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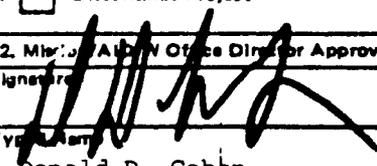
CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

E cultural Extension Outreach			2. PROJECT NUMBER 493-0280	3. MISSION/AID/W OFFICE USAID/Thailand
			4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 80-1 <input type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION	
5. PROJECT IMPLEMENTATION DATES		6. ESTIMATED PROJECT FUNDING \$000		7. PERIOD COVERED BY EVALUATION
First PRO-AG or Equivalent FY <u>77</u>	B. Final Obligation Expected FY <u>77</u>	C. Final Input Delivery FY <u>82</u>	A. Total \$ <u>58,500</u> B. U.S. \$ <u>3,000</u>	From (month/yr.) <u>7/78</u> To (month/yr.) <u>12/79</u> Date of Evaluation Review <u>11/1/79 - 12/7/79</u>

B. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
<p>With AID/W approval, Mission will amend loan agreement to permit inclusion in the project of all provinces beyond the original 33. Mission will then agree to an RTG request that present project funds be used to cover the first year of phase II of the National Extension Project. This will involve the inclusion of 7 additional provinces (5 in the Northeast, 2 in the North — areas of major USAID concern). The USAID Agricultural Extension Outreach Project was initially intended to deal only with Phase I. Thus, year 4 of phase I will run concurrent with year 1 of Phase II.</p> <p>Any extension to additional provinces beyond the first 7 of Phase II will be made dependent upon an appropriate RTG response to the evaluation's recommendations for qualitative improvements in several areas — most importantly with regard to the number and role of subject matter specialists (SMA's).</p>		

8. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS <input type="checkbox"/> Project Paper <input checked="" type="checkbox"/> Implementation Plan e.g., CPI Network <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> Financial Plan <input type="checkbox"/> PIO/T <input type="checkbox"/> Logical Framework <input type="checkbox"/> PIO/C <input type="checkbox"/> Other (Specify) _____ <input checked="" type="checkbox"/> Project Agreement <input type="checkbox"/> PIO/P			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT A. <input type="checkbox"/> Continue Project Without Change B. <input type="checkbox"/> Change Project Design and/or <input checked="" type="checkbox"/> Change Implementation Plan C. <input type="checkbox"/> Discontinue Project
11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Name and Title) <div style="text-align: center;">  Thomas Cooper </div>		12. Mission AID/W Office Director Approval Signature:  Type Name: Donald D. Cohen Date: 2/4/80	

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PD-AAF-87A-C1

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EVALUATION OF
AGRICULTURAL EXTENSION OUTREACH PROJECT

(AID Loan 493-T-019)

November 1 - December 7, 1979

Evaluation
Agricultural Extension Outreach Project
USAID/Thailand
November 1 - December 7, 1979

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Robert A. Wesselmann
Richard A. Jensen
Consultants

ABBREVIATIONS AND TERMS USED

- AA - Amphoe Agent (District Agent)
- AID - Agency for International Development
- Amphoe, Amphur - District
- DOAE - Department of Agricultural Extension of the Ministry
of Agriculture and Cooperatives
- IBRD - International Bank for Reconstruction and Development
(World Bank)
- PFO - Provincial Extension Officer
- PP - Project Paper, the USAID planning proposal for the
Project
- RTG - The Royal Thai Government
- SMS - Subject Matter Specialist
- TA - Tambon Agent
- Tambon - Sub-District
- USAID - The Thailand Office of AID
- VTR - Video Tape Recording

INTRODUCTION

The Extension Outreach Project Evaluation was completed by Mr. Robert A. Wesselmann and Dr. Richard A. Jensen with assistance from representatives of the Royal Thai Government (RTG) who comprised the Evaluation Committee. The RTG representatives included: Mr. Suwan Pasugswad, Ministry of Finance (Co-Chairman); Mr. Songvut Imsoon and Mr. Jirachai Kulavanish, National Economic and Social Development Board; Miss Pathra Chor Sorapongs and Mr. Wathana Wongsekiattirat, Bureau of the Budget, Mr. Visut Montriwat, Comptroller-General Department; Mr. Pichet Soontornpipit and Mr. Nipon Sirivat, Department of Technical and Economic Cooperation; and Mr. Chayan Ekarohit, Ministry of Finance (Secretary). In addition to the official Committee members, representatives of USAID and DOAE met with the Committee as resource people.

The Evaluation Committee met at the beginning of the evaluation period and developed a process for meeting the requirements of the report. An itinerary for field observations, plus basic survey questions were identified at the initial meeting. Survey questionnaires were developed for the six levels of extension staff which are involved in the project: Regional and Provincial Extension Officers, Regional and Provincial Extension Training Officers, Subject Matter Specialists, Amphoe Agents, Tambon Agents, and Contact and Non-Contact Farmers. Eight Provinces were selected for visitation and represented provinces

trials at the farmer level. The association with the researchers would apprise the SMS of latest findings on the crop. About 1/3 of his/her time would be devoted to the research aspects.

Another 1/3 of the SMS time would be spent on training AAs and TAs in his/her Province on that specific crop. This would include many of the fortnightly TA-training meetings which would provide precise details and manipulative operations for the farmers to follow during that period of the year. With about 8-10 Amphoes in each Province and 8-10 Tambon Agents in an Amphoe, the training would be enormous during the cropping season.

The final 1/3 of the SMS time would be in the field, assisting TAs in setting up demonstrations and in monitoring the results, both of the demonstrations and of farmer experiences. These results would be fed back to the concerned research people. If each TA has only one demonstration plot in each of his/her villages, the number of such plots would number several hundred for the Province. The logistical problem of monitoring becomes onerous.

With the cutback in numbers of SMS positions approved for the Project and the inclusion of other specialties (Home Economics, Rural Youth Clubs, Farmers Organizations) the Provinces have no choice but to double or triple the number of "specialties" for each SMS.

The quality of advice given to the agents, and the effectiveness of their assistance to farmers must certainly be diluted.

In the course of their travels, the Evaluators and Committee members were able to observe a training course at Lampang for New TA's, a monthly meeting of Amphoe Agents at Surat Thani, a Train-the-Trainer course at Ubon, and a fortnightly meeting of TA's in Si Sa Ket. The monthly meeting of AA's at Surat Thani was presided over by the Provincial Governor, and the local television station was providing news coverage.

The Evaluation Committee attempted to maintain an unbiased sample of Amphoes, Tambons and villages through random selection. This process provided observations from a representative sample of the Project participants. Although the sample size is small, the number of people interviewed give an acceptable representation of the personnel at all levels in the Project.

It should be noted that due to the limited time and the dispersion of the respondents, the assistance of the RTG members of the Evaluation Committee was invaluable. There were representatives of the Committee on all four trips made to the different Provinces. Much of the information was obtained through their untiring participation. The ensuing comments include summarizations of the informal survey responses.

The field "spot checks" were supplemented by the USAID Project Paper, DOAE quarterly reports, specialized reports solicited from the DOAE, and interviews with Louis Berger International consultants, members of the IBRD Tahal contract staff, DOAE officials, USAID/Thailand specialists, and Governor Sanong Rodphothong of Surat Thani Province.

The topics of particular concern to USAID/Thailand are addressed according to the Scope of Work provided to the Evaluators. Additional comments are included under Item 13.

Positioned within the text are recommendations which may enable the Project to comply more closely with the plans and time-table described in the Project Paper. The submission of these recommendations does not imply an inferior rating for the Project's accomplishments. On the contrary, the Evaluators were generally very favorably impressed by the advances which are already apparent. Considering the magnitude of the Project and the speed required for its implementation, far greater deviations might have been expected. The Evaluators have learned unofficially that RTG officials are already aware of some weak features in the Project and are planning corrective measures. It is to the considerable credit of all concerned that the Project has kept so well "on track".

TERMS OF REFERENCE FOR EVALUATION CONSULTANTS

STATEMENT OF DUTIES

A. Purpose

To serve as members of the Evaluation Team evaluating the Thailand Agricultural Extension Outreach Project. To, in collaboration with other members of the Team, evaluate the progress of the Project, assess continued validity of the original Project design, and recommend changes in the implementation and financial plans as necessary.

B. Scope of Work

Background information will be made available by the Royal Thai Government (RTG) and USAID. Included will be the Project Paper, the 1978 Interim Evaluation Report, IBRD appraisal documents for the National Extension Project and miscellaneous reports.

The basis for the evaluation will be the Evaluation Plan of the Project Paper (Part IV.D). Topics to be addressed include:

1. Implementation Plan: Effect or Project of delay in providing AID-financed technical assistance, role of technical assistance now in place, and revisions in implementation plan as necessary.

2. Financial Plan: AID funding has not been utilized as anticipated because positions were established and budget allocated by RTG more rapidly than anticipated. Team will assess financial requirements of project in light of project budget and recommend revisions in financial plan as necessary.

3. Extent to which the major assumptions identified in the Project Paper relating to increased farmer income, effective village level extension services, and training program outputs are valid.

4. Recruitment of personnel at all levels to include availability of adequate personnel both in the past and projected for the future. Effectiveness of locating personnel in area of origin to facilitate communications.

5. Quality of personnel to include technical competence and ability, especially in the case of Tambon Agents, to relate to the farmers and attitude of farmers toward agents.

6. Effective coverage by extension personnel of villages in Project provinces and effectiveness of demonstration plots.

7. Farmer cooperation and rate of adoption of improved practices.

8. Project impact on increasing income.

9. Degree of interaction between researchers, extension personnel and farmers.

10. Extent to which Project purpose - an exchange of information to and from the farmers - has been achieved.

11. Training Activities:

a. Validity of training proposed in the Project Paper.

b. Amount and quality of training provided at all levels for both pre-service and in-service training.

c. Extent to which training has been transferred into action, i.e., quality of technical advice and method of presentation.

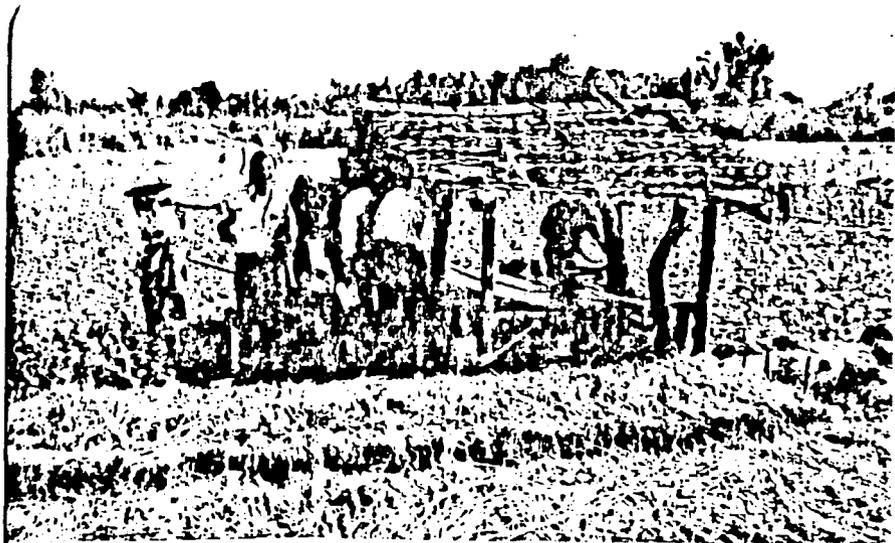
d. Progress on development of modules - both for training and for training in crop information.

12. Other donor activities:

a. Relationship of AID and World Bank activities and extent to which they are mutually beneficial or in opposition (if any).

b. Level of success of World Bank project.

13. Other items deemed appropriate by the Evaluation Team.



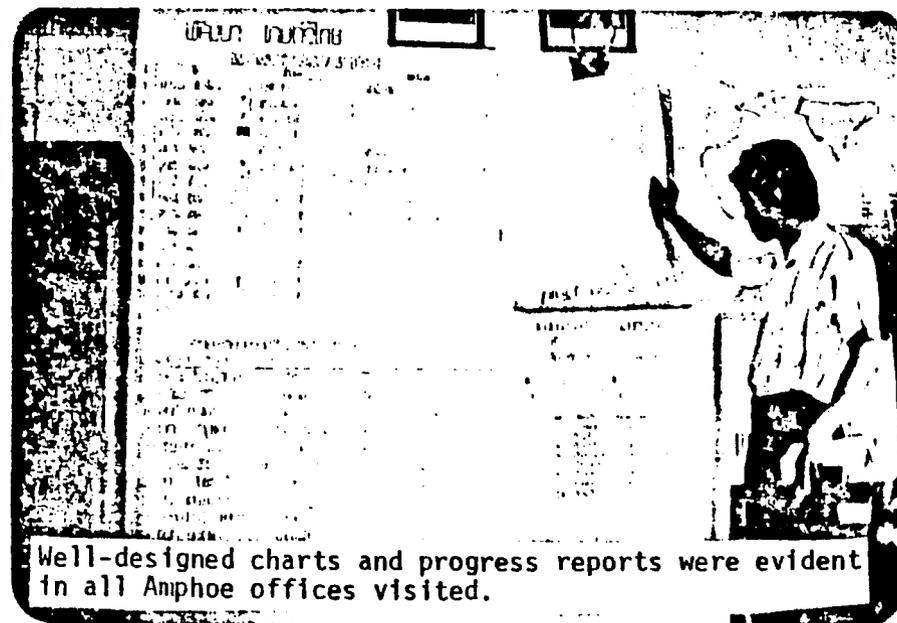
Grass-roots observations were obtained in on-the-farm visits.



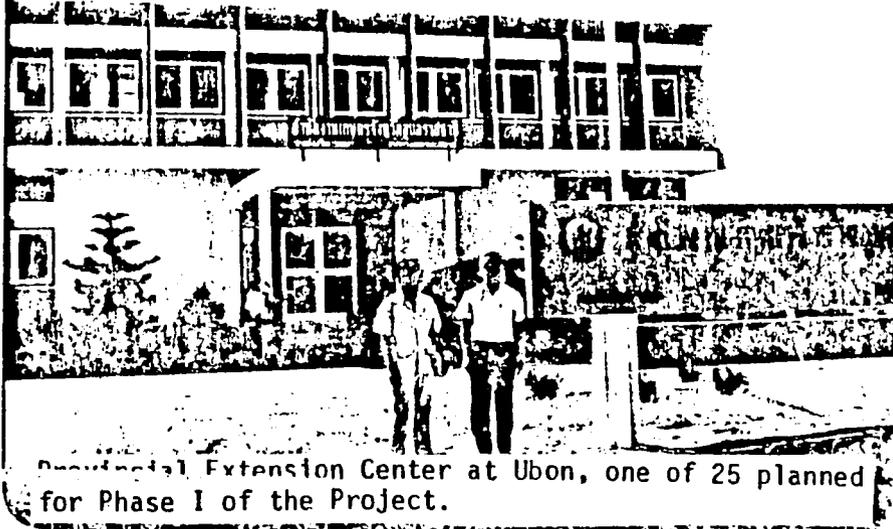
Contact and non-contact farmers were selected at random for interviews on field trips.



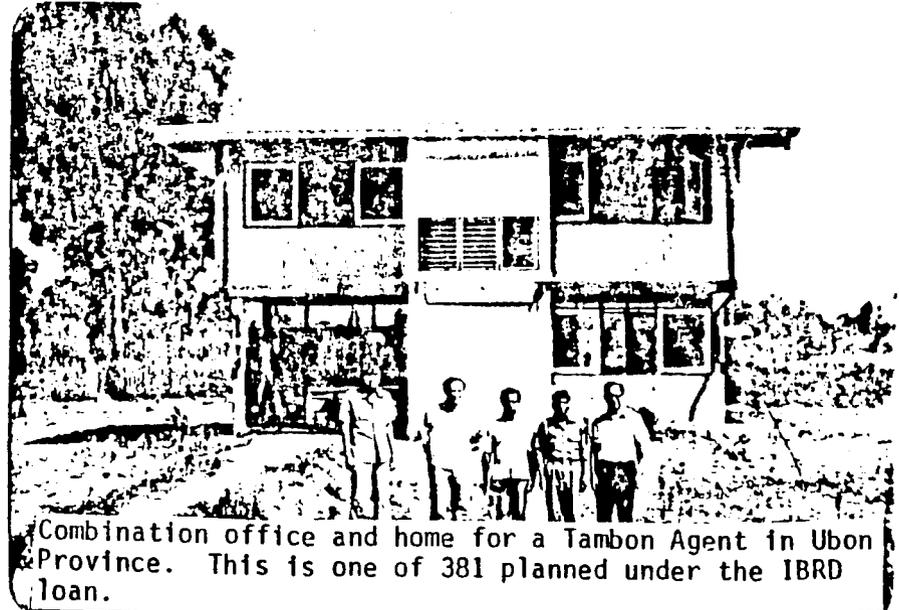
In Surat Thani, farmers were favorably impressed with the help given them through the Project.



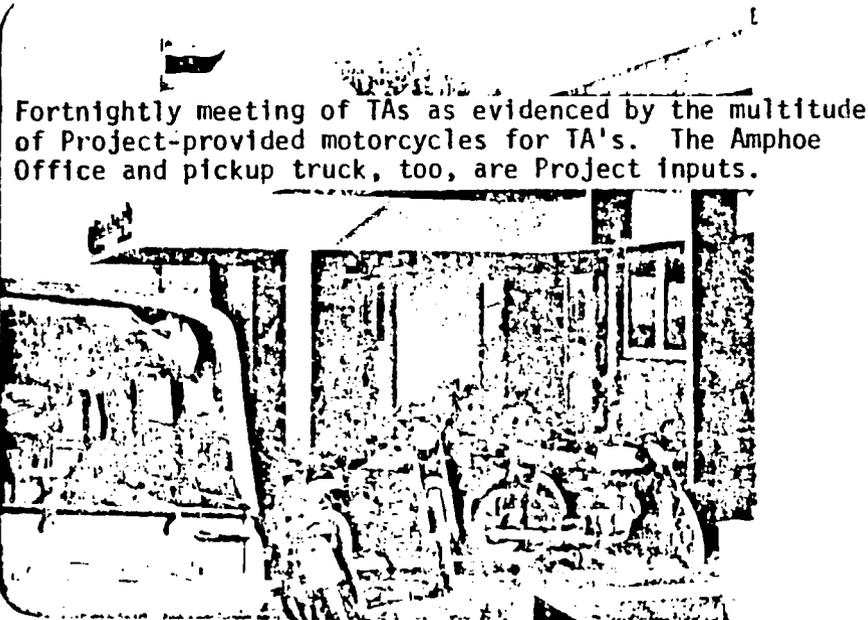
Well-designed charts and progress reports were evident in all Amphoe offices visited.



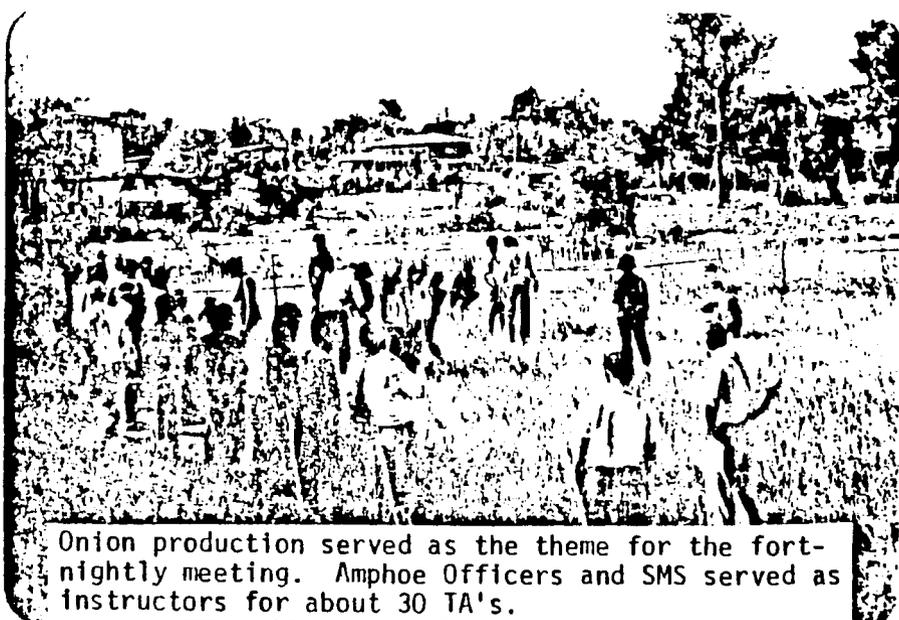
Provincial Extension Center at Ubon, one of 25 planned for Phase I of the Project.



Combination office and home for a Tambon Agent in Ubon Province. This is one of 381 planned under the IBRD loan.



Fortnightly meeting of TAs as evidenced by the multitude of Project-provided motorcycles for TA's. The Amphoe Office and pickup truck, too, are Project inputs.



Onion production served as the theme for the fortnightly meeting. Amphoe Officers and SMS served as instructors for about 30 TA's.

OBSERVATIONS AND RECOMMENDATIONS

1. Implementation Plan

The National Extension Improvement Project (IBRD funded) and the Extension Outreach Project (AID funded) is progressing throughout the Kingdom of Thailand. The first three years of the Project included the following spread of coverage:

1st Year - 4 Provinces in the Northeastern Region.

2nd Year - 11 Provinces in the Central, Western, and Southern Regions.

3rd Year - 10 Provinces in the Northern and Western Regions.

Plans for the fourth year of the Project include an additional 15 Provinces of which only eight were proposed in the Project Paper. The eight include five in the Northeastern Region and three in Eastern Region. The seven additional Provinces were added by the RTG.

The proposed training scheme for the Extension Outreach Project (AID funded) has been implemented. The training programs for the Tambon Agents, Amphoe Officers, Subject Matter Specialists and Trainers have been completed according to schedule. A total of more than 8,000 person-weeks of training have been held in the four regions. This does not include the fortnightly training held for all Tambon Agents. Participants trained at the regional levels have provided training sessions for participants at the Provincial, Amphoe and Tambon levels. Contact farmers have been identified and visited on a rotational basis

which ranges from two visits per-week to one visit per-month. Due to the incomplete assignment of Tambon Agents (reported by DOAE at about 79% nationally), the ratio of Tambon Agents to farm families does not meet the target of 1:1000. There are Tambons with a ratio of 1:550 and others with 1:5000 in the same region, i.e., Northern Region.

The Project goals appear to have been achieved in terms of quantification measures. The qualitative measure is of prime importance to this evaluation effort. Observations and discussions in 8 Provinces, 16 Amphoes and 24 Tambons of the Project area suggest areas of possible improvement.

The role of the Subject Matter Specialists (SMS) is critical to the Project. Discussions with SMS's reveal that their activities do not achieve the projected goal of 1/3 time allocated to interaction with agricultural research staff, 1/3 time devoted to training sessions, and 1/3 time allocated to field visits and demonstration plot assistance. A majority of the SMS's interviewed indicate that from 10-50% of their time is spent on administrative tasks. In addition, SMS time is used at the regional and provincial levels for special duties requested by other governmental agencies. Finally, the reduction in SMS positions from the original plan requires the personnel to be responsible for several crops in which technical expertise is lacking, as well as the added "specialties" of Rural Youth, Home Economics and Farmer Organizations, in some Provinces.

RECOMMENDATION No. 1

Expand the SMS time allocated to TA visits and demonstration plot visits. Too much SMS time is spent on administrative duties at the expense of research, supervisory and field assistance visits.

RECOMMENDATION No. 2

The Subject Matter Specialist positions should be increased at the Provincial and Regional levels, with duties and responsibilities assigned consistent with the Project Paper proposal. The position of Provincial Training Officer should be separated from the SMS positions and should not be charged against the approved number of SMS positions. Additional intensive training of SMS is indicated and should incorporate greater input by research personnel. (Details of SMS role appear in Appendix E).

The Tambon Agents are expected to be trained in five crops which are appropriate for the province, plus extension methodology. The TA's interviewed noted they participated in these pre-service training programs but had limited training experiences in practical farming. The majority of training sessions were devoted to lecture presentations and some group discussion. Consequently the practical skills of Tambon Agents need improvement, especially with the result and method demonstrations. Also, the Tambon Agents are required to establish a visitation schedule for the villages within their Tambon. The schedules are

posted in most of the Amphoe Extension Offices and are conducted with varying degrees of completeness. Reported variation of the visitation schedule ranged from 10% to 50% variation (according to farmers and Tambon Agents comments). The activities completed during the Tambon Agent visits should be monitored to make maximum use of the resources expended (i.e., time, transportation, etc.) for visitation.

Project implementation has been affected, qualitatively, by the late arrival of the technical assistance consultants. The consultants arrived during the third year of the Project and therefore have only spent about three months with the Project at the time of this evaluation. Their efforts should be focused upon the qualitative aspects of the Project while assisting in the planning and execution of the Project plan. With only 18 months remaining in the original 4-year life of the Project, a revision of the technical assistance support may be indicated.

RECOMMENDATION No. 3

Extend the U.S. audio-visual consultant by at least six months to permit more effective development of training aids for both pre-service and in-service training sessions.

2. Financial

The shortfall of personnel should result in a decrease in the planned operational budget in the categories of per diem, travel, and incremental salaries. This shortfall, if applied to the FY 79 budget alone, should reveal unobligated funds which are delineated below from two perspectives: a) as a proportionate decrease from the number of personnel indicated in the original Project Paper, and b) as a proportionate decrease from the number of personnel approved by the RTG Civil Service Commission. These computations are approximate but do allow for the 15% contingency/inflation factor:

Estimate of Reduction in Planned Operational Costs
during FY-79 (\$000)

	<u>Based on Original PP Personnel</u>	<u>Based on CSC Approved Personnel</u>
Per diem	1,371.1	1,133.6
Travel costs	112.8	71.6
Training Staff salary (incr.)	<u>561.0</u>	<u>561.0</u>
	2,045.0	1,766.2
15% Contingency/Inflation	<u>306.75</u>	<u>264.9</u>
	2,351.75	2,031.1
Dollar equivalent	117,550	101,550

Actual expenditures for training have fallen far below the anticipated costs, even after allowing for the reduction in personnel.

As of end of FY 79 - Cumulative planned costs (Project Paper) vs actual DOAE expenditures (\$000)

Training Component

Per Diem	10,922
Travel	580
Training Courses	5,671
Sub-Total	23,679
Training Staff Salary (incr.)	4,933
Total	28,612
+15%	<u>4,292</u>
Planned Total	32,904
Dollar equivalent	\$1,645,200
Actual Expenditures To-Date (DOAE report)	\$373,651

Technical Assistance

Original PP estimate	\$384,000
Actual expenditure	\$ 64,119

A more detailed analysis of the actual expenditures may indicate whether this severe budget reduction is justified. For example, teaching aids for TA's and leaflet handouts for farmers are almost non-existent; and organized training for Contact Farmers as a group has not been developed as planned.

RECOMMENDATION No. 4

The life of the Project for the use of the A.I.D. loan should be extended for one year (to July 31, 1982) to allow for delays which have been inadvertent on the part of the RTG. No change in the total amount of the loan appears necessary.

RECOMMENDATION No. 5

All Contact Farmers should be given annual (or more frequent) training at Amphoe or Provincial levels. While this gives recognition to the CF, it also primes them on the program and recommendations for the coming season.

3. Major Assumptions

The validity of the major assumptions identified in the Project Paper are discussed below. The information has been obtained through DOAE reports, interviews with extension personnel, observations of training activities and review of training aids.

The assumptions include:

a. Marketing system can absorb production increases. The farm products appear to be in demand by consumers or industry. This is evident by the increased price available to farmers for rice. The farmers received ₪2,200/1,000 kg (ton) in 1978 and the first crop price in 1979 was ₪2,600/ton. The exact price for the 1979 second crop was not available, however estimates ranged from ₪2,675 to ₪2,750 per ton.

Also the RTG appears to be able to continue the price support program for major agricultural crops. Therefore the evidence suggests this assumption remains valid.

b. Delivery systems for production inputs can accommodate increased demand. There are two important factors to consider regarding this assumption. First, inflation has had an impact on this assumption in terms of transportation of production inputs. An illustration of the transportation costs is the difference in the price of 50 kg of fertilizer in Bangkok and in an area about 140 km away. The Bangkok price was reported to be \$150-\$175 and the up-country price as \$250-\$275. One possible problem for farmers can be their ability to absorb the increased cost.

The second factor is the availability of production inputs. Necessary fertilizers and chemicals have been reported by some Amphoe Extension Offices to be in short supply. The farmers and Tambon Agents interviewed noted the unavailability of sprayers and water pumps which affected the use of production inputs utilization; especially in demonstration plots and subsequent adoption by farmers.

Therefore, this assumption is not universally valid.

c. Credit will continue to grow at least half as fast as projected. An article appeared in the Bangkok Post noting that the Bank for Agriculture and Agricultural Cooperatives (BAAC) was having difficulty meeting the increased demand for farmer credit. If the economic pressures

of inflation continue to grow, there is a possibility of credit unavailability. However, it should be noted that farmers did not express concern regarding available credit. The major concern expressed was increased costs of chemicals and fertilizers.

This assumption will have to be monitored closely to determine the effect on the Project. Current field observations support continued validity of this assumption.

d. DOAE will create a progressive career system to motivate extension personnel. Tambon Agents, who were newly recruited, maintained that a majority of them planned to continue working in agricultural extension. It appeared they were satisfied with their positions and planned to continue with the DOAE. As this report is being written, the RTG has announced across-the-board salary increases of about 20% for civil servants, effective January 1980.

The assumption is judged to be valid.

e. Crops and practices demonstrated will represent sound innovations for specific zones.

The recommended practices for the 5 major crops of each province are listed in the Crop Modules. The DOAE staff is planning to have agricultural researchers in MOAC review these modules periodically for acceptable technical recommendations. The field observations of extension personnel and farmers supported most of the technical recommendations for the Provinces visited.

The quality of the "practices" being conveyed to farmers show wide variations in value. In some cases, the introduction of dry season crops was eagerly accepted by the farmers and has resulted in tangible benefits. In other cases, the TA seemed to be encouraging practices which were already routine in rice production,--thus the practice is not an innovation in that area. One Province (Chiang Mai) set productivity targets for Contact Farmers and found other farmers eager to match them. At a Central Region Tambon, farmers were asked to subdivide their rice plots but they did not understand why. Some of the messages suggested in the Crop Modules include self-defeating caveats (ex. the use of improved seeds even though there is a question of seed availability). But in a Southern Province, a Provincial Extension Officer reported that the extension efforts to improve the quality of the sheet rubber by farmers has already eliminated the lower two grades in the latest year's production, thus indicating a higher rate of return for the farmers.

The second aspect of this assumption, demonstrations, appears to be in need of review. Demonstration plots must be better planned and utilized. The plots should emphasize specific methods and results to be effected. There should be adjoining check plots so that farmers can make a direct comparison of the results obtainable with the recommended practice. In the South, the Team saw some striking result demonstrations

comparing early maturing rice with the adjacent local longer season variety. Tambon Agents must exploit this type of demonstration with their farmers.

Several Provinces reported that the future trend on field demonstrations will see a decrease in the size of each plot in favor of more replications of each demonstration. An additional observation is that some farmers interviewed considered the recommendations too labor-intensive for their farms. The example cited was the planting of rice in rows which took much more labor than the traditional method of broadcast planting.

The TA's obviously must understand each message and its justification before relaying it to the farmer. The message must have a readily discernible advantage (higher profit, less labor input, etc.) and this advantage should be significant at least to 30%. (Some development agencies claim that the improvement must be on the order of 50% before farmers will gamble a change in their operations).

The DOAE must be particularly careful that the recommendations are possible and profitable innovations for the area and that they are thoroughly understood by the TA's and the farmers. This is of paramount importance during the initial years in each Province, as the Extension Service is establishing its credibility.

This assumption appears to be only partially valid.

RECOMMENDATION No. 6

Training for new Project personnel and refresher training for present staff should emphasize the purpose, design and utilization of method and result demonstrations as motivational and instructional techniques. Recommendations must be carefully designed in terms of labor requirements for the farmer, taking into account the seasonal labor constraints. It may well be advisable to have village trial plots designed to answer this question. Trainers, AA's and TA's must better comprehend the place of demonstrations in the Awareness-Interest-Evaluation-Trial-Adoption process.

f. Increased availability of additional inputs is not critical to project success.

In some of the Provinces visited by the Evaluation Team, the recommendations included the use of improved seed, fertilizer or pesticides and sprayers. All of these inputs were in short supply in one province or another as reflected by respondents at the Tambon level. Some of these shortages may have resulted from the zeal of the Extension Agents. In the Northeast, an Amphoe Agent reported that at least 200 farmers had purchased sprayers and chemicals for rice pest control. This could have caused a temporary shortage of these items at the market. An apparently unforeseen constraint is the lack of heretofore available inputs, specifically, gasoline for fueling water pumps and sprayers. This, too, has constrained the planned output of the Project.

Where the practices involved no purchased inputs (row-planting, planting dates, plant spacing, harvesting dates, dry season cropping) the concern with additional inputs was obviously minimal.

This assumption is not valid in many Provinces.

g. These innovations will be equally relevant to farmers with the smallest landholding and lowest disposable incomes.

The technical recommendations emphasize minimal inputs but, inevitably there are some additional requirements such as more expensive seed or fertilizer or pesticides. But the farmer is encouraged to make his own decision after seeing the results in the field demonstration. He may decide to not accept, partially accept (trial basis), or fully accept the recommendations. In the case of a new seed variety, the Contact Farmer is provided with a small quantity of seed by the Tambon Agent. He is asked to share some of the multiplied seed with his neighbors at harvest time. (Additional seed is usually available through the Extension Service).

In no case did the Evaluation Team encounter recommendations which would involve substantial cash investments or the purchase or rental of high priced equipment.

This assumption is largely valid as long as the Ministry's Plant Protection Service continues to provide control measures for large-scale pest infestations.

h. Project pacing assumptions are reasonably valid.

The timing of the CPI network in the Project Paper has not been met although the sequence of RTG activities has been followed quite closely. The U.S. technical assistance contractor was not available until the third year of the Project. The timing of training, recruitment of extension personnel and available inputs from the IBRD project did not meet the Project Paper proposals. The training scheme did, however, continue to meet most of the proposed network elements. One further problem with the proposed network is the timing of the placement of Tambon Agents. By the time the newly recruited TA's are trained and placed in the villages, the main cropping season is over, rendering their service relatively ineffectual until the subsequent planting season.

The validity of this assumption is questionable, depending on the interpretation of the word "reasonably", however, it may not be critical to the ultimate success of the Project.

i. Extension Agents can be sensitized to the need to treat farmers as equals.

The Tambon Agents interviews, plus interviews with Contact Farmers, suggest a high degree of rapport between them. The Amphoe Agents substantiated this impression. A majority of provincial level extension officers suggested there should be additional human relations topics added to the pre-service training of the newly recruited extension staff.

This suggestion indicates an awareness of the importance of this relationship and offers assurances this assumption will continue to remain valid.

j. Sufficient numbers of qualified personnel will be available to fill the new positions with Extension Service.

This assumption did not come to reality within the CPI timetable. As of November 1979, the Civil Service Commission had approved only about 29% of the number of SMS positions planned in the Project Paper (76 vs 266) and not all of these positions have been filled. The Ministry has been able to fill 1,278 of the 1,631 incremental TA positions (79%) targeted for this juncture.^{1/} The shortage was particularly apparent in the Nakhon Sawan area where fewer than 20% of TA positions are filled. This is largely explainable by the non-existence of any Vocational-Agricultural School in the Province. (Local Vocational-Agricultural Schools are the main sources for TA candidates). And, another 694 TA's need to be found for the 8 new Provinces in Year IV.

Thus, more than 1,000 Tambon Agent vacancies exist as the Project embarks on its fourth year, and the 16 SMS positions for the Year IV Provinces are yet to be filled. If the DOAE proceeds with its plan to telescope 7 additional Provinces (from a Phase II) into the current year, the intended Project outputs for Year IV will almost certainly be seriously diluted.

^{1/} Statistics provided by Personnel Office, DOAE.

RECOMMENDATION No. 7

The training activities should not be extended to additional Provinces under Phase II until the present SMS and TA slots are filled and the training in the 33 "Phase I" Provinces is acceptably effective.

k. The cooperation of farmers and village leaders can be obtained.

The field observations and interviews reveal that this assumption remains valid. There are two major factors that must be monitored to continue validity for this assumption. First the selection process of the Contact Farmers must include input from the village leaders and the farmers themselves. Should this process not be followed, inappropriate selection of Contact Farmers may affect this cooperation.

Secondly, the Tambon Agent must offer assistance to all farmers in the village and encourage the Contact Farmers to do likewise. The Contact Farmers' role in the Project is important if the Project is to be successful.

In many of the Tambons visited, a meeting place for farmers and the Tambon Agent had been provided by private owners, farmers' associations, religious organizations--or a new structure may have been erected by the villagers expressly for this purpose. In all cases observed, the TA had posted a sign which called attention to the next meeting scheduled.

4. Recruitment

Recruitment for the 25 Provinces identified for the first three years, as reported, has been only fair. The DOAE reported, that as of August 29, 1979, 92.1% of the Provincial level Extension Officers have been assigned. This includes 70 Subject Matter Specialists and Trainers of which 76 were approved by the CSC. In addition, 79.7% of the Tambon Agents were assigned. The Provinces in the first and second years of the Project have the highest percentage of Tambon Agents, 97.6% and 95.7% respectively. The 10 Provinces of the third year had 59.3% of the requested Tambon Agents although this figure will be higher as 31 new recruits were attending a training program from November 12-30 and will be assigned to the field.

The data for the fourth year of the Project is incomplete, but personnel figures provided to the Team indicated that no new Tambon Agents had yet been assigned. It was noted that an adequate number of Vocational-Agricultural School graduates was not available in 1979.

The two areas with insufficient personnel include Subject Matter Specialists and Tambon Agents. The Project Paper proposal for staffing of the SMS positions was reduced by RTG but recruitment has failed to satisfy even the reduced numbers. The addition of Home Economics, Rural Youth Clubs, and Farmers' Associations has created additional specialties for the limited number of SMS's. Complete staffing for all levels of the Project is important for both the training and extension components. The opinion of the Evaluation Team is expressed in Recommendation No. 7 above.

Discussions were held with several Provincial Officers and Tambon Agents regarding the possible effects of assigning TA's near their villages of origin. Two salient points emerged: (1) a TA assigned to his home area seems to relate better with his clientele than does a stranger; (2) but a TA assigned to his native village has difficulty in gaining the confidence of the farmers ("A prophet is without honor in his hometown") or may become complacent in his attitude toward farmers.

RECOMMENDATION No. 8

Newly recruited TA's should, as far as possible, be assigned to their home regions, but not to their Tambon of origin.

5. Quality of Personnel

The technical competencies of the Tambon Agents appear to be quite varied in scope and depth. Interviews with Provincial, Amphoe and Tambon staff levels, plus Contact and Non-Contact Farmers suggest that up to 60% of the experienced Tambon Agents are competent in the designated five crops. The depth of knowledge in the crops designated for the different provinces varies considerably. Some of the Tambon Agents were able to describe the recommended cultural practices for crops, however, the reasoning for the recommended practices appears to be lacking. The depth of understanding of the purpose of demonstration plots was also quite varied. Tambon Agents could rarely differentiate between method and result demonstrations. It appears that greater

importance is placed upon the quantitative aspect of demonstration plots (i.e., number, size, etc.) than the qualitative aspects (i.e., information to be learned, comparisons to traditional practices, etc.). There is a need for greater emphasis on these concepts when Tambon Agents are trained and supervised. Also the frequency of SMS and Amphoe Agent supervisory visits must increase in order to emphasize these concepts. As indicated earlier, SMS supervisory visits are generally minimal although some Amphoe Agents reported an average of two visits per month per Tambon. SMS's must devote more time to assisting Tambon Agents with demonstration plots and solving farmer's technical problems. It was reported by Provincial Extension Officers that impact points^{1/} have been identified and these points should be the focus of demonstrations.

The fortnightly meetings appear to be held according to the schedule listed in the Project Paper. The content and teaching processes of the fortnightly meetings must be improved to strengthen the effectiveness of the Tambon Agents. Amphoe Agents reported the fortnightly meetings gave the Tambon Agents opportunities to discuss farmers' problems. However, the typical problems reported for these sessions related to the problems of the TA and not the farmer. Common problems reported include lack of gasoline for TA's, insufficient access to water pumps, insufficient access to pesticide sprayers, etc. However, farmers reported that they

^{1/} An "impact point" is the specific change in farm operations which can lead to benefit for the farmer.

have problems with rat control, unidentified plant diseases and insects, etc. The TA's must become sensitized to the distinction between TA-related problems and farmer-related problems for meaningful discussions at the fortnightly training sessions.

As the Project expands and newly recruited personnel gain experience, there appears to be increasing emphasis on conducting the training for new trainers and TA's. However, there is also a need to offer the experienced TA's, Regional and Provincial SMS's and Trainers, and Provincial and Amphoe Agents opportunities for refresher training. The PP proposed a refresher workshop for the staff each year. The refresher workshop would offer opportunities to improve both the professional (extension related) and technical competencies of the staff. It was also suggested by a Provincial Officer that Provincial staff visit other provinces to gain additional ideas related to the Project. This suggestion could include Amphoe and Tambon level staff as well and could be included with the annual refresher workshop.

6. Effectiveness of Extension Coverage

The PP proposal for the ratio of Extension Agents to farm families served is 1:800 compared to 1:1,700 to 1:4,000 which existed prior to the Project. The reported range in the ratio has been noted at 1:550 to 1:5,000 at the time of the evaluation. The higher ratio (1:5,000) is the result of too few agents for the assigned Tambon positions. The

typical range in ratio of agents to farm families is 1:1,000 to 1:1,500. RTG officials set the goal at 1:1,000 in the assessment of extension personnel assignments.

The Provincial staff interviewed noted the shortage of SMS and Tambon Agents. It is apparent that reduced staff numbers result in reduced extension services for the villagers. The interview respondents indicated that the existing TA's would not be expected to be responsible for farmers outside their assigned Tambon, thereby actually maintaining the 1:1,000 ratio. However, this means that some Tambons are not getting the services of an Extension Agent. It should also be noted that some provinces, especially in the South, have less dense farm population due to larger land areas required for coconut palm plantation. The Provincial Officers agreed that the 1:1,000 ratio was unrealistic and may have to be reduced to 1:600 - 1:400 for these areas.

RECOMMENDATION No. 9

Re-examine the Tambon Agent to farm family ratio. The PP proposal of 1:800 is not the goal accepted by RTG. The ratio of 1:1,000 is currently set as the DOAE target. The ratio should, however, be set according to local needs. (See Appendix B).

Tambon Agents reported they average two visits per month to assigned villages. This figure was substantiated by Contact and Non-Contact Farmers. It was also observed that the TA's actually have

more than one Contact Farmer per village. The typical Tambon has 10 villages (with an approximate range of 8 to 12 villages per Tambon). The number of Contact Farmers per Tambon Agent varies from approximately 60 to 170. There is a very apparent lack of uniformity among the TA's in the system of operations.

Interviews with the Contact Farmers and Non-Contact Farmers reveal that they are aware of the Tambon Agents' visits to their villages. While not all Contact Farmers would know the full name of the Tambon Agent, they did recognize him or her. It is interesting to note that farmers referred to the TA with such terms as "teacher", "professor", "niece", "little one", etc. These terms are an illustration of the positive personal relationships established between the farmers and Tambon Agents.

When Contact and Non-Contact Farmers were asked whom they would seek for solutions of their farming problems, a majority reported they would ask the Tambon Agent. This suggests the TA is available for questions and the farmers feel confident in his (her) ability to provide answers to their questions. There were, however, a minority of farmers who reported they would ask neighbors or village headmen questions regarding their farm problems. One Contact Farmer noted that too often his neighbors gave wrong advice regarding insect pests and he would not rely upon their recommendations in the future; therefore, it is apparent that farmers have developed confidence in the Tambon Agent in lieu of neighbors or family.

7-8. Farmer Cooperation and Rate of Adaption; Impact on Increasing Income

While it is difficult to specify an exact adoption percent, it appears that some farmers are convinced the recommended varieties of rice (i.e., RD-7, RD-11, RD-13, Horm Mali, etc.) are a preferred alternative to the traditional varieties. Many farmers have already planted the recommended varieties on at least some of their land. Some Contact Farmers believe other farmers in their village will purchase the improved rice seeds next year.

One Non-Contact Farmer reported that the new techniques (transplanting rice in rows, applications of fertilizer, etc.) were too labor intensive and thus unprofitable. The problem of available labor, therefore, affects both traditional farming practices and new farming practices.

An immediate impact on increased farmer income is not to be expected as an Extension Service is launched in new areas. Time is required to acquaint both the Tambon Agents and the farmers with the system, and at least one season of successful demonstrations of a profitable new practice is prerequisite to adoption of the practice by any farmers. Under ideal situations, only the small percentage of innovators in a group of farmers will attempt the new practice early in the Project. Positive progress is certainly not to be expected before the third harvest season.

Random interviews in Provinces which are in their first or second year of the Project substantiate these surmises. Nonetheless, several of the Contact Farmers expressed confidence that the help provided by the TA would ultimately lead to positive results, either in greater harvests or in prevention of losses caused by diseases, insects or rodents.

Four Provinces in the Northeast are completing their third full year in the Project and it is in that region that more positive impact could be expected. After several field interviews of Provincial, District and Tambon Agents in two of the Northeast Provinces, this was indeed the case. Extension personnel in Ubon estimated that some farmer incomes had increased by 10% to 30% in the three years of the Project. But the Contact Farmers interviewed estimated income increases of 30% to 100% (despite a dry growing season) while Non-Contact Farmers reported no increase. Most of the profit increase can be attributed to the growing of an improved variety of rice which not only provided greater yields but also enjoyed a higher support price by the government. Further substantiating the prospects in Ubon was the fact that all of the farmers interviewed, both Contact and Non-Contact Farmers, expressed a high degree of confidence in the Extension Service as represented by the Amphoe and Tambon Agents.

9-10. Extent of Achievement of Project Purpose; Interaction between
Researchers, Extension Personnel and Farmers

Project Purpose:

To provide effective agricultural extension services at the village level in 33 Project Provinces which will:

- a. enable the farmer to make better informed decisions,
- b. cause him to use improved farming techniques,
- c. enable him to convey his views and needs back to the bureaucracy.

Verifiable Indicators:

a. The system of pre-service and in-service training envisioned in the Project Paper have been very closely adhered to, despite the delay in posting of the AID-loan-financed technical assistance team. As of October 31, 1979, the USAID quarterly reports and DOAE reports indicate that all required training for 1979 was either completed or scheduled for the following quarter.

The recommended courses in Extension Methodology and Crop Production (up to 5 crops per region) are being complied with. The additional subjects of Training Evaluation and Farm Management have been added. From December 1976 to August 1978, about 4,400 person-weeks of training had been provided under the management of the National Training Division. From September 1978 to November 1979,

an additional 4,140 person-weeks of training had been conducted. These figures do not include locally-called sessions such as the fortnightly training for all Tambon Agents.

b. Effective coverage of villages in 33 participating Provinces by Extension Agents. (Discussed under 6., above.)

c. Routine of interaction between researchers, extension personnel, and farmers established at village and district levels. Interaction among and between farmers, extension personnel, and research scientists is not yet apparently routine. Channels have been provided and are being tested. Experience should refine and formalize these channels. For example, the fortnightly meetings of all TA's in a district provide them with the opportunity to report agricultural problems of their villages. The Amphoe Agent, and frequently the Provincial Subject Matter Specialist, participate in these meetings and are the link with the next rung toward research contact. The fortnightly meetings also provide the SMS the opportunity to relay recommendations from research to the TA's. Research personnel are participating in the project planning and training sessions. A few Amphoes reported occasional visits by research personnel but these were exceptional. As the demonstrations become more sophisticated, more observations by research at farm trials should result.

The SMS cadre has difficulty in spending much time at the research level because of the demands at the Amphoe and Tambon levels.

The annual joint meetings of extension and research at the headquarters, regional and provincial levels, do provide a reasonable opportunity for interfacing of the activities. One cannot realistically expect research to revise its annual program each time an individual problem surfaces. It is, rather, the consummate observations in the various ecological zones which pinpoint broader problems deserving of research attention. Research should play a greater role than at present in conducting field trials on farmer plots. Concurrently, the Extension staff must be careful to inform the farmers of the difference between a field trial and a field demonstration. The field trial is a pilot application of research under farmers' conditions, with no implication of recommendation. The farmer, thus, is involved in the evaluation of possible new techniques, materials, or varieties. The field demonstration, on the other hand, represents a recommended new departure in practices.

d. Reduction of the gap between current and potential crop yields by at least 50%.

With the 1979 rice harvest now underway, figures were not yet available for inclusion in this report. The most meaningful indicators would be expected in the Northeast where 4 Provinces are completing their third year. The spot readings show harvest and income increases over 1977, and 1978 particularly among Contact Farmers, but these were not compared with the potential harvests determined by local research plots. Contact Farmer yields were estimated at about 30% higher than those of Non-Contact Farmers for the 1979 season.

11. Training Activities

A. Training Validity:

The training sequence and scope for the Project has been modified from the proposal in the PP. The role of researchers and associated training methodology described in the PP has not been accomplished according to the proposals. A variety of constraints have developed during the Project which have affected the original proposal. The lack of video tape recording (VTR) has reduced the opportunities to more fully utilize the available talent in the technical areas. In the meantime, the myriad of training sessions held in the expanding number of provinces places insatiable demands on the available talent. Specialists at the National Institute of Development Administration (NIDA) might be involved more for personnel management courses or for training trainers.

The PP specifies the pre-service training sessions would initially include crop technology followed by extension and communication methodology. The typical training agenda for Tambon Agents has been developed so that the extension and communication sessions are held prior to the crop technology sessions. Therefore the opportunities to incorporate appropriate technology examples in the extension methods training sessions are minimal. In addition a majority of the training sessions include lecture formats with limited visuals such as flipcharts, overhead projects and chalkboard messages. The PP

specified an emphasis on practical (psychomotor) experiences within training sessions. The common type of visuals used with lectures limits the learning to knowledge (cognitive) domains with some low level acquisition of values (affective learning). The training sessions at all levels should enable participants to experience all learning domains. The amount of time allocated to each type of learning at the Tambon Agent level should be expanded toward psychomotor activities (at least 40%) and reduced in the cognitive and affective activities. To accomplish the PP goals, training sessions must incorporate the use of "action type" visual aids like VTR (this is explained in Section 13) in addition to the monosensory aids (flipcharts, overhead single layer projections, and chalkboards) typically used in training presentations.

The Evaluation Team was pleased to see several teaching techniques being exploited: (1) the use of overhead projectors, (2) the incorporation of locally produced color slides, (3) the inclusion of role-playing as a class-participation activity, and (4) the practice of having "students" recall the salient points in each presentation.

RECOMMENDATION No. 10

Expand the proportion of time in training sessions spent on field observations and practical exercises. (This includes the fortnightly meetings of TA's). The reported time of less than 30% for this type of training activity is not adequate to acquire the skills and understandings demanded.

Content of the training courses continues to emphasize theory, which has limited application in this ambitious training scheme.

Theoretical presentations necessitate an expanded amount of time and offer relatively limited benefits to the training participants in terms of the immediate project tasks. Since the amount of time available to train participants at all levels is at a premium, theoretical bases of knowledge should be of secondary emphasis with practical skills being the primary training goal. In addition, the training goals of each level in the training scheme should be carefully identified and written out to guide the planning of the instructors.

Finally, training aids distributed should be appropriate for the duties and responsibilities of the participants. It was reported that lecturers provide handouts to the participants. The apparent focus of the handouts relates to the content of the topic, rather than to the application of the content. Training handouts should be developed so that the participants will be able to accomplish specific tasks upon return to the routine of duties and responsibilities in the extension service. Therefore the focus of handouts should be related to "what", "how", "when", and "where" questions rather than the "why" questions of any content area.

The DOAE has gone to considerable effort to develop a series of 5 flipcharts on crop production for the use of TA's. Unfortunately, the size and weight of the printing stock used do not lend them to carrying on a motorcycle. Obviously, the utility of these aids is greatly decreased.

B. Training Scope and Quality:

The training scope has been explained previously in the report. An implementation of the Project training scheme was provided by U.S. extension trainers in December-January (1976-77). The DOAE National Training Officer was primarily responsible for meeting the subsequent training schedule. Quantitatively, the Project outputs have been remarkable, despite the many impediments which have been encountered, such as the late fielding of the U.S. technical assistance contractor and the delays in providing the Provincial and Regional training facilities. The DOAE proved its determination to carry forward by finding training facilities at research stations, existing Ministry of Agriculture offices, universities, regional education centers, farmer association centers, Pest Control Units, and hotels. A more serious handicap has been the lack of farming practice plots at many of these facilities.

The qualitative aspect of the training scheme must be the primary concern of the U.S. technical assistance and has been the evaluation emphasis. The numbers of people trained and the numbers of training sessions held have been largely completed according to schedule. The content and methodologies of the training scheme and the participants' acquired skills are the major areas in need of improvement. The qualitative aspects can be improved in the annual refresher courses or workshops for trainers and trainees.

As was noted earlier, Provincial and Amphoe level staff can gain operational insights by visiting other Provinces. One Provincial

Officer reported that he was asked to speak to another Provincial staff at their orientation session. This exchange of ideas is a good means to multiply the positive experiences of Provinces that have completed one or more years in the Project. Visits to selected Provinces (such as Chiang Mai, Surat Thani, Ubon, etc.) by Provincial Officers beginning participation in the Project can compound the successes of the national project. An exchange of views of all Provincial and Amphoe level staff can have many positive results for both experienced and inexperienced provinces in terms of the Project.

RECOMMENDATION No. 11

As the evaluation of training methodology progresses, annual refresher and up-dating training should be held for all Regional and Provincial trainers.

RECOMMENDATION No. 12

Training should be provided in personnel management and supervision for Regional, Provincial, and Amphoe level staff.

C. Transfer of Information:

One primary problem observed by the Evaluation Team is the effect of demonstration plots. The description of the problem and suggestions were offered earlier in this report. The primary means of transfer of information to both Contact and Non-Contact Farmers is accomplished through this medium. Interestingly, the evaluation now

underway by the DOAE notes that many farmers gain new knowledge through agricultural messages aired on the radio. Provincial and Amphoe extension staff should include this medium to support the extension program. Much of the announcement-type of information (i.e., availability of seed, fertilizer and pesticides, etc.) can be distributed through radio. Well planned extension programs in the Provinces, Amphoes and Tambons can gain much support here, especially since the farmers indicated that they listen to the radio.

The Project has not developed significant aids for farmer-level training. The Tambon Agents apparently use minimal training aids, such as signs posted on some demonstration plots, signs posted for village meeting announcements and signs identifying the local farmer meeting site. As learned from the centrally-produced flipcharts, visuals developed for TA's will have to be portable since transportation is limited to motorcycles. The PP proposed a single concept, one page leaflets for distribution at farmer training sessions. These (or appropriate substitutes) have not been developed. TA's can be more effective if farmer-level visuals are available. It can standardize and systemize their training role in the Project. Also the effectiveness of the farmer training can be increased.

It appears from the evaluation observations, the TA's are operating within a planned system of visitation, but without a well-planned training scheme for farmers. Most TA's reported they have a general meeting with the Contact Farmers and react to a variety of

problems identified by the farmers. Examples of the farmer problems (as described earlier) include rat control, labor availability, sprayer and water pump availability, increased costs of pesticides and fertilizers, inavailability of gasoline, etc. Although these problems are related to the impact points, many of the problems identified by farmers are beyond the control of the TA. A well-devised training plan for the farmers will enable farmers to describe their felt needs, as well as offer TA's the opportunity to teach farmers specific skills related to the extension program. This is an improvement required for the farmer-level training and is not adequately met by either the fortnightly training sessions nor the typical procedures of TA visits.

D. Module Development: (See 13-1)

12. Other Donor Activity

The Project involves external participants in several fashions:

- (1) AID grant financing concerned with loan administration and evaluation;
- (2) AID loan financing of training costs and technical assistance being carried out by Louis Berger International consultants; (3) IBRD financing primarily of construction and "hardware" inputs; (4) IBRD financing of technical assistance in extension field work.

Obviously, all of these activities are interdependent.

A delay of more than two years in fielding the Louis Berger team—two Extension Training and two A-V Specialists--under (2) above, has placed a heavy load on the Thai staff. Nevertheless, the training

activity schedule is being met quantitatively. The quality of the training may have suffered but can be improved by additional in-service training of personnel already in the field. The selection of specialists with Thai experience on the Louis Berger team will undoubtedly accelerate the effective involvement of the team.

Under (3) above, the construction of training, office, and field facilities is also behind schedule, but DOAE staff reports that this has not been an insurmountable constraint in implementing the Project. Vehicle delivery has been nearly on schedule, but a delay in procuring audio-visual support equipment has resulted from the decision to eliminate the video tape medium from the original proposal. This may be partially responsible for a lack of consistency in the acquired training and understanding of the Project by the field staff.

The field Extension team, (4) above, is provided by Tahal Consultants, and consists of an Extension Advisor at headquarters and one advisor in each of the four regions involved. The two expatriate teams hold joint monthly meetings in efforts to dovetail their activities. Reports from both parties and the DOAE are completely optimistic about the technical assistance which will result. Members of both teams were encountered on several occasions in the field by the evaluation team, particularly at training sessions.

As of October 31, 1979, the targets and progress of the building construction under the IBRD loan are indicated by a DOAE report as follows:

	<u>Target</u>	<u>Status</u>
Regional Training Center	2	1 under construction
Provincial Extension Centers	25	4 complete, 3 under construction
District Extension Centers	227	47 complete, 40 under construction
Tambon Agents' Houses	381	30 complete, 83 under construction

The DOAE has been able to make other arrangements for training and office facilities for the time being (see Item 11B) but the lack of these facilities has incurred additional rental expenses and increased travel time and mileage. (In Nakhon Sawan, an interviewed TA was obliged to travel at least 36 km a day between his residence and his nearest village).

13. Additional Comments

A. The Role of Video Tape Recording

The training program envisioned in the Project Paper was extremely ambitious; the fielding in 4 years of a total of 3,800 field staff, including 3,200 Tambon Agents without previous experience. Such a momentous training program could not be launched effectively by the use of conventional methods--qualified training personnel were not available in sufficient numbers to tackle this momentous task. The two possible solutions would have been to protract the project completion date, or to multiply the training talent available. (A dilution of quality of training was not acceptable in meeting long-range objectives).

Given the time constraint of four years,* an innovative medium, video tape recording (VTR), was proposed as a method for "multiplying" the best teaching talent and for standardizing the instruction provided at all levels. The subsequent deletion of this teaching medium has left a vacuum in the original plan which has not been replaced. The substitution of 16 mm and Super 8 mm film production does not appear to be a reasonable alternative, but the expertise which would be required for the production of training films can be easily adapted to video tape production. A lack of uniformity in understanding and implementation of the Project by staff at all levels exists and might have been avoided if VTR had been used as originally planned. Its merit in self-evaluation of instructors and TA's is also still valid.

This medium is new to many countries, but has been used in its present form, or as closed circuit television, for more than 15 years in educational institutions in other countries. It appears to be a logical, more advanced and more economical audio-visual tool for permanent training institutions.

The first phase of the Extension Outreach Project still faces a mushrooming training component, while a second, equally ambitious phase looms in the near future. The training load shows no signs of diminishing, and current staff will need to be up-dated in their specialities. Refinement of teaching techniques should be considered after the field experience of the initial years. The originally conceived role of VTR is still valid. (Details of the potentials of VTR are spelled out in Appendix C.)

* At this writing, steps are being taken to overlap a "Phase II" for remaining Provinces into the fourth year of "Phase I".

RECOMMENDATION No. 13

A pilot trial of the video tape recording medium be made, in the Project, according to recognized advantages and limitations of this teaching tool. This would require a single set of color video tape production equipment to be used under the direction of the Project's Training Office.

The Audio-Visual Section of DOAE has expressed a willingness to undertake this pilot activity and has the experience and talent available for the production of training films. A suggested list of basic equipment is appended (Appendix D) but should be refined by the implementer.

B. The National Training Office

There are indications in the MOAC that the office charged with the Project's training functions will be upgraded to full department status. A review of the training accomplishments to date show that the very ambitious program has virtually been achieved on schedule despite delays in loan negotiations and funding, delays in fielding the technical assistance teams, and cutbacks in the planned numbers of staff and training support commodities. It has been operating on supporting funds less than half of those originally planned. The promotion in stature of this activity is certainly deserved. Hopefully, the higher status of this office will not entail even greater responsibilities unless there is a commensurate boost in staffing.

One of the Subject Matter Specialists assigned to the training section should be charged with reviewing, modifying, and adapting the training modules as they are developed. Great strides have been made in producing these modules (there are 5 in each Region). The primary objective was to organize the best available information on the principal crops in each region. (Up-dating will be required as research and experience dictate). The ultimate objective was to reduce this information to individual, discrete practices which can be communicated by Tambon Agents to farmers. Some of these practices lend themselves to field demonstrations where results will enable farmers to make their own judgments as to the feasibility of the practice. In their present stage of development, the modules have not been reduced to the form most useful for the TA's, i.e., a series of method and/or result demonstration plans on an operation-by-operation basis. The PP envisaged that these simplified plans of one sheet could be reproduced in quantity and also used as handouts to participating farmers. There was no evidence that the crop guides had reached this stage of development.

RECOMMENDATION No. 14

Review the validity and utility of the crop modules developed at the Provincial, Amphoe, and Tambon levels. For the Tambon level concentrate on specific practices which can give visible economic benefits of at least 30%. The Louis Berger International Contract consultants should be able to provide assistance to Training Officers for this purpose.

SUMMARY OF RECOMMENDATIONS

RECOMMENDATION No. 1

Expand the SMS time allocated to TA visits and demonstration plot visits. Too much SMS time is spent on administrative duties at the expense of research, supervisory and field assistance visits.

RECOMMENDATION No. 2

The Subject Matter Specialist positions should be increased in the Provincial and Regional levels, with duties and responsibilities assigned consistent with the Project Paper proposal. The position of Provincial Training Officer should be separated from the SMS positions and should not be charged against the approved number of SMS positions. Additional intensive training of SMS is indicated and should incorporate greater input by research personnel.

RECOMMENDATION No. 3

Extend the U.S. audio-visual consultant by at least six months to permit more effective development of training aids for both pre-service and in-service training sessions.

RECOMMENDATION No. 4

The life of the Project for the use of the A.I.D. loan should be extended for one year (to July 31, 1982) to allow for delays which have been inadvertent on the part of the RTG. No change in the total amount of the loan appears necessary.

RECOMMENDATION No. 5

All Contact Farmers should be given annual (or more frequent) training at Amphoe or Provincial levels. While this gives recognition to the CF, it also primes them on the program and recommendations for the coming season.

RECOMMENDATION No. 6

Training for new Project personnel and refresher training for present staff should emphasize the purpose, design and utilization of method and result demonstrations as motivational and instructional techniques. Recommendations must be carefully designed in terms of labor requirements for the farmer, taking into account the seasonal labor constraints. It may well be advisable to have village trial plots designed to answer this question. Trainers, AAs and TAs must better comprehend the place of demonstrations in the Awareness-Interest-Evaluation-Trial-Adoption process.

RECOMMENDATION No. 7

The training activities should not be extended to additional Provinces under Phase II until the present SMS and TA slots are filled and the training in the 33 "Phase I" Provinces is acceptably effective.

RECOMMENDATION No. 8

Newly recruited TA's should, as far as possible, be assigned to their home regions, but not to their Tambon of origin.

RECOMMENDATION No. 9

Re-examine the Tambon Agent to farm family ratio. The PP proposal of 1:800 is not the goal accepted by RTG. The ration of 1:1000 is currently set as the DOAE target. The ratio should, however, be set according to local needs. (See Appendix B).

RECOMMENDATION No. 10

Expand the proportion of time in training sessions spent on field observations and practical exercises. (This includes the fortnightly meetings of TA's). The reported time of less than 30% for this type of training activity is not adequate to acquire the skills and understandings demanded.

RECOMMENDATION No. 11

As the evaluation of training methodology progresses, annual refresher and up-dating training should be held for all Regional and Provincial trainers.

RECOMMENDATION No. 12

Training should be provided in personnel management and supervision for Regional, Provincial, and Amphoe level staff.

RECOMMENDATION No. 13

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RECOMMENDATION No. 14

Review the validity and utility of the crop modules developed at the Provincial, Amphoe, and Tambon levels. For the Tambon level concentrate on specific practices which can give visible economic benefits of at least 30%. The Louis Berger International Contract consultants should be able to provide assistance to Training Officers for this purpose.

APPENDIX A

Agricultural Extension Outreach

Evaluation

November 1979

Provincial Extension and Regional Extension Officers

1. What are objectives of Project?
2. How did you learn about the Project?
3. What training have you had with Project?
4. Which training sessions most valuable?
5. What additional training would you like to have?
6. In your opinion, are Amphoe Agents and Tambon Agents working effectively?
7. How many Amphoe Agents are in the Province?
8. How many Tambon Agents are in the Province?
9. What training courses have you helped present?
10. Who were the students?
11. What are additional training needs of Amphoe Agents and Tambon Agents?
12. How is the annual Provincial extension program determined?
13. On what occasions do you have contact with research people and how often?
14. How do you view the role of the SMS?
15. How serious is the shortage of SMS?
16. What additional support do you need from supervisors?
17. How often do you see your supervisors?
18. What are your chief problems?
19. Do you have any suggestions for improving the Project?

Agricultural Extension Outreach

Evaluation

November 1979

Regional Training and Provincial Training Officers

1. How is your training program determined?
2. Who determines the subjects to be taught? Who selects the instructors?
3. Are you asked to participate in training at other levels?
4. Do you sometimes use different instructors to teach the same topic?
5. What visual tools are used besides the blackboard?
6. Do you have help available for producing visual aids?
7. How frequently are "handouts" or summaries provided to the students?
8. Please estimate the percentage of training course time devoted to
Lectures _____
Class participation _____ (group work, discussions, visual aid
preparation)
Field trips _____
Farm practice _____
9. Have any follow-up studies been made to determine the adequacy of training courses?
10. What do you consider the main strengths of the training instructors?
11. What do you consider the main weaknesses of the training instructors?
12. Do you have any suggestions for improving the training work?
13. What was your work before this assignment?
14. What is your major in your university degree?

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Subject Matter Specialists

1. How long have you been working with the Extension Outreach Project?
2. What was your previous assignment?
3. At what level are you assigned (regional, provincial)?
4. Very briefly, what do you understand your responsibilities to be?
5. Please estimate the percentage of your time spent on
 - a. field demonstrations _____
 - b. classroom teaching _____
 - c. individual meetings with Amphoe Agents and Tambon Agents _____
 - d. meetings with research people _____
 - e. administration _____
 - f. other (specify) _____
6. What crops or subjects are you expected to specialize in?
7. What is your major in your university degree? Do you feel that your previous academic training or experience was adequate to qualify you for these responsibilities?
8. If not, what further training do you consider necessary?
9. The project originally requested more SMS than have been made available. How can this problem be overcome?
10. What do you think is the most important part of the SMS work?
11. Has your work enabled you to understand some of the agricultural problems of farmers? Have you been able to let research know about these problems?
12. How often do research people participate in field trials or farm demonstration with you?

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Amphoe Agent Questions

1. How many Tambon Agents are assigned to you? Is this the total planned? What is the ratio of TA's to farm families?
2. What do you understand as your role in the Agricultural Extension Outreach Project?
3. Where did you learn about the Agricultural Extension Outreach Project?
4. What are your supervisory duties?
5. What are your training duties?
6. Which do you prefer to do between supervision and training?
7. What is the progress of the Tambon Agents' work?
- 8. What is the rapport between the farmers and Tambon Agents?
9. How often does the Provincial Extension Officer visit you?
10. How long have you been an Amphoe Agent?
11. What additional training do you need to do an even greater job?
12. What was your training before you were an Amphoe Agent?

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Tambon Agents

1. What do you understand your duties and responsibilities to be in the Extension Outreach Project?
2. What type of training have you received for the Extension Outreach Project?
3. What training you received in the Extension Outreach Project helped you in your work with farmers?
4. What additional training needs do you think you should have for your work with farmers?
5. Are you in need of other supporting items for your work? What are they?
6. How often does your Amphoe Officer visit you?
7. Do you tell the farmer's problems to your Amphoe Officer? Give some examples.
8. What are the major needs of your Contact Farmers?
9. What are the chief problems you have in your work?
10. What is the greatest satisfaction you get from your work?
11. Do you intend to make agricultural extension your career?
12. How long have you been a Tambon Agent?
13. How many Contact Farmers do you visit?
14. How often do you meet with the Tambon Agents for training?
15. What did you learn at your last Tambon Agents' training meeting?
16. How many kilometers do you have on your motorcycle?
17. How many demonstration plots did you have this year?

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Contact Farmer and Other Farmer

(Do you want to be a Contact Farmer?)

1. What is the name of your Tambon Agent?
2. What is the purpose of the Tambon Agent?
3. Do you have some problems which the Tambon Agent could help you to solve?
4. Do you think the Tambon Agent has the practical ability to help you with your problems?
5. How often does the Tambon Agent come to visit you?
6. What benefits have you gained from the Tambon Agent?
7. What additional help could the Tambon Agent provide for you?
8. Have you participated in demonstration plots? How?, i.e., plot on your farm or attending field day.
9. Does the Tambon Agent give you practical advice?
10. Who do you ask for advice on farming problems?

Extension Agent to Farm Families Ratio

The Project Paper indicates a target coverage ratio of one Tambon Agent for every 800 families in the Project Provinces. The DOAE has since determined that 1:1000 is a more realistic goal. There is an inherent danger in being too dogmatic about such ratios. They can be important for setting national goals but they should be used as general guides only.

Several factors must be taken into account in determining more precise needs for any specific Province or Amphoe:

1. Degree of dispersion of target families.

Are most of the families clustered in closely knit villages, or are they spread over vast areas such as in coconut-growing regions?

2. Are the farms easily accessible by road throughout the year or does rough terrain, lack of roads, or flooded areas preclude easy visitations?

3. Does a visit by a TA imply a serious technical discussion and demonstration of farm practices, or a mere 5-minute chat in passing? Stated differently, how effective is each farm visit?

There are other factors, as well; the degree of rapport between the TA and his farmers, and the technical ability of the TA.

All of these factors must be considered in determining a realistic ratio for a particular area if farmers are to get their fair share of assistance from the TA and if the workload is to be divided fairly among the TA's.

POTENTIALS OF VIDEO TAPE RECORDING (VTR) IN TEACHING

Robert A. Wesselmann

(Revised December 1979)

In matters relating to the communication of new ideas or the inducement of behavioral changes, there is little question that the addition of visual imagery to the spoken word can increase the effectiveness of the verbal message. A photograph helps in getting a point across; if the visual aid is a black-and-white motion picture, the message becomes much clearer; then, if the fidelity of natural color is added to the film, the total impact upon the audience is limited only by the expertness of the film producer. Thus, aside from the real-life experience, the most desirable communications aid is the reproduction of an activity in motion and in natural color, accompanied by a verbal explanation in the listener's language.

In years gone by, technical assistance efforts in developing countries were often characterized by motion picture production to support developmental programs. These efforts have since waned for several reasons:

1. High capital investment - (cameras, lights, studio, editing and synchronizing equipment, projectors, screens, electrical generators)
2. High cost of producing films, usually in terms of foreign exchange (imported raw film, cost of overseas laboratory services in processing and duplicating films)

13. What kind of training have you received in the Agricultural Extension Outreach Project?
14. What do you think is the most valuable training for an Amphoe Agent?
15. What are some additional training needs of Amphoe Agents for the Agricultural Extension Outreach Project?
16. How do you conduct the Tambon Agents' fortnightly meetings? Who assists you?
17. How often do you visit your Tambon Agents in the field?
18. How often do the Tambon Agents ask for your help? What kind of help do they seek?
19. What are the chief problems you have?
20. What are the most successful activities you do?
21. What agricultural problems have you requested for research to solve?
22. How often do farmers from your Amphoe talk with Agricultural Researchers?
23. Has the 1979 (2522) farmer income increased or decreased from 1978 (2521)? Why?

The basic equipment needed to produce action tapes in color and sound consists of:

- VTR color camera, similar to a 16 mm movie camera
- Microphone
- VTR color tape recorder, playback set, similar to a sound tape recorder and about as simple to operate;
- Color recording magnetic tape, in reels or cassettes;
- T-V color receiving sets, in the size and number desired.

The VTR system has overcome the listed constraints to movie production as follows:

1. High capital investment - VTR probably offers little, if any, reduction in the original cost of equipment.
2. High cost of program production - Here, VTR presents a very strong advantage. The image is recorded, not on film, but on magnetic tape. The magnetic tapes are erasable and re-usable for hundreds of times, so that the original raw stock can serve indefinitely. Duplicate copies of programs can be produced on the spot by connecting two VTR machines, hence, no foreign laboratory services are required.
3. Time required for program production - Here, is probably the strongest advantage of VTR over motion picture film. The original scripting and shooting time does not change, but automatic exposure control and instant viewing of the results on a tandem monitor eliminate reshooting delays.

The "retakes", often required in film production, can be done immediately since the "first takes" are instantly observable. For economy, film footage is often skimmed on, sometimes to the detriment of the subject treatment. Because VTR does not waste any tape, the subject can be adequately covered without the shackles of film costs.

Sound can be recorded simultaneously with the shooting or can be dubbed in later. Nothing needs to be processed so the finished product is available for immediate use. (No lab processing is required). Since the soundtrack is integral with the image track, any narration changes, erasures or additions can be made while viewing the image on the monitor.

4. Video tape can be modified very easily. By re-recording or copying, either the image track or the soundtrack, or both, can be corrected in a matter of minutes. Thus, a change in the fertilizer recommendations from one year to the next can be accommodated by re-recording the correct quantity or formula on the soundtrack. A change in the method of application can be made by shooting the new method and recording it over the original image track.
5. Equipment maintenance and repair - This can be accomplished by many qualified television or electronic repairmen. The proliferation of T-V sets has greatly expanded this capability

in most countries. A sound tape recorder repairman can handle video tape recorders if he has the machine's maintenance manual at hand. Maintenance problems have further diminished by the advent of solid state electronics which replace the former trouble-prone vacuum tubes.

What may be considered a disadvantage lies in the limited size of the viewing screen--the standard T-V set.* This can be somewhat alleviated (often to a teaching advantage) by connecting several sets to the same VTR playback unit. In the average classroom, two T-V sets of the 21-inch size can adequately accommodate 25 to 30 viewers, and the room need not be darkened. (Rural showings need no longer be limited to after-dark hours only). If the small screen size is a serious constraint, several manufacturers now offer T-V image projectors on screens of one-square-meter and larger.

VTR for classroom use presents other noteworthy values. The cassette tape holder has eliminated the entire tape-threading operation. After the cassette is inserted in the playback unit, the touch of a button starts the viewing and sound. At the end of the tape, another button is pressed to automatically rewind the tape. The tape is contained in a sealed cassette, protected from dust and inexperienced figures. Immediate replay, or slow motion, or "freezing" of action at any point, is possible.

*In many situations, this can be an advantage. The playback to small groups encourages discussion, and feedback, for the classroom instructor. For increased understanding, the instructor can quickly rewind and replay any part of the taped program.

The VTR can replace many other types of visual aids. A 16 mm film can be projected normally and copied off the screen by the VTR camera, with or without the film's original soundtrack. A set of slides can be projected and copied in like manner. A flipchart presentation can be recorded visually and with commentary. A speaker thus can present films, slides, flannelgraphs, models, etc., all on one machine. Outstanding teaching presentations can be recorded and preserved for use at many locations, as long as a VTR playback unit is available at those locations. Certain video tape recorders permit more than one sound track to be carried on a single tape. Hence, the narration can be done in two languages for the same program.

VTR has considerable value for performance improvement. A class presentation by a lecturer, or a method demonstration by an extension agent, can be recorded by VTR. After the recording, the lecturer or extension agent can view his own performance to determine where improvements are needed in his own presentation.

The VTR playback unit is about as delicate as a 16 mm sound movie projector, and transport should be kept to a minimum, with packing care to prevent shock. Where the use of this tool will be frequent, such as at a training center, it would be advisable to permanently install the VTR and the desired number of T-V monitors.

A central production office would require at least two VTRs in order to edit and make duplicates of programs. When it is desired to use such programs for commercial television station use, it is advisable to copy the original tape on the machine which is to be used by the T-V station.

Suggested Basic VTR Equipment

- I. Portable camera/recorder system, for battery or AC operation:
- 1 ea. Portable VTR color camera, automatic exposure control, 1:5 zoom lens, self-contained microphone with automatic exposure over-ride, electronic view-finder; close-up focusing; and carrying case.
 - 1 ea. Extra 10 meter camera cable.
 - 1 ea. Portable TV color cassette recorder/playback, $\frac{1}{2}$ inch Beta system, battery and 230 volt AC operation, sound-dubbing capability, remotely operable; inputs for camera, TV, microphone, auxiliary sound sources; playback through camera finder or monitor, pause control; and carrying case.
 - 2 ea. Rechargeable battery packs for above system.
 - 1 ea. Battery recharger
 - 1 ea. 230 volt A/C adapter for above.
 - 12 ea. Tape cassettes.
- II. Studio equipment:
- 1 ea. Video Cassette Recorder/Playback (Beta System preferably) pause, still and slow-motion playback, sound dubbing, 230 volt, 50 cycle AC, with adapter for playback through T-V set; inputs for camera, T-V, VTR, and audio sources.
 - 2 ea. Portable studio floodlights
 - 1 ea. Portable studio spotlight.

The Role of the Subject Matter Specialist

The dearth of SMS's in the Project warrants a review of the Project design concept of the role and responsibilities of the SMS in the Project.

Each of the 33 Provinces in Phase I has selected the 5 principal crops which will be the focus of activity at village level. As originally conceived, each Province would have about 6 SMS's and each SMS would be responsible for one or two crops. The SMS would be given intensive training and be responsible for all aspects of that crop:

varieties and their characteristics

physical soil requirements

plant nutrient requirements

land preparation

seeding/planting time and rates

disease symptoms and control

insect damage and control

nutrient deficiency symptoms

husbandry practices

harvesting

storage and marketing

The SMS would be in close touch with research activities on his/her crops and would report any phenomena occurring in farmer plantings and demonstrations. He/she would seek collaboration of research people in planning method and result demonstrations as well as research field