

**THE IMPACT OF AGRICULTURAL RESEARCH ON END-USERS AND PASS-THROUGH USERS:
CAMEROON NCRE, ROTREP , AND BEAN/COWPEA CRSP PROJECTS**

William H. Judy

July/Sept 1988

Introduction:

There is an increasing and ever more urgent demand for evidence of the impact of research on the beneficiaries. This demand is particularly applicable to agricultural research projects in which the goal of most USAID projects is to improve production and net incomes of small-scale farmers. Most researchers can demonstrate that they have carried out well-designed trials and arrived at some significant improvement in the crops or livestock included in the program. Frequently, researchers cannot justify that the problems they are trying to solve are the most important constraints to production nor do they know the magnitude of the economic benefits of biological gains, however significant. And the most difficult to evaluate is the magnitude of benefit and extent of adoption by the end-users, the farmers.

Fortunately, the NCRE Project (631-0052) includes a linkage mechanism between research and the farmer. Designated the TLU (Testing and Liaison Unit), it is charged with the tasks of (1) surveying the agriculture of an area to identify the constraints limiting crop production and net income, (2) identifying research findings which could remove these constraints, and (3) conducting on-farm trials and demonstrations to evaluate the proposed solutions to these problems. The TLU mechanism in no way removes the responsibility of the researcher himself to survey the target crop production area in order to identify constraints and to evaluate the biologic and economic benefit of his research findings to the end-user, the farmer. But the TLU mechanism does formalize the institutional linkage between IRA and the farmer as well as between IRA and agricultural extension, input, and marketing organizations. It also provides a structured way to determine the biologic and economic impact of research findings on the farmer by surveys conducted on the farm and with the organizations supporting agricultural production.

An improved research planning procedure was introduced by the USAID Project Officer to the implementing contractor IITA and the cooperating Cameroon institution IRA. The improved procedure requires development of objective-oriented workplans based on priority problems and periodic reports based on the objectives described in the workplan. An objective-oriented workplan provides quantifiable and qualifiable long-term and annual objectives. Periodic reports on this kind of workplan provide benchmarks to determine the amount of progress toward the objective and estimates for the amount of time and effort required to achieve the rest of the objective. One can then calculate cost-effectiveness to compare the cost of doing research to reach some finite objective with the economic benefit of the research finding. And one can also calculate the economic benefit to the farmer who adopts the research finding or the organization (seed company, fertilizer company, marketing organization, etc.) which accepts the research and passes it on to the farmer.

BEST AVAILABLE DOCUMENT

An effective objective-oriented workplan and reporting system, especially if it includes a legitimized survey mechanism like the TLU, can provide rather precise periodic evaluations of the effectiveness of a project. What is not available from this system is a compilation of succinct vignettes which demonstrate evidence of research impact on the agricultural community. For example, where can one find in the workplans and reports, examples of not just the biologic economic gain of a research finding, but a description of how and why a farmer or a group of farmers adopted a research finding during some period of time? And were there side effects, such as changes in a whole system of cultivation or in the status of human nutrition? And what about the gains and benefits to pass-through users of research findings like agricultural input organizations, marketing entities, and educational institutions, such as extension?

It was to this end of developing succinct vignettes out of already available information that all USAID agricultural research project technicians were asked in August 1988 to provide one example of the impact of those research findings developed by them in their project.

A format was developed for an anecdotal or testimonial statement about the impact of a specific research finding. There are two classes of beneficiaries of research findings - the end-users and the pass-through users. End-users are defined as the growers of the crops which would include a farmer, a group of farmers (recommendation domain), or company which actually operates a farm. Pass-through users are defined as the intermediary users of research findings such as extension staff, development agencies (MIDENO), production/marketing companies (SODECOTON, UCCAO, etc.), fertilizer and seed companies, credit agencies, etc. Each project technician was requested to complete one format for either an end-user or pass-through user.

Examples of both formats are included as Attachment I. They differ only in the heading of the format. Written instructions were provided as an elaboration of what is meant by each of the six parts of the format.

Instructions were as follows:

"Evidence of the impact of agriculture research will be required of projects. Given that research findings are expected to have a beneficial biological/economic impact on end-users, i.e., farmers, production companies, and extension, the questions become: Who?, Where?, What?, When?, and How? Evidence of impact could come from the results of area surveys, disaggregated statistical data, and personal testimonials. Such information could be written, verbal (audio tapes), and visual (TV tapes and photos). Every technician will be involved in collecting specific evidence of research impact.

One example of utilization of research findings developed in the NCRE, ROTREP, and CRSP projects is now requested from each of the technicians in these three projects. This information would come from either the end-user or from the pass-through user."

BEST AVAILABLE DOCUMENT

The basic formats are shown in Attachment A for the end-users and in Attachment B for the pass-through users. There are six general questions to be answered:

- Who?
- What?
- When?
- How much?
- Why?
- What other benefit?

An explanatory sheet is included for both Attachments A and B. These explanatory notes provide some parameters and dimension to the information that might be included. The format is not intended to exclude other information that you might feel is directly relevant, nor is it necessary to collect every bit of data. For example, points #1,2,3,4 are critical, while points #5 and 6 are important. Include either the be available "hard" data or your best estimate. The information should be prepared in a testimonial or anecdotal format. The completed information on each beneficiary would not exceed one page and could most likely be held to within one-half page. Photographs and transparencies or other visuals would be very helpful.

Our target date for receipt of one completed format from each NCRE, ROTREP, and CRSP technician is September 2, 1988 in the USAID/ARD Office in Yaounde. I will share the collated results with you".

In addition, the consultant contacted each of the project technicians personally to explain the purpose of the questionnaire and what kind of information should be included under each of the six sections.

RESULTS:

All but two of the 18 research technicians in the three USAID agricultural projects responded with at least one example of the impact of a research finding. The two technicians excepted from responding were the Chiefs-of-Party for the NCRE and ROTREP projects. Two IRA researchers also submitted impact statements. Some technicians provided two or three examples. The unedited formats are included with this report as Attachment II.

A total of 17 research impact statements were submitted for end-users and 7 for pass-through users. Some of the statements are so thorough and factual that they could be utilized as a "news story" with minimal editing.

Most technicians provided the kind of information requested. Reasons for imprecise information are primarily related to factors other than the content and relevance of the research program. For example, the technician might lack information about the CPA value of the gain from adopting a research finding, or about the number of farmers in the recommendation domain, or about the actual number of farmers who did adopt. Sometimes the information is even

further removed within the system from the researcher. Information such as the benefit from a research finding to the fertilizer company and to its customers on the use of fertilizer may not be readily available. Information on human nutrition and spin-off effects on other crops is also speculative to the extent that actual data is lacking. However, several technicians did have difficulty in defining the precise research finding or findings which were asserted as being accepted or adopted.

As a whole, all of the examples of research impact given by the project technicians could, with some modification, be accepted as evidence of the positive impact of research findings from the NCRE, ROTREP, and Bean/Cowpea CRSP Projects.

I recommend that USAID require examples of the impact of research findings on end-users or pass-through users to be submitted with the annual report of each research technician in the NCRE, ROTREP, AND Bean/Cowpea CRSP Projects. The format which has been developed appears to be suitable for obtaining the specific information needed.

Audio-Visual Unit:

A second approach taken by the consultant was to utilize the one remaining Audio-Visual (A/V) Unit technician for making A/V tapes demonstrating the impact of the agricultural research projects. A series of vignette for A/V taping was prepared in a conference with the Chief-of-Party of NCRE and the A/V technician. Two 20 minute tapes were planned. One tape would feature perhaps 5-7 examples of the impact of NCRE Project research findings on end-users and pass-through users. The second tape would feature research activities in the three agricultural research projects - NCRE, ROTREP, and Bean/Cowpea CRSP.

An outline of 11 scenarios for research impact was prepared (Attachment III). Seven of these 11 were selected as first priority.

Attempts were made to complete an agreement between the NCRE Project and the A/V technician to develop the scripts, do the filming and editing, and prepare two finished video cassettes. To facilitate the agreement, a sample checklist for an agreement was given to both NCRE Project Chief-of-Party and the A/V technician. Unfortunately, as of the end of the consultancy (September 16, 1988), an agreement had not yet been completed between the NCRE Project and the A/V technician.

BEST AVAILABLE DOCUMENT

[KEEP THIS FORM]

EXPLANATION OF ATTACHMENT B: RESEARCH IMPACT ON INTERMEDIATE
OR PASS-THROUGH USERS OF RESEARCH FINDINGS

.(For education, input supply, marketing, development project, or production company personnel)

1. Who is the beneficiary?

What is the name and location of the education, input supply, marketing, production company personnel, or development project which has accepted/adopted the research finding developed in the NCRE Project?
How many people benefited ?

2. What is the research finding accepted/adopted?

What is the research finding developed in the NCRE Project which has been accepted/adopted and transmitted to the end-users?

- What specific research finding?
- Estimated biologic and/or economic benefit
- Estimated other benefit, e.g., nutrition

3. When did this acceptance/adoption occur?
Over which seasons and year(s)?

4. What has been the result?

What has been the result of the acceptance/adoption?

- For --More kg/ha...(from ___ kg to ___ kg, or ___ % increase)
ex- --More CPA/ha...(from ___ CPA to ___ CPA, or ___ % increase)
ample --Less labor/ha or per kg...(from ___ hrs to ___ hrs,
or ___ % decrease)
--Less inputs/ha...(from ___ kg to ___ kg, or ___ % decrease)
--Improved nutrition...(from/to)
--Increased area cultivated...(from ___ ha to ___ ha,
or ___ % increase)
--More kg sold off-farm...(from ___ kg to ___ kg,
or ___ % increase)
--Improved crop quality...(what?)
--Other?

5. Why and how did the acceptance/adoption occur?

6. Were there other beneficial effects?

- For --Used same practice on another crop?
ex- --Obtained residual effect on another crop?
ample --Made more hectares available for other crops?
--Other?

RESEARCH IMPACT ON END-USERS AND ON INTERMEDIATE OR PASS-THROUGH USERS
OF RESEARCH FINDINGS

INTRODUCTION:

There is an increasing and ever more urgent demand for evidence of the impact of research on the end-user. Evidence of research impact is required by funding institutions and agencies.

DISCUSSION:

In USAID activities in Cameroon, this applies primarily to agricultural research projects whose end-users are the rural population and production companies. However, there are two broad groups of beneficiaries. The other group includes intermediary or pass-through entities such as agricultural extension, agricultural training, development project personnel (e.g. MIDENO), fertilizer and seed companies, credit agencies, and field personnel of production companies (e.g., SODECOTON, UCCAO, etc.). These pass-through users receive research findings and transmit these findings to the farmers.

Evidence of the impact of agriculture research will be required of projects. Given that research findings are expected to have a beneficial biological/economic impact on end-users, i.e., farmers, production companies, and extension, the questions become: Who?, Where?, What?, When?, and How? Evidence of impact could come from the results of area surveys, disaggregated statistical data, and personal testimonials. Such information could be written, verbal (audio tapes), and visual (TV tapes and photos). Every technician will be involved in collecting specific evidence of research impact.

One example of utilization of research findings developed in the NCRE, ROTREP, and CRSP projects is now requested from each of the technicians in these three projects. This information would come from either the end-user or from the pass-through user.

FORMAT:

The basic formats are shown in Attachment A for the end-users and in Attachment B for the pass-through users. There are six general questions to be answered:

- Who?
- What?
- When?
- How much?
- Why?
- What other benefit?

An explanatory sheet is included for both Attachments A and B. These explanatory notes provide some parameters and dimension to the information that might be included. The format is not intended to exclude other information that you might feel is directly relevant, nor is it necessary to collect every bit of data. For example, points #1,2,3,&4 are critical, while

points #5 and 6 are important. Include either the best available "hard" data or your best estimate. The information should be prepared in a testimonial or anecdotal format. The completed information on each beneficiary would not exceed one page and could most likely be held to within one-half page. Photographs and transparencies or other visuals would be very helpful.

TARGET FOR COMPLETION:

Our target date for receipt of one completed format from each NCRE, ROTREP, and CRSP technician is September 2, 1988 in the USAID/ARD Office in Yaounde. I will share the collated results with you.

Enclosures:

ATTACHMENT A
Explanation for ATTACHMENT A
ATTACHMENT B
Explanation for ATTACHMENT B

BEST AVAILABLE DOCUMENT

9

ATTACHMENT II:

RESEARCH IMPACT OF NCRE, ROTREP, AND BEAN/COWPEA CRSP PROJECTS

ON END-USERS AND PASS-THROUGH USERS IN CAMEROON

William H. Judy
Consultant to USAID/ARD, Yaounde

(Compiled from information supplied by
long-term resident researchers in these projects
during July-September 1988)

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052
1988

Researcher-Mr. Dermot McHugh

Date: Sept

1. Who is the beneficiary? Initially, the farmers participating in the TLU trial program; and then, through natural diffusion and the efforts of the MINAGRI extension staff and the Tingoh Rice Cooperative, other rice farmers in the Menchum Valley, and particularly in the villages of Obang, Tingoh and Mbakong. A best estimate would be that between 100 and 200 farmers are benefiting.
2. What is the research finding adopted? New, higher yielding rice varieties with improved (longer) grain quality. Specifically: ITA 222, ITA 212, CISADANE and CICA 8. These varieties have out yielded the local varieties (introduced by the Taiwanese, e.g. IR46, in the early 1970's) by between 1 and 2 tons (20 - 40%). In economic terms, this represents a 100,000 CPA increase in net revenue (because only the variety is changed, and seed cost is the same, and therefore production costs don't change. Farmers were already using fertilizers).
3. When did this adoption occur? From 1983 through the present year, during and following on-farm varietal testing by the TLU.
4. What has been the result? It is difficult to estimate total production increase in the Menchum Valley. This is particularly true because, with the difficulties of selling local rice in Cameroon at this time, the Tingoh Cooperative was unable to absorb all the rice grown last year and the year before in the Valley. This left farmers with large stocks in their houses. Consequently, many farmers didn't cultivate rice in 1987. However, everyone we've talked with has shown a real appreciation for the new varieties, and are only hoping for better market conditions.
5. Why and how did the adoption occur? First of all, the demonstration effect of TLU trials led participating farmers and their neighbors to adopt the varieties. Secondly, French volunteers working with the Tingoh Cooperative, set out large demonstration plots throughout the Valley. Thirdly, the MINAGRI extension staff recommended their use to farmers.
6. Were there other beneficial effects? Unknown.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052
1988

Researcher-Mr. Dermot McHugh

Date: Sept

Who is the beneficiary? Maize farmers in Ndop Plain. First, the dozens of farmers who participated in the TLU on-farm research program (in the villages of Babessi, Bangolan, Babungo, Bamunka, Bamali, Balikumbat, Bambalang, Kedjon-Ketinguh, Bafanji, etc), and then through normal diffusion from farmer to farmer. A best guess would be that 100 - 200 farmers are using the variety, the problem being that there is no program to multiply the seed of Kasai I. This is awaiting the official release of the variety, for which I am actively working.

2. What is the research finding adopted? A new maize variety (Kasai I), planted at a higher density (40,000 plants/ha, even in inter-crops), with a moderate fertilizer application (N = 50kg/ha). Kasai I is an improved maize variety with the following characteristics: high yielding, short plant type (resistant to lodging and suitable for intercropping), and white flinty-dent grain type (for better storability than strictly denty varieties).
3. When did this adoption occur? From 1983 until the present, i.e. throughout the course of the TLU trials in the Ndop Plain.
4. What has been the result? Maize yield increases of between 25% and 100% for adopting farmers, and a 20 to 30% increase in net income per hectare.
5. Why and how did the adoption occur? Through the demonstration effects of the TLU on-farm trials on the participating farmers, their neighbors and farmers attending farmer field days. This year (1988), Kasai I was planted in large test plots (1/8 ha) on the 24 monitored fields from last year's "Maize-based Cropping System Survey". This will help accelerate the farmer to farmer diffusion that is already going on.
6. Were there other beneficial effects? Unknown

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-Bean/Cowpea CRSP

Researcher-Dr. Moffi Ta'Ama

Date: Sept 1988

1. Who is the beneficiary? Progressive and subsistence farmers of Northern Cameroon and Tchad.
2. What is the research finding adopted? New varieties (local + improved) and pest management practices.
3. When did this adoption occur? For the first time in 1984 and since then.
4. What has been the result? Increased production leading to market and storage problems. However improved nutrition from average of 400kg/ha to 1200kg with pest management or 400kg to 700kg without pest management.
5. Why and how did the adoption occur? Through development agencies, missionary and other progressive farmers consulting researchers.
6. Were there other beneficial effects? Increased credibility and trust in research.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052

Researcher- Dr. Susan E Almy

Date: Sept 1988

1. Who is the beneficiary? Mr. Mohammed Nyingwe and 27 other farm families in Ebonji, Tombel Sub Division, Meme SWP (Koupe zone).
2. What is the research finding adopted? High-yielding maize varieties CMS 8501 and Suwan 1 x Gene Pool; the former yields about 40% more without fertilizer across zones than the local maize; the latter outyields CMS 8501 in station trials.
3. When did this adoption occur? CMS 8501 was first introduced through the extension agent, Paul Nsai in minikits for farmer trial in second season 1987 (2/87) and Suwan 1 were provided in minikits in first season 1988 and researcher trials including CMS 8501 and CMS 8503 were planted.
4. What has been the result? Farmers' evaluations of minikits in Koupe zone gave estimates of yield increases of 60% over local for both varieties; the researcher trials gave local yields at 1.5 tons/ha and CMS 8501 at 2.6 tons/ha, without fertilizer. This is equal to a profit of about 103.000 francs/ha sold dry over local maize, without extra cost.
5. Why and how did the adoption occur? The 4 farmers growing the 2/87 maize used a small portion to cook for friends for taste evaluation, and saved the rest for seed for 1/88, dividing with friends. There was so much other demand that the extension agent split each 1/88 minikit into 50g microkits to give out. Further diffusion and sharing is occurring 2/88.
6. Were there other beneficial effects? Ebonji is surrounded by CDC plantations and is reaching the limits of its land. The farmers say the increased yields will help them feed their families with less land and keep their children in farming.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052

Researcher-Dr. Animesh Roy

Date: Sept 1988

1. Who is the beneficiary? Upper Nun Valley Development Authority (UNVDA) and its 6000 farm families at Ndop Plain. Society for the Development Rice Culture at Mbo Plain (SODERIM) and its 400-450 farm families.
2. What is the research finding adopted? Improved rice varieties with high yields, tolerance to local disease pressure, and better grain quality than the existing varieties. Improved cultural practice including proper time of planting, proper plant spacing, appropriate seedling age and seedling quality and better fertilizer management. An economic benefit of about 1.0 to 1.5 tons of rice per ha.
3. When did this adoption occur? During 1984-85 and onward.
4. What has been the result?
 - more rice yield (from 3 to 4-4.5 t/ha) or 33-49% yield increase.
 - More CFA/ha (from 234000 to about 312000-429000 CFA/ha).
 - more area brought under irrigated rice culture: (from 1,280 to about 2,580 ha in Ndop plain, and from none to about 250 ha at Mbo plain.
 - Better consumer acceptance of the new variety.
 - Improved grain quality (from bold sticky to med.- long trans. grain).
5. Why and how did the adoption occur? A change to a better variety was long felt by the production companies (UNVDA and SODERIM). Impressed by the research findings of the NCRE researchers the production companies (UNVDA & SODERIM) extended the recommended technologies to the project farmers for adoption. Individual efforts of the researchers also motivated rice farmers in adopting the new technologies.
6. Were there other beneficial effects? Economic benefit from rice farms helped improved farmers' living conditions including housing, food habit, clothing, and education. Farmers invested income from rice farms to business establishments. Knowledge in improved crop management encouraged farmers better crop management in maize and other food crops. Most farmers in Ndop area now eat more rice a day than any other cereals or root crops they used to eat before.

BEST AVAILABLE DOCUMENT

15

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052

Researcher- Dr. L. Singh

Date: Sept 1988

1. Who is the beneficiary? Farmers and other development agencies of the major sorghum growing areas of Far North Province.

2. What is the research finding adopted? Optimum planting date and plant population of sorghum. Results suggest that (I) short cycle cultivars of sorghum should preferably be sown slightly late towards the end of first week of July to avoid grain mold (II) a plant population of about 62,500/ha ^{500/ha} is sufficient to produce acceptable yield of sorghum and (III) maintaining 2 plants/hill will save labor without effecting yield.

3. When did his adoption occur? With simultaneous testing by Breeders, Agronomists and Extension Agronomists (TLU) during 1984 to 1987 it was confirmed that plant population of 62 500 per hectare is quite optimum under the present level of production technology.

4. What has been the result? There were increase in yield of sorghum by maintaining optimum plant population and timely planting over the low plant population under traditional farming practices. An increase in yield up to 20 - 25% was obtained with optimum plant population over farmer practices in several field trials and on farmers fields.

5. Why and how did the adoption occur? There was need to find out the optimum planting date and plant population for short cycle developed cultivars of sorghum in the low rainfall zones of Far North province of Cameroon. During the years 1984 through 1987 several field experiments at various locations were carried out by NCRE researchers.

6. Were there other beneficial effects? The same plant population can very effectively be used for short cycle maize cultivars when planted early in the season in the Far north Province.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052

Researcher- Mr. John Russel

Date: Sept 1988

1. Who is the beneficiary? Farmers in the Extreme North provinces of the Republic of Cameroon who received food crop extension advice from SODECOTON, the parastatal cotton and rural development agency, have directly benefited from NCRE research activities based in Maroua. In the SODECOTON zone Centre-Nord, the agricultural sector comprises more than 200,000 farms with an average of 5-6 people per farm and an average farm size of 2.5 hectares. Of this population, membership in SODECOTON Groupements Villageois de Producteurs included more than 82,000 farmers.
2. What is the research finding adopted? Short cycle sorghum varieties, particularly in the Centre-Nord the variety S35, have been selected by the NCRE/IRA Sorghum Breeding Program, extensively tested in both varietal and agronomic on-farm trials by the NCRE/IRA Testing and Liaison Unit (TLU), and extended to farmers by SODECOTON. The variety S35 is characterized by earliness (approximately 90 days), cream colored grain preferred by consumers, resistance to diseases and Striga, and medium height. It also has higher yield potential than traditional local varieties, especially under poor rainfall conditions, thus providing a more stable and risk-free production of sorghum from year to year.
3. When did his adoption occur? According to SODECOTON production figures, in the four year since S35 was first recommended to farmers, 1985, 1986, 1987, and the current season 1988-89, a total of 2140 ha of sole-cropped S35 has been grown by SODECOTON farmers (an average of 535 ha per year).
4. What has been the result? One result of the adoption of S35 has been an increase in sorghum yields on those fields planted to the new variety, particularly in poor environments. As reflected in the results of TLU on-farm tests in 1984, 1985 and 1986, S35 produced an average (over all years) of 300kg per hectare more than farmers' traditional varieties. These increased yields are even greater under unfavorable conditions: in the very low rainfall year of 1984, for example, on-farm trial yields were over 600kg per hectare greater than for local varieties; and in all years yields of S35 were 600-800 kg per hectare greater than local varieties on those farms with the lowest production levels. Thus, those farmers who have adopted S35 since 1985 have gained an important protection against the risk involved with the extremely variable and unpredictable rainfall patterns which characterize the Sudano-Sahelian zone.
5. Why and how did the adoption occur? The Testing and Liaison Unit (TLU) in Maroua conducted a survey in 1987 to investigate the extent of adoption of S35 and farmers' reasons for adoption. Of 291 farmers who had participated in on-farm trials with S35 from 1984 to 1986, 211 responded to an invitation to discuss the variety. Of these, about one-third planted approximately one-third of their total sorghum production S35 in 1987, figures which were verified by TLU field visits.

BEST AVAILABLE DOCUMENT

This proportion, together with individual farmer responses, indicated that farmers were planting local varieties with the early rains, generally on unplowed land, and S35 later in the season. Since late planting of local varieties greatly decreases their yields and since a major constraint to the overall production potential of local varieties is that of labor required to prepare and plant large areas in response to early rains, the availability of S35 or other high yielding, short cycle varieties increases the flexibility with which farmers can respond to both major production constraints and unpredictable environmental conditions.

S35 also conforms to consumers' color and taste preferences. In TLU postharvest survey, 93% of farmers indicated a preference for white-seeded varieties. Dr. Henri Talleyrand, NCRE, Garoua, conducted a taste test with 20 families and found that 90% liked the taste of S35 "very much", while 10% liked it "a little."

6. Were there other beneficial effects? There is evidence that in addition to the pattern of planting traditional varieties early and sole-cropped S35 late, farmers who have collaborated with TLU and SODECOTON and their neighbor--are themselves devising cropping patterns to maximize the potential of S35. One method increasingly observed is to intercrop S35 with traditional, longer season varieties. The potential advantage here is again a hedge against the ever-present risk of poor rains. If the year is good, the local variety will dominate the association, with perhaps some additional yield of S35; if the year turns out to be very poor, S35 will do well and compensate for the reduced yield of the traditional variety.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052

Researcher- Dr. Om. P. Dangi

Date: Sept 1988

1. Who is the beneficiary? The farmers of the sorghum growing zones of North Cameroon and neighboring countries like Chad, Republic of Central Africa and other West Africa countries through the seed distribution directly to national programs and developmental agencies namely Seed Multiplication and Seed Distribution agencies (SODECOTON and Ministry of Agriculture and Catholic Mission). Approximately 15-20% farmers has been benefited.

2. What is the research finding adopted? Following sorghum varieties were developed for different ecological zones;- S35 and CS-54 which are high yielding and stable in their yield performance as compared to local varieties short cycle in duration (85-90 days seed to seed) sweet and juicy stalk, resistant to various diseases, pests, drought and Striga hermonthica and good in grading quality has been recommended and accepted by farmers of semi-arid zone (less than 900 mm rainfall) of Far-north province of Cameroon and similar zone of Chad. Stalk and leaves can be used as animal feed during dry hungry period.

Varieties CS-95, S34 an CS-61 are also high yielding and stable in their yield performance, resistant to various foliage diseases and pests, medium duration (95-110 days seed to seed) and tan plant type has been recommended in the sub-humid zone (more than 900 mm rainfall zones). These varieties have superiority in earliness, and yield potential compared to local varieties in this zone. Stalk and leaves can be used as animal feed during dry hungry period.

The pearl millet variety IKMV-8201 has been taken by TLU for on-farm testing which is superior in yield, performance and resistant to disease and short cycle compared with local variety in North-Cameroon.

3. When did his adoption occur? Field experiments at research stations and sub-stations as well as on-farm test with varieties were carried out during 1983 to 1987 crop seasons in the semi-arid and sub-humid zones of North-Cameroon. The seed of these varieties were distributed in large quantity during 1985 to 1988 crop season.

4. What has been the result? The results of multi-locational trials at different research stations and on-farm testing program from 1983 to 1986 has indicated about 26% higher yield than local varieties. These varieties are not only higher and stable in yield performance but are resistant to various diseases, pests, drought, lodging and Striga, short to medium duration in maturity cycle and good in nutritional aspects for human consumption as well as fodder and brewery use.

5. Why and how did the adoption occur? The local varieties grown in these zones are medium to long cycle in maturity, poor in grain quality aspects, mostly susceptible to diseases, pests, Striga and drought stress, therefore, the newly developed varieties were quickly accepted

BEST AVAILABLE DOCUMENT

farmers through large scale in farm testing at farmers field and then wide distribution of seed by seed Multiplication and Seed Distribution agencies. The seed were also reached to farmers through direct distribution after farmer's days organized by IRA during 1983 through 1986 crop seasons.

6. Were there other beneficial effects? The results as well as the Visual Observations indicated that these varieties has more superiority of yield production compared to local varieties under drought year where local varieties failed to produce for example the variety s35 gave 85% higher yield than local varieties during 1984 crop season under 88 locations of on-farm test in the semi-arid zone.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052

Researcher- Dr. Om. P. Dangi

Date: Sept 1988

1. Who is the beneficiary? The farmers of the sorghum growing zones of North Cameroon and neighboring countries like Chad, Republic of Central Africa and other West Africa countries through the seed distribution directly to national programs and developmental agencies namely Seed Multiplication and Seed Distribution agencies (SODECOTON and Ministry of Agriculture and Catholic Mission). Approximately 15-20% farmers has been benefited.
2. What is the research finding adopted? Following sorghum varieties were developed for different ecological zones;- S35 and CS-54 which are high yielding and stable in their yield performance as compared to local varieties short cycle in duration (85-90 days seed to seed) sweet and juicy stalk, resistant to various diseases, pests, drought and Striga hermonthica and good in grading quality has been recommended and accepted by farmers of semi-arid zone (less than 900 mm rainfall) of Far-north province of Cameroon and similar zone of Chad. Stalk and leaves can be used as animal feed during dry hungry period.

Varieties CS-95, S34 and CS-61 are also high yielding and stable in their yield performance, resistant to various foliage diseases and pests, medium duration (95-110 days seed to seed) and tan plant type has been recommended in the sub-humid zone (more than 900 mm rainfall zones). These varieties have superiority in earliness, and yield potential compared to local varieties in this zone. Stalk and leaves can be used as animal feed during dry hungry period.

The pearl millet variety IKMV-8201 has been taken by TLU for on-farm testing which is superior in yield, performance and resistant to disease and short cycle compared with local variety in North-Cameroon.
3. When did his adoption occur? Field experiments at research stations and sub-stations as well as on-farm test with varieties were carried out during 1983 to 1987 crop seasons in the semi-arid and sub-humid zones of North-Cameroon. The seed of these varieties were distributed in large quantity during 1985 to 1988 crop season.
4. What has been the result? The results of multi-locational trials at different research stations and on-farm testing program from 1983 to 1986 has indicated about 26% higher yield than local varieties. These varieties are not only higher and stable in yield performance but are resistant to various diseases, pests, drought, lodging and Striga, short to medium duration in maturity cycle and good in nutritional aspects for human consumption as well as fodder and brewery use.
5. Why and how did the adoption occur? The local varieties grown in these zones are medium to long cycle in maturity, poor in grain quality aspects, mostly susceptible to diseases, pests, Striga and drought stress, therefore, the newly developed varieties were quickly accepted by farmers through large scale in farm testing at farmers field and then

BEST AVAILABLE DOCUMENT

wide distribution of seed by seed Multiplication and Seed Distribution agencies. The seed were also reached to farmers through direct distribution after farmer's days organized by IRA during 1983 through 1986 crop seasons.

6. Were there other beneficial effects? The results as well as the Visual Observations indicated that these varieties has more superiority of yield production compared to local varieties under drought year where local varieties failed to produce for example the variety s35 gave 85% higher yield than local varieties during 1984 crop season under 88 locations of on-farm test in the semi-arid zone.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052

Researcher- Dr. Henri Talleyrand

Date: Sept 1988

1. Who is the beneficiary? The primary beneficiary is a group of small farmers in the South East Benoue Region of North Province (in the sub-humid lowland savanna). These farmers usually grow cotton (as cash crop) under the supervision of SODECOTON, the parastatal agency in charge of integrated rural development.
2. What is the research finding adopted? An improved maize production package developed by the NCRE Cereals Agronomy Unit /IRA Garoua, Cameroon. this package included an improved maize variety (TZPB) and appropriate agronomic practice (planting date, plant spacing, plant densities, fertilization, and weed control). The new package was applied under the supervision of SODECOTON.
3. When did his adoption occur? The adoption of this improved agro-technology occurred gradually during a period of three years from 1982-1985.
4. What has been the result? In the South East Benoue region and under SODECOTON supervision. Due to the successful adoption of the new maize recommendation and other favorable factors, the results have been very impressive: strong increase in the total number of maize farmers, total maize area (+2242 ha, 132%) estimated total maize production (+10, 582 tons, 394%), estimated total value (+634 millions PCPA); increase in yield/ha (+1.8 t/ha, 113%), estimated value /ha (+108000 PCPA).
5. Why and how did the adoption occur? There was no need to diversify and increase the productivity of the cropping system used by the small farmers of this area. SODECOTON and the farmers were interested in maize because of favorable agroclimatic and marketing conditions. SODECOTON extended gradually the new maize production package NCRE/IRA and SODECOTON demonstrated the improved technology through a network of on-farm testing and demonstration, field days. Inputs (fertilizer, seeds, herbicide were supplied by SODECOTON on a credit basis to the farmers who applied it.
6. Were there other beneficial effects?
 - more sale of maize in local market and for export.
 - more income and more profit for the farmers
 - better nutrition: farmers consumes less cassava and more maize
 - increase productivity of cropping systems
 - production of early maize consumed "given" which allocate food deficit in the hungry period.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052

Researcher- Dr. Les Everett

Date: Sept 1988

1. Who is the beneficiary? Farmers of the Adamaoua Plateau: Earliest adoption (1987) was by farmers in villages near the research antenna Mbang Mbiarni (villages of Mbang Mboum and Gangassan), as well as those served by the Lutheran Agricultural Mission at Meng - Tibati.
2. What is the research finding adopted? Release of the mid-altitude maize variety Shaba introduced and extensively tested. It was developed by a USAID sponsored project in Shaba Province of Zaïre in the 1970's. Shaba is the first adapted-improved variety to be released on the Adamaoua Plateau.
3. When did his adoption occur? The variety was released for the 1987 growing season. Seed multiplication had begun in 1986 at the Mery Mission station, and at the Project Semencier Wokwas farm in 1987. The president of the Maize Producers Association of Gangassan began multiplication-production in 1988.
4. What has been the result? Maize production around the research site, where seed first was distributed, has expanded dramatically in two years. No on-farm research unit exists on the Adamaoua for qualification of results, however, maize area expansion is visibly dramatic.
5. Why and how did the adoption occur? Seed made available initially from multiplication and distribution by the Mary mission and the research antenna of IRA (Mbang Mbiarni) at Mbang Mboum. It is now available in quantity from the Project Semencier farm.
6. Were there other beneficial effects? The extension, seed production and distribution fertilizer distribution, and maize marketing systems have been almost non-existent on the Adamaoua Plateau. Demands are now beginning to be and their development will be stimulated. The farmers will thus be able to enter the market economy.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052 Researcher- Dr. Joe Kikafunda-Twine Date: Sept 1988

1. Who is the beneficiary? Maize farmers in the Ndop plain and Menchum valley. An estimated number of 10000 people could have benefited.

2. What is the research finding adopted? The adoption of the Maize Variety. Kasai 1 which was first identified to have desirable qualities at the station and then on Farmers' fields. It is estimated to book economic production by about 10% if the yield of maize and that of the associated crops are considered.

3. When did his adoption occur? Adoption started in 1984 on a survival scale and increased as more farmers become aware through continuous on-farm testing.

4. What has been the result? Farmers who used to grow only the local varieties have been able to replace as much as 50% of their local varieties with Kasai I.

5. Why and how did the adoption occur? The variety was superior to the local variety in terms of better yield and general adaptation to intercropping. The initial adoption started with farmers retaining seed from the minikit trials for subsequent planting.

6. Were there other beneficial effects? As part of the introduced package farmers increased the use of fertilizers on food crop (The trials involved fertilizer use).

BEST AVAILABLE DOCUMENT

25

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052

Researcher- Dr. Monty P Jones

Date: Sept 1988

1. Who is the beneficiary? A. The beneficiaries include two distinct groups of farmers. 1) Society for the expansion and modernization of rice (SEMRY) in Yagoua, Megon and Kousseri in extreme north of Cameroon. 2). Upper Nwon Valley development Authority (UNVDA) Ndop plain in the North West. 3). Society for the development of rice Mbo Plain (SODERIM) in West.

B. Traditional farmers cultivating rice mainly in the uplands.
2. What is the research finding adopted? *Improved high yielding rice varieties and suitable agronomic practices e.g. 1). IR7167-33-2-3 widely cultivated by farmers associated with UNVDA 2). IR46 widely cultivated by farmers associated with SEMRY 3). IRAT10 cultivated by farmers associated with SODERIM. *These improved varieties can double the yield of previously grown varieties and on average have two percent more proteins.
3. When did his adoption occur? These improved varieties have been adopted over the past three to four years.
4. What has been the result? Rice production in the country have more than doubled from around 40 tons in 1981/82 to well over 80 tons in 1987. The farmers were encouraged to bring more land into rice cultivation especially in the extreme north under SEMRY.
5. Why and how did the adoption occur? *Adoption of the new technologies (improved rice varieties) occurred because of the benefits that was derived from rice production . Rice was mainly grown as a cash crop as most of the produce were sold to the parastatal agencies e.g. SEMRY, UNVDA and SODERIM. *Adoption occurred mainly through the parastatal agencies who provided the inputs and supervised production.
6. Areas used for rice in the main growing season are in some cases available for other crops such as sweet potatoes and maize.

BEST AVAILABLE DOCUMENT

26

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052

Researcher- Dr. John A. Poku

Date: Sept 1988

1. Who is the beneficiary? Farmers in Ntui, Mkol-fep, Nkometou II and Abondo in the Centre Province of Cameroon. A total of 30% of the farming families in each village have benefited.
2. What is the research finding adopted? Streak-resistant maize varieties CMS 8507 (white) and CMS 8602 (yellow); bigger and well-filled ears. However, CMS 8602 is preferred because yellow is associated with sweetness and higher market potential.
3. When did his adoption occur? The second season of 1987 to the present.
4. What has been the result? At zero fertility (i.e. no fertilizer applied), the improved maize (CMS 8507 and CMS8602) produced 30% increase over the local. Local-2280 kg/ha and improved maize -2920 kg/ha.
5. Why and how did the adoption occur? The improved maize varieties are adopted because of bigger, well-filled ears which means higher revenue. Adopted through working directly with farmers and through the cooperation with MIDEVIV.
6. Were there other beneficial effects? Maize planted at optimum population (50,000p/ha) in rows makes more land available for other crops; ease of management operations such as weeding.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052 Researcher-Dr. Tzegazeab Woldetatos Date: Sept 1988

1. Who is the beneficiary? Mr. Michael Ebong - Yoke, Muyuka Sub-Division SWP. About 50 farmers benefit in his surroundings.
2. What is the research finding accepted/adopted? Introduction and acceptability of improved maize varieties, CMS 8501 and CMS 8503 which out yielded the local maize varieties and were less susceptible to maize streak virus and lodging than the local ones (Refer attached pictures of maize heaps harvested from equal plot sizes).

The improved varieties are also sweeter when consumed green and thus better preferred than the local ones.

3. When did this acceptance/adoption occur The TLU/EKONA started its on-farm trials in 1987 and is an ongoing process.
4. What has been the result? On the average of 18 different farmers' field sites the improved maize varieties gave 3467kg/ha versus 2320kg/ha for local varieties with fertilizer (52% increase) whereas without fertilizer the yields were 2482 and 1832kg/ha respectively (32% increase).

Economic benefit at 105CPA/kg of maize:

Improved maize (3467kg/ha) 105 CPA/kg = 364.035 CPA/ha. Local (2320kg/ha) 105 CPA/kg = 243.600 CPA/ha. Economic benefits = 364.035 - 243.600 = 120.435frs CPA/ha. Cost of NPK/ha = 17.600frs CPA. therefore net benefit from use of improved varieties = 120.435 - 17.600 = 102.835frs CPA, %.

5. Why and how did the acceptance/adoption occur?

Adoption occurred through the collaborative efforts of NCRE/TLU researchers, extension agents, and the farmers in the direct implementation, data analysis and evaluation of the TLU on-farm trials.

6. Were there other beneficial effects? Farmers realized that appropriate plant population could reduce weed competition by shading and the use of fertilizers to improve maize productivity was recognized.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-NCRE 631-0052 Researcher-Mrs. Christine P. Ngundum Date: Sept 1988

1. Who is the beneficiary? i). Farmers around westcoast (a) Manje - Mrs Emeka Anna and Mr. Anredu (b) Batohe - Mr. Peter Anyeh.

ii). Limbe - (a) Mrs. Sama (b) Bimbia, Mr. Ntoh.

2. What is the research finding accepted/adopted?
 - High yielding Maize varieties: CMS 8501 and CMS 8503 both white kernel.
 - these yield higher than the local, an average of about 20-45% without and with fertilizer respectively which eventually means more food and more money to the farmer.

3. When did this acceptance/adoption occur 2nd season 1986 through first season 1988.

4. What has been the result?
 - increase yield from an average of 3624 kg/ha of local maize to 5572 kg/ha of improved maize i.e. a 54% increase in yield.
 - more PCPA/ha i.e. selling maize at 105 PCPA/kg (established price) gives for improved 585060 PCPA - 380520 PCPA for local net increase = 204540 therefore, more money to buy other food stuff: meat, fish etc
 - more maize to process into other forms: fufu, bear etc.

5. Why and how did the acceptance/adoption occur? Adoption occur because farmers were convinced of the value of the crop through collaboration and participation through on-farm trials.

6. Were there other beneficial effects?
Yes:
 - more time saved to work on other things or crops
 - get more yield for less land cultivated: using closer spacings e.g. farmers usually planted at 15000 -25000 plants of maize /ha but with our technology the put up to 53000/ha and same land even in intercrop with cassava.

BEST AVAILABLE DOCUMENT

1. Who is the beneficiary? MINAGRI/MIDENO Extension Service based throughout the North West Province.
2. What is the research finding accepted/adopted? New maize varieties (COCA, MLC, BACOA, Ekona White, Ekona Yellow), developed by Dr. Ayuk-Tekem and tested extensively and verified by the TLU in on-farm trials, with a moderate application of fertilizer (250 kg of 20-10-10 compound fertilizer per hectare). For extension purposes, MIDENO reduced the recommended fertilizer rate to 100 kg/ha. They felt that farmers couldn't afford to use more. MIDENO is also recommending 25,000 plants/ha as opposed to the TLU recommendation of 40,000.
3. When did this acceptance/adoption occur? Beginning in 1982, with the initiation of TLU on-farm trials and the start up of MIDENO (1983), and continuing to the present.
4. What has been the result? In a MIDENO Extension Service Survey of Maize Package Adoption (1984), 100 farmers adopting the improved package (COCA variety, planted at 25,000 plants/ha, with 100 kg/ha of 20-10-10 compound fertilizer) experienced an average yield increase of 1.4 tons/ha (an 82% increment). In MIDENO's Second Quarter Report (1st October - 31st December, 1987/88), it is stated that "4118 farmers adopted the recommendation for improved maize production". Last year alone, 2946 packets of maize seed was distributed by MIDENO.
5. Why and how did the acceptance/adoption occur? Through a well planned and concerted effort by the more than 300 MIDENO -trained MINAGRI village extension workers, charged with extending the recommended maize package to farmers throughout the North West Province. Also, through demonstration plots on the 9 MIDENO Trial and Demonstration Centres (TDC's), and the demonstration effect of TLU on-farm trials, and particularly the 1750 Minikit trials that have been carried out since 1983. In a follow-up survey of participating minikit farmers going back to 1983, more than 80% who tested the COCA variety were still growing COCA as of 1987.
6. Were there other beneficial effects? Unknown.

RESEARCH IMPACT ON INTERMEDIATE OR PASS-THROUGH USERS OF RESEARCH FINDINGS
Project-Bean/Cowpea CRSP Researcher- Dr. Moffi Ta'Ama Date: Sept 1988

1. Who is the beneficiary? Seed Multiplication Project. 100% of Seed Multiplied from project finding Developpement Society of SODECOTON. Inades, Missionaries.
2. What is the research finding accepted/adopted? Varieties and pest management practices see photocopies attached.
3. When did this acceptance/adoption occur Since 1980 and Onwards.
4. What has been the result? Increase production of Cowpea. However storage and market problem arose.
5. Why and how did the acceptance/adoption occur? Because of need of improved high yielding early and medium maturing cultivars with acceptable seeds. Need of early crop harvest.
6. Were there other beneficial effects? The farmers working with above agencies.

BEST AVAILABLE DOCUMENT

1. Who is the beneficiary? In the major sorghum growing areas of Far North Province of Cameroon through SODECOTON and other development agencies.
2. What is the research finding accepted/adopted? Use of Marshal - T seed treatment chemical at the rate of 1 to 2% for sorghum is being tested by SODECOTON and other development and extension agencies in the Far North Province of Cameroon for better crop establishment and protection against termite at seedling stage.
3. When did this acceptance/adoption occur? Field experiments at research stations were carried out during 1986-87 and 1987-88 crop seasons in North and Far North provinces of Cameroon.
4. What has been the result? Result indicate that Marshal - T chemical though slightly inferior to Puradan (another chemical for control of termites) is cheaper and required in small quantity. Also no extra cost involved in the application of Marshal - T like Puradan which is required to be applied in the soil at the rate of 25 kg/ha and covered with soil. Seed treatment with Marshal - T has given an estimated average yield increase of 10 - 15% at the research stations.
5. Why and how did the acceptance/adoption occur? In the major sorghum growing areas, there is problem of good crop establishment due to termites attack especially at germination and seedling stages. Several chemicals such as Puradan (soil application) and Thioral as seed treatment were tested but were not very effective also the cost of Puradan and application cost is not comparable.
6. Were there other beneficial effects? Visual observations indicated that crop vigor was better when seed was treated with Marshal - T as compared to Puradan and Thioral.

BEST AVAILABLE DOCUMENT

1. Who is the beneficiary? The main beneficiary intermediate user is SODECOTON (the parastatal company in charge of integrated rural development. Another beneficiary intermediate is the seed Multiplication project (another USAID Project) which increased significantly its sale of seeds of maize TZPB.
2. What is the research finding accepted/adopted? The improved maize production package developed by the NCRE Cereals Agronomy Unit for the small farmers of the SouthEast Benoue region of North Province.
3. When did this acceptance/adoption occur During a period of three years from 1982 to 1985.
4. What has been the result? SODECOTON increased its impact on the whole region by improving the productivity of the cropping system of the farm and the total incime. SODECOTON increased significantly its sale of fertilizer seeds, herbicide, agricultural tools and equipment (maize Shella + mill). The increase in maize area favored the extension and profitability of the mechanization program of SODECOTON.
5. Why and how did the acceptance/adoption occur? There was a need for intensive maize cultivation in the regions. SODECOTON and NCRE/IRA extended gradually the package and provided the necessary inputs for the farmers who adopted the new accommodations .
6. Were there other beneficial effects? Other (non - SODECOTON) farmers are using the same agronomic package with encouraging results. In other regions the West and North East Benoue, farmers have adopted the new maize package. Consequently the total area and production of maize has increased significantly.

BEST AVAILABLE DOCUMENT

1. Who is the beneficiary? Project Semencier - Wakwa (Ngaoundere) and the MINAGRI Extension Service.

2. What is the research finding accepted/adopted? Release of the introduced variety Shaba for the Adamaoua Plateau. No variety had previously been released in that area.

3. When did this acceptance/adoption occur? Main growing season, 1987.

4. What has been the result? Maize seed production has begun at the Projet Semencier farm on approximately 4 hectares. Seed had not previously been produced or distributed on the Adamaoua Plateau.

5. Why and how did the acceptance/adoption occur? Two hundred kg of foundation seed was given by the breeder in 1987 and 1988. Previous agronomic trials at Wakwa (and elsewhere) had demonstrated to Projet Semencier the potential of the variety.

6. Were there other beneficial effects? The system of maize seed production and distribution had not been active on the Adamaoua Plateau. Production is now under way and a system of distribution as well as extension education is now in demand by farmers who have seen the variety.

BEST AVAILABLE DOCUMENT

1. Who is the beneficiary?
 - A. The rice development project e.g. SEMRY, UNVDA and SEDERIM.
 - B. Scientists and extension workers attached to IRA e.g. at Beifomy, Babungo and Keirewa.

2. What is the research finding accepted/adopted?
 - A. New improved rice varieties e.g. IR7167-33-2-3, IR46, IRAT10, ITA 222, ITA212.
 - B. Better cultural practices e.g. fertilizer rates, and planting pattern to sustain nutritional status of the soil. Generally the improved varieties gives better grain field and are better resistance to the major diseases such as blast; insect pests; such as stem borers and nerve better tolerance to low temperature.

3. When did this acceptance/adoption occur Acceptance and adoption of new improved technologies e.g. varieties and cultural practices have occurred over the past three to four years. However because of breakdown to diseases such as blast effort is being made to produce new adaptable varieties with better resistance to environmental stresses.

4. What has been the result? The immediate results of adoption of the new technologies is increase in growing yield and area under rice resulting to other. All increase in rice production in the country. *Better crop stored as the field was being obtained due to less attack of diseases, insect pests and better tolerance to low temperature. This obviously resulted to better nutritional quality.

5. Why and how did the acceptance/adoption occur? To solve specific site problems, NCRE research have been conducted in collaboration with rice development project staff in the production sites. Therefore, staff of the project and IRA personnel are aware of the new technologies being develop and readily accept promising technologies and adopt them.

6. Were there other beneficial effects? Other crops including potatoes, maize etc are grown after rice in the same season.

BEST AVAILABLE DOCUMENT

RESEARCH IMPACT ON END-USERS OF RESEARCH FINDINGS

Project-ROTREP 631-0058

Researcher-Dr. Joe Wuton

Date: Sept 1988

1. Who is the beneficiary?
Njoke Family Farm, Ekona, S.W. Province; people benefited (9).
2. What is the research finding accepted/adopted?
A root-rot resistant cocoyam (*Xanthosoma Sagittifolium*) was identified in a genetic breeding program in September, 1987.
3. When did this acceptance/adoption occur Adoption was in January 1988, after two seasons of observations.
4. What has been the result? Clones of selected resistant plants are growing in the Njoke Family Farm showing robust disease free growth. Expected increase in yield is from 500kg. to 20,000kgs, and this translates from 725,000 CPA to 3,000,000 CPA per ha.
5. Why and how did the acceptance/adoption occur? This was a pre-extension trial to which the Njoke Family agreed to participate in a pilot experiment.
6. Were there other beneficial effects? The trial will be extended to five other interested farmers next season.

BEST AVAILABLE DOCUMENT

Attachment III:

POSSIBLE THEMES FOR AUDIO-VISUAL TAPE ON IMPACT OF
AGRICULTURAL RESEARCH PROJECTS

William H. Judy

September 1988

1. Theme featuring Cameroon Scientist Charles The, Maize Breeder in Nkolbisson
Cameroon Scientist trained to Ph. D. degree/
Scientist trained on the job by NCRE/IITA Project Technician
NCRE/IITA Project technician departs project/
Scientist continues variety development/
Scientist assists seed multiplication company/
Scientist evaluates varieties through TLU
2. Theme featuring NCRE/IITA technician Dermott McHugh, TLU Agricultural Economist in Bambui
TLU Extension Economist trains MIDENO staff in research findings/
MIDENO takes research to farmers for evaluation/
MIDENO conducts demonstrations/
Delegate of Agriculture discusses NCRE Research and relationship with MIDENO and farmers/
TLU and MIDENO prepare and distribute maize minikits
3. Theme featuring on-farm trials of Jerry Johnson and John Russel TLU Extension Agronomists in Maroua
TLU Extension Agronomist develops on-farm trials/
TLU works with SODECOTON field staff on trials/
TLU visits farms and evaluates trials/
Participating farmer saves sorghum seed and sells seed to other farmers
4. Theme featuring John Poku TLU Extension Agronomist Nkolbisson with farmer designed, operated, and evaluated trials.
TLU Agronomist identifies farmers and plans on-farm trials with them/
TLU plants and visits trials with farmers/
TLU evaluates trials results with farmers
5. Theme featuring Susan Almy, TLU Agriculture Economist Ekona, economic considerations in root crop based cereal cropping system.
TLU Agricultural Economist conducts field survey/
TLU selects interventions/
TLU visits farms and makes economic and agronomic evaluation of results
6. Theme featuring Jacob Ayuk-Takem, former participant, now Director of IRA
Ayuk-Takem trained under former regional USAID Cereals Project
Ayuk-Takem as maize breeder, develops varieties, increases seed, and introduces varieties to farmers
Ayuk-Takem as Station Chief Bambui and as National Coordinator for the IRA Cereals Program and Cameroon Coordinator for NCRE Project
Ayuk-Takem as Director of IRA

BEST AVAILABLE DOCUMENT

38

7. Theme featuring NCRE/IITA technician Les Everett Maize Breeder Bambui developing maize varieties for highlands and commercial maize farms
Maize breeder establishes breeding nursery/
Maize breeder selects varieties and hybrids/
Maize breeder evaluates varieties and hybrids in TLU trials and with other cooperators where there is no TLU
Varieties and hybrids accepted by farmers
8. Theme featuring NCRE/IITA Animesh Roy Rice Agronomist
Rice Agronomist conducts agronomic research/
Rice agronomist evaluates research findings on farmer's fields at Ndop and Mbo
Rice agronomist extends adoption of agronomic findings through rice development scheme
9. Theme featuring NCRE/IITA Om Dangri Sorghum Breeder Maroua
Sorghum breeder develops varieties of sorghum/
Sorghum breeder increases sorghum seed on seed farms and in fields of private farmers
Sorghum breeder works with TLU in on-farm sorghum trials
Sorghum farmer grows new sorghum variety, saves seed, and sells seed to other farmers
10. Theme featuring NCRE Project returned participant Edward Ngong-Nassah IRA Bambui as Station Chief and conducting Field Days at Stations
Participant returns to Cameroon and takes up duties as Bambui Station Chief
As agronomist, he conducts trials
As Station Chief, he develops field days at stations and makes presentations
11. Theme featuring Bean/Cowpea CRSP Moffi Ta'Ama in Cowpea research and on-farm trials
Cowpea entomologist conducts field experiments on insects of Cowpeas/
Cowpea entomologist conducts laboratory experiments on storage of cowpeas
Cowpea entomologist works with TLU to introduce improved cowpea varieties

iang 0055A

BEST AVAILABLE DOCUMENT

UNITED STATES GOVERNMENT

memorandum

DATE: September 22, 1988

REPLY TO
ATTN OF: John Balis, Agricultural Development Officer, USAID/Cameroon

SUBJECT: The Impact of Agricultural Research

TO: Keith Sherper, AFR/TR, AID/W

Ref: The 1988 survey conducted by Dr. William Judy

Susan Almy reports from the Southwest Province that the 28 farm families growing the new maize variety CMS 8501 realized 40% yield increase over local varieties, and without the use of fertilizer. Dermot McHugh reports from the Northwest Province that between 100-200 farmers are using the new variety Kasai I with between 25 and 100% increase in yields and with 20 to 30% increase in net income per hectare. Animesh Roy reports that 400-450 rice farmers in the Nun Valley are using new rice varieties with an increase of 33-41% in yield. The new sorghum variety S35 is reported by John Russel to yield 300 kg more per hectare than the traditional variety, and in low rainfall or poor soil sites the benefits of S35 may be 600 kg or more per hectare. Of the 211 Northern farmers recently surveyed, one-third planted about one-third of their land in S35. Joe Wutoh in only the second year of the roots and tubers project, has put some preliminary trials of promising clones into farm trials and expects to increase the first farmer's income by more than 725,000 francs CFA.

These are a few of the results of a recent survey of research impacts which was conducted by Bill Judy. The complete report is attached for your reference. This adds to the research reporting provided by the Project Implementation Reports, the Phase I Bulletin, and the TV tapes in tracking the performance of this project. As you may recall during the Program Week Review of the Cameroon program, there was a great deal of interest expressed concerning the impacts of the research program. We feel the record is quite respectable for an eight year period and it is our pleasure to share this information with our colleagues.

The plan is to continue to collect these brief case study reports. We're asking the project staff to send things in as observations are made and the project officer will follow up on at least an annual schedule. We would be interested in the comments and suggestions that your staff might offer for our future efforts.

Attachment: The Impact of Agricultural Research on End-Users and
Pass-Through Users: Cameroon NCRE, ROTREP and Bean/Cowpea CRSP
Project; William H. Judy; July/Sept. 1988

cc: AFR/DP JWestley
AFR/PD CPeasley
AFR/DP JWolgin
AFR/DP ESimmons
AFR/PD AGetson
AFR/TR CMartin
AFR/TR/ANR LJepson
AFR/TR/ANRC Morgan
AFR/TR/ANR MKonan
ST/Agr. DBathrick
AFR/CCWA AFessendon