

THE STATISTICAL ANATOMY OF OUR PERENNIAL RICE PROBLEM

by

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Introduction

Self-sufficiency in food, particularly in rice, has been the subject of development plans and programs of the government for the past years. For rice, the problem becomes more pressing because of the great number of people whose staple food is rice (around 76.8 per cent of the total population) and of people dependent on the rice industry. The rise in prices of this vital commodity is always viewed as an indication of a shortage in supply. Some economists even consider the price of rice as the barometer of all items of the cost of living.¹

The problem of the price of rice is like a two-edged sword. While consumers moan over the high price of rice at the corner store, producers lament the very low prices of palay received by them on the farm. The battlecry is, **IMPORTATION** and **PRICE CEILING** for the consumers, and **NO-IMPORTATION** and **PRICE SUPPORT** for the Producers (or Farmers). What, then, is the right step for the government to take?

The Situation

The apparent lack of adequate "communication" and "cooperation" among the various agencies concerned with the

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¹ In 1948, a UN consultant on social affairs made the observation that the prices of the components of the cost of living in this country "seemed to go up and down as the price of rice went up and down." Such statement has, since then, been engrained in the public mind.

rice industry; have, often-times, confused government policy-makers as to the actual situation existing in the country. Post-haste recommendations based purely on subjective observations and/or incomplete information are being taken as "cure-all" remedies.

The Lesson of 1961

To cite a concrete example, consider the so-called "rice crisis" in 1961. Almost all responsible government officials were in agreement then, that there was to be a shortage of this vital commodity during the lean months of July to September of that year. As if in answer to this forecast, the price of rice rose at the beginning of the period. The long queues of rice buyers in NARIC stores seemed to attest to the scarcity and prohibitive price of said commodity in the market. As a result of this mass hysteria and strong public opinion, the government decided to import rice (188 thousand metric tons of milled rice or 6,578 thousand sacks of palay equivalent) through the NAMARCO.

Did we really have a rice shortage during that period? The Inter-Agency Committee on Rice and Corn Production and Consumption¹ had estimated that there would be a surplus of around 3,412 thousand sacks of palay at the end of the crop year 1961 (or on June 30, 1961). Yet, the National Economic Council recommended the importation of rice on

¹Constituted by the Office of Statistical Coordination and Standards (OSCAS) of the National Economic Council in 1956. Said inter-agency committee is presently composed of the following government entities:

- Office of Statistical Coordination and Standards (OSCAS), -NEC
- Office of National Planning (ONAP), NEC
- Agricultural Economics Division (AED), DANR
- Program Implementation Agency (PIA)
- Rice and Corn Administration (RCA)
- Presidential Committee on Executive Performance (PRECEP)
- Food and Nutrition Research Center (FNRC), NIST, NSDB
- Bureau of Commerce (BC)
- Bureau of Census and Statistics (BCS)
- Rice and Corn Board (RICOB)

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the claim that such surplus will not be enough to supplement the harvest during the lean months from July to September. The rice imported by the NAMARCO arrived during the period July to November of said year. However, reports have it that a greater proportion of the NAMARCO importation arrived after August, signifying that the major bulk of said rice could have been distributed only after the "crisis" was already (or almost) over.

In spite of the overwhelming public opinion regarding the shortage of the supply of rice, there were still a number of people who believed, during and even after the crisis was over, that such shortage was not the resultant of an actual shortage in supply in the country, but was the result of an artificial manipulation of stocks by unscrupulous and profiteering individuals. They cited the fact that almost anyone could buy as much rice as he wanted provided he was willing to pay the prohibitive price.

A review of the stock position of the government in relation to total commercial stocks for the past several years may shed some light on the "real" rice situation that existed during the period. From February 1, 1958 to September 30, 1960, the government has had in its possession during certain periods of said years, no less than 19 per cent of the total commercial stocks of palay, ranging from 19.5 per cent in February 1, 1958 to as high as 34.9 per cent in August of the same year. And even after the calamities during the first quarter of crop year 1961 (July to September, 1960), the government stock (as of September 30) remained as high as 27.3 per cent of the total commercial stocks. BUT, two months thereafter, November 30th to be exact, the government stock dropped to barely 7.7 per cent, and hitting an all time low of 3.0 per cent on January 31, 1961. The price stabilizing agency of the government, therefore, was doomed to fail in its assigned task, considering the fact that it was unable to increase its stock during the peak harvest season (October to January). And by July 1, 1961, the government was holding only a mere 5.7 per cent of the total commercial stock (or 325,000 sacks of palay as compared to 3,889,000

sacks held by the private sector). The inevitable result, therefore, was the "rice crisis" which set in after July 1, 1961.

The Rice Situation (Circa 1963)

TODAY, the same ticklish rice situation as in 1961 is again brewing. The rising price of rice is viewed as an indication of a shortage in supply. From the Rice and Corn Board's (RICOB) charge of over-estimation of palay production, to smuggling of rice in the South, up to the Rice and Corn Administration's (RCA) inadequate distribution system . . . all of these tend to show the absence of a clear understanding of the "real" nature of the rice problem.

The RICOB should not blame the "shortage" on the "unreliability" of the rice production estimate of the DANR. In its stead, attempts should be made to study and investigate the role played by aliens who have been eased out of the rice and corn trade since December, 1962. Reports have it that in some places in the Visayas, warehouses and mills owned by aliens which were closed, opened again in the same sites using the same building and facilities, under a new name and "new" management. It is probable that these aliens could have retained control of the enterprise through their common-law wives, in-laws, or by employing other dummies. If this be the case, then it will not be surprising if said aliens try to sow confusion and chaos in the industry, by the simple expedient of withholding their stock, thereby creating an artificial shortage which will ultimately lead to the rise in prices of said commodity. Their target will be to create the impression in the public mind that the nationalization move of our government is ineffective and unsound. The chances, therefore, of the law being repealed may be enhanced.

The financing problem of Filipinos who have taken over the rice and corn business from aliens is another important aspect that is relevant to and has a bearing on the existing rice situation. The reported inability of Filipino rice traders to absorb palay offered for sale during the peak harvest season,

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especially in Mindanao, because of the alleged lack of the necessary capital, may effectively reduce the amount of palay moving in the different commercial channels. Also, such a situation might tempt aliens to re-engage in the industry, since their expected profits may be much more than the risks involved.

The DANR should examine the possible effects of this year's comparatively low production of corn in relation to the possible increase in the consumption of rice. The livestock and poultry industry might be consuming more palay now per unit of animal or (poultry) as compared with previous years, because of inadequate supply of corn. It may also be possible that there has been an increase in the proportion of people eating rice. This could be the effect of a significant shifting of people consuming corn to that of rice. In time of inadequate supply or production, it is generally much easier for people to shift from corn to rice than vice-versa.

The RCA, confident of its increased share of the total commercial stock in the country, has repeatedly stated that it is capable of meeting the needs of the people through the lean months of July to September. Their main problem of transporting rice to deficit areas can be solved adequately by the projected use of Philippine Army trucks. However, in order to minimize distribution costs, the RCA must determine the surplus-producing areas (or provinces or regions) as well as the deficit-producing ones, so that their stock can be strategically located in various critical areas. The proper amount of stock to maintain in each area must also be determined, in order to effectively reduce transportation costs. The effected savings can then be used for increasing the amount intended for the procurement of additional stock.

In a period when production barely meets requirement (or when supply barely exceeds requirement), actual shortages will occur in small "pockets" or areas throughout the country due to inadequate transportation facilities and hence an inefficient distribution system. Also, the manipulation of stocks with a

view to creating artificial shortages, can easily be effected. Thus, the government must not only hold the necessary "buffer stock", 5 per cent of the national requirement, to meet unexpected calamities, but also, a significant proportion of the total commercial stocks in the country. Past experience has shown that the government must have in its possession at any period of the year no less than 20 per cent of the total commercial stocks in the country, in order to check the unnecessary rise in price of this vital commodity.

The Inter-Agency Committee on Rice and Corn Production and Consumption

In order to understand fully the rice situation existing in the country today, a review of the methods and procedures being used by the official government body charged with this national undertaking is necessary. The Inter-Agency Committee on Rice and Corn Production and Consumption was charged with "the responsibility of reviewing periodically the rice and corn situation in the Philippines in order that only one set of official figures will be adopted by all echelons in the government, thus completely eliminating the problems of conflicting statistics related to these two basic cereals."

The National Consumption Requirement (1962-1963)

The Inter-Agency Committee in its 5 April 1963 report, estimated the total national consumption requirement to be as follows:

	<i>Sacks of 56 kilos Clean Rice</i>	<i>Sacks of 44 kilos Palay</i>
Total National Consumptions Requirement	<u>47,105,100</u>	<u>92,363,000</u>
Annual Food Requirement	42,259,400	82,861,600
Total Allowances for Poultry and Livestock Feeds, Seeds, etc.	4,845,700	9,501,400

Of the total allowances, 2,697,400 sacks of rice were for animal and poultry feeds, commercial use and other purposes (computed at 6 per cent of the total consumption requirement

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except seeds), 674,100 sacks of rice for waste (at 1.45 per cent of total production), and 1,474,720 sacks (rice equivalent) for seeds (at 0.9 sack of 44 kilos palay per hectare converted at the rate of 51 per cent recovery by volume).

The total national food requirement corresponds to the annual consumption needs of 22,834,900 individuals which is 76.8 per cent¹ of the population, 29,733,000 as of January 1, 1963.² The total rice-eating population was further broken down into males (10 years old or over), 7,633,700; females (10 years old or over), 7,663,400; and children (below 10 years), 7,537,800, with an annual per capita rice consumption 2.299, 2.105 and 1.138 sacks, respectively.

The Rice Supply Situation (1962 - 1963)

The three basic sources of the supply of rice for the year which were considered by the Inter-Agency Committee, are: (a) reported commercial stock at the start of the period (July 1, 1963) amounting to 5,615,900 sacks of rice (or 11,011,600 sacks of palay equivalent); (b) production forecast for the whole year, 46,488,500 sacks of rice equivalent (or 91,154,000 sacks of palay); and (c) importation which was zero for this year. The total rice supply for the year, therefore, amounted to 52,104,400 sacks of rice (or 102,165,500 sacks of palay), which is 4,999,300 sacks of rice (9,802,500 sacks of palay) more than the estimated total requirement of 47,105,100 sacks rice (92,363,000 sacks palay). This apparent surplus at the end of the year (June 30, 1963) is only around 600,000 sacks short of the 5,615,900 sacks of rice reported on commercial channels at the beginning of the year (or on July 1, 1962).

¹ Estimated proportion of the rice-eating population based on PSSH 1958 survey results.

² Official population estimate of the Inter-Agency on Demography. January 1st was selected as the reference point of the population estimate because this is the mid-year of the crop year 1963, that is, beginning July 1, 1962 up to June 30, 1963.

It must be noted here that the production figure used in this regard is not the final production figure for the year, but a **forecast**¹ of the probable production for the whole year as of a certain date (February 1, 1963). As the crop year nears its end, the production forecast tends to approach (and may merge) with the estimate of the actual production.²

The reported commercial stock as of July 1, 1962 was only partial in coverage because the stock survey of the AED does not cover the whole population of palay-stock holding individuals and/or entities. Small wholesalers and large and small retailers were often missed in the report. The total palay stock on commercial channels, therefore, can be more but not less than the reported commercial stock as used by the Inter-Agency Committee. This unreported stock may range from 5 per cent to 10 per cent or higher.

An Appraisal of the Inter-Agency Report

On Farm Household Stocks

One basic weakness of the Inter-Agency report is that it did not consider the household stocks in the determination of the total rice supply in the country for the whole year. The committee, while fully aware of the significance and importance of the household stocks, could not consider them in the absence of available data on said stocks. As it is, the Inter-Agency report presumed that the total household stocks at the beginning of the year are being replaced with the same amount at the end of the year, thus, justifying its non-inclusion in the analysis of the total rice supply for the year.

¹ *Forecast* is "a statement of the likely magnitude of production on the basis of known facts on a given date, assuming weather conditions and damages from insects or other pests during the remainder of the growing season to be about the same as the average of the previous years when reported conditions on the given date was similar to the present reported condition."

² As of February 1, 1963, only 21 per cent of the palay crop remained unharvested.

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Is the foregoing assumption valid? Like the population of the country, the total number of households also increase every year. Assuming that the number of households having stocks at the beginning of the year is the same as at the end of said year (although I strongly believe that it is not), will their average holding of stocks be the same for the two periods? In a period of production sufficiency this condition may be true, because the household, especially the farm households, will only hold for a certain amount on the basis of past experience. But when production barely meets requirement, then the farm households may store only whatever amount is left of the harvest after meeting all of their commitments.

An appraisal of the rice supply situation during the first quarter of the current crop-year will give an indication of the total amount of household stocks at the start of the year. In spite of the typhoon and the attendant floods which hit Northern Luzon last July, the country did not suffer any shortage of rice during the lean months from July to September. Therefore, it can be presumed that the total rice supply during the period was able to meet the requirements of the country. In fact, as of October 1st, there were still 5,996,800 sacks of palay on commercial channels, signifying a drop of only 5,014,800 sacks from the July 1st stock of 11,011,600 sacks. From the foregoing facts, it can be deduced that the amount represented by the decrease in stock position, plus the amount that has been harvested during the quarter and the unreported household stocks on farms on July 1st, were able to meet the country's requirement during that quarter.

If the sum of the crop in stock position amounting to 5,014,800 sacks and the production for the quarter which was estimated at 11,202,830 sacks (12.29 per cent of the expected total production for the year) were subtracted from the palay requirement for the quarter, 23,090,750 sacks (1/4 of the total national consumption requirement), the difference of around 6,874,120 sacks will, then, be represented by the total household stocks at the beginning of the crop-year. This is still a very conservative estimate of the total household stocks, because in the analysis, it was presumed that at the end of the

quarter all of the household stocks were fully consumed. It is probable that the households may still possess a significant proportion of their stock at the end of the period. Also, it must be borne in mind that due to the natural calamities last July, the distribution of the monthly harvest of the total production was disrupted. Because of the destruction of the remaining second crop lowland about to be harvested in July the proportion of the palay production harvested during the quarter may be much less than the normal 12.29 per cent.

On Total Allowances:

Allowances for seeds. According to the August 1st forecast of the AED, most of the areas damaged by typhoon "Kate" last July were the "newly transplanted fields and seedlings about to be transplanted." For Central Luzon alone (with the exception of Pangasinan), the damage seedlings (on seed-beds) have been estimated at around 20,200 sacks of palay equivalent. These damage seedlings and the newly transplanted ones have been subsequently replaced, since farmers in these areas were still able to replace their fields in time for the regular first crop season (lowland). These replacements for the damaged seedlings were not included in the allowance for seeds considered by the Inter-Agency Committee.¹ Also, the equivalent amount of seeds used in the newly transplanted fields covered by sand, particularly in Pampanga, Bulacan and Bataan, which were not replanted were automatically excluded because they no longer form a part of the estimated harvest area for the current year. It is apparent that the total allowance for seeds this year is much lower than the actual amount used in this regard.

Allowance for feeds, commercial uses, etc. - It is doubtful whether the requirement for livestock and poultry feeds,

¹ 0.9 sacks of palay to every hectare of the estimated harvest area for the year.

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commercial uses, etc., will remain as a constant proportion of the total national consumption requirement of the country throughout the years. It is highly probable that the 6 per cent (of national consumption requirement except seeds) in 1958 (based on the PSSH 1958 survey) could have changed significantly after a period of 5 years. This condition may be true for livestock and poultry feeds, only if the rate of growth of the livestock and poultry industry will be the same as that of the human population. The allowances for commercial uses will also depend on a number of factors aside from the rate of expansion of the population.

On the Rice Milling Recovery Rate

It is significant to note that the 51 per cent milling recovery rate by volume or 64.91 per cent by weight used by the Inter-Agency Committee in converting the total palay production to its rice equivalent, was still based on the AED 1955 survey results. The majority of the members of the Inter-Agency Committee believed that the present milling recovery rate may be much higher than this figure, considering that the number of disk-cono mills in the country have increased and their corresponding milling efficiencies raised significantly over the last 8 years. However, the Committee was again constrained to change said percentage in the absence of an accurate, objective, and up-to-date estimate.

It is understandable that the committee should be very particular about the accuracy and reliability of the statistics used. However, the 51 per cent milling recovery rate of 1955 when applied to succeeding years will no longer be as accurate and reliable. Much depends on the various assumptions made. One such assumption is that the proportion of palay being milled by various types or methods and their corresponding efficiencies will remain the same throughout the years.

If the present milling recovery rate (by volume) is one per cent higher than 51, the Inter-Agency Committee would have caused the disappearance of around 912 thousand sacks

of clean rice or 1,753 thousand sacks of palay equivalent (from the production side alone) into thin air. If the difference will be two or three per cent, then one can readily see its significant impact on the current picture of the present rice situation.

On Sampling and Non-sampling Errors

Whenever doubts are cast on the estimated surplus, the general tendency is to offer the probable error of the estimated rice production as an all around safety valve. It is always easier (and quicker) to point out that the error in the analysis of the rice supply situation may have been a contribution of the error in the production estimate. This should not be the case. It is equally probable that the consumption requirement side will be in error by as much as that of the estimated production. In the preceding sections, errors which were likely to have arisen from the determination of total allowances and the use of the present rice milling recovery rate have been extensively discussed. These errors, however, are relatively small as compared to probable errors arising from the determination of food consumption requirements.

There are two variables involved in the determination of the total food consumption requirement, namely, the total human population and the per capita consumption requirement. The total population is only a projection based on the result of the 1960 Census of Population. As such, it can be expected that such a projection may not be the true population figure for the reference date. But, like the production figure, such an estimate suffices for the needs and requirements of government and planners. The same condition is true as regards the per capita requirements for the different age and sex groups. Since these estimates were based on a sample survey (PSSH 1958 survey results), they also have their respective measures of reliability.

By and large, these errors (sampling and non-sampling) need not alarm policy-makers. These are inherent in all statis-

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tics and statistical series; regardless of whether they are mere estimates or are based on a complete census. These errors cannot be totally eliminated—they can only be minimized. This is the most important consideration, because by minimizing such errors, one reduces the risk involved in making decisions. The probability of one's decision being wrong will be further reduced.

Some Basic Points to Consider in Making Policy Decisions

Risk of Decision: Probability of Being Wrong

In every decision, there is always a certain degree of risk involved. If one crosses a busy intersection, say Quezon Boulevard, there is the probability that one will meet an accident. An insurance company insuring an individual who may (in all probability) die any moment after receiving his policy faces the same risk. But such "probables" will not deter the individual in crossing the busy intersection nor the insurance company in issuing a policy. These are the "risks" involved in making decision which any individual must face.

Suppose our government policy-makers accept the Inter-Agency report and on the basis of which decided not to import rice, what will be the risks involved in making such a decision? What will be the total loss to the government if the decision happens to be wrong? Will the overall effect of such action disrupt the economy of the nation? If so, to what extent?

The probable error (or coefficient of variation) of the estimated national palay production is around 3.4 per cent, thus, the confidence interval (at 95 per cent probability level or two standard errors) will be from 84,955,600 to 97,352,400 sacks of palay.¹ If the lower limit (84,955,600) happens to be

¹ This confidence interval simply means that if repeated sampling were made on the same population, using the same design and number of sample units, 19 out every 20 such intervals, in the long run, will contain the true value.

the true production figure, then the expected surplus at the end of the year will only amount to 2,395,100 sacks of palay instead of the estimated amount of 9,802,500 sacks. Will this be sufficient to supplement the expected harvest during the lean months and the probable household stocks at the beginning of the next crop year? But, suppose the upper limit, 97,352,400, is the true production figure, will the additional 6,198,400 sacks to the estimated surplus of around 9,802,500 at the end of the year force down prices to such an extent that producers or farmers will be unable to break even with their production costs?

Before handing out the decision of no importation, policy-makers should first take cognizance of and assess the availability of rice substitutes (and the extent to which people will use them), and second, the effectivity and sufficiency of the price stabilization machinery of the government. These two basic considerations are relevant to, and interlaced with, the rice problem.

If the lower confidence limit is the true production figure, the question as to whether the supply of rice substitutes, such as corn and rootcrops, will be sufficient to cover the expected shortage in supply during the lean months will have to be considered. Our national discipline as a people will determine the success or failure of the economic policies of the government. Can the government succeed in controlling the unnecessary rise in prices, thereby protecting the welfare of the poor and lowly consumers?

Suppose the upper confidence limit is true, can the government be in a position to buy the surplus from the market, thus stabilizing prices? Will the government be ready to initiate a price support program for such commodity? If the government can absorb the glut from the market, and be able to subsidize the industry, does it possess the necessary machinery to extend such benefits direct to the majority of the common farmers?

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Of course, as was pointed out earlier, there is still the possibility that the estimate of the national consumption requirement will be in error by as much as (if not more than) that of production (or total supply). In such case, the errors of the two estimates may cancel each other. But in any case, the government must be ready to face the "risks" attendant to every policy decision. The possibility of the decision being wrong is ever present and cannot be ignored. The government must be ready to face it. A set of alternative solutions (or actions) must and should be an integral part of each and every action or decision to be made.

July to September: The Lean Months

In order to ensure sufficiency in production during the period from July to September, the national production for the year must be raised by at least 106 per cent over and above the current production. This situation appears next to impossible. Production sufficiency for these months, therefore, cannot be realized for a long time yet, and perhaps, may not all be practical and logical to strive for. So that even if the country has already attained production sufficiency (considering the whole year's period), it is still necessary to determine whether the probable stocks in households and in commercial channels is sufficient to supplement the harvest during the lean months. The question of how much of the expected surplus to retain at the end of the year will have to be resolved during the coming years when over-production may justify exportation.

This year (as in 1961) when the expected commercial stock at the end of the year will be very much below the national requirement for the first quarter of the incoming crop-year, the role of the household stocks cannot be overlooked or ignored. Without the household stocks, there is a definite need to import rice in order to supplement the supply for the period. But how much do we know about the nature of those stocks? We know for a fact that it is a general practice among rice farmers to reserve part of the harvest for the consumption needs of the household up to the next harvesting season. But what propor-

tion of farmers are doing this? Does the amount of stock depend on the production performance of the farm? Will they part with said stock if farm prices of palay become unusually high during the period?

With regards to the stock in commercial channels, what will be the "ideal" amount to maintain or preserve during this period, in order to maintain the normal behavior of prices of this commodity? How much of those stocks should be maintained in the different parts of the country in order to avoid shortages in small "pockets" or areas? How long will it take to effect the transfer of surplus stocks from one area to another area where said stock is greatly needed? How much time is needed before the stocks of the rice-millers (and wholesalers) reach the final consumers? And so many more questions which need to be answered first before handing out any final decision regarding the matter.

A prominent agricultural economist advanced the view that it may be necessary to study the supply-requirement situation on a monthly basis (at least during this period). He reasoned out that the computed total supply for the quarter (or for the year) is not evenly distributed throughout the period, thus, there will be months when supply will not be adequate to meet the requirements. And deficits in the early months cannot be covered up by surpluses from the succeeding months. Surpluses are cumulative, but not the deficits.

The foregoing considerations bring to the fore the apparent need for a detailed and extensive analysis of the supply and requirement picture, not only from the point of view of the whole crop-year but also, of specific periods within the same year. The quarterly approach can be a very good starting point. It may also be necessary to determine what proportion of the requirements for the quarter should be available as stocks at the beginning of said quarter, in order to offset the effect of natural calamities, such as typhoons and floods, and unusual circumstances, such as delayed harvesting, which might occur during the period. The need for maintaining a "buffer stock"

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which can be moved to afflicted areas within the shortest possible time is, therefore, imperative. This is complementary and supplementary to the amount of stock in commercial channels which the government must possess at any given time for price stabilization purposes.

Concluding Remarks

By and large, statistics alone cannot hope to furnish all the solutions to this vital problem or any problem for that matter. In fact, statistics must and should be taken and used as basic tools for the economists, administrators, and policy-makers. It will be up to the economists to make the necessary extensive studies and analyses along such problem-situations so that administrators (and/or policy-makers) may be able to determine the kind and type of statistics that they will need. Policy-makers should take cognizance of the vital role being played by reliable and timely statistics, not only on rice (and on agriculture in general), but on all sectors of the economy. It should be borne in mind that while conflicting statistics may cause chaos and confusion among policy-makers, wrong or inaccurate statistics on the other hand, will certainly wreak havoc on the national economy.

Statistics must cease to be the scapegoat of administrators and policy-makers. Like any other tool, it is intended to help build and not to destroy. It has to be understood and its basic concepts, assumptions and limitations must be defined clearly and explained fully. And lastly, it must be recognized as a profession which must only be manned by competent and technically-trained individuals.