

## Technological Changes and the Filipino Peasantry

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### ABSTRACT

*This article examines the effects of technological changes in the field of agriculture on the Filipino peasants especially in its socio-cultural aspects. It is found that the increase in production as a result of modern technology does not benefit the peasants. On the contrary, it reinforces inequality and thus fails to improve the living standard of the poor rural peasants.*

### ABSTRAK

*Rencana ini membicarakan kesan perubahan teknologi dalam bidang pertanian ke atas petani-petani Filipino khususnya dalam aspek sosio-budaya. Penulis mendapati bahawa peningkatan keluaran akibat daripada pengenalan teknologi baru tidak menguntungkan para petani tetapi sebaliknya mengukuhkan lagi ketidakseimbangan dan dengan demikian gagal untuk memperbaiki kehidupan petani-petani miskin di desa.*

### INTRODUCTION

In the decade just past, there has been an observable change in Philippine agriculture. The increased use of technological farm inputs, infrastructure development, and an easy credit system have all contributed to reshaping a significant area of the Philippine countryside. These advances have in turn resulted in a certain pattern of economic development associated with a productivity-oriented strategy. Economic progress in agriculture can result in an improvement in the quality of life of the rural population. Increased productivity can lead to a rise in incomes of the peasant producer given a system where the benefits are spread evenly to all rural sectors. However, in a society where control over resources is unequally divided, an increase in agricultural production may only serve to strengthen inequality and therefore will fail to improve the situation of the rural poor.

This paper will attempt to trace the effects of technological changes in Philippine agriculture on the Filipino peasantry with respect to the socio-cultural aspect. A presentation will first be made on the extent of the use of modern technology in farming and the consequent effects of this use on

productivity and farm and peasant incomes. The socio-cultural effects to be analysed include changes in class structures, consumption pattern, migration and peasant unrest.

### AGRIBUSINESS EXPANSION

Perhaps the clearest indicator of the changes in rural farm practices is the expansion of agribusiness concerns in the Philippine countryside. Agro-industrial firms are considered to be at the forefront of rural modernization. In 1978, a Presidential Decree No. 1159, otherwise known as the Agricultural Investment Incentive Decree, was issued in order to encourage agribusiness development in the country. Various incentives are offered including tax holidays, easy loans, and the opening up of agriculture to wholly-owned foreign firms.

Major sectors of Philippine agriculture are already currently controlled by agribusiness firms. These include the banana export and pineapple industries, the sugar industry, coconut processing, and corporate rice farming. Agribusiness presence in the rural areas take several forms. Firms may either engage in direct production, distribute technological inputs and machinery, extend credit, loans and financing to local firms, organize joint ventures with local businessmen, enter into management contracts with farmer's groups of local firms, or, simply take charge of marketing the products in the domestic and foreign market.

Agribusiness ventures herald the development of capitalist agriculture. Mechanization of farm operations, maximum use of chemical inputs, corporate management practices, and the institutionalization of profit as the main concern characterize agribusiness expansion. Millions of pesos are spent in the effort to modernize agriculture.

Firms in the corporate rice farming programme, for example, have already invested a total of P300 million since 1974. Palm oil projects in Mindanao may cost more than one billion pesos when completed.

### SMALL FARMER TECHNOLOGY

As a result of a conscious government policy to increase production in agriculture, small Filipino farmers have also been brought into the world of modernized farming techniques. The land reform program in rice and corn lands carries with it a package of technological inputs including high yielding variety (HYV) seedings, fertilizers and pesticides, farm mechanization from production to milling, easy credit programmes, and extension services. As Table 1 shows the proportion of total rice crop area planted to modern varieties in the Philippines has dramatically increased from only 21.2 percent in 1968 to 63.3 percent in 1973.

TABLE 1. Proportion of total rice area planted to modern varieties, 1967-1973, Philippines

Year	Percentage	Year	Percentage
1967-68	21.2	1971-72	56.3
1968-69	40.6	1972-73	54.0
1969-70	43.5	1973-74	63.3
1970-71	50.3		

Fertilizer consumption in rice lands has also been increasing rapidly. Fertilizer use increased from 197,495 tons in 1971 to 335,519 tons in 1977 or a 70 percent rise. Harvested area also grew from 2.7 million hectares in 1971 to 3.1 million hectares in 1977 (Table 2).

TABLE 2. Consumption of fertilizers on palsy, crop years 1971-77

Year	Fertilizer Consumption (tons)	Harvested play area (1,000 ha)
1971	197,495	2,748
1972	215,148	2,880
1973	270,083	2,678
1974	339,680	3,027
1975	333,236	3,086
1976	313,020	3,189
1977	335,519	3,147

Sources: Bureau of Agricultural Economics and Fertilizer and Pesticide Authority

Until very recently, the government had been subsidizing fertilizer prices by selling to rice farmers at 21 percent below the market price. A credit programme aimed at rice farmers was launched in 1973 and as of April, 1980 has disbursed a total of P4.3 billion to small farmer-borrowers.

### MACHINES, CHEMICALS AND LOANS — THE TOTAL PICTURE

In 1980, the president of the country's largest agricultural machinery dealer announced that they had already run out of the previous year's stocks (Philippine Farmer's Journal Feb. 1980: 12-13). This development was attributed to feverish efforts by sugar planters to mechanize their farm operations from land preparation to harvesting. Small farmers have also been turning to hand tractors in order to maximize the potentials of the

high yielding varieties. A local hand tractor manufacturing industry is growing and now accounts for 80 percent of all hand tractor sales in the country (Philippine Farmers' Journal Feb. 1980: 15).

Fertilizer consumption in all croplands registered an annual growth of 7.4 percent from 1975 to 1980 (Philippine Farmers' Journal August 1981: 60 – 62). For 1980 alone, total fertilizer consumption was 819,600 metric tons.

Loans for the agricultural sector have also registered increases. The Development Bank of the Philippines (DBP) announced 1980 loan approval for agriculture in the amount of P648 million involving 13,204 projects in grains and other crops, livestock, poultry, and fisheries.

### INFRASTRUCTURED DEVELOPMENT

Irrigation systems are an essential component of the agricultural modernization drive. Accordingly, the National Irrigation Administration (NIA) undertakes a programme of utilizing the country's 410 principal rivers and 50 natural lakes to irrigate some 2.5 million hectares of potential crop areas. Presently, the NIA systems service 437,000 hectares: the communal systems, 413,000 hectares pump systems. The NIA 1981 Annual Report also identifies 54 ongoing national irrigation projects all over the country estimated to cost P7,809.6 million (Table 3).

TABLE 3. Ongoing national irrigation project, 1981

Funding Sources	No.	Irrigable area (hectares)	Updated Cost (P million)
Local	28	100,066	535.256
World Bank	8	241,236	3,827.882
OECF (Japan)	4	35,400	1,006.414
ADB	11	139,244	2,242.831
PADAP (Aust.)	1	3,200	40.113
USAID	2	7,173	157.117
Total	54	523,318	7,809.613

Source: National Irrigation Administration

Road and bridge networks are part of countryside infrastructure development. The 2,000 kilometer Pan-Philippine Highway (also known as the RP-Japan Friendship Highway) links the country's northernmost point of Luzon to the southernmost point in the island of Mindanao. In Mindanao alone, ongoing and recently completed road projects primarily foreign-funded will cost P4.3 billion. The rationale, for extensive road

networks is of course, to facilitate the transport of agricultural products from the farm to the market.

### ECONOMIC CHANGES AS A RESULT OF TECHNOLOGY

Without doubt, technological improvements in agricultural production, processing, and marketing have brought about a significant degree of economic development in the rural areas. This is to say that for that part of the Philippine agriculture which has attained a certain degree of modernization, it has been anything but stagnant.

Total crop production in the Philippines from 1971 to 1980 grew at an annual rate of 7.5 percent. The total agricultural crop production for the ten year period totalled 216 million metric tons with a value of P214.4 billion (Table 4).

TABLE 4. Total crop production and value, Philippines

Year	Production ( <sup>'000</sup> MT)	Value ( <sup>'000</sup> Pesos)
1971	15,621.4	P 9,143,807
1972	15,421.2	10,285,660
1973	15,309.1	10,752,546
1974	17,711.2	17,763,464
1975	19,807.3	20,147,477
1976	23,329.4	20,207,829
1977	24,506.5	27,898,646
1978	26,095.9	26,831,025
1979	28,609.2	33,758,317
1980	29,566.2	37,609,411
Total	215,977.4	214,398.182

Sources: Bureau of Agricultural Economics Ministry of Agriculture

In the rice growing sector, the small farmer credit program known as *Masagana 99* is regarded as responsible for the change in the status of the country from a rice importer to a rice exporter. The rice production programme from 1976 – 1978 constituted 74.3 percent of the country's total rice crop for these years despite covering only 23 percent of the total rice crop land.

### THE OTHER SIDE OF ECONOMIC DEVELOPMENT

The rice farm credit programme, however, can be viewed in less favourable terms from the point of view of the peasant producer. Despite the fact that *Masagana 99* loans need not collateralized, the number of farmer borrowers

has considerably decreased from a high of 529,161 in the May-October 1974 period to only 54,250 in the November 1979 to April 1980 phase. This drop in participation can be attributed to the fact that most farmer-borrowers have not been able to repay their loans. A 1978 study of delinquent borrowers by a government team revealed that despite increased production, 80 percent of the farmers surveyed have sales income of only P5,000 and a net income of below P1,000 (Castillo 1982:263).

Case studies gathered by a church-based research group also show that despite the use of modern farm practices and access to credit net incomes of rice farmers remain very low (LUSSA 1982:18 – 22). Expenses for the modern inputs constitute 70 percent of total production expenses.

Corn farmers who have utilized modern inputs and availed themselves of a similar non-collaterized credit programme are estimated to earn a net income of only P1,066 per hectare for 1982 which is equivalent to P286 at 1972 prices (IAPMP Memorandum March 3 1982).

The government study which revealed the above findings also estimated the annual net income of a farmer with 1.6 hectares of corn land and using modern inputs at only P3,352 or 63 percent of the yearly income of a non-plantation worker.

A key factor in the use of modern farm inputs is the high cost of chemical fertilizers and pesticides. The country depends on imports of chemical inputs to meet farms needs. Fertilizer imports in 1980 was 751,924 metric tons while local manufacturers could produce only 230,000 metric tons in the same year. Pesticide imports for 1980 was 27,708 metric tons, 93 percent above the Fertilizer and Pesticide Authority's import target for the year. Fertilizer prices have been continually increasing. An 18 percent increase in June, 1981 was followed by another 27 percent rise three months later. The lifting of the fertilizer subsidy was expected to increase fertilizer cost per hectare to P381 as against only P254 before June, 1981 in the process reducing farmer's per hectare income from P979, on yield of 43 cavans, (Philippine Farmers' Journal August 1981:64).

The dependence on foreign sources for the modern inputs accounts for their high costs. Even the local production of pesticides is foreign-controlled. Fifteen of the twenty-two pesticide manufactures and formulators in the country are actually subsidiaries of American and West European transnational corporations. Five of the six major fertilizer companies are also subsidiaries of transnationals.

In terms of per hectare yields, data from surveys do not offer any positive correlation between the use of modern inputs and higher yields (Castillo 1982: 259). While a five year weighted average yield per hectare of some 915 farmer participants in the Masagana-99 program was 61.2 cavans, confining the survey to only one year (1978) showed a low yield of only 36 cavans per hectare. The national average for 1978 was about 40 cavans per hectare.

The introduction of technological advances into agriculture does not automatically result in improvements in the quality of life of the peasant population. Other factors play an equally significant part. Besides the more obvious variables such as weather conditions, prices of inputs and of the farm product, and developing expertise of the new technology, the existing social structure plays a decisive part. Where rural societies are highly stratified with only a select few elite classes controlling resources and access to political favours, technological advances would, by themselves, only strengthen inequality. Without a successful equity-oriented rural development programme working alongside it, technological modernization would certainly be biased in favour of those who already have more to start with in the first place.

For example, under the *Masagana 99* credit programme rural banks and other financing institutions were able to capture 66 percent of the subsidy offered by the government as an incentive while only 34 percent accrued to farmer-borrowers (Esguerra 1981). Banks, of course, are owned and controlled by the rural elite. Larger farms have also been favoured by the credit programme, Esguerra (1981:210) writes:

While the volume of total formal credit to small farmers has increased absolutely during the period of implementation of the supervised credit dominant share of total formal credit. It is believed that in view of disqualification because of repayment problems, the relative share of small farmers to total formal credit has declined in more recent years.

## THE RURAL SOCIAL CLASS STRUCTURE

Rural classes can be divided into two major grouping the dominant rural elite classes and the poor and disadvantage classes. Included in the first category are the landlords, the rural capitalist class, and the rural commercial class. Among the rural poor are the tenants, the landless workers, and small owner-cultivators including amortizing owners.

The landlord class belongs to a pre-capitalist mode of production who are now being encouraged by government to give up their lands in return for a handsome compensation and incentives for investing in commercial and industrial ventures. Due to the snail's pace implementation of the land reform programme, landlord influence remains strong even though it is in a state of transition.

The rural capitalist class own large farms and plantations that grow export crops which depend mainly on hired labour. It is this class which is growing in influence as well as in size. Government encouragement of agribusiness ventures through attractive incentives will aid in the growth of this particular class.

The commercial capitalist class may be the most dynamic among the rural elite. As distributors of technological inputs and other farm services as well as acting as both formal and informal credit sources, they are in the best position to capture a large share of the agricultural surplus.

Tenants can be divided further into shareholders, leaseholders or holders of Certificate of Land Transfer (CLT). The latter are tenants who are deemed beneficiaries of the land reform programme but who have yet to negotiate with their landlords for the price of the land.

Landless rural workers can also be subdivided into plantation workers, small farm labourers, and seasonal farm workers. Recent studies indicate that landless workers now comprise the majority of the rural labour force.

Small owner-cultivators may constitute the rural middle class. The upper stratum of this class also engage in the hiring of farm labour. Amortizing owners are land reform beneficiaries who have gone beyond the CLT stage and are now paying yearly amortizations on the land they till.

### SOCIAL MOBILITY — UPWARD OR DOWNWARD?

If the majority of the rural labour force are unable to substantially raise their living standards even in the face of technological advances in agricultural production, then it follows that any social mobility taking place among tenants and rural workers can only be downward.

Social mobility can be gleaned from a look at the distribution of income over a given number of years. From an analysis of government data on income distribution for the Philippines as a whole, the share of the lowest 20 percent of families declined over a thirteen year period from 1965 to 1978 while the share of the top 20 percent of families has increased over the same period Table 5. Declines were likewise noted among the second 20 percent, the third 20 percent and the fourth 20 percent of families. This shows that for the country as a whole, there has been a downward trend in social mobility as far as the bottom 80 percent of the population are concerned.

TABLE 5. Income distribution in the Philippines

Family Income Group	Percent Share in Total Income			
	1965	1971	1975	1978
Lowest 20%	3.5	3.7	5.1	3.2
Second 20%	8.0	8.3	9.1	6.9
Third 20%	12.8	13.6	12.4	12.0
Fourth 20%	20.2	21.5	18.4	19.3
Top 20%	55.4	52.9	55.0	58.6

Source: National Census and Statistics Office surveys on family income and expenditures

The above national figures may be said to approximate very closely the pattern of income distribution in the rural areas since only 30 percent of the total population live in the cities. How much of the figures reflect on



areas with an increased technological visibility cannot be determined on a national scale. Some case studies on the effects of technological inputs on rice farmers could, however, reveal certain trends.

Ledesma (1982) studied two villages where the conditions for rural development were theoretically attainable including an implemented land transfer programme and technological changes. The study noted an increasing trend towards stratification with the formation and differentiation among peasant sub-classes namely landless workers, amortizing owners, and permanent lessees. Landless workers are identified as the peasant sub-class that has benefitted the least from the technological changes. Land tenure changes resulting from land reform have reduced share tenancy but has resulted in an increase in the number of landless workers. Technological changes have brought an increase in the living standards of tenant farmers in the study villages but only among a restricted group of the more enterprising tenant farmers (Ledesma 1982: 202). The greater impact of the new developments is summarized by Ledesma in the following manner:

The rest of the small farmers continue to experience low net incomes after the harvest and many remain indebted to credit sources. Judging from the situation in Abangay and Rajah Sur, what seems more likely to happen is the evolution of a few tenant beneficiaries at the top while the lower strata among the peasantry remain in an involutory process of growing poverty, particularly among landless workers.

Fegan (1982) also traces the effects of a series of technological changes in rice farming communities in the Central Luzon area, once the hotbed of rural unrest. The first phase associated with the introduction of the hand tractor merely displaced the labour of the farmers themselves and actually increased the demand for hired labour. The second phase, however, resulted in the elimination of hired labour for many of the farm's needs due to the inclosed use of chemical weedicides and direct seeding techniques. Mini-threshsers "freed labour for reaping but reduced hired labour's of the crop" (Fegan 1982:20). Who have benefitted and who have been disadvantaged, Fegan (1982: 19-20) outlines:

The cumulative effect of past pieces of technology, many of them harvest increasing, has been to distribute income away from the landless rural workers. To remind you: making seedbeds, uprooting seedlings, transplanting, weeding have been largely eliminated on well drained and irrigated land because of the interaction of mechanical cultivation, direct seeding and chemical weedicides. Pesticides cut down free protein sources. Winnowing, then threshing have been replaced by machine. Labour in field preparation in much reduced by hand tractors. All these have favoured the manufacturing sector that produces the equipment, the petroleum exporters that sell the fuel and chemicals, and the lenders, many of these being in the rich countries; but at the expense of the rural sector, the petroleum importers, the borrowers in the poor countries. Within the rural sector they redistributed income from the landless poor to the farmers, and from both to the lenders and owners of capital.

Fegan agrees with Ledesma that stratification has been a net effect of the changes among rice farming communities. The new pattern of rural

differentiation that has emerged within the village is describe in this manner (Fegan 1982:21):

....the pattern is one of prosperous kulaks controlling several farms a middle class of tenants and land transferees holding single farms, augmented by small entrepreneurs and village dwelling families with salaries or wages earned elsewhere. At the bottom are the landless rural workers have been displaced from work in the rice cycle, have shaky and dependent rights to houselots, and have lost free resources.

From the above, it follows that among the peasantry the effects of modern farming practices have not been distributed evenly. As Castillo (1982:432) noted, "some farmers are pushed upward while others are pushed downward." Landless rural workers appear to be victims of changes in farming practice. It is in this rural sub-class that downward social mobility is frequently experienced. The 1979 estimate of the number of landless rural workers is 4.8 million out of a total rural labour force of 7.3 million (Ledesma 1982:196). About 70 percent of landless workers are in rice and corn lands.

As for the landlord class their power within the old feudal system has been somewhat diminished. From preliminary studies what has been occurring is landlords engaging in business activities related to distribution of inputs and machinery, and trading of rice and consumer goods (Fegan 1982: 21 - 22). The hope implicitly contained in the land reform programme that landlords would divert their assets into industrial undertakings has been lost in the face of the landowners' reaffirmation of trust in their traditionally favoured areas such as real estate and banking. Within the village economic system, landlords have therefore, taken advantage of the technological changes to secure a larger share of the rural surplus. While declining as a traditional landlord class, they have assumed new identities as entrepreneurs. Social mobility for them has been, as usual, upward.

In plantation enclaves, such as in export fruits, the expansion of agribusiness ventures has had the effect of displacing peasant communities engaged in food crop production. The effect of this is twofold--peasants become unemployed and food crop production declines in these areas. Agribusiness, of course is capital-intensive and is therefore, labour displacing.

Technological changes within the context of the Philippine rural sector results in the physical displacement of large numbers of peasants from the land. As landless workers, work opportunities are severely limited for the displaced peasantry. For some, the inevitable trek to the cities becomes a lesser evil given the drudgery of rural life.

## RURAL MIGRATION

As a result of labour saving innovations in farming, the growth of capital intensive agro-industries, and less than adequate farm incomes, rural

unemployment and under reemployment have been increasing. While in the past the opening up of settlement areas enabled large numbers of peasants from Luzon and the Visayas to migrate to frontier lands in Mindanao in the south, such opportunities are no longer present. Settlers who have become owner-cultivators in Mindanao are themselves experiencing the displacing effects of agribusiness concerns.

As for rural-urban migration, this simply has had the effect of increasing the population of urban slum areas. Industrialization in the Philippines has been proceeding at a pace that cannot offset rural displacement nor accommodate the one million or so annual entrants into the labour market.

### CONSUMPTION PATTERNS

In the Ledesma study, consumption patterns of farming households affected by technological changes apparently still follow tradition flows (Ledesma 1982: 48 – 49). Rice farmers who have relatively prospered under the new set-up still spend 55 percent of their total expenditures on food items. The next highest expense — 8 percent, goes for clothes and personal wear. Landless workers, on the other hand, allocate 66 percent for food expenses and 9 percent for recreation, drinks, and cigarettes.

### PEOPLE RESPONSES

For many years now, a tribal Filipino group in northern Luzon has been resisting the construction of a multi-million dollar hydro-electric project. The Kalinga and Bontoc whose ancestors built the world famous rice terraces hundreds of years ago, oppose the Chico River Basin Hydroelectric Project on the grounds that the two proposed dams will destroy their lands and their way of life (Winnacker 1979: 23 – 24). From the national government's side, the dams are important in order to cut down on huge oil imports. The dams are calculated to save the government some US\$39 million in oil import bills. The Bontoc and Kalinga peoples are being asked to make sacrifices in the name of "national survival".

The determined resistance of the tribal groups to the dams has spawned a serious conflict between military forces on one hand and the people on the other. The new People's Army (NPA), military arm of the Communist Party of the Philippines (CPP), has entered into the picture and has used the Chico dam issue as a rallying cry for the tribal groups to wage an armed struggle against the national government (Winnacker, 1979:28 – 29). From newspaper accounts of the conflict, the NPA has made considerable headway among the Kalinga-Bontoc groups.

The above case of people's response to technological changes is by no means isolated, though the degree and manner of resistance would vary

from place. Another tribal group, the T'bolis of southern Mindanao have expressed opposition to the construction of the Lake Sebu dam which would inundate 3,000 hectares of their rich agricultural lands that also form an ancestral heritage for them (Tadem 1980:30 – 31). The implementation of both the Chico and Lake Sebu dams has been not back because of the people's opposition.

The entry of agribusiness activities and their resultant dislocating consequences have also been the object of resistance by peasant settler communities. In 1977, 34 farmers were jailed in Davao del Norte for refusal to vacate a 549 – hectare land which was being taken over by a corporate rice farm (Tadem 1978: 68 – 71). Several peasant settler communities in Agusan del Sur have raised questions about the multimillion peso palm oil projects because they would be forced to give up their homestead lands (Tadem, 1980).

### CONCLUSIONS

It cannot be denied that in a technologically backward economy where productivity is low and the working population have to engage in daily backbreaking labour to produce the goods necessary for daily living changes are essential in order to raise the quality of life of the people. The question, however, is what type of technological changes are to be introduced and who would benefit from them. While millions of pesos are spent for the importation of commercial fertilizers and chemicals the case for organic yield increasing inputs has already been made in countries like Vietnam and China.

The International Labour Organization's report on the Philippines in 1974 argued in favour of communal irrigation projects instead of the massive irrigation systems of the NIA. The ILO report (1974) pointed out that "the amount of public funds required per unit of irrigated area under such communal systems is less than a tenth of the amount provided for NIA systems, so that there is a real possibility of economizing."

The conflicts that have arisen in the case of the Chico River dam could have been avoided by the simple process of consulting the Kalinga and Bontoc peoples beforehand and working out a compromise that would be beneficial to both the government and the tribal groups. Unfortunately, most projects are drawn up without the participation of the so-called "beneficiaries". Instead, foreign consultants make the recommendations that are eventually translated into official decisions.

An all important point that needs to be made is that technological innovations do not take place in a vacuum. The existing socio-economic structures including the class configuration play a determining part in the whole process. Technology, by itself, is neutral but in the hands of social

groups can either serve to buttress an inequitous status quo or blaze a liberating trail for the working classes.

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