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AN IMPACT ASSESSMENT REPORT ON THE MULTIPLE-CROPPING PROJECT (KABSAKA) STA. BARBARA, ILOILO

Alexander Q. Valenciano

INTRODUCTION

Traditional agricultural practices coupled with small landholdings have limited the production and earning capacities of farms because of the scarcity and high cost of irrigation facilities. A promising alternative towards the solution of this problem is multiple cropping on rainfed lowland farms. Multiple cropping is the intensification of land use by increasing the number of crops grown on the same piece of land through efficient and timely utilization of farm resources and inputs such as fertilizers, chemicals, new technology (including credit), and farm household labor.

II. PROJECT BACKGROUND

The idea of multiple cropping as a means of increasing farm productivity was initiated by the National Food and Agricultural Council (NFAC) in 1971. In 1974 the Bureau of Agricultural Extension (BAEx) in collabroation with the International Rice Research Institute (IRRI) and the Philippine Council for Agricultural and Resources Research (PCARR) started a series of pilot test sites in Sta. Barbara, Iloilo, with the aim of establishing a pattern of multiple cropping technology in rice areas which depend on rain for water requirements. The pattern that was found satisfactory in terms of productivity levels was in rice production with a rice-upland or vegetable pattern. The first rice crop was dry-seeded before the onset of the monsoon season in late April or early May, the second crop was a wet-seeded rice in early September, and the third crop was a suitable

Economic Development Specialist, National Economic and Development Authority, Region VI, Iloilo City.

upland crop of vegetable or vegetable (preferably mongo bean, eggplant, tomato, or watermelon) for planting in December or January when the soil exhibits a sufficient amount of moisture to warrant crop growth. Rice yields rose from 2 to 5 metric tons per hectare for the first two crops. The third crop was something that had not been practiced before. It gave the project farmer-cooperators extra income.

In November 1976, the Iloilo Pilot Extension Project, code named KABSAKA (Kabusugan sa Kaumhan, an Ilongo phrase meaning "bounty on the farm") was launched in Sta. Barbara, Iloilo with fifty initial members covering 89 hectares through the auspices of IRRI and PCARR. In December 1976, twenty-one farm technicians, farmer-leaders, and representatives of participating agencies undertook multiple-cropping training at the University of the Philippines at Los Baños and IRRI. When this batch of trainees returned, a three-day echo seminar-workshop was conducted at the project site for the other farmer cooperators, and this completed the trainiing scheme for the project.

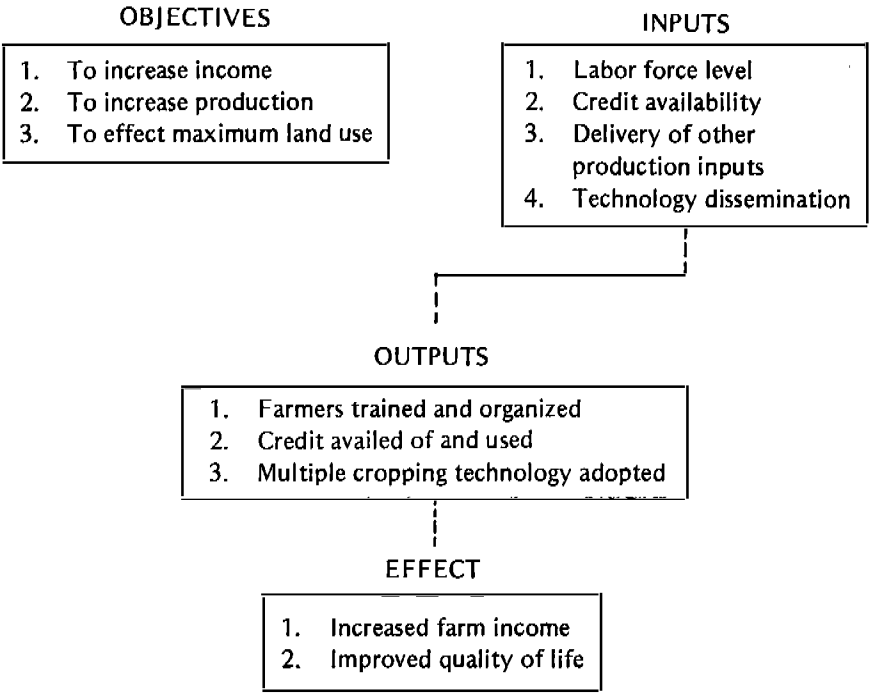
III. PROJECT CONCEPTUAL FRAMEWORK

To bring about an increase in production and income, the KABSAKA farmer has to make use of the multiple cropping technology propounded by the project through the extension technician. It is hypothesized that positive changes in farm input usage and cropping patterns and intensity will lead to changes in production and productivity levels which, in turn, will bring about farm income growth. The relationship between inputs, outputs, effects, and impacts hypothesized by the KABSAKA project are summarized in Figure 1.

IV. OBJECTIVES OF THE STUDY

This evaluation of the multiple-cropping project in Sta. Barbara, Iloilo, focuses on assessing the attainment of the project objectives and describes the impact of the project on the respective participants within the project area, specifically: (1) the level and extent of component technologies vis-à-vis land-use intensity, cropping pattern, and input usage adoption by the farmers; (2) the production and income changes of the farmer cooperators before and after the project; and (3) an examination of the socioeconomic, institutional, and other perceived benefits accrued as a result of the program.

FIGURE 1
CONCEPTUAL FRAMEWORK DIAGRAM, KABSAKA PROJECT
STA. BARBARA, ILOILO



V. PROCEDURE AND METHODOLOGY

A key-informant survey was undertaken which focused on the perceived benefits accruing from the project. In addition, secondary data on input usage, including credit and technical assistance, were gathered from the KABSAKA Office, Iloilo, and other appropriate sources.

VI. FINDINGS

Profile of Sta. Barbara

Sta Barbara is located in the centermost part of the province of Iloilo. It is bounded on the north by the municipality of New Lucena, on the northeast by the municipality of Zarraga, on the southeast by

the municipality of Leganes, on the south by the municipality of Pavia, on the southwest by the municipality of San Miguel, and on the northeast by the municipality of Cabatuan. It is 12 kilometers or 20 minutes' drive north of the city of Iloilo, and accessible by both land and rail transportation. Based on a survey conducted by the municipal development staff in December 1976, it has a total road network of 80.48 km and transportation facilities are adequate for motor vehicles and railways. The municipality of Sta. Barbara comprises sixty barangays and has a total land area of 7,750 ha. It has a total population of 30,662 (1975 census), with an average annual growth rate of 1.92 percent and a population density of 395.63 persons per square kilometer.

The municipal topography of Sta. Barbara varies from slightly rolling hills to almost flat or gradually inclined plains, sliced by the Tigum River at the center which flows from northwest to southeast, and by the Aganan River in the southern section flowing in the same direction.

This municipality is not within the country's typhoon belt, although tropical storms and typhoons do pass through the municipality occasionally. The climate is wet from June to November and dry from January to April. Heavy rain begins to fall by mid-May, enabling rice farmers to prepare rice beds and plant upland rice.

Generally, Sta. Barbara's soil is thick, fertile, and suitable for raising many kinds of agricultural products. For productive yield only minimum quantities of fertilizer are needed. There are no commercial forest, brushland, open land, marsh, or swamps within the municipality. Ninety-five percent of the town's land is cultivated. Sta. Barbara has consistently maintained its position as the premier food-producing center in the province, ranking first in vegetable production, third in coconut and mango production, and among the top ten in rice, corn, mongo, sorghum; tobacco, fruit, root crops, livestock, and other food commodities.

Project organization set-up. As a farmer's organization, KABSAKA is composed of fifteen officers. All nine barangay leaders covered by the project are automatically appointed as members of the board of directors. Representatives from the Sangguniang Bayan and the Farmer's Cooperative Marketing Association (FACOMA) are also allotted a slot in the board. Lending support to the project is a management staff headed by a regional director under whom is a regional coordinator who, in turn, supervises a provincial in-charge. The project area is served directly by trained production technicians

who are jurisdictionally supervised by a municipal in-charge or a supervisor.

Major project outputs. (1) *Manpower and credit assistance.* In the pre-KABSAKA period there was only one technician that covered the nine barangays including other nearby barangays, and the farmers were visited on a regular monthly basis except during period of insect or disease infestation of epidemic proportions.

At project initiation (1976) there were six farm management technicians (FMT's) and one municipal program officer (MPO) assigned in the nine pilot barangays of Sta. Barbara, with an average workload of thirty-four farmers per technician covering a mean area of 77 hectares. Most of the technicians were casual employees and the number per year fluctuated on the basis of availability of funds for salaries, per diems, and the transportation expenses estimated at around ₱50,000-₱60,000 per annum.

Table 1 shows the different activities of the KABSAKA manpower support organization. It indicates that the most common means of technology transfer method were practical farming classes while the least common were field tours and individual instruction.

In terms of financing, the Development Bank of the Philippines (DBP), Rural Banks, Philippine National Bank (PNB), and the Land Bank of the Philippines (LBP) assisted the farmers. Of those institutions, the PNB was the major source of financing, accomodating

TABLE 1
DISTRIBUTION OF RESPONDENTS BY TECHNOLOGY TRANSFER METHOD
(92 Farmers, Sta. Barbara, Iloilo, 1981)

Technology transfer activities	*Number*	*Percent*
Practical farming classes	79	86
Farm visits	47	51
Individual instruction	12	13
Farmer's classes on radio	55	58
Preparation of farm plan	20	22
Dissemination of brochures and pamphlets	31	34
Field tours	9	10
Demonstration	16	17

Source: Ardales, Calubiran, and David (1981, p. 26).

about 77 percent of farmers seeking financial assistance (Nicolas et. al. 1980). Data collected from the KABSAKA office indicate about 50 percent of the farmers made use of their own savings to finance farm operations. After the project, this rose to 55 percent as against 48 percent who availed themselves of credit (Ardales, Calubiran, and David 1981).

(2) *Trained farmers.* All 168 baseline farmers were trained in the manner described earlier. Periodic reorientation activities were provided through farm visits, practical farming classes, and other farm extension methods noted in Table 1.

Indicators of change and component technologies adoption: effect.

(1) *Cropping pattern.* The major cropping pattern used by farmers before the project was rice-upland crop (60 percent) and rice-fallow (30 percent). A rice-rice pattern was practiced by a few farmers (10 percent) whose farms were traversed by a creek. With the introduction of KABSAKA technology, which recommends a rice-rice upland crop pattern, the crop patterns adopted by the farmers during the crop year 1978-79 were rice-rice (50 percent), rice-rice upland (47 percent), and rice-rice-rice (3 percent). A parallel investigation by Ardales, Calubiran, and David in October 1981 found that most KABSAKA farmers in the area followed a rice-rice-mongo (mungbean) cropping pattern. They reported that 100 percent of the respondents planted only rice during the first cropping, and a significant proportion (37 percent) planted mungbean for the third cropping.

(2) *Cropping intensity.* This is an index which measures the number of times per year that a piece of land is utilized for crop production. Before the project, 104 of 168 farmers surveyed in the nine barangays covered by KABSAKA planted only one crop per year, 51 farmers planted two crops in the same year, and 9 farmers planted three crops. The overall cropping intensity was 1.39 (Quiñon and Lesondra 1980). With the KABSAKA project, however, of the 92 farmers interviewed, 41 planted three crops in one year, the same number planted two crops during the year, and only 10 planted one crop. This presented a cropping intensity of 2.34. Table 2 presents comparative data on cropping intensity before and after the project.

(3) *Input usage.* In the pre-KABSAKA period 87 percent of the farmers used traditional rice varieties (e.g., BE_3 and Binato) and only 13 percent used high-yielding varieties (HYV). In the post-KABSAKA period, 100 percent of the farmers used modern varieties (IR 36) for the first crop and 97 percent for the second crop (Nicolas 1980).

TABLE 2
COMPARATIVE CROPPING INTENSITY BEFORE AND AFTER KABSAKA

Number of Croppings	*Number of farmers* *Before*	*After*
0	4	0
1	104	10
2	51	41
3	9	41
Total	168	92
Cropping intensity	1.39	2.34

Source: Ardales, Calubiran, and David (1981, p.17).

This finding is also corroborated by baseline studies indicating that about 80 percent of the pre-KABSAKA farmers utilized traditional rice varieties (Quiñon and Lesandra 1980) and shifted to the use of HYV's at post-KABSAKA (Ardales, Calubiran, and David 1981).

The KABSAKA-recommended seeding rate for dry-seeded rice (DSR) and wet-seeded rice (WSR) was between 88 and 110 kg/ha. Farmers in the area applied more – 144 kg/ha. for DSR and 138 kg/ha. for WSR. Reasons given for broadcasting more seed were allowance for dead seedlings, birds, insects, and uprooted plants when weeding.

During the pre-KABSAKA period, 67 percent of the farms used fertilizer for their first rice crop and 12 percent used fertilizer for their second rice crop. Post-KABSAKA proportions were considerably higher – 100 percent using fertilizer for the first crop and 85 percent using fertilizer for the second crop. Post-KABSAKA average levels of fertilizer use were also higher, especially for phosphorous and potassium.

For insecticide application, all farmers for the first crop after KABSAKA applied insecticide, representing a 35 percent increase in the number of farmer-users before KABSAKA. Post-KABSAKA farmers utilized on the average about 0.38 kg. active ingredient/ha. compared to 0.20 kg. active ingredient/ha. before the project. The same trend holds true for the second crop.

A great number of farmers (90 percent of the respondents) applied herbicides on the first crop, dry seeded (post-KABSAKA).

Some farmers, however, did not apply herbicides due to puddling of the soil. The average application ranged from 0.24 to 0.69 kg. active ingredient/ha. for the second and first croppings, respectively. Before the KABSAKA period, however, 13 percent of the farmers indicated using herbicides in very insignificant amounts.

Indicator on farmer's production/productivity levels, income and other perceived benefits: project effect/impact.

(1) *Yield.* Before the project, the average yield per hectare of palay for the first crop was 37.5 cavans. With the project, the average yield rose to 67.7 cavans. For the second crop (rice) the yield before the project was 17.72 cavans, while with the project, the average yield was 51.96 cavans. In the work of Cocjin et al. (1978) the overall average yield per hectare in KABSAKA areas was reported to be 60.32 cavans — a yield which is higher than the national average and which approaches the average yield of irrigated farms in Region VI.

About eight farmers at post-KABSAKA planted for crop year 1979-80 mongo and cowpeas with yields of 5.03 and 3.46 cavans per hectare, respectively. Various upland crops were planted for the third crop under KABSAKA. Third crop plantings before the project, however, indicate mostly grains with yields below 20 cavans/ha.

(2) *Farm income.* Table 3 shows the cost and return analysis for thirty farmers before and after KABSAKA. All cash items were revalued at crop-year 1978-79 constant prices. The returns over cost indicate a regressing amount from the first to the third cropping both before and after KABSAKA. Total net income for three crops under KABSAKA amounted to ₱6,311 versus ₱2,935 for two crops without (before) KABSAKA. Other studies indicate a progressive differentiation for KABSAKA cooperators in terms of income from farming. Before the project, the average monthly income of the farmer cooperators was ₱752 (Quiñon and Lesondra 1980, p. 18). With the project, it increased to ₱893.23 (Ardales, Calubiran, and David 1981, p. 35).

(3) *Perceived benefits.* For better assessment for the perceived benefits from the project, 10 key informants were interviewed. They were barangay leaders, municipal workers and other farmers who have enough information about the project. The informants unanimously agreed that they felt an increase in production considering the more numerous transactions in the sale and stocking of palay in local warehouses. As mentioned in the credit portion of this report, more farmers availed themselves for credit. Technicians were busy helping farmers make farm plans and budgets. Several

TABLE 3
COST AND RETURN ANALYSIS OF RICE AND UPLAND CROPS BEFORE AND AFTER KABSAKA
(23 Financed farmers, Sta. Barbara, Iloilo, 1978-79, pesos/ha.)

Item	*Before KABSAKA*			*After KABSAKA*			
	First crop[a]	*Second crop*[b]	*Total*	*First crop*[a]	*Second crop*[c]	*Third crop*[d]	*Total*
Gross return	2,427	971	3,398	3,961	3,048	1,085	8,094
Material costs	323	140	463	832	713	238	1,783
Seeds	123	124	247	294	286	200	780
Fertilizer	175	12	187	385	336	35	756
Insecticide	23	4	27	73	74	3	150
Herbicide	2	—	2	80	17	—	97
Return over material cost	2,104	831	2,935	3,129	2,335	847	6,311

Source: Nicolas et al. (1980, p. 41).
a. Rice.
b. Rice and mungbean.
c. Rice.
d. Upland crops (e.g., mungbean, cowpea, peanut, watermelon, field corn, sweet potato, sorghum, squash, and eggplant).

key informants reported that there was an increase of employment in the community. More people were being hired and self-employment increased. There were references from most of the informants to some negative effects as well. These included palay price manipulations by private traders in the area.

(4) *Distributive benefits.* In terms of technology and instruction received by farmer cooperators by tenurial status, more farm instructional contact has been received by landowner when it comes to individualized instruction, field tenure, and demonstration. Leases have been serviced more through practical farming classes and farmer's classes on the air. Tenants have been serviced primarily by practical farming classes, brochures and pamphlets and farm visits.

VII. SUMMARY AND CONCLUSION

With the operationalization of the project after five years, the adoption of KABSAKA technology was accompanied by an increase in crop yield, higher crop intensity (via a better cropping pattern), and higher income. The benefits as perceived from the project were very apparent as indicated by people within and outside the community. The distributive effects per tenurial status of the farmer cooperators were found to be positive and do not lean in favor of one tenure class.

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