to supermarkets no more than twelve hours from the time it was picked up at farms.

Jember - Universitas Jember

Twenty farmers are involved with the incubator. Their main crop is bananas, but the farms visited show beneficial crop diversification and mixing, at least some of which is through the influence of incubator training. "To motivate" is a basic program goal, together with:

- transfer of knowledge to farmers that enables them to develop their farms as businesses; and
- transfer of technology to improve farms' yields, productivity, and product quality.

The university rector views the incubator as an integral feature of his aim to build an "agribusiness and agroindustry institution" and make Jember a center for agribusiness development. In this effort, the incubator would join together the university, Department of Agriculture, Badan Agribisnis and the Ministry of Youth and Sport. The university would commit 12 hectares of land for the incubator center and experimental fields. There is also reported to be a second incubator in the university--one in the economics faculty that serves industry.

From the beginning of the training phase, the university has sought to forge strategic linkages that would enhance the incubator's ability to help farmers. For example, resource persons were invited to speak to the farmers from both government and the private sector, including a representative of BAPPEDAS, an exporter, and an estate owner.

The participating farmers emphasized that the incubator should be prepared to provide certain types of help in the future. These include help with:

- marketing, including export;
- obtaining market information;
- new products into which excess supplies of their agricultural commodities could be processed;
- facilities and equipment which they can use on a shared basis; and
- specialized short training, e.g., on tissue culture.

Another area where farmers need help, here as elsewhere, is in developing or accessing superior varieties of seed stock. There is a tendency among some farmers to save seed from their own crops to use for future plantings. In Bandung, this is seed fish; in Jember, seed corn. These practices may reduce yields and diminish other desirable crop qualities.

Bali - Universitas Udayana

Universitas Udayana has sponsored a business incubator to help 20 farmers, primarily chicken growers selected from 36 applicants, to turn their farms into businesses. The university has plans to create another incubation program for cattle growers. The incubator program has the full support of the university's rector and dean of the faculty of agriculture. The dean has joined the study tour to the United States. The university has many facilities to support agribusiness development, including laboratories focused on tropical forage, nutrition, food technology, and biochemistry, and departments devoted to agronomy, animal husbandry, agricultural technology, and agricultural economics. These are all viewed as parts of an agribusiness development system with the incubator as focal point. University people

were working with farmers prior to the incubator initiative, providing technology transfer and training to farmers as part of the university's public service orientation.

At present, all the farmers are under contract to sell their output to a core private "poultry store," which provides feed, seed, medicines and slaughterhouse services. The owner is a university graduate and a member of the university faculty in animal husbandry. He agrees that the incubator should supply capital, feed, seed, medicinal, and technical assistance to the farmers. His contracts with the farmers are for six month periods. These contracts commit him to buy the farmers' entire production at a fixed price which is increased 20 percent if there is a spread between the market and contract price. The dean of the university agriculture faculty claims, however, that this core firm is inadequate as a source of supplies and advice, which is why the farmers need a cooperative.

The "learning by doing" or practicum part of the incubator training matches the farmer trainees with existing, successful poultry farmers to learn from them with respect to feeding, disease control, sales, record keeping, and other aspects of farming as a business.

Chicken farmers have already organized themselves into a mutual support group. They would like to form a new, legal cooperative so that they can do processing and add value to their product. The university is trying to support them in this effort. Their support includes lobbying the Ministry of Cooperatives, whose regional department opposes the establishment of a new cooperative. The department would rather see the farmers affiliate with an existing village cooperative (KUD). Regulation no. 25 (1992) permits a group of professionals to form a new cooperative based upon a commodity. In fact, the existence of this regulation was one reason why the university selected the farmers from one village. The university estimates that farmers would benefit from discounts on feed, slaughterhouse services, etc., relative to what they are now paying to the private core company.

Financing has become another major obstacle to fulfillment of the farmers' plans. The university estimates that Rp 600 million would be required to finance the cooperative. This estimate is probably low. It is based upon an estimate of Rp 30 million per farmer to cover farm capital and operating costs of raising an additional 4,000 chickens. Yet, the dean of agriculture recommends that the cooperative hire a professional manager. Indeed, this would be necessary and represent a significant added cost.

Individually, the chicken farmers also face financing constraints. Their desire to expand their operations is constrained by lack of credit. Applications to receive loans from Modal Ventura have been rejected as too risky because of chicken mortality rates, price fluctuations, and other factors. It may be that Modal Ventura has little

experience lending to farmers. Badan Agribisnis would like to help the farmers obtain capital from this source.

One of the major goals of the incubator program is to enable farmers to sell their product directly to Bali hotels and restaurants. One reason they have not been able to do so is that they have not been raising chickens as a business. Hotels and restaurants needing large quantities per day have been buying from East Java and other non-local sources. One major restaurant, for example, purchases 400 chickens per day.

Some planning has already been accomplished for a second incubator to serve cattle growers. The Bali Cattle Research Center would like to work with the university to establish such an incubator. The university's incubator staff have already been testing the market. The evidence thus far indicates it is very promising. Blind tests of Balinese beef vs. high quality beef from other sources in a first class Bali hotel revealed no significant differences. Incubator staff are continuing to probe major hotels' willingness to buy Balinese beef. They estimate that three and a half years would be needed to develop an incubator for cattle growers.

Such a facility would benefit from a cattle research station supported by the Indonesian-Australian Development Cooperation Programme. This station has been testing how alternative mixes of feeds and feed additives affect cattle growth rates and their final, marketable weights. The station is situated on four hectares of land that the university would allot for incubator facilities and activities.

Many benefits are attributed to the program (see section VI), but the kinds of monitoring that would serve to document many of these are still lacking. Baseline data cover hardly more than numbers of chickens raised. Incubator staff report they are "getting in position" to monitor, which should be easier now that farmers are starting to keep better records as a result of their training (itself a beneficial outcome). They plan to visit farms once a week with a DOA representative to effect monitoring. They also plan to establish a monitoring data base.

Incubator staff report no intent to charge fees for services except to try to cover costs of expensive items like antibiotics. There is little understanding, yet, of the fact that an incubator is itself an enterprise which somehow, sooner or later, needs to be able to operate on a financially self-sustaining basis. The dean looks to governmental and international donor sources to finance the incubator(s). He apparently believes that a farmer cooperative can become financially self-sustaining but this raises some important, unanswered questions. Is the incubator to be the cooperative? Where is a business plan that shows whether and how a chicken growers' cooperative can, indeed, become a self-sustaining enterprise?

Fortunately, Universitas Udayana is affiliated with an agribusiness oriented foundation which is already receiving international donor support--the Indonesia International Rural and Agriculture Development Foundation (INI RADEF). This foundation is developing an Education and Business Centre at the university. Some of its activities would be similar to those of an incubator, including training, support for new product development, and promotion of industry-university linkages. Does this mean that the foundation/centre would negate the need for an agribusiness incubator at the university? The answer seems to be "no" because the centre is designed to serve a different class of clientele, primarily well-established, medium-large businesses. The foundation also provides partial support of the Bali Cattle Research Centre, cited earlier. Thus, centre and incubator do not conflict or duplicate one another's functions; rather, they are congruent and complementary.

The university also has its own cooperative--Koperatasi Universitas Udayana. The foundation and/or cooperative provide options for structuring an incubator in Bali that may not be available to incubator sponsors in other locations.

III. BARRIERS and CONSTRAINTS

The farmers visited indicated several barriers and constraints that need to be overcome so that they can better develop their agribusiness enterprises. The major ones appear to be deficiencies among the following:

- adequate capital or access to financing;
- adequate, appropriate, and timely market information;
- appropriate, affordable technologies to increase productivity of small processors (e.g., a seeds press, drying technologies, a coconut oil press, and technology to produce vegetables with longer shelf lives);
- access to various kinds of facilities and equipment which can be employed on a shared use, shared cost basis (e.g., a tractor, a small PC computer, a meeting room, drying equipment, a laboratory, oxygen tanks, and transport); and
- help to identify and enter non-local markets, including export markets.

Well-managed incubators can help to alleviate all of these. The ways they can do so are discussed in section VII on "Incubator Design and Development;" section VIII on "Incubator Organization, Financing, and Sustainability;" and section IX, containing "Recommendations."

IV. MONITORING and EVALUATION

As indicated by most of the program descriptions in section II, monitoring and evaluation are largely lacking. Program performance evaluations would be premature at such early stages of incubators' development, but monitoring is not. Nor is evaluation of their starting structures. The latter concern is addressed in section VI: "Program Assessments" and in section VIII: "Incubator Organization, Financing, and Sustainability."

Proper monitoring of both incubators and the enterprises they assist is crucial from the outset of incubator development in order to do the following:

- enable incubator management to assess their own and their incubator's performance and learn how to manage the incubator for best results;
- demonstrate to donor agencies and other sources of support progress and performance toward incubator goals and objectives ; and
- establish a sound basis of data and information for later performance evaluations.

There are three requisites for effective monitoring.

- Collect baseline data on entrepreneurs and enterprises entering the program.
- Keep accurate records of financial accounts and time expended for incubator development and operations.
- Provide a data base containing farm/business performance data for the agribusinesses that the incubator is helping.

The latter is most important. The success of an incubator is contingent upon the success of the businesses whose development the incubator has assisted. If the businesses are not performing significantly better than they did before incubator intervention, or improvements cannot be documented, then government and other sources of incubator financial support could withdraw their support.

None of the universities has established a baseline data base. This should be done immediately upon an entrepreneur's entry into an incubation program. Fortunately, it is not too late for adequate baseline data to be collected, but they should be collected from participating farmers very soon.

The kinds of data that need to be collected from participating agribusinesses include the following:

- total number of hectares under cultivation and/or total square meters of sheds or pond areas being used;
- total (gross) sales--per month or quarter;
- total quantity of each commodity raised (kg);
- yields (kg/hectare or kg/sq meter);
- costs by major category (labor, seed, feed, etc.);
- farm/business profitability;
- hours of work per week or month; and
- quantities of major inputs used (kg, liters, etc.).

During the study tour, incubator managers should see how their counterparts in the U.S. have set up their incubator accounting systems and how they monitor incubator clients.

V. TRAINING NEEDS ASSESSMENTS

The farm visits and meetings with farmers have revealed both laudable features of the initial training and needs for future, continuing training. Thus far, farmers attest to learning how to operate their farms in a businesslike way to maximize income through crop diversification and rotation, use of fertilizers and growth enhancers, selection of seeds, application of farm technologies, farm-business management, access to credit, good record keeping, marketing, and other ways.

The wide-ranging coverage of the initial training suggests that future training might best be provided in the form of short (maximum five day) training sessions or workshops on more specialized topics. Some of these have surfaced during on-site discussions with farmers. They include basic computer training (word processing and spreadsheet routines), how to prolong shelf life of vegetable crops, how to access and use market information, export market standards, tissue culture and quality control. Another reason for brief training is that it is the rare entrepreneur who can spend more than a few days away from his or her business.

The fact that certain training needs surfaced during the visits, however, suggests that a more systematic way of discovering such needs would provide useful guidance to ongoing incubator training activity. That some supplemental training needs have already been uncovered is not entirely serendipitous. Explicit questioning of farmers was used to divulge what ongoing farm/agribusiness development needs that an incubator might help to address.

Experience with incubator operations in the U.S. indicates, however, that early-stage entrepreneurs seldom have a sufficient understanding of their own needs or how to value incubator services designed to address those needs. Learning about these is an

evolutionary process for both incubating entrepreneurs and incubator management, somewhat like peeling away the layers of an onion. In order to specify an appropriate process for assessing training needs, it helps to recognize that enterprise development is an evolutionary process proceeding by stages or phases.

The basic training need is to establish incubators as focal points of ongoing learning processes, so that entrepreneurs can learn what they need to know to cross whatever threshold or major contingency they may face as their businesses develop. "Training" is more limited than "learning." It seems to denote formal, classroom training sessions. The initial training itself has already demonstrated, however, that there are many ways farmers learn.

- They learn from each other by interacting within their group(s), as through what one incubator manager called "buzz sessions."

- They learn from already successful peers through farm visits and discussions on-site.

- They learn through a "practicum" or work in the field, whereby farmers undertake to solve specific problems at their farms with the aid of advice from the incubator manager, a university's faculty incubator advisors, and/or DOA extension agents.

- They learn with the aid of structured tests or trials which are managed with farmers' participation, such as trials of alternative seeds, feeds, or new equipment.

In fact, it is the latter modes of learning rather than a classroom component that comprised the majority (at least one half) of the time that farmers devoted to their initial training. These modes should continue to be employed because of the following:

- Most farmers found these to be among the most useful features of their initial training experience.

- These features are very likely to help farmers identify increasingly specific learning and informational needs as they confront increasingly specific challenges in their businesses through interactions with themselves and others.

- They facilitate the building of agribusiness development networks.

As educators have often observed, the best training facilitates ongoing learning. It enables trainees to ask questions and want to learn more as they see how newly acquired knowledge helps to develop their enterprise(s) and improve their lives.

Business growth leads to additional demands for information which can be conveyed in a variety of ways, such as specialized training, management advice, mentoring, workshops, networking, and conferences. In order for farm or other agribusiness enterprises to grow, they will need to identify (1) their own special capabilities, (2) new market opportunities, and (3) how to bring the latter two profitably together. In other words, most developing small businesses tend to become more focused or specialized as they grow; indeed, in order to be able to grow. Significant business growth poses development challenges because a small business cannot continue to grow on the basis of its existing management structure and procedures.

Growth management, in fact, is often the acid test that determines whether a small business will continue to grow or fail. Capital requirements escalate, an entrepreneur's understanding of his or her own business is challenged, needs for better management information rise in quantum leaps, old business plans get thrown out because totally revised ones are required, and so on.

The evolving need for training, therefore, translates into increasingly demanding needs for more and better management and market information. These needs have two immediate implications as given below.

1. Incubator management is going to have to progress to keep at least one step ahead of the most highly motivated entrepreneurs among their incubator clients.

2. Once agribusiness entrepreneurs have proceeded past their initial training, it is unlikely that classroom instruction will be the most cost-effective medium for transfer of information or technology.

These points also follow from the two above:

1. Small business development is most likely to proceed through foci on what are called "niche" markets in advanced economies.

2. As indicated by research on small business development in other countries, the proportion of small businesses that grow rapidly or substantially (i.e., make significant contributions to the economic development of their communities) is a small percentage of any given starting group.

Thus, the farmers upon whom the incubator should continue to expend significant time and resources will become a small subset of those originally selected as it becomes increasingly clear to incubator management which of them have the motivation and ability to succeed and which do not.

Ongoing assessments of the training needs of agribusinesses, therefore, primarily call for two things.

1. Intelligent listening by incubator management and faculty advisers as they interact with farmers; and

2. Administration of an annual incubator client survey/questionnaire by incubator management to learn which incubator services and facilities are used, which are most valued, and what additional incubator services or facilities would be used and valued, if available.

Inquiries revealed two other types of training needs in addition to those specific to agribusiness enterprises. One was mentioned earlier--the need for DOA to train many of its extension agents in business development. Such training should first be focused upon agents serving the same areas and farmers as the incubators. The same universities that have trained farmers could train agents. Ideally, the training would include a practicum feature similar to that required of incubator farmers. This would probably be most effective if an incubator has set aside land for incubator use upon which experimental fields could be planted. Then some farmers and agents would be able to learn new practices together.

Another training concern resides within the universities. Some faculty deans mentioned unemployed graduates as a potential resource. Another mentioned that university students of agriculture are not planning careers in agribusiness; they look forward to working for the government. These remarks suggest an important question: How is the next generation of agribusiness entrepreneurs going to be developed, to be able to fulfill the long-term agribusiness development goals set forth at the very beginning of this paper? The ministers of agriculture and of education should be conferring together to find answers to this key question of education and training. What are the ministries doing to encourage university students to become agribusiness entrepreneurs? Do universities require entrepreneurship training as part of the agriculture curriculum? Are there special scholarships for students of agriculture who want to specialize in agribusiness development?

VI. PROGRAM ASSESSMENTS

Though systematic monitoring of farmers' progress is still largely lacking (as indicated earlier), evidence gathered through participant interviews, meetings with farmers, and other observations indicates that the agribusiness incubator programs thus far have led to significant improvements in the farming operations and/or agribusinesses of nearly all of the farmer trainees/enterprise incubatees. These

include improvements in farming and/or business practices, yields, markets, sales, productivity, feedstocks, seeds, and other relevant features of farm/business performance.

The following cases are illustrative:

- fish mortality rates down from 60% to 30-40%
- formation of mutual self-help groups among farmers
- initiation of self-financing mechanisms
- production increases from 10 kg to 30 kg per day
- growth of employment from 2 employees to 17 in one of the farm enterprises
- increase in the quality of feedstocks and seeds used
- improvements in basic tools and technologies
- increases in average harvested fish size from one to three kilograms
- increased fish larvae output from 5 liters to 10 liters for one farmer, from 2 liters to 10 liters for another, and from 10 to 20 liters for a third
- marketing and use of marketing techniques where none had developed or been used before
- use of a growth stimulant for bananas which farmers learned about through their training and
- record keeping, plus learning how to use records' data to do analysis of cash flow (the life blood of a small business), profit and loss. (Note: 17 of 19 farmers attending the meeting in Bali say they now keep records where none were kept before. These include accounting for the costs of family labor, whose costs were not counted before.)

Overall, farmers attest to learning how to run their farms in a businesslike way to maximize income through crop diversification and rotation, use of fertilizers and growth enhancers, selection of seeds, application of farm technologies, farm-business management, marketing, etc. Thus, one of the major goals of the program has apparently been fulfilled--"the creation of 100 new enterprises"--as long as it is understood that the enterprises in question are existing small farms which are "new" only because they are now being run for the first time as businesses. The number

may exceed 100 because one of the five universities is now working with its second group of 20 farmers.

There are some notable program shortcomings, however. Among most incubator sponsors, there is a lack of any vision or plan for program development and operations beyond handling the current sets of farmer trainees. Among government officials, there appears to be a lack of a full appreciation of what incubators represent. The latter includes a long-term time horizon for project support before the full potential of projects can be fulfilled and they can become financially self-sustaining. Thus, some workshops on business incubators for sponsors and officials may be in order. It is to be hoped that the study tour to the U.S. may help in this regard. Government officials comprise a high proportion of those selected to participate in the tour.

The business incubation process only begins with training. The time horizon for gestation of an enterprise to maturity and growth takes up to five years. During that period, young enterprises face many threats and contingencies. Entrepreneurs have continuing need of many kinds of assistance. Training is preparatory. Its main benefit is to prepare the entrepreneur to understand what he or she needs to build an enterprise and to value the resources that would help in that effort.

Beyond training, there are needs for:

- ongoing technical and management assistance;
- help with marketing;
- access to facilities and equipment which an individual enterprise could not afford, on the basis of costs and uses which are shared with other incubating enterprises;
- timely access to working capital and other financing;
- ready access to timely and accurate market information;
- additional, short-course training on special topics;
- interaction with other entrepreneurs to share information, enable mutual self-help and facilitate joint ventures, formation of cooperatives, or other collaborative efforts; and
- technical assistance to improve the quality and supply of inputs, including:
    - the development of superior seed hybrids;

- improved cropping patterns and irrigation;
- more effective use of chemicals and pesticides;
- techniques to decrease postharvest losses; and
- improved inspection and grading techniques.

It may take up to five years for an incubator, itself an enterprise, to become financially self-sustaining. This requires an expanded market for incubator services as well as a business plan which indicates how the incubator might be able to attain financial self-sufficiency.

Indeed, for an incubator to be an agribusiness incubator which helps to fulfill the development potential of the Indonesian agribusiness sector, it will need to serve a much broader "market" than just young farmers. The agribusiness sector is a set of interlinked commodity chains that run from the primary farmers to collectors, traders, and processors, including vendors of marketing, equipment, feedstocks, seeds, services, and other supplies to other firms up and down the chains.

In order to serve the variety of existing and emerging needs and enterprises in the Indonesian agribusiness sector, an agribusiness incubator needs to be developed as not only a center of training and good advice but as:

- a physical facility, providing spaces for entrepreneurs to meet and work and share equipment as well as incubator staff; and
- the hub of an area-wide network of support services for agribusiness enterprise development.

These are major features of successful business incubators all over the world; however, there are at least two reasons why they can and should also become features of agribusiness incubators in Indonesia.

1. There are natural clusterings of farms and other agribusinesses around similar commodities due to geographic, climactic, soil condition, topographic, and other factors.
2. There are strong social, behavioral, and government policy factors in Indonesia which induce cooperation, collaboration, and the self-organization of entrepreneurs into groups.

Both of these are revealed by observations in the field--the formation of groups by farmers producing similar products to enable mutual self-help. Agribusiness incubators can build upon and reinforce these factors.

VII. INCUBATOR DESIGN and DEVELOPMENT

Major features

An incubator is a hybrid of three major components:

1. Physical Facility - providing office space and equipment; workspaces in which entrepreneurs lacking small, affordable business premises can start up their enterprises; a conference room or meeting room and/or training classroom(s); a library or reference room with facilities for accessing market information and other agribusiness information resources; plus access to laboratories and other university facilities.

2. Enterprise Support Services Component - so that entrepreneurs have ready access to the various services they need to develop their businesses, when they need them and in just the amounts needed, especially timely, affordable, and appropriate doses of technical assistance, management advisory services, and financial services.

3. Qualified, Cooperative Network - service providers and enterprises which forge backward and forward linkages of each participating enterprise with others in the agribusiness sector.

Of these three, the latter is most important in the Indonesian context and should be accorded more weight than it is usually given in the incubator programs of other countries. It has been gratifying to see farmers organizing themselves into mutual self-help groups. Indeed, as we have observed in some locations, farmers want to formalize their groups into legal, newly licensed cooperatives. Unfortunately, they have run into some resistance from the Department of Cooperatives in their efforts to accomplish their goal.

A well-managed incubator which builds upon an incubator's cooperative, networking potential, however, can achieve all the benefits and most of the features of a cooperative without having to become a licensed cooperative or be limited by the cooperative legal form. The ideal organizational form for an Indonesian agribusiness incubator would be a synthesis of traditional cooperative and incubator forms. This mix would also represent an innovative Indonesian adaptation of the incubator

concept. A more comprehensive and aggressive approach to networking and services provision, moreover, would distinguish an incubator cooperative from a traditional cooperative.

The physical facility component is less important in an agribusiness incubator than in conventional incubators, especially when working with farmers; however, it is still important. Most farmers do not need work spaces; they have their farms and homes. Even some farmers, however, might want to become incubator tenants in order to utilize fields that some of the incubators have set aside for incubator use. Experimental fields can help to test a variety of crop and farming innovations. This possibility is envisaged by another agribusiness incubator under development in Bandung with support from the Department of Cooperatives.

Another type of tenancy in incubator facilities that should be encouraged is called "anchor-tenants" or "anchor-clients." These are well-established companies, agencies or organizations that are part of an agribusiness network. Location of one to three of these within an incubator facility can help greatly to do the following:

- stabilize an incubator and help it become financially sustainable; and
- support farmers and other small agribusiness entrepreneurs.

Examples of desirable "anchors" for an incubator would include:

- Small Business Development Centers (SBDCs), which provide a built-in set of business assistance services;
- "nucleus" companies for whom incubator farmers are doing contract farming (Note that a nucleus could also lease incubator land to produce crops that would embody new technologies, as suggested by the HoDeNS paper [ADP, 1995]); and
- offices of companies which serve as suppliers of materials and/or services to farmers and other agribusiness enterprises.

The importance of looking forward to including physical facilities as incubators develop should not be underestimated. Many farmers have indicated they would like to have access to an office and university facilities and the use of some pieces of equipment. The incubator itself will need an office with some office equipment plus a conference room or meeting room. If one of the major recommendations of this report (see section VIII) is followed, so that other agribusiness entrepreneurs are helped as well as farmers, then there are some who are likely to need workspaces at some point in the future. The agribusiness incubators should be developed to accommodate this possibility.

Agribusiness support services

Most incubator managers claim that it is the services component that is most important to business incubation, because this aspect is most likely to influence enterprises' success, failure, or stagnation. One cannot deny the great importance of appropriate services which are well-delivered when needed. This component, together with networking, is the most dynamic component, requiring great ability, flexibility, entrepreneurship, outreach, negotiating ability and other qualities of incubator management. It is "dynamic" because the incubator needs to be able to develop and vary its services mix to suit stages and phases of business development. The mix of services that the incubator can provide or help entrepreneurs to access should gradually become more varied and sophisticated. This goal is accomplished less by trying to build services into an incubator facility than it is by networking. The latter, in fact, can be viewed as the number-one service of a well-managed incubator.

Three major features of the services component should be noted as keys of incubator development to serve the agribusiness sector in Indonesia.

1. Longer-term nature of the business assistance to be provided: Contrary to the way most SBDCs operate in the U.S., for example, it is neither sufficient nor appropriate to provide short, one-or two-time doses of assistance. Enterprises accepted into the incubator program need continuing assistance for at least a few years up to a maximum of five.

2. Need to obtain better quality inputs at least cost: Farmers, especially (but not exclusively), need direct assistance to obtain high quality inputs at affordable prices. Thus, for example, the incubator for chicken growers in Bali should enable the farmers to do bulk purchasing of breeder stock and feed.

3. Need to develop new and larger markets: Farmers, especially (but not exclusively), need direct assistance with marketing and the identification of specific new marketing channels for their produce and products. Better marketing information is needed, to be sure, but it is not enough for an incubator to provide only information.

Some emphasis upon the latter two features also distinguishes an agribusiness incubator serving farmers from incubators helping entrepreneurs in other industries. Most incubators in the United States, for example, provide little or no help with material inputs or marketing.

More specifically, an outline of services to be provided by a fully developed agribusiness incubator might look as follows:

1. Market Development (including export markets)

   - identification of market opportunities
   - provision of market information and market analysis
   - provision of market grades and standards
   - price monitoring (including import and wholesale prices)
   - establishment of contact with reputable buyers
   - advice on market strategy development
   - identification of trade shows and help with market tours

2. Production, Postharvest Handling, and Processing Assistance

   - technical interventions to increase yield and quality
   - advice on improved handling and processing techniques
   - assistance with product development (e.g., packaging, grading, labeling)
   - identification and coordination of training courses and tours

3. Product Quality Improvement

   - assistance with establishment of product-specific quality standards
   - initiation of pre-shipment inspections
   - training in quality assurance

4. Basic Business Services

   - bookkeeping
   - typing
   - mailbox

5. Advanced Business Services

   - management advisory
   - financial services

6. Services of Facilities and Equipment

   - incubator office and conference room
   - equipment: photocopier, telephone, computer, fax machine
   - pilot plant for processing agricultural commodities
   - other facilities (e.g., laboratories) and equipment (e.g., drying and cooling equipment) that the needs assessments find are needed by the agribusiness entrepreneurs the incubator is trying to assist

To repeat: Incubator development is a gradual process. The above outline should not be read as a "plan" to be immediately implemented. Services should be introduced as needed and as an incubator's clientele and resource base expand. An essential feature of the resource base is a services network organized by incubator management, as indicated earlier. Only a few of the variety of services that eventually will be needed can be built into an incubator or offered directly by incubator facilities and staff.

Micro-enterprise development

Another distinctive feature of the agribusiness incubators in comparison with most incubators (including some of those already operating in Indonesia) is the emphasis upon serving micro-enterprises. Typically, these are enterprises which are family businesses, usually home-based, with less than 20 employees. The young farmers involved in the five agribusiness incubators certainly fall into this category. Most successful micro-enterprise development programs are small credit or so-called "micro-loan" programs which provide small loans to entrepreneurs on a group basis. Potential recipients form themselves into a group, so that the social and peer pressures of the group members help to ensure payback of loans by individual members of the group. Default rates on micro-loans provided by successful micro-enterprise programs are less than two percent.

Part of the development potential of agribusiness incubators in Indonesia would be to integrate the best features of micro-enterprise and business incubator programs. The farmer group formations which have already appeared among the Indonesian incubators provide a good basis for establishing micro-loan arrangements which would be adaptations of micro-enterprise development models. The additions of entrepreneurship training (as already provided) plus management and technical assistance by the incubator, however, represent additions and departures from the micro-enterprise program models, which provide only credit. These ingredients represent very important added value for the sake of agribusiness development, because they provide the opportunity for micro-enterprises to grow into larger "SMEs"--small- and medium-size enterprises that employ many more people than just family members.

This implies the possibility of generating larger overall economic development impacts than micro-enterprise programs. Where successful, as in Bangladesh via the Grameen Bank, parts of South America via Accion, and Indonesia via the P4K Project, the latter have been undeniably beneficial in augmenting incomes of low-income families. A large majority of micro-enterprises, however, stay "micro" rather than grow out of the informal economy to become full members of the mainstream market economy. Even with an excellent micro-loan program, such as the Indonesian P4K (loan recovery rate: 98 percent), it is hard to grow an enterprise when the

maximum loan is Rp250,000. By contrast, many of the farmers with whom we met need expansion capital in the range of Rp 10-30 million. Others need amounts significantly in excess of Rp250,000.

The main challenge of agribusiness incubation is growing micro-enterprises so that they graduate into the SME category. The incubator programs began with selectivity. Selectivity should continue to be exercised as the incubators develop because the main purpose of incubators is to help businesses develop. As incubator staff and university faculty interact with farmers and other agribusiness entrepreneurs, they will learn who has the motivation and ability to grow their businesses and who may be satisfied to see their businesses remain micro-enterprises, providing little more than supplementary income and employment for family members. The latter should be gradually dropped from the program so that services can be increasingly focused on businesses that are likely to grow.

Recommended features

The emphasis on developing businesses has implications for incubator development. The major implication is that incubator development should anticipate the needs for assistance which are corollaries of business development. In other words, the incubator should evolve so as to stay at least one step ahead of the businesses whose growth it is trying to promote. More specific implications include the following:

- Devote at least one large room which can be subdivided, or two smaller rooms that would become the starting incubator facility, providing an incubator office, office equipment, and a conference or meeting room.

- Do not assume that farmers (the starting group of incubator clientele) are all poor or that they want to remain poor or that they want to remain micro-enterprises. The key to incubator success is to identify those that want to grow, and then help them to grow.

- Plan to offer services and resources for the incubating enterprises which steadily increase in their variety and their sophistication, starting with those which first address the most urgent needs of small, young farmers.

- Build the capabilities and power of the farmer group(s). Assist them to increase their bargaining power, sales, and incomes by the following:

    - helping them to negotiate contracts with estates, "core" firms, "nucleus" companies, suppliers and others;

- negotiating bulk-purchase arrangements to obtain material inputs at lesser costs per unit; and

- providing technologies, tools, and equipment that, individually, could not be afforded, and leasing these to farmers and other agribusiness entrepreneurs on the basis of shared-use, shared-cost.

- Build the economy of network(s) to give the small enterprises some of the advantages of bigger businesses; e.g., by doing the following:

  - helping farmers to form marketing and processing cooperatives so that they can add value to their produce and obtain better prices and/or helping farmer groups negotiate arrangements with existing traders or processors; and

  - encouraging farmers and other agribusinesses to collaborate or engage in joint ventures so that, together, they can supply new customers and penetrate new markets.

For example, agribusiness incubators should prepare to take advantage of the types of opportunities put forth in the ADP paper, "Horticulture Development in North Sumatra--HoDeNS" (ADP, 1996). These are opportunities for agribusinesses to adopt new technologies so that they can penetrate new or broader markets. If the existing incubators can position themselves to provide, with help from the ADP, the kinds of assistance outlined in the paper, there is no overriding reason why the "agribusinesses" in question cannot be some of the farmer groups who are already part of the incubator program. Similar opportunities can be found in aquaculture, chicken farming, or cattle growing; they are not limited to horticulture.

The technologies in question include the following:

Pre-cooling: to facilitate the export of snowpeas, cauliflower, and other vegetables.

Integrated pest management (IPM): to enable cabbages and other vegetables to be certified and marketed as "reduced pesticide" produce.

Gibberellic acid: to promote increased sprout development in seed potatoes which will increase the number of potatoes produced per tuber. Caution should be used as too much gibberellic acid can reduce yields and quality of potatoes.

Sprout inhibitor: to facilitate commercial potato storage.

Vacuum drying technology: to dehydrate fruits and vegetables so that they can be profitably sold to the dried noodle and soup industries.

The HoDeNS paper's focus is not upon farmers but upon agribusiness entrepreneurs such as traders and exporters, some of whom are called upon to organize "outgrower" programs that, through contract farming arrangements, would obtain the produce to which the technologies would be applied. Such arrangements represent part, but not all, of the market potentials for farmers which the technologies would help to realize. Other possible arrangements could be made with incubators' assistance, such as the formation of farmer cooperatives that could effect the post-harvest processing required by the technologies.

A more general implication of the foregoing is that an incubator be developed and managed so that it is market driven. As ADP's working paper on "Strategies for Agribusiness Development" stated:

> The market is the master. The products of the agribusiness sector . . . must ultimately meet the test of the market--including requirements of form, price, quality, timing and location . . . . (Boomgard, 1993, p.3)

Thus, the incubator must provide "market led assistance." It should "seek opportunities for intervention that create benefits for many firms at a single stroke . . . that create almost certain benefits by assisting firms to exploit real business opportunities. When opportunities for new markets appear . . . the intervener (incubator) must rapidly and efficiently deploy its tools to help firms capitalize . . . ." *(Ibid,* p.17*).*

Incubator management

The key to implementing most of these features of incubator development is the incubator manager. He or she is the single most important factor in the development and success of an incubator. Recruitment and selection of an incubator manager is an even more stringent process than selection of the entrepreneurs who would be admitted into the incubator program. Some agribusiness incubator managers have simply been designated by university officials. Those designated may or may not have the requisite dynamic, entrepreneurial qualities to manage an incubator. It is very important that incubator managers are not only able, but that they have maximum freedom of action, to manage their programs in flexible, entrepreneurial ways.

Incubator sponsors in other countries also find that incubator manager candidates need to be trained, so special training programs have been established in the U.S. and Europe. It is to be hoped that the study tour will serve as a partial substitute for

incubator manager training. This implies, however, that all designated incubator managers have been included on the tour, which unfortunately is not the case.

Contrasts with other Indonesian programs

The ways this paper has characterized agribusiness incubators and their development offer striking contrasts with the major, prevailing, government-sponsored programs for promoting small enterprise development in Indonesia--"nucleus/plasma," Bapak Ankat, BUMN, LIKs and PIKs. Descriptions of each of these, which can be found in other sources, are not needed here to note their major shared feature: that they tend to promote continuing dependencies between the government and/or large companies and their small enterprise clientele. They are "schemes that protect, guide and subsidize small enterprises . . . that try to force integration of small farmers into commercial systems . . . they are counterproductive . . . they tend to generate . . . weak, dependent and uneconomic firms and farms . . . " (Boomgard, 1993, p.5). They are also programs that are applied from the top down.

By contrast, a well-designed, well-managed incubator helps small enterprises help themselves to become independent, well-managed entities in their own right. Incubators also represent "bottom up" rather than "top down" strategies.

VIII. INCUBATOR ORGANIZATION, FINANCING, and SUSTAINABILITY

The most difficult challenges faced by incubators in any country are those of financing and sustainability. The issue of organization is related because some forms of organization are more appropriate vehicles for financing and operations than others. The challenges are especially great if the incubator is serving clientele who:

- do not need or do not want to lease space in the incubator facility; and
- are reluctant to pay fees for services, because they are poor and cannot afford them or for other reasons.

These two features characterize the Indonesian agribusiness incubators thus far. Together, they imply the need for continuing subsidies as long as one or the other continues to hold true. As long as small farmers continue to be a significant part of the incubators' clientele, for example, some level of continuing subsidies would probably be needed. By broadening and diversifying an incubator's base of clientele, however, it should be able to recover a gradually increasing proportion of its costs and diminish the need for subsidies. The extent to which this can occur depends greatly on the quality of incubator management.

Thus far, the incubators have been totally subsidized through MOA budgetary commitments of Rp 100 million per incubator. This level of commitment seems about right for the first year of incubator operations, given that the major first-year activities have been to do the following:

- train groups of farmers in sets of 20;
- provide technical and management assistance; and
- engage an incubator manager.

As one of the incubator managers remarked, however, these activities represent an "embryonic" or "preparatory" incubator and, as another insisted, incubator development requires additional resources. At the same time, the question of how some incubator costs can be recovered, or revenues earned, will continue to be an urgent one.

If the line of development outlined in the previous section VII is followed, an incubator office would need to be prepared and equipped, and at least one additional staff person would have to be hired to assist the incubator manager. Some allowances for travel, materials, electricity, telephone, etc., would also need to be budgeted. These requirements imply incubator "Year 2" total cost budgets of about Rp 50 million more than the existing level of Rp 100 million per incubator for "Year 1."

Just as farmers and others need to be weaned away from continuing dependency on subsidies as much as possible, so do incubators. Otherwise, both the incubator and many of its clients will fail when the day comes (as surely it eventually will) when government appropriations cease to be available. The incubator system needs some built-in incentives for costs to be recovered and/or for revenues to be garnered from other than Indonesian government sources in order to reduce its dependency.

In the case of incubator clients, the shift away from dependency is effected through the following:

- gradually introducing and then gradually increasing fees for utilization of incubator equipment and services; and

- the selectivity noted earlier--those entrepreneurs who are (1) not making use of the incubator, or (2) not making progress toward fulfillment of their business plans are dropped from the program and others are selected to replace them.

Dependency in the case of the incubators themselves is gradually reduced by introducing incentives for incubator management to seek other sources of revenue

and/or achieve cost recovery. These incentives can include some or all of the following:

- government budgetary allocations provided on a "challenge," "matching grant," or "contingency" basis;
- government budgetary allocations which gradually decline; and/or
- incubator manager performance contracts.

It is by no means clear whether the latter are feasible in a university setting, so let us focus upon what kinds of incentives can accompany government transfers. Government grants for economic development projects (including incubators) in the United States usually require project sponsors to raise matching resources in amounts which are at least a minimum percentage (often 25 percent) of total project cost. Thus, for a Rp 100 million project budget, a project sponsor (whether a university or any other) would have to contribute Rp 25 million in order to qualify for the receipt of the remaining Rp 75 million from the government.

Similarly, the U.S. Agency for International Development now requires some of its projects (including some ADP projects) to require potential grantees to contribute 50 percent of projects' costs. Many private foundations issue "challenge grants"; for example, they will give Rp 100 million if the organization can raise Rp 50 million. Both government agencies and foundations may give monies which provide substantial investments in development projects when they are starting up but which gradually diminish if the projects are expected to earn revenues or achieve some degree of cost recovery.

Some incentives should be provided to induce incubators to recover costs and/or raise revenues. There are actually two reasons why such incentives are important--not only to reduce dependency but to generate resources to develop incubator programs. It is suggested that the MOA budget money for incubator development on a challenge or matching grant basis starting in "Year 2" of any incubator. Incubator management, anticipating this, would have one year to find ways to obtain revenues from other sources and/or recover some costs.

The "Guiding Principles for ADP's Private Sector Component" call for project management to find ways of raising money to pay for service delivery. The ability to accomplish this is somewhat dependent on how an incubator is organized, as indicated earlier. Three forms of organization are conceivable in Indonesia:

1. P.T. (a for-profit, limited liability company);

2. Yayasan (an Indonesian foundation akin to a U.S. private, not-for-profit corporation); and

3. Cooperative--legal (licensed) or informal.

The "P.T." option can be dismissed because the Indonesian incubators are viewed as public service projects and it is highly unlikely that they would be run at a profit. This leaves choices 2) and 3). The point is that a choice should be made. An organizational form should be selected, preferably before an incubator is established but, in any event, before an incubator continues much beyond its first year (Year 1). An incubator should have its own identity and accountability as an operating entity. It is highly undesirable for an incubator to be managed as only a branch unit of either a university or a government agency.

Most incubators in the U.S. and Western Europe have been organized as not-for-profit corporations through a mix of public and private resources. Thus, many are described as "public/private partnerships." A prime advantage of this form is that it can receive private as well as governmental contributions because it is tax-exempt. Incubators have not been established as cooperatives, but there are no foreign incubators serving farmers and most foreign cooperatives are organized by farmers.

Considerations in choosing between "Yayasan" or "Cooperative" in Indonesia may be characterized as follows:

Yayasan: Could attract and receive support from other sources, including the private sector; would be more suitable for serving a broader range of clients, not only farmers; and would permit fees for services to be charged.

Cooperative: The best form for groups of farmers; would enable revenues to be made and costs to be saved for farmers as a group through group selling and purchasing arrangements, respectively.

In and of itself, neither form provides a ready-made answer to the sustainability question. Much will depend on the ability of an incubator manager to market his program to potential sources of support and/or demonstrate that it adds value to enterprises so that entrepreneurs, recognizing the added value, would be willing to pay fees for at least some services. This can be accomplished over time, directly and/ or indirectly. These are described below:

Directly: By providing valuable services, introducing them to entrepreneurs for no fee or reduced fee, then gradually increasing the fee as the value of the services comes to be recognized; and

Indirectly: Through service contracts with a select subset of entrepreneurs whose agribusiness enterprises have started to grow through their participation in the incubator program. Such contracts, for example, could call for payments of a fraction of a percent of enterprises' sales as payback for services received (known as "royalty" payments).

Any of these arrangements relates to the dependency problem at the level of the enterprise. An incubator does entrepreneurs no favor by insulating them from market forces; i.e., by treating their businesses like delicate tropical flowers to be raised in a protected greenhouse. The incubator is in business to establish and nurture agribusiness enterprises which, ultimately, can be fully competitive in regional and foreign markets, not just local markets.

The choice between Yayasan and Cooperative need not be an either/or choice. The Yayasan form is somewhat more general and preferable as a legal form of organization for an Indonesian incubator. It is desirable that an agribusiness incubator serve a cross-section of agribusiness enterprises, including farm businesses. A group of farmers that is well-organized could establish a cooperative form within the context of an agribusiness incubator that has been established as a Yayasan.

A Yayasan would also permit incubator sponsors to solicit financial support from a wide variety of sources, public or private, domestic or international. Indonesian sources are well known to incubator sponsors and so will not be specifically addressed here. A major sectoral source, however, should not be overlooked--the private sector. Each incubator's organization should include a majority of private sector representatives on the board of the incubator governing body and/or should include a private sector advisory committee.

Assistance from international donors should be aggressively sought in the form of grants and/or program-related investments. Prime international sources to approach are the following:

- USAID via ADP
- UNDP: United Nations Development Program (which provided earlier support for incubator development in Indonesia)
- The World Bank (which has provided support for agribusiness and small scale enterprise development projects in Indonesia)
- ACDI/VOCA: Agricultural Cooperative Development International and Volunteers for Overseas Cooperative Assistance (which have supported agribusiness development, including agribusiness incubators, in other countries)
- Ford Foundation, Rockefeller Brothers Foundation, the Pew Charitable Trust, Winrock International, and other private foundations based in the U.S.

(which have supported micro-enterprise and agribusiness development projects involving universities and NGOs)
- CARESBAC, the development financing arm of Care International, could help provide financing for agribusiness enterprises
- USDA: U.S. Department of Agriculture (has supported some rural or agribusiness incubators in the U.S. and agricultural development projects abroad)

ADP, representing USAID, is able to provide support, budgets permitting, in the areas of technical assistance, training, market information, facilities improvement, and small equipment acquisition. These are all areas of need already identified among the five agribusiness incubators. Which needs could be addressed by ADP support, to what extent and on what terms, would be the subject of negotiations between ADP and BA now that the new fiscal year of the Government of Indonesia is getting underway. Whatever the nature and extent of ADP support may turn out to be, it is very important that BA assume a leadership role in helping managers of the agribusiness incubators obtain funding from outside sources.

IX. RECOMMENDATIONS

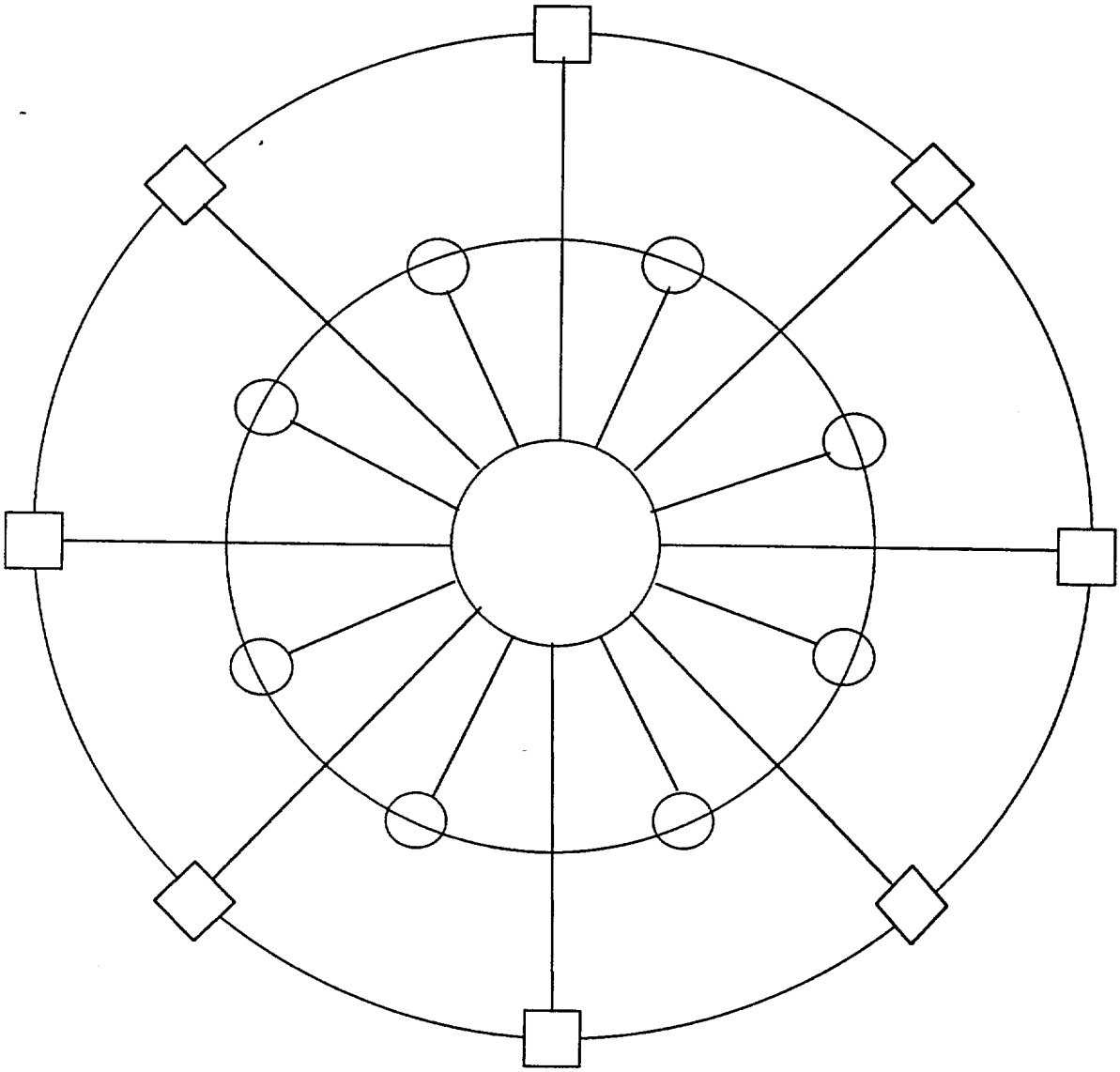
Many recommendations derive from one guiding principle--that an agribusiness incubator be viewed as an integral component of an agribusiness development system. This guiding principle, in turn, derives from one major well-known feature of the agribusiness sector--that it is a set of interlinked activities characterized by commodity chains. Projects to improve farmer incomes "must involve an integrated approach: if there is one missing link in the chain, from seed to farmer, then it is possible that no benefits will accrue to farmers" (West, 1994).

The implied structure of an agribusiness incubator program is shown by Fig. 1, which represents the incubator as the hub of an area-wide network of support services for agribusiness development. Moving outward from the hub, the second circular set of nodes shown in Fig. 1 represent the various facilities and services of a sponsoring university that agribusiness entrepreneurs should be able to utilize, such as faculty and students, equipment, premises, pilot plants, laboratories, technologies, and training.

The outer perimeter of Fig. 1 represents the set of resources in the larger community outside the university that the incubator should help agribusiness entrepreneurs to identify and access--suppliers, professionals, equipment rental shops, import/export companies, estates, and other medium-large agribusiness firms.

Figure 1

Incubator as Hub



○ Facilities and services of sponsoring university

□ Community resources outside university

Consider, therefore, the following recommendations in light of the concepts, factors, and features noted thus far.

Sponsoring universities should do the following:

- Prepare business plans which outline their visions for the development of their incubators and how they would proceed to realize them in all essential detail--activities, services, facilities, organization, management, and financing.

- Focus their incubators upon single or closely interrelated agricultural commodities. Most already have focused their activity, for example, upon fruits, coconuts, poultry, fish, or cattle.

- Recognize that the clientele to be served by their agribusiness incubators is far greater than the group of small, young farmers in their regions. It includes older farmers and a diverse set of entrepreneurs and enterprises in the agribusiness sector, including processors and suppliers of seeds, feed-stocks, equipment, services, and financing; and unemployed university graduates.

- Establish broad-based advisory committees for their incubators, committees which include individuals of high repute from the private sector, public sector, and donor agencies which can help support the incubator program in various ways.

- Dedicate at least one room to provide a physical center for incubator activity as well as to provide essential space for an incubator's office, equipment for shared use by incubator staff and incubating enterprises, and a meeting place for agribusiness entrepreneurs.

- Identify, screen, qualify, and select sets of resource providers in both the university and larger communities and enter these into a data base which can be easily accessed. Prepare a directory to all relevant services and resource providers. Distribute this directory to farmers and others.

- Work to identify agribusiness opportunities and try to match them with entrepreneurs who have also been identified through the incubator program. Pay special attention to needs of farmers that are not being supplied in the marketplace. Any of these might provide the basis for a new enterprise that would serve farmers and other parts of the agribusiness sector.

- Enable easy access to all relevant data bases of agribusiness market information in and through the incubator office.

- To enable program monitoring and evaluation, and for the sake of program management, establish a computerized data base to incorporate all data collected on the farmers as well as the incubator's own records.

- Increase the incubators' efforts to market themselves. Two ways that could prove fruitful in this regard, as well as educational for the attendees, are listed below:

  1. Convene a workshop on agribusiness incubation for DOA officials.

  2. Bring together high level officials from government and donor agencies for a conference on agribusiness incubation.

- Approach Winrock International, USAID's AMIS II Project, the United Nations Development Programme, the World Bank, Agriculture Cooperative Development International, and other international donor agencies to try to obtain additional support for the incubator projects.

- Provide direct marketing assistance to farmers and use marketing requirements as the primary driver for advising changes in cropping, postharvest processing, and other modifications in farm businesses so that new markets can be penetrated.

- Help strengthen existing group cooperation by providing assistance to those groups of agribusiness entrepreneurs who wish to

  - form marketing or processing cooperatives;

  - enter into joint ventures, collaborative efforts, or strategic alliances;

  - contract with medium-large agribusiness companies;

  - build networks to enable shared information, production, financing, or other activities; and

  - extend existing informal group financing activities into more formal savings and loan or revolving loan fund arrangements.

- Equip the incubator with a core set of basic office equipment and make this accessible to agribusiness entrepreneurs who are participating in the incubator program.

- Identify other facility and equipment needs, and find ways to meet them. An inventory of relevant university facilities and equipment should be compiled

and included in the directory recommended earlier; moreover, arrangements should be made for farmers and other agribusiness entrepreneurs to access these and the terms of access should be described in the directory. To the extent that needed tools do not already exist at the incubator, the incubator manager should take steps to acquire them and thereby build an inventory of tools that entrepreneurs can utilize through rental or lease-purchase arrangements.

- Identify entrepreneurs' needs for short amounts of follow-up training on special topics, such as computer training, quality control, and exporting, and find ways to provide such training.

- Monitor the progress of their incubator programs by keeping careful records of two types:

  - Incubator records: Sources and uses of capital financing; how staff members allocate their time among various activities; staff costs and other costs of incubator operations; and incubator revenues from fees and other operating sources

  - Records on farmers and other agribusiness entrepreneurs served by the incubator: Baseline data reflecting the status of agribusiness entrepreneurs' enterprises upon their entry into the program, and data collected periodically (at least yearly) to monitor their progress. Such data should include sales (gross revenues), costs, profitability, yields, productivity, business practices, and technologies adopted.

For its part, Badan Agribisnis should do as follows:

- Work with the Indonesia Incubator Association to establish an interministerial coordinating committee for incubator development. For example, an existing interministerial committee, the Steering Committee for UNDP Assistance to the Private Sector, might become such a committee with the addition of the only relevant ministry not yet represented--the Ministry of Agriculture.

- Explicitly incorporate incubator planning and development into the agency's long-term planning and budgeting activities and documents.

- Try to affect scheduling and activities of agricultural extension agents so that they are coordinated with those of the incubator in the locations where the incubators exist.

- Sponsor seminars or short training courses at the sponsoring universities in order to acquaint DOA extension agents with the basics of business development and the overlap of technical and business concerns.

- Commit at least Rp 150 million per incubator for base support for five years, contingent upon incubator project sponsors obtaining supplementary matching funds of at least Rp 25 million per year in years subsequent to 1995 or subsequent to an incubator's initial (start-up) year. To the extent that incubators need to capitalize a fund to provide direct lending among incubator services, the financial commitments would have to be higher by at least another Rp 75 million. Of course, any such additional amount would be a one-time capital commitment.

- Insist that those agribusiness incubators receiving government financial support become part of the Indonesian Incubator Network and other incubator networks abroad, and help them to do this.

- Discuss the incubator program with select agribusiness trade associations and try to get one of them to locate an office in at least one of the incubators.

- Do as much as possible to help the incubators raise financing for farmers and agribusiness enterprises and also for themselves.

The best way to accomplish the latter would be to press for sufficient incubator funding from the Government of Indonesia in the next fiscal year budget so that each incubator could use some portion of its funding to establish a small revolving loan fund (maximum capitalization: Rp 100 million) to provide direct small loans to its clients. A condition of receiving the extra money should be that a potential recipient farmer group raise at least Rp 2 million from its own resources.

These recommendations should be fully discussed by all relevant actors and agencies and appropriately modified before they are accepted and formalized.

Recommendations specific to locations and programs

1. Ujang Pandang: Universitas Hasanuddin

The incubator's second group of farmers is too far away (average distance 250 km) to be able to return to the university monthly and make use of whatever facilities could be made available for them. Thus, the first recommendation is one already given by one of the farmers--that the university, in conjunction with DOA, try to provide a room with some equipment for the farmers at the district level.

Other recommendations specific to this incubator are listed below.

- The incubator should import and/or adapt the coconut oil press being used in the Philippines to provide a more efficient means of extracting oil.

- The university should design and implement a short (maximum 5 days) training course to acquaint vegetable farmers with the standards and requirements for vegetable exports and then work intensively with a few farmers to enable them to export. Another short, special training course should focus on postharvest handling and show vegetable farmers how to extend the shelf life of their produce.

- Unemployed university graduates who have successfully completed SBDC training and are interested in agribusiness should also be included in the incubator program.

- The incubator should work intensively with a select subset of farmers to prepare them to take advantage of the nearby estate's invitation.

- The incubator should identify a tractor rental service, if any. If one does not exist, the incubator should assess the market potential for such a service and, if it is sufficient, try to find an entrepreneur to establish one.

- Follow up with DOA to get equipment to connect to the MOA/DOA LAN for accessing market information.

- Work with DOA to design and implement a training course on agribusiness development for DOA extension agents.

2. Yogjarkarta: Universitas Gadjah Mada

- Existing farmer "lottery" arrangements should be transformed into savings and revolving loan funds which would enable the incubator to provide small loans to farmers on a self-financing basis.

- Purchase an old, used coin press and try to adapt it to press empling mlinjo seeds into chips.

- Complete plans to obtain market information through the Internet.

- Help seed processors to identify and/or develop their own marketing channel.

- Develop and/or obtain and adapt drying technologies for testing by the seed processors.

- Devise procedures for testing the effects of changes in technologies to estimate whether they make significant differences in productivity, yield, quality, or other desirable attributes. Farmers who volunteer to help test changes (e.g., the chip stamping machine) should then be taught how to implement the testing procedures.

- Invite the new, formal cooperative devoted to salata fruit farmers to be part of the incubator program and/or the Center for Agribusiness Development and Planning at the university. For example, invite the cooperative to establish its office in the same building as the incubator and the Center.

- Contact relevant horticulture trade associations and invite them to participate in the incubator program. Reserve some space in the incubator facility to accommodate them if they are interested.

3. Bandung: Universitas Padjadjaran

- Unemployed university graduates who are interested in agribusiness should also be included in the incubator program.

- Develop simple techniques for fish farmers to use to test and monitor the composition of their pond waters; train farmers in the use of these techniques.

- Develop simple data/record formats for farmers to use to periodically record important data reflecting fish weights, diseases, and mortality; show farmers how to maintain these records.

- Identify specific reasons why some Indonesian fish have been subject to export detention. Communicate these reasons to fish farmers and train some of them to raise fish to meet export standards.

- Follow up with Slamet Rahardjo, Director of PUTRI SEGAR (the vegetable wholesaler) and try to negotiate arrangements whereby he would buy fish from some of the fish farmers. Provide assistance to the farmers so that they can meet time-to-market, postharvest handling, and quality requirements of HERO and PUTRI SEGAR's other supermarket customers.

- Find a source of oxygen tanks for farmers in need of them. If there is not a nearby source, purchase some tanks and lease them to farmers.

4. Jember: Universitas Jember

Since the rector is striving to develop an Agribusiness and Agroindustry Institution involving a consortium of agencies and ministries, Universitas Jember should consider assuming a lead role in a collaborative effort involving all five of the universities participating in the agribusiness incubator program. The collaborative effort should define specifically what kinds of inter-agency, inter-departmental, inter-ministerial coordination are needed for the program and then press for these to be implemented. This would provide a coordinated response to what one of the university deans called the "coordination problem." This is a serious problem affecting the future of the incubator program. The progress of the program may be impeded because it does not fall neatly within the boundaries of one agency or ministry, but rather crosses the boundaries of several agencies. Incubators usually suffer from bureaucratic management interventions.

Other suggestions:

- Incubator staff and university faculty should organize a workshop to focus on horticulture marketing, then work with interested and motivated individual farmers to advise them how to modify their planting, growing, and postharvest practices so they can sell to more distant markets, including possible export markets.

- The incubator should obtain a computer which can tie into ADP, DOA, BA, the Internet, and other networks providing agricultural market information, and make the computer and/or the information accessible to farmer members of the incubator program. Prior to this, other, more readily available sources of market information should be shared with farmers.

- The incubator should consider providing short (2-5 day), special training on postharvest handling (including packaging) and tissue culture. If there are not enough farmers interested in such training to justify special courses, then these concerns should be addressed through university or DOA extension services.

- The incubator should mobilize university faculty, laboratories, and/or others to propose and develop new products from processing horticulture commodities. Then the incubator should identify and assist agribusiness entrepreneurs who are capable of taking such products to market (e.g., dried banana chips).

- The university should take steps to integrate its two incubators and put them under the same roof.

- The farmers growing corn should be helped to obtain better seed. It is not advisable for the farmers to be using seed corn that is saved from previous crops.

- The Jember incubator manager should visit with the manager of the incubator at the Institut Teknologi Sepuluh Nopember Surabaya (ITS), Hartanta Tarigan, Ph.D.; see the ITS incubator facility; and learn from the manager's experience developing and operating the incubator. Dr. Tarigan's telephone number is (031) 594-7254.

5. **Bali: Universitas Udayana**

- Mobilize high level officials to press the Department of Cooperatives and Small Scale Enterprise (DOK) to license the proposed new farmers' cooperative.

- Engage Badan Agribisnis (BA) to press for approval of farmer loan applications by P.T. Sarana Bali Ventura and, more generally, for the latter to develop procedures to expedite such approvals in the future.

- Mobilize high level support to obtain BUMN financing for the new cooperative and/or its members.

- Once the cooperative has been licensed, proceed to merge the incubator into the cooperative (or vice versa). Thus, the incubator manager would also be manager of the cooperative.

- Approach the Australian international development assistance program and ask them to help support an incubator to assist cattle growers.

- Help the chicken growers to renegotiate their contracts with the "core" poultry shop when their contracts come up for renewal.

- Negotiate arrangements with INI RADEF whereby incubator offices can be located in the Foundation's Education and Business Centre and share the use of the centre's facilities.

- Until the cooperative becomes operational, try to get the "poultry shop" to guarantee loans to individual farmers.

- Help the farmers to establish their own revolving loan fund to provide direct, small, timely loans.

- Send a selected incubator manager candidate abroad to do a study tour to learn how to manage both an incubator and an agricultural cooperative.

- Discuss the matter of production scheduling with incubator farmers, and try to formulate a scheduling plan that would prevent surpluses of chickens entering the market at times when prices are likely to be soft.

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