

# **COST OF AGRICULTURAL PRODUCTION OF SELECTED CROPS—RICE, CORN, TOBACCO, ABACA AND COCONUT: 1956**

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## **Introduction**

The survey on the cost of production of crops which included palay, corn, tobacco, abaca and coconut, and of livestock which included cattle and hogs was conducted jointly by the Agricultural Economics Division, DANR as the operating agency and the Office of Statistical Coordination and Standards, NEC as the coordinating agency. The survey which was conducted from September, 1956 to April, 1957 was financed from the lump sum appropriation of the National Economic Council as a project under the Philippine Statistical Survey, C.P. 7106. This study included information not only on the general conditions of the farms studied during the crop year 1956 but also on the man and animal labor requirements and on the different factors contributing to the cost of production of crops and livestock.

A description of the result of this survey on the cost of production of five crops (rice, corn, tobacco, abaca and coconut) is presented in this paper.

## **Description of the Survey**

The gathering of data on cost of production was done from September, 1956 to April, 1957. The desired information were collected through personal interviews with farmers and the data were recorded on prepared schedules. For the purpose of this survey the country was divided into five districts or regions, each under the jurisdiction of one agricultural survey supervisor who administered the collection of data by paid interviewers.

## **Objectives**

The specific objectives of this study were: (1) to deter-

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mine the cost of production per hectare and per unit product of rice, corn, tobacco, abaca and coconut; (2) to determine the various factors affecting the cost of production of crops; and (3) to have data as basis for discovering ways of reducing the cost of production on crops.

### Scope

The schedules used in this study were prepared by a committee created and composed of technical men from the Agricultural Economics Division, DANR, the U.P. Statistical Center, the U.P. College of Agriculture and from the Office of Statistical Coordination and Standards, NEC. Specific schedules were prepared for each kind of crop selected.

The major items included in the schedules for each of the selected crops were (1) General Information, (2) Labor Requirement and Cost of Various Operations, and (3) Other Farm Expenses (See schedules, Appendix A).

**I. General Information:** — Important items included under general information are the following:

1. Personal data.—This consisted of pertinent demographic information about the farm operator: his name, age, sex, birthplace, present address, his educational attainment, main source of income and number of persons in the family. The tenure status of the farm operator was also asked which included any of the following:—

**Owner:**—A farm operator who owned the land he farmed or one who operated the farm of a family member.

**Part-owner:**—A farm operator who owned part of the land and rented or leased portion of the land he farmed.

**Tenant:**—A farm operator who rented all the land he farmed.

2. Information about the farm.—Included under this item were the location of the farm and its general description as topography soil class, number of hectares cultivated, extent of damage by pests and diseases and the area of crops fertilized. Other important items included in the general information were the market and assessed value of the land operated by the farmers; total amount Council, included representatives of the Bureau of the Census and Statis-

of crops produced and market value of these crops immediately after harvest.

**II. Labor Requirement and Cost of Various Farm Operation:**—This part of the schedule included a detailed description of the various field operations involved in the production of crops studied and the corresponding cost of man and animal labor for each farm operation. The items for field operations vary according to the kind of crops grown, thus the field operations involved in the growing of lowland rice differ from that of upland rice, corn, coconut, tobacco and abaca, as indicated in the schedules for lowland rice and tobacco, Appendix A.

**III. Other Expenses:**—This part included the cost of seeds, fertilizers, containers, insecticides and fungicides used in the operation of the farm, the food furnished farm laborers, the cost of fencing the lot, and other expenses.

**IV. Farming Implements, Equipment and Building:**—Information on the number, condition and value of farm implements and buildings found on the farm and the cost of services and repairs were to be recorded in this part of the schedules. Data collected were used in determining depreciation charges for the use of these implements, equipment and buildings during the year.

### Sampling Design

The sampling design for the survey on cost of production of rice, corn and coconut in this study was based on the 1955 crop and livestock survey of the Agricultural Economics Division, DANR. A description of the sampling design of this crop and livestock survey is presented in Appendix B. Sampling designs were prepared independently for the study on cost of production of tobacco and abaca. A brief description of the sampling procedures for the cost of production survey of each of the selected crops is discussed below:—

1. Rice.—From a list of 6,954 rice farmers in the 1955 AED Crop and Livestock Survey, a sub-sample of 900 farmers was taken (Table 1). The 6,954 rice farmers obtained from this list were classified by province and a percentage distribution of this number of rice farmers by province was obtained. The product of the total farmers to be sub-sampled or 900 and the percentage for a province gave the number of sample farmers in that sample

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province. The number of rice farmers included in the sample was not classified into upland and lowland rice farmers.

2. Corn.—From a list of 1,819 sample corn farmers in the 1955 AED Crop and Livestock Survey, a sub-sample of 600 farmers was taken and distributed to principal corn-growing provinces as in the case of rice above.

3. Coconut.—From a list of 1,380 sample coconut farmers in the 1955 AED Crop and Livestock Survey, a sub-sample of 400 farmers was taken and distributed to principal coconut-growing provinces as in the case of rice above.

4. Tobacco.—From a list of 9,038 tobacco farmers submitted by the municipal agriculturists and fieldmen of the Bureau of Agricultural Extension as well as by the AED field personnel assigned in the tobacco regions, a list of 300 sample farmers was compiled. The 300 sample farmers were allocated to each of the principal tobacco-growing provinces proportional to the number of tobacco farmers reported in that province. The sample farmers included within a province were selected at random and without replacement.

5. Abaca.—From a list of 5,445 abaca farmers furnished by the Fiber Inspection Service, a list of 411 sample farmers was selected and compiled. Different sampling fractions were assigned to each of the provinces to get the over-all sample of 411. The number of abaca farmers in a province included in the sample was determined on the basis of the sampling fraction applied to the total number of abaca farmers listed in that province.

### Field Operations

Although the collection of data was done by paid interviewers, not all the farmers listed in the samples have been interviewed. Non-responses were due to (1) lack of cooperation from some farmers, (2) death of some farmers, (3) transfer of some sample farmers to another town, (4) inaccessibility, that is, the sample farmers were located in remote and hardly accessible localities which involved great risks and required much sacrifice on the part of supervisors and interviewers to reach them, and (5) loss of schedules, (that is, there were farm records which were not received but were sent to the main office by the interviewers).

In the cost of rice production survey, 865 or 96.1 per cent of the 900 sample farmers were interviewed. Of this number, 662 were lowland rice farmers and 203 were upland rice farmers. In the case of corn, only 80.7 per cent of the 600 corn farmers included in the sample responded; 80 per cent for tobacco; 81.5 per cent for abaca; and 76.2 per cent for coconut (Table 1).

### Estimating Procedures

When the desired information on production, cost of production, or other information were computed on a per hectare and per unit of product basis, then the average yield per hectare is a weighted average obtained by dividing the total production of the farm surveyed by the corresponding total harvested area of land. Likewise, the average cost of production per hectare of crop was calculated by dividing the sum of the total cost of man and animal labor; fixed costs such as depreciation of farm implements and buildings, interest on capital investment, land tax and charges for the use of land; and other operating farm expenses by the total area of land planted to crops as indicated in Appendix C. When the computation is on a per unit of production basis, say per cavan of lowland rice, the procedure is similar as shown above, but in this case the denominator is the total unit of production instead of the total area planted.

In the computation of the value of the different items contributing to the cost of production of the different crops the following sources of expenditures were considered:—

1. Man and animal labor.—The value of man and animal labor is the product of the number of days worked at eight working hours a day and the observed wage rate prevailing per day. If labor was paid in kind, the value in pesos was the product of the number of units given and the cost per unit.

2. Other operating expenses.—These include expenses for the purchase of seeds, fertilizers, insecticides and fungicides, containers, food furnished farm laborers and other farm expenses.

3. Fixed costs.—These include depreciation of tools and equipment and farm buildings, 6 percent interest on capital investment (equipment and buildings) and charges for use of land and land tax. The interest for the use of

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land was assumed at 6 per cent of the market value of the land.

### SUMMARY OF SURVEY RESULTS

#### Tenure of Farm Operators:—

One of the important personal data asked from the farmers during the interview was their tenure status. The results of the surveys showed that of the 662 lowland rice farmers interviewed, almost 41 per cent were full-owners, 10 per cent were part-owners and 49 per cent were tenants. There was a lower percentage of tenancy among the upland rice farmers interviewed which reached only about 40 per cent; 8 per cent were part-owners and 52 per cent were full-owners (Table 2).

Tenancy was more prevalent among corn farmers than among upland rice farmers with a total of almost 44 per cent of the 484 corn farmers interviewed as tenants, 5 per cent part-owners and 51 per cent full-owners. The percentage of tenancy among the tobacco farmers especially those growing Virginia tobacco was even lower than those of either corn or upland rice farmers. Of the 173 Virginia tobacco farmers interviewed, almost 54 per cent were full-owners, 21 per cent, part-owners and 25 per cent, tenants. Of the 67 native tobacco farmers interviewed, 52 per cent were full-owners, 13 per cent were part-owners and almost 35 per cent were tenants.

Almost all or 94 per cent of the 335 abaca farmers interviewed were full-owners and about 5 per cent were tenants. Coconut farmers also showed low percentage of tenancy with 74 per cent of the 305 coconut farmers interviewed as full-owners, 6 per cent, part-owners and 24 per cent, tenants.

#### Average Area Planted and Production per Hectare:—

For the 662 lowland rice farmers surveyed in the principal rice-producing provinces throughout the country, the average area planted to lowland rice per farmer was 1.94 hectares with an average production of 28.3 cavans per hectare. Irrigated lowland rice fields gave an average production of almost 34 cavans as against 25.5 cavans per hectare for non-irrigated or rainfed farms. The average area planted to lowland rice per farmer ranged from 1.13 hectares in the Ilocos region to 3.85 hectares in Southern and Western Mindanao. The yield of lowland rice was lowest in Eastern Visayas, with 19.2 cavans per

hectare as against 36.8 cavans for Central Luzon. The average yield per hectare of irrigated lowland rice farms in Central Luzon was 44.4 cavans and 32.5 cavans for non-irrigated. This production was almost 10 cavans higher than the average production for all regions (Tables 3 and 4).

In the case of upland rice, the average area planted per farmer ranged from 0.94 hectares in Ilocos region to 3.06 hectares in Southern and Western Mindanao with an overall average of 2.10 hectare. The average production per hectare for all farmers surveyed was 19 cavans ranging from 15 cavans in Central Luzon and Eastern Visayas to 24 cavans in Southern and Western Mindanao.

The overall average area planted to corn per farmer amounting to 1.22 hectares was almost one-half that of upland rice. This ranged from 0.83 hectare in Central Luzon to 1.65 hectares in Southern and Western Mindanao. It will be noted that except in Western Visayas, bigger areas were planted to corn in the principal corn-producing regions. The yield was lowest in Bicol which was 14.1 cavans of shelled corn per hectare and highest in Central Luzon at 19.9 cavans with an overall average of 16.4 cavans per hectare.

Another crop included in the survey was tobacco. Of the 240 tobacco farmers interviewed, 173 were planting Virginia and 67, native tobacco. Virginia tobacco planters were concentrated mostly in the Ilocos and a few in the Central Luzon Province. Native tobacco planters were confined in the Ilocos, Cagayan Valley and Central Luzon provinces as well as in Eastern and Western Visayas. The average area planted to Virginia tobacco was 1.44 hectares per farmer. Central Luzon with only 13 farmers studied, reported an average planted area of 3.15 hectares per farmer as against 1.31 hectares for the 160 farmers in the Ilocos provinces. The average production per hectare of Virginia tobacco was 536.2 kilos in Ilocos as compared with 513.3 kilos in Central Luzon or an overall average of 532.4 kilos.

The average area planted to native tobacco per farmer was lower than that of Virginia tobacco which ranged from 0.52 hectare in Eastern Visayas to 1.71 hectares in Central Luzon and 1.56 hectares in Cagayan Valley with an overall average of 1.07 hectares. Production per hectare of native tobacco

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was also lower than that of Virginia tobacco ranging from 347.1 kilos in Central Luzon to 578.2 kilos in Ilocos with an overall average of 502.1 kilos.

From the 335 abaca farmers surveyed principally in Bicol and Southern and Western Mindanao provinces, the average area planted per abaca farmer was 3.95 hectares ranging, from 2.55 hectares in Eastern Visayas to 5.17 hectares in Southern and Western Mindanao. Of all the crops studied, abaca has the highest average area planted per farmer. There was even a wider variation in yield which was lowest in Bicol with only 142.3 kilos and highest in Southern and Western Mindanao which amounted to 665.5 kilos or an overall average of 316.1 kilos per hectare. The yield in Bicol which was just almost one-third that of Southern and Western Mindanao was low because the abaca plantations surveyed in that region were almost abandoned as compared to the abaca plantations in other regions, especially in Davao which were better cared for.

Of the 305 coconut farmers surveyed in the principal coconut-producing provinces, the average area planted per coconut farmer was 2.68 hectares which is second to abaca in area. This ranged from 1.48 hectares in Western Visayas to 3.58 hectares in Southern and Western Mindanao and 3.36 hectares in Bicol region.

Production per hectare was highest in Southern Tagalog provinces amounting to 9,792 nuts and lowest in Western Visayas with 1,854 nuts per hectare. The overall average was 4,213 nuts per hectare. The low production in Western and Eastern Visayas and in the Mindanao provinces may be due to the fact that the plantations surveyed were relatively much younger and many of the trees were not in full bearing.

### Average Cost of Production per Hectare and per Unit of Product by Kind of Crops and by Region

The cost of producing crops consisted of the value of man and animal labor actually spent in crop production, seeds and fertilizers used, depreciation of equipment and buildings, interest on investment, and charges for the use of land, etc. The provinces covered by the cost of production surveys were distributed into 9 regions: (1) Ilocos, (2) Cagayan Valley, (3) Central Luzon, (4) Southern Tagalog, (5) Bicol, (6) Eastern Visayas, (7) Western Visayas, (8) Northern and Eastern Mindanao, and (9) Southern and Western Mindanao.



The average cost of production of irrigated and unirrigated lowland rice, for all lowland rice farmers surveyed was P292 per hectare or P10.32 per cavan. Cost of lowland rice production was lowest in Southern and Western Mindanao, P208 per hectare or P10.10 per cavan; and highest in the Ilocos provinces, P377 or P14.28 per cavan. Results in other regions further showed that the cost of production of lowland rice was P355 per hectare or P9.65 per cavan in Central Luzon; P372 or P10.32 per cavan in Southern Tagalog; and P292 or P13.64 per cavan in Bicol.

The cost of rice production per hectare of irrigated lowland rice field, which amounted to P326 was higher by P52 than that of the rainfed (unirrigated), but the cost of production per cavan of the former was lower, P9.64, as against P10.75 for the rainfed. This is due to increased production of palay in the irrigated areas. Cost of rice production per hectare of lowland rice irrigated, ranged from P252 or P8.63 per cavan in Southern and Western Mindanao to P392 or P10.48 per cavan in Southern Tagalog. For rainfed or unirrigated, it was lowest in Eastern Visayas, P195 per hectare or P9.85 per cavan and highest in the Ilocos, P378 per hectare or P14.26 per cavan (Tables 5 and 6).

Upland palay has an average cost of production of P177 per hectare or P9.31 per cavan. Cost of upland rice production was lowest in Bicol, P133 per hectare as against P200 in Southern Tagalog.

Among the cereal crops studied, corn has the lowest cost of production in the amount of P103 per hectare or about one-third that of the lowland rice culture. This ranged from P75 in Cagayan Valley to P121 in Central Luzon. The cost of production per cavan ranged from P5.22 in Cagayan Valley to P7.09 in Eastern Visayas or an overall average of P6.30.

In the case of tobacco, separate analysis were made in the cost of producing Virginia and native tobacco. The results of the study on the cost of production of tobacco showed that it was more costly to produce native tobacco than it was to produce Virginia tobacco as more man labor was needed in producing native tobacco, especially in the care and harvesting of crop. For all tobacco farms surveyed, the average cost of production per hectare was P413 or P0.82 per kilo for native tobacco as against P320 or P0.60 per hectare for Virginia tobacco. For native tobacco the cost of production per

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hectare ranged from P248 or P0.49 per kilo in Eastern Visayas to P492 or P0.98 per kilo in Western Visayas. Central Luzon has the highest cost of production per kilo of native tobacco which amounted to P1.13.

Virginia tobacco was produced in the Ilocos provinces at P313 per hectare or P0.58 per kilo as compared with P354 or P0.69 per kilo of Virginia tobacco produced in Central Luzon provinces.

The cost of farm operation expenses for abaca and coconut included only the value of man and animal labor requirements in the maintenance of plantation and harvesting of the crop. The abaca and coconut plantations surveyed were already in production, hence, the costs of maintenance of the plantations from the clearing of land and planting to bearing age which takes about three years in the case of abaca and about eight years in the case of coconut, were not included in the computation of the cost of production of these crops.

It will be noted in Tables 5 and 6 that the cost of maintaining, harvesting and stripping a hectare of abaca plantation amounted to P119 or P0.38 per kilo of abaca fiber produced. Coconut plantations which required less labor for plantation maintenance and harvesting showed production expenses of only P73 per hectare or P1.74 per 100 nuts gathered. Cost of abaca production ranged from P89 per hectare in Bicol region to P191 in Southern and Western Mindanao. That of coconut varied from P43 in Northern and Eastern Mindanao to P133 in Southern Tagalog.

It will be noted further that while the cost of production per hectare of abaca was lowest in Bicol Region, the cost of production, P0.62 per kilo of abaca fiber was highest in that region. This amount was more than twice the cost of raising a kilo of abaca in Southern and Western Mindanao which amounted only to P0.29 because of a higher production per unit of area in this region. Contrarywise, the cost of production per 100 nuts of coconut was low (P1.35) in Southern Tagalog provinces, like Laguna and Quezon but the cost of production per hectare in this region was high.

### Average Cost of Production per Hectare by Kind of Crops and by Various Costs of Farm Expenses

Tables 7 and 8 show that expenses for farm operations which included land preparation and planting, cultivating,

wceding, fertilization and control of pests and diseases and harvesting contributed from 45 to 65 percent of the total cost of production expenses depending upon the kind of crops grown. Other farm operation expenses which included cost of seeds, fertilizers, fencing materials and containers, insecticides and fungicides, and irrigation fees amounted to about 4 to 20 per cent and from 14 to 45 per cent for fixed costs which included charges for the use of land, land tax, depreciation and interest on capital investment.

For lowland rice, farm operation expenses per hectare from land preparation to harvesting amounted to P125 for rainfed fields and P144 for irrigated fields or around 45 per cent of the total cost of production. About 13 per cent was contributed by other operation expenses and 42 per cent for fixed costs. Almost 43 per cent of the expenses for farm operation in the growing of lowland rice are for land preparation, about 35 per cent for harvesting, almost 20 per cent for planting and only 4 per cent for care of crop. In the case of upland rice more than 62 per cent of the total cost of production or P110.38 was for farm operation. Almost 46 per cent of this amount was for land preparation and 28 per cent for harvesting. Less than one per cent was spent for planting but almost 18 per cent was spent for cultivating and weeding of the crop. Fixed expenses for upland rice amounted to about 26 per cent of the total cost of production and 12 per cent for other operating expenses.

Almost 63.1 per cent or P65 of the total cost of production for corn was spent for farm operations, about 57 per cent of which was for land preparation alone, almost 20 per cent for harvesting and 18 per cent for cultivating and weeding of the crop. Fixed costs occupied about 26 per cent of the total cost of production and 11 per cent for other operating expenses.

The distribution of the cost of production for tobacco is almost similar to that of upland rice and corn, where in the case of Virginia tobacco, about 65 per cent of the total expenses (P320) were for farm operations, 20 per cent for other operating expenses and 16 per cent for fixed costs. For native tobacco, almost 58 per cent of the total farm expenses (P413) were for farm operations, 12 per cent for other operating expenses and 31 per cent for fixed costs. Almost 30 per cent of the expenses for farm operations in the culture of Virginia and native tobacco were for land preparation; about 28 per

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cent for harvesting; 18 to 22 percent for weeding and cultivation and control of pests and diseases; and around 14 per cent for planting. About 9 per cent was also spent for the preparation and planting of seedbeds.

For abaca and coconut, more than 51 per cent of the total expenses (P199 and P73 respectively), were for farm operations, 13 per cent for other expenses in the case of abaca and 3.4 per cent in the case of coconut, and 36 to 45 per cent for fixed costs. More than 36 per cent of the farm operation expenses for abaca and 35 per cent for coconut were for cleaning the plantations and 63 to 65 per cent for harvesting.

### Average Cost of Production per Hectare and per Unit of Product by Kind of Crops and by Size of Farm

In general the cost of production per hectare and per unit of product tends to decrease as the area planted to crops increased. In the case of lowland rice, farms below one hectare in area showed an average cost of production per hectare of P425, ranging from P412 for rainfed and P461 for irrigated as against the overall average of P292. For lowland rice farms of 1 hectare and over but below 2 hectares in area, the average cost of production was from P346 to P370 per hectare while rice farms of 2 hectares and over but below 5 hectares the range was P257 to P279 per hectare. Farms of 5 hectares and over but less than 10 hectares showed the lowest cost of production, P246 per hectare which is less than 60 per cent of the cost of production of farms below 1 hectare.

The cost of production per cavan of lowland rice produced was also highest for farms below 1 hectare, P12.24 for irrigated and P13.08 for unirrigated or an overall average of P12.69. Cost of production per cavan in the irrigated farms of 2 hectares and over ranged from P8.15 to P10.21 and P10.15 to P11.66 for rainfed areas. For all lowland rice farms surveyed, the average cost of production per hectare was P9.64 for irrigated and P10.25 for rainfed or unirrigated, Tables 9 and 10.

The inverse relationship of cost of production and size of farm observed in lowland rice holds true not only for upland rice and corn but also for tobacco, abaca and coconut. The cost of production of upland rice farms below 1 hectare was P206 per hectare or P9.90 per cavan as against the cost of production of from P139 to P202 per hectare or P7.33 to

P9.61 per cavan of upland rice farms of 2 hectares and over. Corn farms below 1 hectare showed a cost of production of P141 per hectare or P8.30 per cavan as against P88 to P95 per hectare or P5.30 to P7.06 per cavan for corn farms 2 hectares and over.

In the case of Virginia tobacco, the cost of production of farms below 1 hectare amounted to P408 per hectare or P0.92 per kilo as against P162 to P350 per hectare or P0.35 to P0.63 per kilo for Virginia tobacco farms 2 hectares and over. For native tobacco it was P507 per hectare or P0.99 per kilo for farms below 1 hectare, as compared with P303 to P401 per hectare or P0.51 to P0.78 per kilo for native tobacco farms of 2 hectares and over in area.

A wider margin in the cost of production by size of farm was noticed for abaca and coconut. For abaca, the cost of production per hectare of farms 2 hectares and over was almost one-third that of abaca farms below 1 hectare while the cost of production per kilo of abaca produced was almost one-half. In the case of coconut, the cost of production per hectare of coconut farms 2 hectares and over was almost one-half that of farms below 1 hectare.

The inverse relationship of the cost of production and size of farm may be due to the facts that: (1) the smaller the area of the farm, the more intensive was the cultivation; (2) there was more efficient use of labor in larger farms than in small ones; (3) tools and equipment intended for cultivation and maintenance were inefficiently used in small farms; and (4) the interest charge on capital investment and depreciation cost of implements were proportionally larger per unit in smaller farms.

#### **Man and Animal Labor Requirements per Hectare by Kind of Crops**

This involves the number of man and animal labor days of 8 hours work per day needed in the culture of crops from the time the land is prepared for planting to the harvesting and storing of the products.

The results of the survey showed that of the crops studied, native tobacco consumed the most number of man days amounting to 170 days valued at P206 per hectare. About 29 per cent of these were spent for harvesting, 26 per cent for land preparation and 23 per cent for care of plant such as weeding

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and cultivation, suckering and control of pests and diseases. Irrigated lowland rice farms consumed 78 man days valued at P114, followed by Virginia tobacco, 74 man days valued at P144; unirrigated lowland rice, 70 man days valued at P98 and upland rice, 68 man days valued at P88 per hectare. Of the annual crops studied, corn consumed the least number of man days amounting to 37 days per hectare valued at P45 (Table 11). Corn production consumed less number of days especially in the cultivation and weeding and in the harvesting of crops.

Very little variation was noted in the animal labor requirement of the different crops studied especially in the plowing and harrowing of the land preparatory to planting. In the case of corn the number of days varied from 18 days valued at P20, to 32 days for Virginia tobacco valued at P62 per hectare. It will be noted also that of the annual crops studied, Virginia tobacco farmers paid the highest rate of almost P2 per day for both man and animal labor. The rest paid at the rate of from P1.04 to P1.60 per eight-hours-working day.

Maintenance of abaca and coconut plantations and harvesting of abaca and coconuts needed only 38 man days valued at P61 per hectare for abaca and only 24 man days valued at P25 for coconut. Less than two days of animal labor valued at P2.31 were required per hectare especially in the hauling of nuts gathered from plantation to the nearest copra drier.

### **Comparative Cost of Production per Hectare and per Kilo Based on Observed Wage Rate and the Minimum Wage Rate**

Attempts were made in this study to compare the effects in the cost of production of crops should the farmers pay their laborers the minimum wage rate of P2.50 per day instead of the actual rate prevailing in the community.

The results (Table 12) showed that if farm laborers were paid the minimum wage rate of P2.50 per day, the cost of production of crops would increase from 19 per cent for Virginia tobacco, to 71 per cent for corn. The cost of production of lowland rice would increase by almost 37 per cent and cost of production of upland rice from P10.32 to P14.09. The cost of production of upland rice would increase by almost 62 per cent and that of corn by 71 per cent. These indicated that farm laborers in the upland rice and corn farms were actually re-

ceiving lower rates of pay than similar laborers working in the lowland rice farms.

A wider margin existed in the range in pay of farm laborers working in the Virginia and native tobacco farms. While Virginia tobacco growers could afford to pay their farm laborers at the rate of P1.94 per day, similar laborers in the native tobacco farms received only P1.20 per day. Hence, the application of the minimum wage rate of P2.50 per day for laborers in the Virginia tobacco and native tobacco farms would increase the cost of production of Virginia tobacco by only 19 per cent as against 61 per cent for native tobacco, or from P0.60 to P0.71 per kilo, in the case of Virginia tobacco, as against P0.82 to P1.33 per kilo for native tobacco.

In the abaca and coconut farms, the application of the minimum wage rate in the payment of farm laborers would increase the cost of production per hectare by 30 percent in the case of abaca and 37 per cent for coconut. The cost of raising abaca would increase from P0.38 per kilo based on actual wage rate to P0.48 based on P2.50 wage per day. Likewise, the cost of raising 100 coconuts would increase from P1.74 to P2.36, or an increase of almost 36 per cent.

Table 1

COMPARATIVE NUMBER OF SAMPLE FARMERS AND THE NUMBER OF SUB-SAMPLE FARMERS ACTUALLY INTERVIEWED BY KIND OF CROPS SURVEYED:

Crops	1956		Sub-Sample Farmers Interviewed	
	Number of Sample Farmers *	Number of Sub-Sample Farmers **	Number	Percent
Rice	6,954	900	865	96.1
Lowland rice	—	—	662	—
Upland rice	—	—	203	—
Corn	1,819	600	484	80.7
Tobacco	9,038	300	240	80.0
Virginia	—	—	173	—
Native	—	—	67	—
Abaca	5,445	411	335	81.5
Coconut	1,380	400	305	76.2

\* Sample farmers in the 1955 Crop and Livestock Survey of AED.

\*\* Farmers used in the cost of production survey.

TABLE 2  
TENURE OF FARM OPERATORS BY KIND OF  
CROPS: 1956

C R O P S	Tenure of Farm Operator						
	All Operators	Full-owners		Part-owners		Tenant	
		Number	Percent	Number	Percent	Number	Percent
Lowland Rice .....	662	271	40.9	67	10.2	324	48.9
Upland Rice .....	203	106	52.2	16	7.9	81	39.9
Corn .....	484	247	51.0	26	5.4	211	43.6
Tobacco: .....	240	128	53.3	45	18.7	67	28.0
Virginia .....	173	93	53.8	36	20.8	44	25.4
Native .....	67	35	52.2	9	13.4	23	34.4
Abaca .....	335	316	94.3	—	—	19	5.7
Coconut.....	305	226	74.1	6	2.0	73	23.9



Table 3

Average Area Planted per Farm by Kind of Crops and by Region: 1956

(Hectares)

Crops	All Regions	Ilocos	Cagayan Valley	Central Luzon	Southern Tagalog	Bicol	Eastern Visayas	Western Visayas	Northern and Eastern Mindanao	Southern and Western Mindanao
Lowland Rice	1.94	1.13	1.97	2.15	2.10	2.22	1.18	2.10	2.66	3.85
Upland Rice	2.10	0.94	1.92	2.00	2.53	1.71	1.31	1.83	2.67	3.06
Corn	1.22	1.48	1.62	.83	—	1.41	1.00	1.10	2.10	1.65
Tobacco:										
Virginia	1.44	1.31	—	3.15	—	—	—	—	—	—
Native	1.07	0.77	1.56	1.71	—	—	0.52	1.00	—	—
Abaca	3.95	—	—	—	—	4.75	2.55	—	3.65	5.17
Coconut	2.68	—	—	—	2.34	3.36	2.97	1.48	2.26	3.58

Table 4

Average Production per Hectare by Kind of Crops and by Region: 1956

(Pesos)

Crops	Production Unit	All Regions	Ilocos	Cagayan Valley	Central Luzon	Southern Tagalog	Bicol	Eastern Visayas	Western Visayas	Northern and Eastern Mindanao	Southern and Western Mindanao
Lowland Rice:	Cavan	28.3	26.4	29.2	36.8	36.4	21.4	19.2	23.9	30.9	20.6
Irrigated	Cavan	33.8	36.4	31.9	44.4	37.4	20.8	17.6	20.0	40.8	29.2
Rainfed (Unirrigated)	Cavan	25.5	26.5	26.8	32.5	30.7	22.3	19.8	23.0	21.8	18.8
Upland Rice	Cavan	19.0	19.0	16.3	15.0	19.6	18.8	15.0	18.2	15.3	24.0
Corn	Cavan	16.4	15.0	14.4	19.9	—	14.1	15.6	19.5	14.1	17.2
Tobacco:											
Virginia	Kilo	532.4	536.2	—	513.3	—	—	—	—	—	—
Native	Kilo	502.1	578.2	538.5	347.1	—	—	504.8	502.1	—	—
Abaca	Kilo	316.1	—	—	—	—	142.3	322.3	—	314.3	665.6
Coconut	Nut	4,213	—	—	—	9,792	4,505	2,197	1,854	2,599	2,399

Table 5

Average Cost of Production per Hectare by Kind of Crops and by Region: 1956

(Pesos)

Crops	All Regions	Ilocos	Cagayan Valley	Central Luzon	Southern Tagalog	Bicol	Eastern Visayas	Western Visayas	Northern and Eastern Mindanao	Southern and Western Mindanao
Lowland Rice:	292	377	254	355	372	292	211	248	280	208
Irrigated	326	374	259	367	392	300	260	263	340	252
Rainfed (Unirrigated)	274	378	250	348	250	285	195	246	255	199
Upland Rice	177	164	151	152	200	133	137	147	150	196
Corn	103	104	75	121	—	81	110	105	89	115
Tobacco:										
Virginia	320	313	—	354	—	—	—	—	—	—
Native	413	370	438	392	—	—	248	492	—	—
Abaca	119	—	—	—	—	89	131	—	122	191
Coconut	73	—	—	—	133	80	49	52	43	50

Table 6

Average Cost of Production Per Unit of Product by Kind of Crops and by Region: 1956

(Pesos)

C r o p s	Production Unit	All Regions	Ilocos	(Pesos)							
				Cagayan Valley	Central Luzon	Southern Tagalog	Bicol	Eastern Visayas	Western Visayas	Northern and Eastern Mindanao	Southern and Western Mindanao
Lowland Rice:	Cavan <sup>1</sup>	10.32	14.28	8.70	9.65	10.22	13.64	10.99	10.64	9.06	10.10
Irrigated	Cavan <sup>1</sup>	9.64	14.17	8.12	8.27	10.48	14.42	14.77	10.12	8.33	8.63
Rainfed (Unirrigated)	Cavan <sup>1</sup>	10.75	14.26	9.33	10.71	8.14	12.78	9.85	10.70	10.32	10.59
Upland	Cavan <sup>1</sup>	9.31	8.62	9.26	10.14	10.21	7.10	9.12	8.10	9.77	7.98
Corn	Cavan <sup>2</sup>	6.30	6.94	5.22	6.07	—	5.76	7.09	5.40	6.19	6.70
Tobacco:											
Virginia	Kilo	0.60	0.53	—	0.69	—	—	—	—	—	—
Native	Kilo	0.82	0.64	0.81	1.13	—	—	0.49	0.98	—	—
Abaca	Kilo	0.28	—	—	—	—	0.62	0.41	—	0.39	0.29
Coconut	100 Nuts	1.74	—	—	—	1.35	1.78	2.24	2.80	1.65	2.10

<sup>1</sup> Cavan of palay (rough rice) of 44 kilos.<sup>2</sup> Cavan of shelled corn of 57 kilos.

Table 7

Average Cost of Production Per Hectare by Kind of Crops and by Various Cost of Farm Expenses: 1956  
(Pesos)

I t e m	Lowland Rice			Upland Rice	Corn	Tobacco		Abaca	Coconut
	Average	Irrigated	Rained			Virginia	Native		
Total Farm Expenses .....	291.88	326.12	273.89	176.82	103.00	319.57	412.54	118.59	73.26
Farm Operations .....	131.57	144.13	124.95	110.38	65.00	206.01	237.32	60.70	37.48
1. Preparation & planting of seed-beds <sup>1</sup> .....	6.44	6.46	6.41	—	—	18.55	17.42	—	—
2. Land preparation <sup>2</sup> .....	56.41	59.27	54.91	50.65	37.03	63.47	70.00	—	—
3. Planting <sup>3</sup> .....	25.57	27.18	24.73	1.00	3.42	28.73	32.32	—	—
4. Care of the crop <sup>4</sup> .....	5.56	8.10	4.22	20.72	11.67	37.23	53.04	21.96	12.96
5. Harvesting <sup>5</sup> .....	32.29	37.46	29.56	30.86	12.88	58.03	64.54	38.21	24.52
6. Storing <sup>6</sup> .....	5.30	5.66	5.12	7.15	—	—	—	.53	—
II. Other Expenses <sup>7</sup> .....	37.19	47.52	31.06	20.63	11.37	63.58	48.65	15.49	2.50
III. Fixed Costs <sup>8</sup> .....	123.12	134.47	117.88	45.81	26.63	49.99	126.57	42.40	33.28

<sup>1</sup> Includes: Land preparation, planting, and care of seedbed.

<sup>2</sup> Includes: Plowing and harrowing of the land preparatory to planting.

<sup>3</sup> Includes: Pulling and bundling of seedlings in the case of lowland rice and tobacco, transplanting and replanting.

<sup>4</sup> Includes: Weeding, irrigation, drainage, fertilization, control of pests and diseases, suckering and cultivation.

<sup>5</sup> Includes: Harvesting and bundling, stacking, hauling, shocking, classifying, sticking, assembling, husking, etc.

<sup>6</sup> Includes: Drying, hauling to camarin and other services.

<sup>7</sup> Includes: Seeds, fertilizers, miscellaneous (fencing materials and containers) food furnished to laborers, insecticides and fungicides, and irrigation fees.

<sup>8</sup> Includes: Depreciation, 6 per cent interest on capital investment (equipment and building) charges for use of land and land tax.

Table 8

Percentage Distribution of the Cost of Production per Hectare by Kind of Crops and by Various Cost of Farm Expenses: 1956  
(Percent)

I t e m	Lowland Rice			Upland Rice	Corn	Tobacco		Abaca	Coconut
	Average	Irrigated	Rainfed			Virginia	Native		
Total Farm Expenses .....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
I. Farm Operations	45.1	44.2	45.6	62.4	63.1	64.5	57.5	51.2	51.2
1. Preparation & planting of seed-bed <sup>1</sup> .....	2.1	2.0	2.3	—	—	5.8	4.2	—	—
2. Land preparation <sup>2</sup> .....	19.3	18.2	20.0	28.6	36.0	19.9	17.0	—	—
3. Planting <sup>3</sup> .....	8.8	8.3	9.0	0.0	3.3	9.0	7.8	—	—
4. Care of the crop <sup>4</sup> .....	1.9	2.5	1.5	11.7	11.3	11.6	12.9	18.5	17.7
5. Harvesting <sup>5</sup> .....	11.1	11.5	10.8	17.5	12.5	18.2	15.6	32.2	33.5
6. Storing <sup>6</sup> .....	1.8	1.7	2.0	4.0	—	—	—	0.5	—
II. Other Expenses <sup>7</sup> .....	12.7	14.6	11.3	11.7	11.0	19.9	11.8	13.1	3.4
III. Fixed Costs <sup>8</sup> .....	42.2	41.2	43.1	25.9	25.9	15.6	30.7	35.7	45.4

<sup>1</sup> Includes: Land preparation, planting and care of seedbed.

<sup>2</sup> Includes: Plowing and harrowing of the land preparatory to planting.

<sup>3</sup> Includes: Pulling and bundling of seedlings in the case of lowland rice and tobacco, transplanting and replanting.

<sup>4</sup> Includes: Weeding, irrigation, drainage, fertilization, control of pests and diseases, suckering and cultivation.

<sup>5</sup> Includes: Harvesting and bundling, stacking, hauling, shocking, classifying, sticking, assembling, husking, etc.

<sup>6</sup> Includes: Drying, hauling to camarin and other services.

<sup>7</sup> Includes: Seeds, fertilizers, miscellaneous (fencing materials and containers) food furnished to laborers, insecticides and fungicides, and irrigation fees.

<sup>8</sup> Includes: Depreciation, 6 per cent interest on capital investment (equipment and building) charges for use of land and land tax.

Table 9

## Average Cost of Production Per Hectare by Kind of Crops and by Size of Farm; 1956

(Pesos)

Crops	All farms	Below 1.00 Ha.	1.00 to 1.49 Ha.	1.50 to 1.99 Ha.	2.00 to 2.99 Ha.	3.00 to 3.99 Ha.	4.00 to 4.99 Ha.	5.00 to 9.99 Ha.	10.00 and over Ha.
Lowland Rice: .....	292	425	370	346	276	279	257	246	273
Irrigated .....	326	461	431	475	305	271	302	275	273
Rainfed (Unirrigated) .....	274	412	339	277	262	286	238	238	—
Upland Rice .....	177	206	183	192	159	202	175	168	139
Corn .....	103	141	104	108	92	88	94	95	90
Tobacco:									
Virginia .....	320	408	400	318	350	268	162	195	261
Native .....	413	507	391	427	401	372	—	303	—
Abaca .....	119	276	157	134	107	98	83	96	63
Coconut .....	73	136	—	106	74	62	68	61	61

Table 10.

Average Cost of Production Per Unit of Product by Kind of Crops and By Size of Farm: 1956<sup>1</sup>

Crops	Pro- duction Unit	All farms	(Pesos)							
			Below 1.00 Ha.	1.00 to 1.49 Ha.	1.50 to 1.99 Ha.	2.00 to 2.99 Ha.	3.00 to 3.99 Ha.	4.00 to 4.99 Ha.	5.00 to 9.99 Ha.	10.00 and over Ha.
Lowland Rice:	Cavan <sup>2</sup>	10.32	12.69	10.35	10.70	9.69	10.17	10.15	10.72	10.21
Irrigated Rainfed (Unirrigated)	Cavan <sup>2</sup>	9.64	12.23	9.90	11.53	8.98	9.98	9.13	8.15	10.21
	Cavan <sup>2</sup>	10.75	13.08	10.63	10.02	10.15	10.35	10.85	11.66	—
Upland Rice	Cavan <sup>2</sup>	9.31	9.90	10.60	9.91	9.61	8.98	7.99	8.73	7.33
Corn	Cavan <sup>3</sup>	6.30	8.30	6.03	7.16	5.73	5.30	5.47	6.18	7.06
Tobacco:										
Virginia Native	Kilo	0.60	0.92	0.82	0.71	0.63	0.54	0.35	0.33	0.40
	Kilo	0.82	0.99	0.82	1.05	0.78	0.66	—	0.51	—
Abaca	Kilo	0.38	0.49	0.34	0.43	0.30	0.29	0.23	0.23	0.24

<sup>1</sup> No available data for coconut.<sup>2</sup> Cavan of palay (rough rice) of 44 kilos.<sup>3</sup> Cavan of shelled corn of 57 kilos.



Table 11

Number and Value of Man and Animal Labor Requirements Per Hectare by Kind of Crops: 1956

C r o p s	Man Labor		Animal Labor	
	Day	Value	Day	Value
	Number	Pesos	Number	Pesos
Lowland Rice:				
Irrigated	77.72	113.72	26.00	30.41
Rainfed (Unirrigated)	70.22	98.36	22.34	26.59
Upland Rice	67.93	88.30	19.96	22.08
Corn	37.04	45.18	18.18	19.82
Tobacco:				
Virginia	74.46	144.45	31.72	61.54
Native	170.23	205.97	25.90	31.34
Abaca	37.89	60.70	--	--
Coconut	24.23	35.17	1.54	2.31

Table 12

Comparative Cost of Production Per Hectare and Per Unit of Product Based on Observed Rate and the Minimum Wage Rate of ₱2.50 Per Day by Kind of Crops Grown: 1956

Crops	Cost of Production per Ha.			Production Unit	Cost of Production per Unit of Product		
	Based on observed rate	Based on ₱2.50 per day	Per cent Increase		Based on observed rate	Based on ₱2.50 per day	Per cent Increase
	(Pesos)	(Pesos)			(Pesos)	(Pesos)	
Lowland Rice: . . . . .	292	399	36.6	Cavan	10.32	14.09	36.5
Irrigated . . . . .	326	441	35.3	Cavan	9.64	13.05	35.3
Rainfed (Unirrigated). . . . .	274	380	38.7	Cavan	10.75	14.92	38.7
Upland . . . . .	177	286	61.5	Cavan	9.31	15.06	61.8
Corn. . . . .	103	176	70.9	Cavan	6.30	10.76	70.8
Tobacco:							
Virginia . . . . .	320	379	19.0	Kilo	0.60	0.71	18.0
Native . . . . .	413	666	61.0	Kilo	0.82	1.33	62.0
Abaca . . . . .	119	154	30.0	Kilo	0.38	0.48	26.3
Coconut. . . . .	73	100	37.0	100 Nuts	1.74	2.36	35.7