

# THE FARM PARCEL APPROACH: A STEP TOWARDS THE IMPROVEMENT OF CROP STATISTICS IN THE PHILIPPINES<sup>1</sup>

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## I. Introduction

The Philippines today is in a critical stage of trying to recover from the ruins created by almost 20 years of mismanagement in government affairs and misdirected thrusts and priorities for development.

Despite the expressed bias of the past dispensation for industrial development, agriculture has remained to be the Philippines' dominant sector and continues to provide the impetus in the country's process of structural transformation. Agriculture accounts for about 60 percent of the traditional export earnings, provides employment to close to 50 percent of the labor force and contributes about a third of the country's gross national product.

It is therefore no wonder that the President, in a number of public fora has often said that agriculture is the centerpiece of the Philippine Economic Recovery Program.

Relatedly, in the current reorganization of the Department of Agriculture, the importance of statistics in the day-to-day activities of the Department has been placed in focus. The Department of Agriculture is one of the only two departments in the executive branch which installed a bureau specifically tasked to provide the requisite statistical support to its operation. Under Executive Order 116. "The Bureau of Agricultural Statis-

tics shall be responsible for the collection, compilation and official release of agricultural statistics; exercise supervision over data collection centers; coordinate all agricultural statistics and economic research activities of all bureaus, corporations and offices under the Department."

Even prior to the issuance of this EO, some initial moves to improve the state of agricultural statistics were already initiated at the BAEcon, the precursor of the BAS, mid last year when a new leadership was installed. The entire agricultural statistical system was reviewed and the strengths and weaknesses of the various data collection schemes, and processing and dissemination systems were identified.

Major focus, however, was given to the Rice and Corn Survey as this is the principal survey vehicle for almost all agricultural production statistics. What will be presented shortly is the initial and preliminary output of this effort.

## 2. A Review of the Development of Agricultural Surveys

Perhaps, one of the most important contributions of statistics in the modern world is the introduction of survey sampling techniques. Through sampling surveys, we are able to get timely and reliable statistics in the most cost-effective way.

The use of probability surveys for generating agricultural surveys in the Philippines may be traced back to the early fifties when the Department of Agriculture created the Agricultural Economics Division to

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provide the Department with economic and statistical studies to support its decision making processes. Since then, these surveys have undergone changes in titles - Crop and Livestock Survey (1954-1968), Integrated Agricultural Survey (1969-1975) and Rice and Corn Survey (since 1976). The content, sampling design and method of collection have, however, remained essentially intact.

For almost four decades, the statistical design used in major agricultural surveys has always been multi-stage stratified design with the country's administrative subdivisions serving as the initial sampling units and the households as the ultimate sampling unit.

During the initial years of agricultural surveys development in the Philippines, three-stage sampling technique was used (1954-1957). The municipality served as the primary sampling unit (psu), the whole barrio or part of it (grid) as the secondary sampling unit (ssu) and the farm households, the ultimate sampling unit. Starting with the 1958 series, the municipality was ignored as a stage in the selection process. With the province serving as the domain, selection of sample respondents was done in two stages - the barrio as the psu and the household, the ssu.

The very first Crop and Livestock Survey in 1954 considered the Philippines as the domain and the psus were stratified into the nine (9) geographic regions. In the 1955-1957 series, however, each province was considered as an independent strata. With the shift from three-stage to two-stage sampling in 1958, the stratification of the psus (barrio or barangay) has undergone a number of modifications. Some of the characteristics used were: palay density, cropping pattern, presence or absence of production assistance program, types of dominant crop planted, farming area, etc.

From 1954 to 1958, agricultural surveys were conducted on an annual basis. Thereafter, four rounds of agricultural surveys were conducted every year except from 1976 to 1980, when the BAEcon conducted 5 rounds every year. Moreover, it was only the 1954 survey which used the results of a census of agriculture (1948 Census of Agriculture) for sampling frame. Partly because of some administrative problems encountered in accessing the census data and partly because of the time differences within which census data would become available, subsequent agricultural surveys have relied on list of barrios supplied by field statisticians. In 1971, this scheme of building up a sampling frame has been systematized by BAEcon into what is now known as the Barrio Screening Survey (BSS).

Over the years, the size of the sample for agricultural surveys has also increased significantly. From 400 grids and 8000 farm households in 1954 the survey coverage has expanded in 1984-1986 to 12,000 barangays and 110,000 sample households. In 1987, this was pruned down to only 6,400 barangays and 60,000 households. This is still considered quite large and work is currently going on at the BAS to determine how the size of the sample could be reduced into a more manageable size without affecting the reliability of the survey data.

While the agriculture surveys have undergone several metamorphosis in terms of changes in titles, modification in the design, increases in the sample size, etc., the main features have however, been preserved. The orientation of the survey has remained the same. The agriculture survey is the principal vehicle for generating agricultural production data, particularly for rice and corn.

The present Rice and Corn Survey (RCS) is a quarterly agricultural production survey. While the design of the survey has a strong bias in favor of rice and

corn, the survey, nevertheless, has always served as a multipurpose one-used to generate information not only for rice and corn, but for other crops as well. It also includes production information for livestock and poultry. The July and January rounds are used to estimate actual production during the reference semesters (January to June and July to December, respectively). The two other rounds, April and October, provide bases for forecasting the semestral production.

The demand for more accurate information on rice and corn could be the primordial reason why the size of sample for RCS has grown almost unabated. This is one way of controlling sampling error. In the process, however, more serious non-sampling errors may have been added which may even negate whatever gain was achieved in increasing the sample size. This is not, however, the main focus on this exercise.

The present exercise addresses itself to looking into the perceptible difference that may be observed if some changes are instituted in the concept of the unit of inquiry, i.e., shift the point of inquiry from a total farm perspective to specific farm parcel.

### **3.The Farm Parcel Approach: A Modified RCS**

Traditionally, RCS sample respondents are asked about production characteristics on a total farm basis. Some households, however, are known to be operating multiple parcels, some adjacent to each other, others, spread in other areas. This situation may result in a downward bias in the estimate, due primarily, to memory lapses of the respondent especially if the farm parcel is relatively smaller than his other holdings or if the parcel is situated outside the barangay where he is residing.

The farm parcel approach was initially undertaken by the BAS in 29 provinces last December 1986 as an alternative way of generating agricultural production data.

It also seeks to elicit the same information asked in the RCS for each individual parcel operated by the farm household.

A parcel is defined as any piece of land entirely surrounded by water, road, river or any other landmark (physical or legal) or a combination thereof, and which is not contiguous to any other part of the farm operated by the same farmer. In Tagalog, parcel could either be "puesto", "palagay", "parcela", or "banos", it is "punong" in the Visayas.

In mounting the FPAS, the basic sampling design and sample households of the RCS was not disturbed. Moreover, to attain maximum comparability of results, FPAS field operations were launched two weeks after the RCS. The FPAS, however, necessitated a modification of the RCS questionnaire. The RCS questionnaire is designed to accommodate five (5) sample respondents. This scheme, while admittedly, is a cost-saving measure may however affect the randomness of the replies elicited from the respondents. Unless very strict supervision is enforced during field enumeration, the enumerators may be tempted to use the reply of one respondent as a "pattern" for the other respondents assigned to him. Thus, the FPAS survey instrument has been designed as a "stand alone-single household" questionnaire.

Some of the other significant deviations of the FPAS questionnaire from the RCS are:

1. The question that provided information on the monthly distribution of harvest is given in the RCS as : "month when major portion of the crop was harvested". How to determine the "major portion" especially for multiple parcel farms where harvests are not done within the month has become a significant problem in the RCS. Thus, in the FPAS, the phrase "major portion" was deleted. Moreover, to provide a built-in check on the

month the crop was harvested, an additional question "month when the crop was planted" was included in the FPAS instrument preceding the question "month when the crop was harvested".

2. In the palay utilization and disposition portion of the questionnaire of the RCS, all items except for the share of the landlord are so worded using both past and future tenses. This was revised in the FPAS by deleting all the future tenses and an additional item was added for the "share of harvester/thresher which in the RCS has been lumped together with the portion of the crop disposed for other purposes.

#### 4. Initial Findings

The results of the initial survey in the 29 provinces are still being processed. For the moment, however, selected statistics from four provinces are presented to provide some initial trends observed. Pangasinan and Cavite are used to depict palay provinces while corn provinces are presented by Bukidnon and Sultan Kudarat.

There are an estimated 69,200 farms in Pangasinan, 12,764 in Cavite, 28,526 in Bukidnon, and 16,780 in Sultan Kudarat. In all four provinces, there are a substantial but varying numbers of multiple parcel farms. In Pangasinan, over 50 percent of the farms consist of at least two parcels. Forty nine percent are single parcel farms covering a total area of 25,764 hectares or about 30 percent of the 85,790 hectares farmland in the province. Thirty one percent are two parcel farms getting over 32 percent of the farm area. The remaining 20 percent of the farms or 38 percent of the total farmland are 3 or more parcel farms.

In Cavite, Bukidnon and Sultan Kudarat, single parcel farms dominate multiple farm parcels. In Cavite, only 20 percent of the farms are operating 2 parcel farms and

11 percent are 3 or more parcels. In Bukidnon, while less than 40 percent of the farms are multiple parcels, this group, however, account for over 65 percent of the total farmland. Finally, in Sultan Kudarat, less than 24 percent of the farms are multiple parcel but this gets 34 percent of the total farm areas (Table 1).

Table 1 also shows that average farm size per parcel increases with the number of parcels. In Pangasinan, average farm size for one, two and three or more parcels are 0.8, 1.3 and 2.3 hectares; in Cavite, the distribution is 1.2, 1.9 and 3.1 hectares; in Sultan Kudarat, the distribution is comparable with Cavite at 1.8, 2.6 and 4.8 hectares. In Bukidnon, however, the increase in farm size is more pronounced at 2.0, 4.0 and 11.7 hectares.

The difference is more pronounced in two corn provinces than in the palay provinces.

In the two palay provinces, the results of the FPAS and RCS are much closer in Pangasinan than in Cavite. For single parcels, for example, the RCS even yielded higher estimates than the FPAS. One may hasten to add though that the difference is only a marginal 2.9 percent for area and 1.8 percent for production. For two parcels, however, the differences are 12.7 percent for area and 14.4 percent for production to the FPAS favor; the 3 or more parcel group, the area and production differences are 16.4 and 24.2 percent, respectively. The distribution by type of farm also gave very close results using either method.

The same can not be said, however, in the case of Cavite. Significant differences were noted in the distribution of farms by type of farms. Likewise, significant differences were observed in the estimates of area and production by number of parcels and by type of farm.

The superiority of the FPAS over RCS in the case of Bukidnon and Sultan Kudarat is apparent in Table 3. This is especially true in the case of multiparcel farms

where differences in area and production exceed a thousand percent for three or more parcels in both Bukidnon and Sultan Kudarat.

Another distinct difference noted between the FPAS and the RCS is in the estimation of the distribution of monthly harvest. While there is similar concentration of harvest in the months of October and November, some significant deviations are apparent in the other months.

#### **5. Final note**

These initial results, while still in need of further statistical validation, tend to support the initial hypothesis set that the FPAS is a move forward to improve the crop statistics in the country.

The detailed accounting asked for the FPAS coupled with a much improved format and questionnaire

content help the respondent recall the activities they did in the farm. It was found out during the interview that in the RCS, a number of activities were missed out especially in cases where the parcels are either smaller than the other or where the same is located far from the residence of the respondent.

The detailed questionnaire, however, has also encountered some problems. Some respondents are reluctant to provide the needed information for fear that this will be used for taxation purposes. Moreover, being a new concept, both enumerators and respondents who are used in the ways of the RCS find it necessary in most cases to ask clarificatory questions which result in protracted interviews as concepts have to be explained and articulated.

**Sampling Designs Employed In Baecon Surveys, 1954-1986**

| Year (s)  | Type of Sampling  | No. of Sampling Units |                |                 | Survey Frame   | Stratification                                   |
|-----------|---|-----------------------|----------------|-----------------|--|--|
|           |   | Towns                 | Barrios        | Farm Households |  |  |
| 1954      | A. Three-stage<br>1. Towns<br>2. Grids<br>3. Farming Households                     | 40                    | 400<br>(Grids) | 8,000           | 1948 Census lists of towns.  | Towns grouped into nine (9) geographical regions |
|           | B. Cluster sampling of households from selected points of sample grids on town maps |                       |                |                 |  |  |
| 1955-1957 | A. Three-stage<br>1. Towns<br>2. Barrios<br>3. Farming Households                   | 422                   | 1,267          | 12,286          | Updated list of municipalities and barrios with ancillary information on crops grown in the barrios according to importance; number of small and large farms (crop, livestock) | Provinces were considered independent strata.    |
|           | B. Systematic sampling of farming households  |                       |                |                 |  |  |
| 1958-1960 | A. Two-stage  | -                     | 1,133          | 5,500           | Updated list of barrios as reported by the AED   | Barrios within provinces were stratified accord- |

Sampling Designs Employed In Bacon Surveys, 1954-1986 - continued

| Year (s)  | Type of Sampling                                       | No. of Sampling Units |         |                 | Survey Frame  | Stratification  |
|-----------|--|-----------------------|---------|-----------------|---|---|
|           |  | Towns                 | Barrios | Farm Households |   |   |
|           |  |                       |         |                 | field statisticians.  | ing to cropping pattern (i.e., major crop or crops raised).   |
|           | B. Systematic sampling of farming households           |                       |         |                 |   |   |
| 1961-1966 | A. Two-stage<br>1. Barrios<br>2. Farming Households    | -                     | 1,200   | 6,000           | Updated list of barrios as reported by the AED field statistician | <ol style="list-style-type: none"> <li>1. Provinces were considered as independent strata.</li> <li>2. Barrios within provinces were grouped according to palay density (i.e., ratio of palay area to farming).</li> <li>3. Barrios within palay density grouped were further stratified based on geographical location.</li> </ol> |
|           | B. Systematic sampling of listed farming households in |                       |         |                 |   |   |

## Sampling Designs Employed In Bascon Surveys, 1954-1986 - continued

| Year (s)  | Type of Sampling  | No. of Sampling Units |         |            | Survey Frame  | Stratification   |
|-----------|---|-----------------------|---------|------------|---|--|
|           |   | Towns                 | Barrios | Households |   |  |
|           |   |                       |         | Farm       |   |  |
|           |   |                       |         |            |   |  |
|           |   | sample barrios        |         |            |   |  |
| 1967-1968 | A. Two-stage  | -                     | 1,960   | 8,900      | List of barrios updated<br>classified into program<br>and non-program barrios | <ol style="list-style-type: none"> <li>1. Barrios were grouped into program and non-program barrios</li> <li>2. Within the group of program barrios - barrios were classified into size groups on the basis of palay area.</li> <li>3. Non-program barrios were grouped according to crops grown as follows: <ol style="list-style-type: none"> <li>a. Barrios growing mostly palay</li> <li>b. Barrios growing mostly corn</li> <li>c. Barrios growing mostly non-palay and corn</li> <li>d. Barrios growing mostly palay and corn</li> </ol> </li> </ol> |
|           | <ol style="list-style-type: none"> <li>1. Barrios</li> <li>2. Farming Households</li> </ol> |                       |         |            |   |  |



Sampling Designs Employed In Baecon Surveys, 1954-1986- Continued

| Year (s)  | Type of Sampling  | No. of Sampling Units |           |   | Survey Frame   | Stratification  |
|-----------|---|-----------------------|-----------|---|--|---|
|           |   | Towns                 | 'Barrios' | Households'                               |  |   |
|           |   |                       |           |   |  | e. Barrios growing mostly palay and<br>f. Barrios growing mostly corn and other crops<br>g. Barrios growing mostly palay, corn and other crops. |
|           | B. Systematic sampling of listed farming households in sample barrios |                       |           |   |  |   |
| 1969-1971 | A. Two-stage<br>1. Barrios<br>2. Farming Households                   | - 2,492               | 11,863    | Updated list of barrios used in 1955-1957 | Same as scheme used for non-program barrios in 1967-1968 |   |
|           | B. Systematic sampling of listed farming households in sample barrios |                       |           |   |  |   |

## Sampling Designs Employed In Baecon Surveys, 1954-1986 - Continued

| Year (s)  | Type of Sampling                    | No. of Sampling Units |         |            | Survey Frame  | Stratification   |
|-----------|-------------------------------------|-----------------------|---------|------------|---|--|
|           |                                     | Towns                 | Barrios | Households |   |  |
| 1971-1972 | A. Two-stage                        | -                     | 2,865   | 14,097     | Updated list of barrios taken from the Barrio Screening Survey (BSS) of the 27 provinces                      | 1. Each of the 27 priority survey province had independent sampling design; barrios were stratified by cropping pattern and further stratified by farm size. |
|           | 1. Barrios<br>2. Farming Households |                       |         |            |   | 2. All other provinces employed design used for non-program barrios in 1967-68.  |
| 1973-1974 | A. Two-stage                        | -                     | 3,117   | 10,000     | Updated list of barrios taken from the BSS of the 59 provinces from 1969-71; 7 provinces remaining unupdated. | 1. Each of the 59 survey provinces had independent sampling design; barrios were stratified by cropping pattern and further stratified by farm size.         |
|           | 1. Barrios<br>2. Farming Households |                       | 4,000   | 26,000     |   | 2. The remaining 7 provinces employed design used for non-program barrios in 1967-1968.  |

Sampling Designs Employed In Baecon Surveys, 1954-1986 - Continued

| Year (s)  | Type of Sampling  | No. of Sampling Units |         |                 | Survey Frame  | Stratification  |
|-----------|---|-----------------------|---------|-----------------|---|---|
|           |   | Towns                 | Barrios | Farm Households |   |   |
|           | B. Systematic sampling of listed farming households in sample barrios |                       |         |                 |   |   |
| 1975-1980 | A. Two-stage<br>1. Barrios<br>2. Farming Households                   | -                     | 2,000   | 10,000          | Updated list of barrios from the household Screening Survey (HSS) of 1974 | 1. Each of the 72 provinces was treated as independent stratum. Barrios were stratified by the presence or absence of palay and corn. Palay/corn barrios were further stratified according to size of palay/corn area. Households were stratified as either farming or non-farming. The former was further classified according to the type of farm operated, as follows:<br><br>a. palay and/or corn producing farms<br>b. crop farms, other than palay and corn |

## Sampling Designs Employed In Bascon Surveys, 1954-1986 - Continued

| Year (s)  | Type of Sampling   | No. of Sampling Units |           | Survey Frame | Stratification  |
|-----------|--|-----------------------|-----------|--------------|---|
|           |  | Towns                 | 'Barrios' |              |   |
|           |  |                       |           |              | c. livestock and/or poultry farms.  |
|           | B. Systematic sampling of listed farming households in sample barrios. |                       |           |              |   |
| 1981-1984 | A. Two-stage   | -                     | 5,000     | 46,000       | 1. Each of the 72 provinces was sub-stratified according to geographical contiguity and similarity of agriculture, each group with a maximum of 4 municipalities with a total of 100 barangays. Barrios were stratified as follows: |
|           | 1. Barrios   |                       | 12,000    | 93,000       | a. palay barangay   |
|           | 2. Farming Households  |                       |           |              | b. corn barangay  |
|           |  |                       |           |              | c. palay and corn barangay  |
|           |  |                       |           |              | d. non-palay/corn barangay  |
|           |  |                       |           |              | e. non-agricultural barangay  |

Sampling Designs Employed In Bacon Surveys, 1954-1986 - Continued

| Year (s) | Type of Sampling | No. of Sampling Units |         |            | Survey Frame | Stratification |
|----------|------------------|-----------------------|---------|------------|--------------|----------------|
|          |                  | Towns                 | Barrios | Households |              |                |

Households were categorized into farm and non-farm

|           |  |   |        |         |   |   |
|-----------|--|---|--------|---------|---|---|
|           | B. Systematic sampling of listed farming and non-farming households in sample barrios. |   |        |         |   |   |
| 1985-1986 | A. Two-stage<br>1. Barrios<br>2. Farming Households                                    | - | 12,000 | 107,000 | Updated list of barrios from the HSS of 1976. | 1. All survey provinces were designed to provide municipal level estimates for rice, corn, backyard, livestock and poultry. The number of strata was determined based on the number of barangays in every municipality. Households farming and non-farming. |
|           | B. Simple random sampling was applied in the selection of sample barangays.            |   |        |         |   |   |

## Sampling Designs Employed In Baecon Surveys, 1954-1986 - Continued

| Year (s) | Type of Sampling | No. of Sampling Units |         |            | Survey Frame | Stratification |
|----------|------------------|-----------------------|---------|------------|--------------|----------------|
|          |                  | Towns                 | Barrios | Households |              |                |

C. Systematic  
random sampling  
of listed farm-  
ing and non-  
farming house-  
holds in  
sample barrios.

**Table 1. Distribution of Crop Farms by Parcel  
July - December 1986**

| <u>Province/<br/>Parcel</u> | <u>Total No.<br/>of Farms</u> | <u>Percentage<br/>of Total<br/>Farm</u> | <u>Total Area<br/>of Farm</u> | <u>Total<br/>Farm</u> | <u>Average<br/>Size per<br/>Parcel</u> |
|-----------------------------|-------------------------------|---|-------------------------------|-----------------------|--|
| <u>Pangasinan</u>           | 69,200                        | 100.00                                  | 85,790                        | 100.00                | 1.24                                   |
| 1 Parcel                    | 33,686                        | 48.68                                   | 25,764                        | 30.03                 | 0.76                                   |
| 2 Parcels                   | 21,568                        | 31.17                                   | 27,851                        | 32.46                 | 1.29                                   |
| 3 or more Parcels           | 13,946                        | 20.16                                   | 32,175                        | 37.50                 | 2.31                                   |
| <u>Cavite</u>               | 12,764                        | 100.00                                  | 19,736                        | 100.00                | 1.55                                   |
| 1 Parcel                    | 8,824                         | 69.13                                   | 10,624                        | 53.83                 | 1.20                                   |
| 2 Parcels                   | 2,529                         | 19.81                                   | 4,777                         | 24.20                 | 1.89                                   |
| 3 or more Parcels           | 1,411                         | 11.05                                   | 4,225                         | 21.96                 | 3.07                                   |
| <u>Bukidnon</u>             | 28,526                        | 100.00                                  | 107,620.20                    | 100.00                | 3.77                                   |
| 1 Parcel                    | 17,502                        | 61.35                                   | 35,395.40                     | 32.89                 | 2.02                                   |
| 2 Parcels                   | 7,439                         | 26.08                                   | 30,134.29                     | 28.00                 | 4.05                                   |
| 3 or more Parcels           | 3,585                         | 12.57                                   | 42,090.51                     | 39.11                 | 11.74                                  |
| <u>Sultan Kudarat</u>       | 16,780                        | 100.00                                  | 35,763.88                     | 100.00                | 2.13                                   |
| 1 Parcel                    | 12,802                        | 76.29                                   | 23,599.21                     | 65.99                 | 1.84                                   |
| 2 Parcels                   | 3,228                         | 19.24                                   | 8,541.78                      | 23.88                 | 2.65                                   |
| 3 or more Parcels           | 750                           | 4.47                                    | 3,622.89                      | 10.13                 | 4.83                                   |

The FPAS has consistently resulted in relatively higher overall estimate than the RCS for area harvested and production. In the four provinces, The FPAS estimates are higher than RCS, thus

|                | <u>Area</u> | <u>Production</u> |
|----------------|-------------|-------------------|
| Pangasinan     | 7%          | 10.3%             |
| Cavite         | 21.8%       | 8.2%              |
| Bukidnon       | 78.7%       | 115.4%            |
| Sultan Kudarat | 32.4%       | 32.3%             |

Table 2. Palay (All Farms): Area Harvested, Production and Yield, by Parcel and Kind of Survey July - December 1986

| Province/<br>Parcel | A R E A |        |        | P R O D U C T I O N |           |        | Y I E L D |       |        |
|---------------------|---------|--------|--------|---------------------|-----------|--------|-----------|-------|--------|
|                     | RCS     | FPS    | % Dif. | RCS                 | FPS       | % Dif. | RCS       | FPS   | % Dif. |
| Pangasinan          | 73,520  | 78,680 | (7.0)  | 3,706,900           | 4,087,200 | (10.3) | 50.42     | 51.95 | (3.0)  |
| 1 Parcel            | 31,780  | 30,860 | 2.9    | 1,583,400           | 1,555,200 | 1.8    | 49.82     | 50.40 | (1.1)  |
| 2 Parcels           | 20,760  | 23,400 | (12.7) | 1,075,200           | 1,230,200 | (14.4) | 51.79     | 52.57 | (1.5)  |
| 3 or more Parcels   | 20,980  | 23,420 | (16.4) | 1,048,300           | 1,301,800 | (24.2) | 49.97     | 53.31 | (6.7)  |
| Cavite              | 6,750   | 8,220  | (21.8) | 364,000             | 393,900   | (8.2)  | 53.93     | 47.92 | 11.1   |
| 1 Parcel            | 5,430   | 6,210  | (14.4) | 298,900             | 302,800   | (1.3)  | 55.05     | 48.76 | 11.4   |
| 2 Parcels           | 890     | 1,380  | (55.1) | 39,100              | 59,900    | (53.2) | 43.93     | 43.41 | 1.2    |
| 3 or more Parcels   | 430     | 630    | (46.5) | 26,000              | 31,200    | (20.0) | 60.47     | 49.52 | 18.1   |



Table 2.1 Palay (Rainfed Farms): Area Harvested, Production and Yield, by Parcel and Kind of Survey July - December 1986

| Province/<br>Parcel  | A R E A    |        |         | P R O D U C T I O N |           |           | Y I E L D |       |        |
|----------------------|------------|--------|---------|---------------------|-----------|-----------|-----------|-------|--------|
|                      | RCS        | FPS    | % Dif.  | RCS                 | FPS       | % Dif.    | RCS       | FPS   | % Dif. |
|                      | Pangasinan | 46,980 | 49,130  | (5.2)               | 2,227,100 | 2,425,200 | (8.9)     | 47.71 | 49.36  |
| 1 Parcel             | 21,180     | 20,170 | 4.8     | 1,011,800           | 972,400   | 3.9       | 47.77     | 48.21 | (0.9)  |
| 2 Parcels            | 12,060     | 13,160 | (9.1)   | 557,900             | 638,600   | (14.5)    | 46.26     | 48.53 | (4.9)  |
| 3 or more<br>Parcels | 13,440     | 15,800 | (17.6)  | 657,400             | 814,200   | (23.9)    | 48.91     | 51.53 | (5.4)  |
| Cavite               | 200        | 1,270  | (585.0) | 6,100               | 58,500    | (859.0)   | 30.50     | 42.70 | (40.0) |
| 1 Parcel             | 100        | 1,050  | (950.0) | 2,600               | 45,300    | (1,642.3) | 26.00     | 43.14 | (65.9) |
| 2 Parcels            | 100        | 320    | (220.0) | 3,500               | 13,200    | (277.1)   | 35.00     | 41.25 | (17.9) |
| 3 or more<br>Parcels | -          | -      | -       | -                   | -         | -         | -         | -     | -      |

Table 2.2 Palay (Irrigated Farms): Area Harvested, Production and Yield, By Parcel and Kind of Survey  
July - December 1986

| Province/<br>Parcel  | A R E A |        |         | P R O D U C T I O N |           |        | Y I E L D |       |        |
|----------------------|---------|--------|---------|---------------------|-----------|--------|-----------|-------|--------|
|                      | RCS     | FPS    | % Dif.  | RCS                 | FPS       | % Dif. | RCS       | FPS   | % Dif. |
| Pangasinan           | 26,070  | 29,370 | (12.7)  | 1,454,800           | 1,650,100 | (13.4) | 55.80     | 56.18 | (0.7)  |
| 1 Parcel             | 10,170  | 10,630 | (4.5)   | 558,200             | 581,000   | (4.1)  | 54.89     | 54.66 | 0.4    |
| 2 Parcels            | 8,520   | 10,220 | (20.0)  | 509,400             | 590,900   | (16.0) | 59.79     | 57.82 | 3.3    |
| 3 or more<br>Parcels | 7,380   | 8,520  | (15.4)  | 387,200             | 478,200   | (23.5) | 52.47     | 56.13 | (7.0)  |
| Cavite               | 5,200   | 5,910  | (13.7)  | 340,700             | 319,000   | 6.4    | 65.52     | 53.98 | 17.6   |
| 1 Parcel             | 4,360   | 4,420  | (1.4)   | 282,900             | 245,300   | 13.3   | 64.89     | 55.50 | 14.5   |
| 2 Parcels            | 410     | 860    | (109.8) | 31,800              | 42,500    | (33.6) | 77.56     | 49.42 | 36.3   |
| 3 or more<br>Parcels | 430     | 630    | (46.5)  | 26,000              | 31,200    | (20.0) | 60.47     | 49.52 | 18.1   |

Table 2.3 Palay (Upland Farms): Area Harvested, Production and Yield, by Parcel and Kind of Survey  
July - December 1986

| Province/<br>Parcel  | A R E A |     |        | P R O D U C T I O N |        |         | Y I E L D |       |         |
|----------------------|---------|-----|--------|---------------------|--------|---------|-----------|-------|---------|
|                      | RCS     | FPS | % Dif. | RCS                 | FPS    | % Dif.  | RCS       | FPS   | % Dif.  |
| Pangasinan           | 770     | 280 | 63.6   | 25,000              | 11,900 | 52.4    | 32.47     | 42.50 | (30.9)  |
| 1 Parcel             | 430     | 60  | 86.0   | 13,400              | 1,800  | 86.6    | 31.16     | 30.00 | 3.7     |
| 2 Parcels            | 180     | 20  | 88.9   | 7,900               | 700    | 91.1    | 43.89     | 35.00 | 10.3    |
| 3 or more<br>Parcels | 160     | 200 | (25.0) | 3,700               | 9,400  | (154.1) | 23.13     | 47.00 | (103.2) |
| Cavite               | 1,350   | 940 | 30.4   | 17,200              | 16,400 | 4.7     | 12.74     | 17.45 | (36.9)  |
| 1 Parcel             | 970     | 740 | 23.7   | 13,400              | 12,200 | 9.0     | 13.81     | 16.49 | (19.3)  |
| 2 Parcels            | 380     | 200 | 47.4   | 3,800               | 4,200  | (10.5)  | 10.00     | 21.00 | (110.0) |
| 3 or more<br>Parcels | -       | -   | -      | -                   | -      | -       | -         | -     | -       |

Table 3. Corn (All Farms): Area Harvested, Production and Yield, by Parcel and Kind of Survey, Bukidnon and Sultan Kudarat, July - December 1986

| Province/<br>Parcel  | A R E A |        |           | P R O D U C T I O N |           |           | Y I E L D |     |        |
|----------------------|---------|--------|-----------|---------------------|-----------|-----------|-----------|-----|--------|
|                      | RCS     | FPS    | % Dif.    | RCS                 | FPS       | % Dif.    | RCS       | FPS | % Dif. |
| Bukidnon             | 35,080  | 62,680 | (78.7)    | 907,000             | 1,953,800 | (115.4)   | 26        | 31  | (19.2) |
| 1 Parcel             | 24,780  | 32,720 | (32.0)    | 584,700             | 628,500   | (7.5)     | 24        | 19  | 21.3   |
| 2 Parcels            | 9,090   | 13,720 | (50.9)    | 230,500             | 303,300   | (31.6)    | 25        | 22  | 12.8   |
| 3 or more<br>Parcels | 1,210   | 16,240 | (1,242.1) | 91,800              | 1,022,000 | (1,013.3) | 76        | 63  | 17.1   |
| Sultan Kudarat       | 7,800   | 10,330 | (32.4)    | 268,500             | 355,300   | (32.3)    | 34        | 34  | 0      |
| 1 Parcel             | 7,550   | 8,970  | (18.8)    | 260,800             | 291,400   | (11.7)    | 35        | 32  | 8.6    |
| 2 Parcels            | 210     | 650    | (209.5)   | 6,000               | 30,500    | (408.3)   | 29        | 47  | (62.1) |
| 3 or more<br>Parcels | 40      | 710    | (1,675.0) | 1,700               | 33,400    | (1,864.7) | 43        | 47  | (9.3)  |

Table 4. Palay: Percentage Monthly Distribution of Production In RCS & FPS  
By Farm Type and Province, July - December, 1986

|                      | Total     |           | July |      | August |      | September |       | October |       | November |        | December |       |
|----------------------|-----------|-----------|------|------|--------|------|-----------|-------|---------|-------|----------|--------|----------|-------|
|                      | RCS       | FPS       | RCS  | FPS  | RCS    | FPS  | RCS       | FPS   | RCS     | FPS   | RCS      | FPS    | RCS      | FPS   |
| Pangasinan           | 3,707,200 | 4,087,500 | 0.36 | 0.03 | 0.28   | 0.52 | 1.74      | 3.57  | 23.03   | 23.75 | 58.97    | 61.66  | 15.64    | 10.47 |
| IR                   | 1,455,200 | 1,650,400 | 0.00 | 0.07 | 0.63   | 0.93 | 3.17      | 7.72  | 36.52   | 35.42 | 44.85    | 46.29  | 14.82    | 9.57  |
| 1 Parcel             | 558,500   | 581,300   | 0.00 | 0.00 | 1.63   | 0.00 | 3.42      | 8.89  | 37.62   | 38.36 | 41.81    | 44.52  | 15.52    | 8.22  |
| 2 Parcels            | 509,300   | 590,700   | 0.00 | 0.00 | 0.00   | 0.32 | 3.55      | 8.33  | 42.73   | 31.44 | 41.65    | 47.89  | 12.08    | 12.02 |
| 3 or more<br>Parcels | 387,400   | 478,400   | 0.00 | 0.23 | 0.00   | 2.82 | 2.32      | 5.54  | 26.79   | 36.75 | 53.46    | 46.47  | 17.42    | 8.19  |
| RF                   | 2,227,100 | 2,425,200 | 0.91 | 0.00 | 0.05   | 0.25 | 0.82      | 0.76  | 14.30   | 9.44  | 67.90    | 71.96  | 16.34    | 11.12 |
| 1 Parcel             | 1,013,800 | 974,600   | 0.46 | 0.00 | 0.05   | 0.62 | 0.89      | 0.60  | 15.32   | 3.33  | 64.35    | 74.31  | 18.73    | 10.50 |
| 2 Parcels            | 557,900   | 638,400   | 0.00 | 0.00 | 0.11   | 0.00 | 0.14      | 1.77  | 14.23   | 2.02  | 74.82    | 77.51  | 10.70    | 7.82  |
| 3 or more<br>Parcels | 655,400   | 812,200   | 0.45 | 0.00 | 0.00   | 0.00 | 1.30      | 0.16  | 12.77   | 4.09  | 67.49    | 64.79  | 17.45    | 14.48 |
| UP                   | 24,900    | 11,900    | 0.00 | 0.00 | 0.00   | 0.00 | 0.00      | 0.00  | 14.86   | 0.01  | 85.14    | 94.96  | 0.00     | 1.68  |
| 1 Parcel             | 13,400    | 1,800     | 0.00 | 0.00 | 0.00   | 0.00 | 0.00      | 0.00  | 17.91   | 0.00  | 82.09    | 100.00 | 0.00     | 0.00  |
| 2 Parcels            | 7,800     | 700       | 0.00 | 0.00 | 0.00   | 0.00 | 0.00      | 0.00  | 16.67   | 0.00  | 83.33    | 71.43  | 0.00     | 28.57 |
| 3 or more<br>Parcels | 3,700     | 9,400     | 0.00 | 0.00 | 0.00   | 0.00 | 0.00      | 0.00  | 0.00    | 0.01  | 100.00   | 95.74  | 0.00     | 0.00  |
| Cavite               | 364,020   | 394,100   | 0.69 | 0.00 | 0.00   | 0.48 | 26.26     | 12.18 | 25.25   | 25.35 | 38.46    | 44.08  | 9.34     | 17.91 |
| IR                   | 340,700   | 319,200   | 0.70 | 0.00 | 0.00   | 0.60 | 26.80     | 12.72 | 22.60   | 26.41 | 40.77    | 49.50  | 9.13     | 10.78 |
| 1 Parcel             | 282,900   | 245,500   | 0.85 | 0.00 | 0.00   | 0.57 | 29.02     | 15.56 | 18.73   | 20.65 | 41.15    | 55.64  | 10.25    | 7.58  |
| 2 Parcels            | 31,800    | 42,500    | 0.00 | 0.00 | 0.00   | 0.00 | 10.69     | 5.65  | 59.12   | 49.18 | 23.58    | 38.59  | 6.60     | 6.59  |
| 3 or more<br>Parcels | 26,000    | 31,200    | 0.00 | 0.00 | 0.00   | 1.60 | 22.31     | 0.00  | 20.00   | 40.71 | 57.69    | 16.03  | 0.00     | 41.67 |
| RF                   | 6,100     | 58,500    | 0.00 | 0.00 | 0.00   | 0.00 | 21.31     | 5.98  | 13.11   | 7.18  | 18.03    | 24.96  | 47.54    | 61.88 |
| 1 Parcel             | 2,600     | 45,300    | 0.00 | 0.00 | 0.00   | 0.00 | 42.31     | 4.42  | 30.77   | 7.51  | 15.38    | 30.68  | 11.54    | 57.40 |

Table 4. Palay: Percentage Monthly Distribution of Production In RCS & FPS  
By Farm Type and Province, July - December, 1986 - Continued

|                      | Total  |        | July |      | August |      | September |       | October |       | November |      | December |       |
|----------------------|--------|--------|------|------|--------|------|-----------|-------|---------|-------|----------|------|----------|-------|
|                      | RCS    | FPS    | RCS  | FPS  | RCS    | FPS  | RCS       | FPS   | RCS     | FPS   | RCS      | FPS  | RCS      | FPS   |
| 2 Parcels            | 3,500  | 13,200 | 0.00 | 0.00 | 0.00   | 0.00 | 5.71      | 11.36 | 0.00    | 6.06  | 20.00    | 5.30 | 74.29    | 77.27 |
| 3 or more<br>Parcels | 0      | 0      | 0.00 | 0.00 | 0.00   | 0.00 | 0.00      | 0.00  | 0.00    | 0.00  | 0.00     | 0.00 | 0.00     | 0.00  |
| UP                   | 17,220 | 16,400 | 0.70 | 0.00 | 0.00   | 0.00 | 17.42     | 23.78 | 81.88   | 69.51 | 0.00     | 6.71 | 0.00     | 0.00  |
| 1 Parcel             | 13,420 | 12,200 | 0.89 | 0.00 | 0.00   | 0.00 | 22.35     | 9.02  | 76.75   | 81.97 | 0.00     | 9.02 | 0.00     | 0.00  |
| 2 Parcels            | 3,800  | 4,200  | 0.00 | 0.00 | 0.00   | 0.00 | 0.00      | 66.67 | 00.00   | 33.33 | 0.00     | 0.00 | 0.00     | 0.00  |
| 3 or more<br>Parcels | 0      | 0      | 0.00 | 0.00 | 0.00   | 0.00 | 0.00      | 0.00  | 0.00    | 0.00  | 0.00     | 0.00 | 0.00     | 0.00  |

Table 4.1 Palay: Percentage Monthly Distribution of Harvested Area in RCS  
and FPS by Farm Type and Province, July - December, 1986

|                      | July |      | August |      | September |      | October |       | November |       | December |       |
|----------------------|------|------|--------|------|-----------|------|---------|-------|----------|-------|----------|-------|
|                      | RCS  | FPS  | RCS    | FPS  | RCS       | FPS  | RCS     | FPS   | RCS      | FPS   | RCS      | FPS   |
| Pangasinan           | 0.56 | 0.03 | 0.35   | 0.57 | 1.64      | 3.47 | 22.45   | 23.16 | 58.62    | 61.47 | 16.38    | 11.30 |
| IR                   | 0.00 | 0.07 | 0.84   | 1.09 | 3.02      | 7.79 | 36.23   | 35.08 | 44.10    | 45.08 | 15.81    | 10.89 |
| 1 Parcel             | 0.00 | 0.00 | 2.15   | 0.00 | 3.31      | 8.57 | 36.73   | 37.66 | 43.92    | 44.44 | 13.89    | 9.32  |
| 2 Parcels            | 0.00 | 0.00 | 0.00   | 0.68 | 3.87      | 8.22 | 43.54   | 31.70 | 39.20    | 45.21 | 13.38    | 14.19 |
| 3 or more<br>Parcels | 0.00 | 0.24 | 0.00   | 2.96 | 1.63      | 6.28 | 27.10   | 35.90 | 50.00    | 45.73 | 21.27    | 8.89  |

Table 4.1 Palay: Percentage Monthly Distribution of Harvested Area In RCS And FPS  
By Farm Type And Province, July - December - Continued

|                      | : July : |         | : August : |         | : September : |         | : October : |         | : November : |         | : December : |         |
|----------------------|----------|---------|------------|---------|---------------|---------|-------------|---------|--------------|---------|--------------|---------|
|                      | : RCS :  | : FPS : | : RCS :    | : FPS : | : RCS :       | : FPS : | : RCS :     | : FPS : | : RCS :      | : FPS : | : RCS :      | : FPS : |
|                      |          |         |            |         |               |         |             |         |              |         |              |         |
| RF                   | 0.88     | 0.00    | 0.08       | 0.26    | 0.90          | 0.92    | 14.94       | 16.18   | 66.24        | 71.06   | 16.96        | 11.58   |
| 1 Parcel             | 0.67     | 0.00    | 0.13       | 0.64    | 0.71          | 0.74    | 15.72       | 13.75   | 62.40        | 73.59   | 20.38        | 11.28   |
| 2 Parcels            | 0.00     | 0.00    | 0.08       | 0.00    | 0.58          | 2.05    | 13.60       | 13.05   | 75.21        | 76.40   | 10.53        | 8.50    |
| 3 or more<br>Parcels | 2.01     | 0.00    | 0.00       | 0.00    | 1.49          | 0.19    | 14.93       | 21.92   | 64.25        | 63.34   | 17.31        | 14.55   |
| UP                   | 0.00     | 0.00    | 0.00       | 0.00    | 0.00          | 0.00    | 11.84       | 3.57    | 88.16        | 92.86   | 0.00         | 3.57    |
| 1 Parcel             | 0.00     | 0.00    | 0.00       | 0.00    | 0.00          | 0.00    | 13.95       | 0.00    | 86.05        | 100.00  | 0.00         | 0.00    |
| 2 Parcels            | 0.00     | 0.00    | 0.00       | 0.00    | 0.00          | 0.00    | 17.65       | 0.00    | 82.35        | 50.00   | 0.00         | 50.00   |
| 3 or more<br>Parcels | 0.00     | 0.00    | 0.00       | 0.00    | 0.00          | 0.00    | 0.00        | 5.00    | 100.00       | 95.00   | 0.00         | 0.00    |
| Cavite               | 1.07     | 0.00    | 0.00       | 0.61    | 22.96         | 11.89   | 35.47       | 31.43   | 31.46        | 38.83   | 9.05         | 17.23   |
| IR                   | 1.17     | 0.00    | 0.00       | 0.85    | 25.41         | 10.32   | 23.06       | 26.73   | 39.59        | 48.56   | 10.76        | 13.54   |
| 1 Parcel             | 1.40     | 0.00    | 0.00       | 0.90    | 27.09         | 12.90   | 19.94       | 20.81   | 39.42        | 55.66   | 12.15        | 9.73    |
| 2 Parcels            | 0.00     | 0.00    | 0.00       | 0.00    | 9.76          | 4.71    | 60.98       | 55.29   | 21.95        | 34.12   | 7.32         | 5.88    |
| 3 or more<br>Parcels | 0.00     | 0.00    | 0.00       | 1.56    | 23.26         | 0.00    | 18.60       | 29.69   | 58.14        | 18.75   | 0.00         | 50.00   |
| RF                   | 0.00     | 0.00    | 0.00       | 0.00    | 22.28         | 14.39   | 20.73       | 20.14   | 31.09        | 20.86   | 25.91        | 44.60   |
| 1 Parcel             | 0.00     | 0.00    | 0.00       | 0.00    | 35.48         | 12.26   | 43.01       | 19.81   | 10.75        | 24.53   | 10.75        | 43.40   |
| 2 Parcels            | 0.00     | 0.00    | 0.00       | 0.00    | 10.00         | 21.21   | 0.00        | 21.21   | 50.00        | 9.09    | 40.00        | 48.48   |
| 3 or more<br>Parcels |          |         |            |         |               |         |             |         |              |         |              |         |
| UP                   | 0.82     | 0.00    | 0.00       | 0.00    | 13.55         | 18.09   | 85.63       | 77.66   | 0.00         | 4.26    | 0.00         | 0.00    |
| 1 Parcel             | 1.14     | 0.00    | 0.00       | 0.00    | 18.90         | 6.67    | 79.96       | 88.00   | 0.00         | 5.33    | 0.00         | 0.00    |
| 2 Parcels            | 0.00     | 0.00    | 0.00       | 0.00    | 0.00          | 63.16   | 100.00      | 36.84   | 0.00         | 0.00    | 0.00         | 0.00    |
| 3 or more<br>Parcels |          |         |            |         |               |         |             |         |              |         |              |         |