TABLE 30
DAILY WAGE OF HIRED LABORER BY TYPE OF WORK AND STATUS AS OF JANUARY 1980, PANTABANGAN NUEVA ECIJA

Employer	Status	Daily wage	Average annual Wage[a]
1. BFD	Casual	₱13.00	₱ 663.00
2. NIA	Casual	13.54	704.08
	Temporary, semiskilled	17.63	5500.56
	Temporary, skilled	20.57 and above	6417.84

a. For casual who are hired at the average of 1.7 months, the annual wage is computed for 52 days. For temporary laborers, the annual wage is computed for 312 days.

Source: Floro (1980a), Table 14; based on data obtained from NIA Records Division, BFD Office, Pantabangan, Nueva Ecija.

at ₱4,006 shows inferior earning power from casual employment. Of course, temporary employment yields a higher annual income of ₱5,500-₱6,418; when compared with Floro's estimates of minimum income requirement for an average farm household's production and consumption needs of ₱5,009.00, a substantial amount is left for other household needs. Floro's estimates, however, refer to the income (cash and imputed) of farms which have not yet experienced gains from agro-forestation.

To look into how the Villarica project fares in the whole resettlement area in general, a content analysis of the town's newsletter, *Balitang Pantabangan,* was made. Table 31 presents the newsletter's references to agro-forestry-relevant events. As a background information, none of the staffers of the newsletter are residents of Villarica; all the staffers have undergone ARGSOD leadership training. Although the August 1980 issue mentions prospective coordination among the different implementors of agro-forestry related activities, such as the NIA-World Bank Project, ARGSOD and the Villarica SAMABUN, this does not seem to be likely given the recent turn of events, unless all bodies concerned give in to each other's

SEGURA- ANGELES UPLAND DEVELOPMEN PROJECT

TABLE 31
EVENTS RELEVANT TO AGRO-FORESTATION
PANTABANGAN NEWSLETTER

Date and issue of Balitang Pantabangan	News
April May, 1980 Balitang Pantabangan (BP) = 9 (p	BFD Aya Plantation claimed have the plantation
August 31 1980- BP 3)	Coordination of Poblacion and West Watershed Control Project vegetables (NIA-WM
	Coordination NIA-WMECP aid the latter location map help
September October 1980 BP # 3)	Reference Revolution and ject as having sta
January February 198 3)	Mentions wa the contract the ipil plant. The the ipil-ipil available

demands. For instance, resentment preclude any trust which the farmers they could expect once the WB Project failure of the UHP and the ARGSOD problems of coordination between

two and other agencies. In fact, different priorities attached development projects to development areas of concern alre result in inconsistencies among project implementors. For insta wariness over the NEECO project (mentioned in the Janu February 1981 Pantabangan newsletter) due to environme reasons is mentioned. Such importance attached to the A project goals is partly reflected in Table 32 which shows the r reliance on inorganic fertilizer by Villarica farmers, who are most influenced by the AFDP. In such a case, AFDPs have potential impacts on foreign exchange earnings. Specifically, reduce the dependence on oil-based fertilizer which has a import content.

Another issue implicit in the differences in priorities tac by various project implementors is the emphasis on the agricult component vis-à-vis the forestry component, or in more ger terms, the short-run needs versus the long-run needs. The ARG claims that focusing on human resource development which incl improvement of farm management skills has produced early imp on farmers' income. According to the ARGSOD, higher farm

TABLE 32
INORGANIC FERTILIZER USE BY PANTABANGAN FARMERS

Barangay	Type of fertilizer
Villarica	None
Malbang	Sulphate 12-12-12
East Poblacion	16-20 Sulphate Animal Manure
West Poblacion	14-14-14 Sulphate 16-20 Animal Manure

Source: Nueva Ecija PDS, 1980.

comes have already been experienced by its farmer-trainees. Indeed, there is room for improving the UHP and BFD agro-forestation schemes, particularly with respect to the agricultural component. Improvements in marketing and development of other farm-based activities could be facilitated by the presence of a closely knit organization.

Impact on Income

The impact on income may be analyzed by looking into the demonstration farm wherein much of the AFDP inputs have been poured. The farm, which is managed by the barrio captain, registered cash farm incomes of ₱2,114 in 1981 and ₱5,713 in 1982 (Table 33). These imply significant increases over the 1978 income of ₱2,000 (UHP Sociology Survey, 1979) and ₱1,040 in 1980 (ESIA/WID Survey, 1980).[1] It should be noted that a typhoon wiped out the harvestable agricultural crops of Pantabangan farmers in 1980.

TABLE 33
CASH INCOME FROM THE DEMONSTRATION FARM
(In Pesos)

Month	Income in current terms[a]		Real income[b]	
	1981	1982	1981	1982
July	262.95	71.35	85.99	21.66
August	241.25	1,070.50	79.50	318.05
September	197.70	518.00	65.12	148.54
October	477.50	1,288.50	155.79	370.41
November	540.45	1,093.40	174.11	303.87
December	394.00	1,671.50	125.00	465.21
Total	2,113.85	5,713.25	685.51	1,627.64
Percent increase	170%		137%	

a. Source: Saplaco (1984, Tables 5 & 6, pp. 12-13).
b. Income in 1972 pesos. The monthly consumer price index for food in Region III where the farm is located was used as deflator.

1. In 1972 pesos, the cash income figures are as follows: ₱914 in 1978, ₱379 in 1980, ₱685 in 1981 and ₱1,627 in 1982.

Should differences among the surveys conducted in the various years arise, it may be more useful to compare only the figures derived by the same researcher. Thus, Table 33 presents only the 1981-82 figures. Here, even after allowing for inflation, a large increase in real income may still be noted. A closer look into the detailed tables (Saplaco 1984) in fact shows that such increase was accounted for largely by higher sales from ginger, tomatoes and eggplant.

Conclusions

The Villarica AFDP appears to be progressing as measured by the stoppage of burning in the farms, the large extent of tree planting, and the adoption of terracing practices. While the discontinuance of kaingin-making and the planting of tree crops have both been followed by all AFDP cooperators, the progress in terracing/vegetative contouring is still minimal. This may be partly attributable to the amount of labor time available to farmers, which varies depending on whether the farmer relies on the farm as a major income source.

The transfer of technology through the use of a demonstration farm, the holding of farmers' classes, and the provision of farm inputs appear to effectively promote the practice of resource conservation measures. Such measures, coupled with the discontinuance of practices destructive to the environment, would engender positive impacts on the environment. However, a significant impact on income has yet to be seen, because of their longer-run nature, and because terracing or vegetative contouring has not yet been widely adopted. Nevertheless, evidence shows increases in the income of the barangay captain who owns the AFDP demonstration farm where inputs (including agricultural ones) have been poured. The agricultural component and bench terracing or vegetative contouring activities thus both need further support for wider adoption by farmer cooperators. This is imporant inasmuch as short-run income increases could be expected from increased agricultural production. An alternative, or supplementary activity — that of involving farmers as laborers in reforestation work by other development project implementors — does not presently offer sustained increases in income because of its temporary nature.

Since organization-building is a major effort in the agrofore
tion scheme, it produces positive impacts on participation, inclu
participation by women. The Pantabangan respondents cons
organization work, decision-making, the preservation of peace
order, and coordination with government agencies as benefit
working through organizations. Agency participation appear
leave much room for improvement, though, especially in tern
facilitating access to land for the farmers.

With respect to the other areas of concern, the data gat
were used mainly for characterizing the project site, the p
coordinators, and the initial or preproject conditions of the
They were nevertheless discussed in order to present possible
mation sources for analyzing impacts on other areas of concer
longer time frame.

IV. SUMMARY, CONCLUSIONS AND RECOMMENDATI

AFDP Components and Conditions for Success

The following emerged as necessary conditions for an
to achieve its objectives: the provision of inputs to the agr
and forestry components; organization-building, security
tenure, complementarity with other upland development
(implying the need for institutional linkages); and human
development, technology extension, and production and m
aspects. Forest destruction by loggers, shifting cultivators,
stock raisers is a multidimensional problem which ther
quires a total approach (sociocultural, economic, ecologic
others) to development. Thus, the ability of project imp
to design and implement AFDPs which address such dim
crucial to the success of the project. A resource conserv
ject such as agro-forestation thus entails the recognition o
relationships between the physical, economic and in
considerations in project implementation.

While it is noteworthy that a general atmosphere o
characterizes the project implementors' attempt to be flex
learn from the pilot (experimental) nature of the AFDP
on the peculiar aspects of agricultural and forestry c
strategies may yet yield valuable lessons with respec
schemes and implementation. With this strategy, atten

paid simultaneously to both the agriculture and forestry components. The pilot project examined here paid *more* attention to tree crop planting, in terms of provision of inputs. For instance, though in the Villarica project terracing technology was introduced through the demonstration farm its adoption during the first two years of the project was quite limited. Yet, this is one component which could be expected to produce positive impacts on agricultural production and income during the early years of AFDPs. Thus, there is a need to look into the factors which may constrain the adoption of terracing, such as labor time available. An analysis of 19 Villarica UHP-AFDP cooperators points out that those who relied more on and spent more time in the farm were the ones who have bench-terraced or built vegetative contours. Another source of agricultural output, that of raising animals, also needs to be implemented more intensively.

Given the numerous considerations which AFDP project implementors need to take into account and the long-term nature of such a resource conservation-oriented project, it is not surprising, then, to initially expect that intensive management for such projects would be necessary. And yet, the pilot nature of the project suggests short-lived, or at best, sporadic implementation, as project personnel turns over. This is particularly true for "special" projects versus "regular" projects.

However, organization and skill-building may yet prove to be better alternatives to intensive project management by external agents of change. This may be sufficient in the long run if and only if government agencies from whom assistance is sought by local organizations are responsive to the latter's needs. In this respect, the Villarica and Pantabangan experiences indicate that much still needs to be done by agencies operating in the distant, upland areas.

Such factors which affect the sustained and holistic implementation of agro-forestation in the project sites as well as their eventual implementation in other areas occupied by shifting cultivators suggest the need to look into the institutionalization of AFDP concepts and schemes in recent forestry development planning and implementation. The emergence of the MNR's Integrated Social Forestry Development Program and the Bureau of Forest Development's Upland Development Working Groups are positive steps in this direction. In fact, the numerous significant changes in forest policy formulation and implementation concerning the shifting

cultivators has been notable. However, the manner of training forestry extension agents towards AFDPs and of achieving coordination between forestry implementors/developers and other agents of change remains to be tackled.

AFDP Impacts

The studied AFDP produces impacts primarily on the following areas of concern: environment, participation, production and income (potentially), and education.

a. Environment

The impact on the *environment* as measured by the crop diversity, agro-forest crop mix, terracing and contouring, and discontinuance of burning has been directly observed for the AFDP project. However, the external effect of maintaining ecological balance as measured by the various environmental indicators has not yet been validated because of its long-term nature. Discussion of such indicators focused only on their base line values.

In terms of the stoppage of kaingin-making, the AFDPs appear to have achieved direct and positive impacts on the environment. This is particularly true when one focuses on the AFDP's continuing cooperators only. However, given the dropping out of cooperators such as those in the Villarica project, and potential increases in migration into the uplands, continued practice of *kaingin*-making may still be expected to occur. These imply that agro-forestation should not be expected to singlehandedly solve the upland denudation and forest occupancy management problems.

b. Participation

Impact on *participation* is an immediate and direct impact of AFDP because organization-building is a major input of the UHP-Villarica AFDP. Participation here includes the following levels: (a) participation in the political process by the project cooperators via development of local organizations; (b) participation in AFDP activities by women; and (c) participation by various government agencies in the development of local communities through AFDP project implementation.

c. Production/Productivity

Impact on *production* may be seen in terms of the potential outputs of the new cropping systems established in the farms. While it is still too early to measure the impact on forestry production, the high survival rates of the tree seedlings planted under the Villarica AFDP suggest increased production from such trees in the future. With respect tc agricultural crop production, higher *income* in the Villarica deomonstration farm suggests increased production; a similar increase is also noted for the ARGSOD farms. However, a more widespread implementation of techniques which would increase agriculture production from crops and animals has yet to be seen in Villarica.

d Income/Labor-Use

The impact on *income* which is partly produced via increased production and productivity is similarly indicated only for "ideal" project cooperators of UHP and ARGSOD in Villarica and the other Pantabangan towns, respectively.

Compared with income from employment in reforestation projects, potential income increases from AFDPs appear to be more promising and stable for the farmers. This brings to mind possible competition for labor by various development projects in uplands which are designed to be labor-intensive. In fact, this was reported as a problem area more recently by an implementor of the NIA-Pantabangan project (Galvez 1984). Here, a time allocation study for households in uplands is in order.

e. Education

The impact on education is direct, and may be measured in terms of better knowledge of resource conservation by the farmer cooperators, as a result of farmer training, and skills learned from the demonstration farm. Such knowledge appears to have been acquired regardless of the type of forest land conservation project being implemented. Since the AFDP assessed was experimental, and was generally research-oriented, one can also say that the impact on "education" or knowledge of project implementors on AFDP had been produced by the project.

Perhaps, the distinguishing feature of AFDP is that it simultaneously produces an impact on implementors and on policy-makers with whom the implementors interact. Significant changes in the attitudes and policies of forest authorities towards shifting cultivators are worth noting.

f. Energy

The impact on energy by the Villarica AFDP is indicated by the reliance on compost fertilizer which thereby reduces dependence on oil-based inorganic fertilizer. However, since the project is of small scale, such impact may not yet be substantial from the viewpoint of the energy bill. The impact on dendro-energy appears to be minimal since the project avoids the tree-monoculture type of plantations. The effects of hydro-based energy which are expected from better maintenance of reservoir supporting watersheds are not attributable to the AFDP alone.

g. Other Areas of Concern

The impact on health, population, and nutrition, which are produced through income effects and which are also dependent on education, presence of social services, and the like, is more weakly related to AFDPs in the short run. Minimization of malaria cases would be expected only after the uplands have considerably improved, i.e, in the long run. Improved nutrition should be expected if there were significant increases in vegetable crop production and rich protein-sources (e.g., poultry), but, since this has not yet been depicted by the AFDP studied, it cannot be expected as yet.

Impact and Progress Assessment

Evaluation studies of development projects which attempt to develop formerly bypassed areas such as the uplands encounter difficulties with respect to the relevance of traditional sources of information, and the availability of manageable data with which to test hypotheses on project effects. However, local sources of information and data gathered by project implementors themselves can yield valuable insights into project progress and impact. Pro-

cessing of data generated by such sources should, however, be supplemented by observations made during trips to project sites.

Studies on agro-forestation, a time-intensive activity, need to be conducted for a longer duration for the evaluation of long-run impacts. However, monitoring of the project's short-run effects also needs to be done because most AFDPs are still experimental, and could therefore yield useful information to the project implementors. Also, significant impacts of the project may already be deduced after careful observation and analysis of the AFDP's short-run effects.

While the progress and impact studies are being conducted on specific project sites, the general atmosphere within which they are implemented also needs to be monitored; this includes looking into forest land management policies and population control and employment programs. This stems from the fact that forest denudation is a result of numerous events including those beyond the control of forest authorities.

Suggestions for Future Research

Based on questions raised during the discussion, the following issues relevant to agro-forestation should be dealt with as soon as more information is gathered from the several pilot projects:

the minimum land area for satisfying the basic needs of the former;

2. competition for family labor between agriculture and forest crops (in terms of participation in pure reforestation, agro-forestation and/or the labor market);
3 cost effectiveness of various forest restoration schemes tried out by different government agencies;
4 absorption of landless workers by upland employment-generating activities;
5. environmental impact of expanding communities in the upland;
6. maximum family size sustainable by various agroforestation schemes;
7 factors affecting the adoption of soil conservation practices, particularly those which may be directly influenced by policy changes; and

8. detailed farm level socioeconomic studies.

Such site and community-specific studies are a prerequisite to the economic evaluation of upland development projects which need to be analyzed from the viewpoint of society and in terms of off-site impacts as well.

REFERENCES

Cuevas, S. E. "Agro-Forestry Management." Paper delivered at the UPLB-Program for Environmental Science Management (PESAM) Seminar on Environmental Science and Management, U.P. at Los Baños, August 21, 1979.

Estacio, B. F., and Morcilla St. Peters, B. "The Philippines." Summary of paper prepared for an Expert Group Meeting on "Local-Level Planning for Integrated Rural Development," Economic and Social Commission for Asia and the Pacific; Bangkok, November 6-10, 1978.

Floro, M. S. "Economic Effects of Resettlement on the Organization of Production, Consumption, and Distribution in Barrio Villarica, Pantabangan, Nueva Ecija." Paper presented at the Seminar-Workshop on the Socio-economic and Institutional Aspects of Upland Development sponsored by the Program for Environmental Science and Management, U.P. at Los Baños, Laguna, August 4-6, 1980.

Floro, M.S."An Inquiry Into the Transformation of Social Formations in a Resettlement Village: A Case Study of Barrio Villarica, Pantabangan in the Province of Nueva Ecija, Philippines." Partial report for 1980 of the UPLB-UHP Socio Economic Group. Mimeographed.

Ganapin, D. J. Jr. "Factors of Underemployment in Kaingin Communities." Term paper submitted in partial fulfillment of the requirements of Agricultural Education 285, Graduate School, University of the Philippines at Los Banos, College, Laguna, Second Semester 1978-79.

Galvez, J. A. "Foraging Activity of Termites in a Grassland Ecosystem." Mater's thesis, University of the Philippines at Los Baños.

Mindajao, N. M. "Smallholder Forestry and Rural Development: A Case Study of the PICOP Project in Bislig, Surigao del Sur, Philippines." Ph.D. dissertation, University of Minnesota, 1978.

National Irrigation Administration (NIA) and Engineering Consultants, Inc. (ECI). Pantabangan Watershed Management Project. Draft Feasibility Report, 1978.

Philippine Council for Agriculture and Resources Development (PCARRD). Proceedings of the Agro-Forestry Symposium/Workshpp. PCARRD, Los Baños, Laguna, December 19-21, 1979.

Raros, R. S. "Cropping Systems Research and Development for Hillyland Rehabilitation." SEARCA Professional Chair Inaugural Lecture delivered at the College of Forestry. U.P. at Los Baños, June 15, 1979.

Raros, R., and Sajise, P. "Integrated Studies on the Hydroecology of Upland System." Research Program Proposal, 1976 Mimeographed.

Sajise, P. "Upland Resource Management in Integrated Rural Development." Paper presented at the International workshop on Agro-Forestry for Rural Communities sponsored by UNESCO and Chiang Mai University at Chiang Mai, Thailand, on November 12-16, 1979.

———. "Strategies for Transdisciplinary Research on Natural Resource Management: The Case of the UPLB Upland Hydroecology Program." Working paper submitted to the Environment and Policy Institute, East-West Center, Hawaii, July 1981.

Samonte, V. PB. "Social Profile of Upland Farmers in Barrio Villarica, Pantabangan, Nueva Ecija." UPLB-UHP, December 1980.

Saplaco, S. R. "Agroforestry: A Sustainable Land Use for Productive and Protective Uplands." Paper presented at the First Seminar of the ASEAN-US Watershed Project, Bogor, Indonesia, August 27-31, 1984.

Upland Hydroecology Program (UHP). Annual Reports, 1976-1977 & 1979 and Policy Report 1978. UPLB-DNR-NIA-Ford Foundation.

Vergara, N. "The Socio-Economic Aspects of Shifting Agriculture in the Southern Philippines." Paper read at the Duke University Tropical Forestry Symposium, North Carolina, April 1965.

Ymson, G. de la Costa. "Rumblings from an Upland (The Pantabangan Experience)." Paper presented at the Seminar-Workshop on the Socio-Economics and Institutional Aspects of Upland Development sponsored by the Program for Environmental Sciences and Management, U. P. at Los Baños, Laguna, August 4-6, 1980.

Symbols not defined elsewhere in text:

AUDP – Antique Upland Development Project
BAI – Bureau of Animal Industry
MAR – Ministry of Agrarian Reform
MLGCD – Ministry of Local Government and Community Development
NCSO – National Census and Statistics Office
NEA – National Electrification Administration
PC-INP – Phil. Constabulary-Integrated National Police
PDS – Provincial Development Staff
PHILCOA– Philippine Coconut Authority
UPSEC – University of the Phil. Sccience Education Center
WMECP – Watershed Management and Erosion Central Project