MANUAL ON TECHNIQUES AND PROCEDURES FOR VALIDATION OF COMMERCIAL, INDUSTRIAL AND OTHER CROPS STATISTICS

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DATA VALIDATION OF COMMERCIAL, INDUSTRIAL & OTHER CROPS

I. INTRODUCTION

The Bureau of Agricultural Statistics serves as the official data bank for agriculture. Over the years, it has generated data of about 200 commodities in 78 provinces and 16 regions of the country.

With the volume of data handled, and data sets available from several sources, a kit of tools on data review and validation process is necessary. The growing needs of data users put pressure to the Bureau to come up with accurate and timely statistics. Much more, that some agencies also generate similar data sets for their own purpose. Needless to say that these data are being used as checks data. At times, these differ from the releases of the Bureau and create some doubts.

High quality data yields confidence to both the data producer and the users. Given an accurate and reliable data, the user is given an assurance of the true crop situations. Expectedly, the result of the plans and decisions made out of it will turn out to be above board with high confidence.

This manual hopes to come up with standard data review and validation procedures to be adopted at all levels. This also aims to provide updated parameters to be used as a guide.

1.1 Rationale

Whether the data has been generated through probability or non-probability sampling, it is essential for the survey result to undergo data review and validation. The process makes sure that the result is consistent, accurate and acceptable in the statistical community or in the industry. The most critical are the comments of these groups which also maintain information of the industry.

To some extent and for valid reasons, this involves adjustment of the levels of the data generated. Especially, if said level is found not to conform to the trend of the established existing data series. Although, if sufficient financial support allows, conducting either post enumeration survey, area measurement and crop cutting experiments could have been better options.

Errors may arise at different stages in data generation. This could start even from the conceptualization (sampling error) and survey implementation (non-sampling error). The quality of the survey frame and the selection of the sampling design may also result in sampling error.

In the data collection stage, error could be committed either by the respondent or the interviewer. On the part of the respondent, errors could be from the misleading to intentional wrong information given, being reluctant or the refusal to be interviewed, memory biases and misunderstanding the questions asked. The interviewer, on the other hand, may commit errors by asking leading questions, providing answers, rephrasing or wrong translation of the question to mean differently than intended. This may also include omitting some questions or entering the responses in the wrong answer grid or the entries differ from the response. Above all, errors maybe due to the dishonesty of either or both the interviewer and the respondent.

Moreover, failure to interview the sample forms part of the errors at the data collection stage. These failures include either due to its location, availability of the sample given the fieldwork schedule, availability of the transportation as well as the peace and order situation of the place.

On the processing stage, the errors may range from an illegible handwriting, poor editing, use of wrong codes for coded responses and simply errors on encoding.

Knowing where the errors may be committed, reviewing the entries in the questionnaire before leaving the interviewee reduces the error when they are being processed. Even then, data review and validation of the survey result still needs to be done if only to attain an accurate, reliable and to be consistent to the established internal data series being maintained.

2.1 Variable Parameters used in Data Review

Information/Data	Source
1. Planting density, area, Production, bearing trees And yield, crop calendar	Barangay Screening Survey (BSS) Bureau of Plant Industry (BPI) Philippine Seed Board National Tobacco Administration (NTA) Philippine Coconut Authority (PCA) Sugar Regulatory Administration (SRA) Fiber Industry Development Authority (FIDA) Cotton Development Authority (CODA) Census on Agriculture and Fisheries (CAF)/NSO Private Growers Agri-business Cooperatives NGOs (IPB) Institute of Plant Breeding (see annexes)
2. Foreign trade statistics	BAS, NSO, Plant Quarantine (BPI) NFA, BAI, CB
3. Prices: a. fertilizer, pesticides b. farmgate, wholesale, retail	Agricultural supply traders BAS
4. All relevant data report from large Growers, crops associations, Cooperatives	NGO, private growers, agri-businessmen
5. Per capita consumption Industrial Consumption	FNRI, NFA, BAS LGUs
6. Weather conditions and damage report due to natural and man made calamities (i.e. typhoons, floods, drought)	PAGASA, MAO, Farmers, LGUs, DA, BAS
7. Government and private programs and policies affecting crop production (i.e. seed dispersal program, subsidies)	DA, NGO, LGUs
9. Trading and Milling Patterns of Selected Commodity	Bas, (trading matrix of selected commodities) NFA

3.3 Methodology

Through the years, the data generation for other crops was done through the non-probability sampling. In the past four years, the financial support of other agencies under different programs allowed the Bureau to generate production data using probability-sampling design. With so many agricultural crops to cover, improvement on the accuracy of data focused only on the major and priority crops in major producing provinces.

With funding support from the projects of other agencies, attempts have been done to explore generation of more reliable data through statistically sound methodology at least cost. This includes Production Survey under the Agrikulturang MAKAMASA, Key Commercial Crops Programmed – Bureau of Agricultural Research (KCCDP-BAR), High Value Commercial Crops – National Agriculture and Fishery Council (HVCC-NAFC) and Statistical Research and Training Center (SRTC). The Philippines Statistical Association, on the other hand, spearheaded in the piloting conduct of Integrated Agricultural Survey.

In 1996 to 1999, Production Survey was conducted under the "Strengthening of Benchmark Data for Priority Crops with the Key Commercial Crops Development Program" (KCCDP). The Bureau of Agricultural Research (BAR)funded this activity. The survey covers eight crops such as papaya, pineapple, rambutan, ampalaya, asparagus, eggplant, stringbeans and watermelon. This survey was conducted in twenty provinces. In 1999, "Production Survey of Selected High Value Commercial Crops" with funding from the National Agriculture and Fishery Council (NAFC) covers a total of twelve crops. The permanent crops include banana, coffee, durian, jackfruit, lanzones, pili, pineapple, and rubber. While the temporary crops are camote cassava, garlic and mongo. A total of 45 provinces were involved.

Also in the same year, under the Agrikulturang Makamasa, "High Value Commercial Crops Production Survey" was conducted for the 6 crops in its June Round. Another 12 crops were conducted for the November Round. The June Round covered the crops raised during dry months like tomato, garlic, mango, mongo, onion and tobacco. The crops with no pronounced seasonality were covered in the November Round. The 12 crops include cabbage, camote, coffee, peanut, calamansi, eggplant, banana, cacao, abaca, pineapple, rubber and cassava. The June and November Rounds covered 33 and 57 provinces, respectively.

In these activities, three stage sampling were employed. Said activities focused to establish a benchmark data and improve the accuracy of the generated data for major and priority crops. Selections of the provinces were based on the cumulative contribution of about 70 to 98 percent share to the average 1993 to 1997 total production. The sampling design employed the 5X5X5 or the 3 stage sampling with the province as the domain. The five top producing municipalities were purposively selected as the primary sampling units (psu) based on the crop area or number of bearing trees. Selection of these municipalities were validated in consultation with the Provincial Agricultural Officers

(PAO). In each selected municipalities, the barangays were assessed based on the available BSS result for some provinces. Otherwise, key informants like the PAO, Municipal Agricultural Officers, Agricultural Technicians and other knowledgeable persons in the locality like traders and farmer leaders were consulted to determine the percentage contribution of the barangays. The top five producing barangays represented the secondary sampling units (ssu).

Farmers producing the focused crops were listed through the key informants approach. The listing covers the farmers in the barangay who planted and harvested the crop during the reference period regardless whether they reside within or outside the barangay. Provided, however, if they meet the set minimum number of bearing trees or area requirement. Five samples were then drawn proportional to size to ensure a good representative of the barangay. These farmers represent the ultimate sampling units (usu).

The above-mentioned data collection activities were great improvements to the current non-probability sampling. But still, these have some limitations. Having limited established frame for agricultural crops, ranking and contributions of the municipalities and barangays were so subjective. Given no budget to very limited budget, listing of farmers only allows covering the sample barangays for certain commodities through key informant's approach.

Moreover, through the funding of the Statistical Research and Training Center (SRTC), the "Developing Methodology to Improve Data Collection System for High Value Crops" was conducted in Isabela. The selection of Isabela was based on its availability of barangay information on crop area and production from its 1997 BSS result. The province, likewise, is identified as one of the top producing provinces of the 4 High Value Crops such as eggplant, mongo, peanut and tobacco.

Based also the 1997 BSS results, the top producing municipalities as its primary sampling units (psu) were selected. While the secondary sampling units (ssu) are the 20 sample barangays proportionately allocated to the municipalities, for each crop. In each barangay, a list was generated for each crop through the key informants approach. Furthermore, for each crop, six farmers in each barangay were drawn using systematic sampling with a random start. These farmers represent the ultimate sampling units (usu).

Another activity conducted in 1999 was the "Production Monitoring for Other Crops" with the funds made available by the NAFC. This monitoring system was piloted in only 3 provinces namely: Pangasinan, Iloilo and Bukidnon. The 20 major and 20 priority crops were covered. Information on the percent changes in area, production and number of harvested trees as well as the reasons for changes were gathered from 5 key informants in each municipality. Since this covers all the municipalities, the fieldstaff find the summarization too tedious.

Aside from the government assistance to address the accuracy problem, the Philippine Statistical Association (PSA) assisted to conduct Integrated Agricultural Survey. This was piloted in major vegetable producing provinces like Benguet, Nueva Vizcaya and Misamis Oriental. The activity was conducted in 1995 using probability-sampling scheme. The scheme was found to be too expensive.

The attempt for the improvement on data collection with the PSA continued. In 1996, another system was tried in Cavite. Heavy participation with the MAOs in all municipalities was expected. All the MAOs were trained to conduct this activity. Since the MAOs need travel allowances for their quarterly reports, cooperations of the mayors were required. Unfortunately, only some mayors were cooperative and appreciated this activity. Inspite of informing them the importance of agricultural statistics in their planning and development, the project staff failed to convince them.

With no frame available for all agricultural crops, conducting production survey for all crops using probability sampling becomes very expensive. Muchmore, no sufficient funds are available for the activity. Likewise, the generated data in the above developmental activities resulted in different levels. Thus, data review and validation plays a major role and becomes more complicated and calls for close attention.

There are about three popular approaches in assessing the consistencies with the established data series maintained by the Bureau and those generated from outside sources. These are the time series analysis, the supply-utilization accounts and consultation with industry experts.

3.3.1 Common Analytical Tools

A. Time Series Analysis Approach

Time series is a set of observations at different time periods concerning economic activity in terms of figures. The figures are given in order of time. Its four elements are trend, cyclical fluctuations, seasonal variations and irregular variations. The data validation process employs trends and seasonal variations among the four.

The long-term movement of a time series is the trend. The seasonal variation is a periodic series, which repeats itself regularly and occurs, in a fixed period. The variation usually occurs yearly. These variations are due mainly to the same causes. In contrast, the cyclical fluctuations differ in length. It occurs after longer period as short as 2.5 years or as long as 8 years.

Trend lines express the different modes of growth. Of the various forms, frequently used is the simple linear trend line. There are several ways of fitting a straight line. These are freehand method, method of semi averages, method of moving averages

and the method of least squares. Although, the first three methods serve as the preliminaries to develop the method of least squares.

Freehand method is the simplest in finding a trend line given a set of time series data. This helps in giving a rough idea whether a straight line or other curve should be fitted prior to using a more refined method. This is done by plotting the time series on a graph and fit a straight-line to the plotted points. The straight line shows the trend.

The method of semi averages is a crude and simple way of fitting a trend line. The time series is divided into two parts. The average in each part is fitted to a trend line. When there are an odd number of years, either the middle year maybe left out or unevenly split the series. So that the trend will not be thrown line off, outlier or extreme values should be omitted.

The method of moving averages is used to smooth out fluctuations. This applies to data that show regular periodic fluctuations, the moving average will have its canceling-out effect. Moving totals are computed to derive the moving averages. These moving averages are then plotted on the graph and fall on a straight line. The straight line is the trend line we are seeking. Other methods will then be used to fit a trend line.

The most widely used method of fitting a straight line to a series is the method of least squares. This is a method to fit the computed trend line to the observed data so that the sums of the squares of the deviations are at a minimum.

In general, the survey results maybe accepted if it follows the trend or seasonal pattern of the existing data series. The data set that follows the general pattern of change in the series maybe considered more accurate than the other set.

For example : cashew production, area and bearing trees data from 1990 to 1998 is a series data.

Table 1 : Cashew

	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
Production	11,560	12,060	12,120	12,580	12,580	12,125	31,879	39,825	31,860
Area (ha)	4	5	7	7	6	5	12	20	20
Bearing Trees	340	400	595	595	510	425	2,125	2,655	2,2655

Production of cashew is consistently increasing from 990 to 1993. It suddenly dropped in 1994 and 1995. Again, the production picked up in 1996 and 1997 ten dropped again in 1998. Were there causes of the drop in 1994, 1995 and in 1998? Was it possible for the production to drop to as low as __% in 1995 compare to 1993 level? Is so, then is it reasonable to accept the drop in production?

Area planted to cashew was generally increasing since 1990 up to 1998 except in 1994 and 1995. What happened to area in 1994 and 1995? Was it washed away by floods to cause the drop in area? Is it possible for the area planted to suddenly increase

from 7 hectare to 70 hectare in 1997 and 1998? Anyway the area are small figures. However, it important to rationalize the increase or decreases in the series data.

The same is true to the number of bearing trees. Those trees were suddenly last in 1994 and 1995. Remember that cashew is a perennial crop or permanent tree that as long as the crop is not washed away, burned of cut down away the plant is still there to exist and bear fruit at a given time and favorable weather condition

B Supply-utilization Account Analysis

The supply-utilization accounts (SUA) is a systematic presentation of a specific food or non-food commodity, which reflects the country's supply and disposition. This is similar and related to the Food Balance Sheets (FBS). The Bureau of Agricultural Statistics (BAS) prepares the former for selected food and non-food agricultural commodities in their primary forms. While the latter is done by the National Statistical Coordinating Board (NSCB). They cover all potentially edible commodities, processed or unprocessed. Both accounts present the estimates on production, trade and utilization.

The three major uses of SUA for food and non-food agricultural commodities are as follows:

a. It shows the balance between the supply and its disposition. It can provide the disparity between the available supply and the average requirements. The information can be used in policy decisions whether to import or the need for food aid.
b. It helps determine the supply of food nutrient equivalents in an average diet. Specifically, it can be used to determine which food and how much supply is available for consumption in terms of calories, protein and fats.
c. It can be used as a device to identify, which set of statistics is deficient or inaccurate. More often, it identifies the uncollected items.

Table 2 : Supply and Utilization Elements for Food and Non-Food Commodities

SUPPLY	UTILIZATION
1. Beginning stock of unprocessed Food commodity	1. Export of unprocessed food commodity
2. Production of unprocessed Food commodity	2. Ending stock of unprocessed food commodity
3. Importation of unprocessed Food commodity	3. Domestic utilization of unprocessed food commodity 3.1 Seeds 3.2 Feeds 3.3 Processed for food and non-food 3.4 Waste 3.5 Supply available for food

Table 3 : Supply and Utilization Elements for Non-food Commodities

SUPPLY	UTILIZATION
1. Beginning stock of unprocessed non-food commodity	1. Export of processed non-food commodity
2. Production of unprocessed non-food commodity	2. Ending stock of unprocessed non-food commodity
3. Importation of unprocessed non-food commodity	3. Domestic utilization of unprocessed non-food commodity 3.1 Seeds 3.2 Waste

General Estimation Procedures

Below are the formulas used to estimate the components of the supply-utilization account.

A. Food Commodities

1. ESTIMATION OF GROSS SUPPLY (GS)

   GS = Beginning stock + Production + Imports

2. ESTIMATION FOR NET SUPPLY DISPOSABLE (NSD)

   NSD = Gross Supply – (Export + Ending Stock)

3. ESTIMATION OF NET FOOD DISPOSABLE (NFD)

   NFD = NSD1 – (FD1 + SD1 + W1 + F1 + NF1)

4. ESTIMATION OF PER CAPITA CONSUMPTION (PCC)

$$\text{PCC (kg./yr.)} = \frac{\text{Total NFD}}{\text{Population}}$$

B. Non-Food Commodities

1. ESTIMATION OF TOTAL SUPPLY (TS)

   TS = Beginning stock + Production + Imports

2. ESTIMATION OF DOMESTIC USE (DU)

   DU = Total Supply – Exports

WHERE:

NFD1 = Net Food Disposable

NSD1 = Net Supply Disposable

FD1 = Quantity used for feeds

SD1 = Quantity used for seeds

W1 = Quantity lost/spoiled

F1 = Quantity processed for food use

NF1 = Quantity processed for non-food use

In the estimation of food and non-food commodities, values and ratios of some parameters have been specified and remain constant overtime. These have been based on the statistical and research studies done by the agencies involved in the generation of statistics on production and usage of agricultural products. While the net food disposable (NFD) is the residual. This is the remainder after all the items on utilization parameters have been accounted for. For more details on the values and ratios of parameters specified and held constant over time, refer to A Handbook on Supply and Utilization Accounts, 1995 prepared by the Bureau of Agricultural Statistics.

C. Delphi-User's Perspectives

Another approach to validate the survey results is through the presentation of said data to major users or industry experts. This is done after the estimates have been firmed up. Acceptability of the data can be drawn and at the same time to develop the accuracy of the estimates on a particular commodity. Interaction with data users and industry experts can increase response rates of commercial farms. This is also a venue to generate feedback on formatting the statistical reports.

These industry players are good source of validating the survey results as they have updated information on the different developments in their industry. Usually, they maintain relevant and historical data sets on economic situations, trends in both local and international trade, prices, and supply. They know fully well the production and prospects of the industry to which they belong. At times, they group according to commodity group. Thus, survey results of a certain commodity should be presented to the concerned industry players.

Table 4 : Peanut Supply and Utilization Accounts, Philippines, Calendar Years 1995-1998

ITEM	LEVEL (in MT)			
	1995	1996	1997	1998
SUPPLY				
Production	32,200	33,393	25,836	24,954
Imports	40,829	58,967	51,971	43,330
Gross Supply	73,029	92,460	77,807	68,284
UTILIZATION				
Exports	0	0	0	0
Seeds	191	115	106	99
Feeds & Waste	365	462	389	341
Net Food Disposable	37.361	85.411	71.866	63.064
Per Capita				
Kg./year	0.98	1.22	1.00	0.86
Grams/day	2.69	3.35	2.75	2.36
Total Utilization	73,029	92,460	77,807	68,284

Table 4 shows peanut supply and utilization accounts for calendar years 1995-1998. Imports were generally higher than production during the years covered. In 1998, imports comprised about 43% of gross supply. The derived per capita consumption ranged from 0.86 kilogram per year in 1996.

Total consumption is derived by multiplying per capita consumption with total population.

Illustration:

Per Capita Consumption (1998)	× 0.86
Total population (1998)	73,147,776
Total Consumption	62,907,087.36

Apparently in 1998, with total consumption level at 62,907 metric tons and production level at 24,954 metric tons there is a deficit of 37,953 metric tons. However, since we have imported 43,330 metric tons in 1998, gross supply reached 68,284 metric tons, thus net food disposable derived was 63,064 metric tons.

Table 5 : Tobacco, Supply and Utilization Accounts, Philippines, Calendar Years 1995-1998

ITEM	LEVEL (in MT)			
	1995	1996	1997	1998
SUPPLY				
Production	63,706	64,871	65,092	71,090
Imports	26,110	14,557	23,859	18,712
Gross Supply	89,816	79,428	88,951	89,802
UTILIZATION				
Export	19,146	18,176	18,171	13,191
Waste	6,371	6,487	6,504	7,109
Domestic Use	64,299	54,765	64,270	69,502

Table 5 shows that in 1995, about 41 percent of the total tobacco supply were imported. Also, during this year domestic use was greater than production by about 593 metric tons as compared with the/succeeding years, 1996-1998 when production level were greater than domestic use. Apparently the surplus in production accounted for the decrease in the proportion of imports during 1996-1998.

3.3.2 Provincial Data review

A. Personnel Involved

A.1 Data Review Team

PASO – Review Team Leader
Point Person for Other Crops – Review Assistant
All Fieldstaff – Members

A.2 PASO Responsibilities

- The PASO shall preside over the provincial data review.
- He/She shall check that production/area harvested/number of bearing trees of all commodities grown in the province have been estimated where applicable.
- He/She shall review the levels, the zero, positive or negative change should be justified/explained
- Ensure that the provincial report is complete, acceptable and the figures are realistic.

Specific Procedure

1. Preparation of all required documents such as the following:

- Tabulated estimates for current reference period;
- Data Series;
- Reasons for Changes (Form 1a, 1b, 2a, 2b, 3a,3b);
- Damage Report;
- Data on production, area and yield from other sources;
- DASR Report;

2. Review/Assessment of current estimates for:

- **Erratic trend**

This shows the abrupt and irregular fluctuations in the series. Cross check the trends in production, area and number of bearing trees. The area planted should at least increase ahead of production. The gap in the number of months/years it has increased corresponds to the number of months/years from planting until it bears fruit.

Illustration:

Table 6 : Mango

Year	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Area Planted	500	500	575	639	703	1005	1010	1120	1180	1300	13500
Bearing Trees	56000	60161	62078	69829	77580	12532	132132	132132	150432	160257	68750
Bearing Trees	56000	60161	62078	69829	77580	83786	83786	89500	113120	122720	157720

Verify

Note: 157720 were correct (lag time from planting to fruiting)

With the substantial increase in area 1994, bearing treed could not possibly increase in the same year. Mango will yet bear fruit 5 to 7 years from planting. The 1994 plantings will yet be seen to bear fruit the earliest by 1999.

- **Extreme values**

  These are the outlier and are far to be within the range. Review the extreme values for computational errors. Refer to the range of the established level from other data sources or the existing data series. If outside the range in the series, review the data sets and refer back to the provinces. Yield per hectare for temporary crops and yield per tree for permanent crops provide a good indicator for accurate level of production

Table 7 : Coconut

Year	1994	1995	1996	1997
Production (kg)	154,928,545	155,778,234	162,446,574	510,134,468
Bearing Trees	16,419,029	15,611,452	15,611,452	17,940,037
Yield (kg)	9.44	9.98	10.41	28.44

Verify

The 1997 production substantially increased verify the data sources and computation. This might need field verification and check the reason for the high increase and to verify by/pinpoint the areas.

Note that the yield is out of range and has not been observed in the province.

Table 8 : Cassava

Year	1994	1995	1996	1997
Production (kg)	6,493,220	6,817,880	8,613,562	4,704,536
Area Harvested	3,896	3,934	3,934	3,974
Yield	1,666.70	1,733.06	2,189.52	1,183.83

Verify the figures and computation. Note that the area harvested in 1997 increased. The production dropped compared to 1996 and even to the 1994 levels.

- **Negative estimates**

Negative estimate shows decreasing trend compared to the preceding figure. Check the negative estimates of the April-June and October-December periods. This occurs when the semestral estimates are less than the January-March or July-September estimates. In reporting the semestral estimates, the first quarter period estimates for the said semester should be considered.

Illustration:

Table 9 : (Production (kg) of Rambutan

Year	1997	1998	1999
July – Sept.	10,750	10,00	9,650
Oct. – Sept.	0	965	(1,675)
July – Dec.	10,750	10,965	7,675

- Derived = July-Dec Less July Sept.

- Should be higher than July – Sept.

Table 10 : (Production (kg) of Camote

Year	1997	1998	1999
July – Sept.	3,747,144	1,376,086	3,346,878
Oct. – Sept.	0	2,183,701	(126,332)
July – Dec.	3,747,144	3,559,787	3,230,546

- Derived = July-Dec Less July Sept.

- Should be higher than July – Sept.

- **Zero change**

When the figure in the preceding reporting period is the same or maintained in the current reporting period, zero change occurs. When this happens, review how the figure was derived. If said figure is retained/maintained, explain or give reason.

Illustration:

Table 10 : Production (kgs)

Crop/Year	1997	1998	1999	% change	Reasons
Mabolo	14,080	14,080	14,080	NC	-----
Makopa	46,320	46,320	46,320	NC	-----

Verify

Table 11

Crop/Year	1997	1998	1999	% change	Reasons
Mabolo	14,080	14,080	14,080	NC	No additional bearings
Makopa	46,320	46,320	46,320	NC	Trees & no increase in yield

Table 10 : Production (kgs)

Crop/Year	1997	1998	1999	% change	Reasons
Cabbage	22,050	22,050	22,050	NC	-----
Eggplant	149,507	149,507	149,507	NC	-----

Verify

Table 11

Crop/Year	1997	1998	1999	% change	Reasons
Cabbage	22,050	22,050	22,050	NC	No additional area
Eggplant	149,507	149,507	149,507	NC	No additional area

- **No reported value**

Verify non-response for certain quarter/semester periods. In case of permanent crops, consider the seasonality of the crop. In no year that there have been no production in said quarter. Also consider the number of times a crop may bear fruit in a quarter/semester/year. Likewise, the number of months from flowering to fruiting stage or until the produce matures and becomes ready for harvest should also be considered. In the case of mango, consider the practice of fruit induction. Just the same, explain for no reported figure.

Table 12 : Papaya Production (kg)

Year	1997	1998	1999	% Change	Reasons
Jan-Mar	128,276	130,842	---		
April-June	383,545	394,697	407,846		
Jan-June	511,821	525,539			

verify

- **Appropriate distribution of estimates by variety for applicable crops**

For crops with different varieties (i.e. coffee, banana, mango, tobacco, etc.), corresponding levels of production for each variety should be reported. Especially when the estimates by variety in the data series have already been established. Estimates by

variety helps to determine its contribution to the overall variety. It also facilitates to identify the most or least grown variety in a province or region.

Table 13 : Tobacco Production

Crop/Year	1997	1998	1999
Tobacco	1,387,465	1,460,000	1,410,045
Native	----------	----------	----------
Others	----------	----------	----------
Vrginia	----------	----------	----------

The reported estimates in 1997, 1998 and 1999 were the total for all varieties of tabacco. Our format requires estimates for every variety and an accurate distribution of estimates to the varieties. Below is the corrected production report by variety.

Crop/Year	1997	1998	1999
Tobacco	1,387,465	1,460,000	1,410,045
Native	1,282,221	1,349,254	1,410,045
Others	105,244	110,746	0
Vrginia	0	0	0

- **Area harvested and bearing trees for each specific crop does not exceed the total area planted and total trees, respectively**

Review and make sure that the total area devoted to specific crop does not exceed the total agricultural area in the province. On the other hand, bearing trees should be less than the total number of trees at the provincial level. It seldom happens that the total bearing trees is equal to the total number of trees.

Below is a hypothetical case error of area harvested, which is greater than the area planted during the July-Dec.

Table 15

Area Harvested and Bearing trees

	Verify Area Planted (ha)	Correct Area planted (ha)
Coconut	158,870?	60,400
Abaca	38,000?	30,000
Banana	27,000?	27,700
All other Crops	15,000?	15,900

	Total trees	Verify Bearing	Correct Trees
Coconut	10,700,000	8,900,600	8,900,600
Abaca	17,100,000	19,200,000	17,100,000
Banana	12,960,000 12,975,025	12,975,025	12,960,000 or 12,975,025

Area planted for pechay for July-December was only 2.0 hectares while the reported area harvested was 2.25 hectares. This should not be the case. This is an error report. Second semester area harvested must be verified because it exceeded the second semester area planted which is 2.0 hectares only.

- **Conformity with prescribed product form**

The product form reported must conform to the prescribed form. (Refer to 2.2). These are likewise reported in kilograms. Although, some cut flowers are reported in bundles, pieces dozens, or tabo. If figures reported deviate from the prescribed form and unit of measure and unknown to data users, the figures for which it is intended will affect differently. Thus, it defeats the purpose.

3. Relate production estimates with other check data where applicable

- **Price trend**

In most cases, price reflects the supply situation of a commodity. Thus, price tends to be low during peak production period. Although, we should remember that part of the market supply have been sourced outside of our area of coverage.

- **Import/Export data**

In most instances, production estimates should be more than the export data. This rarely equals to the exports. Care should also be taken for supplies coming from outside sources whose exporter are based in a province. Production other than those within the province should not be accounted. Rather, they should be counted to the source or producing province.

- **All other relevant variables/parameters**

Unusual demand/supply of a commodity should not be attributed to increase/decrease in production in a province. These could be sourced from outside like smuggled commodities or imported commodities being brought in (i.e. sugar, garlic, onion) or from the hoarding activities of traders sourced from other provinces.

Sensitivity of a crop to changes in weather or to incidence of pests and diseases could attribute to production levels. Likewise, *trading and milling patterns* of crops are also good indicators of the fluctuation on production estimates.

Observe significant changes in levels of production, area and number of bearing trees in province/regions affected by *natural/manmade calamities*. Significant change should be explained.

When reviewing the series, compare the current estimate against the data of a comparable year in the past. Consider if the year is normal, year when El Nino or LaNina occur or year after the El Nino or La Nina. Effects on agriculture of the occurrence of El Nino and La Nina are observed in the succeeding years. The extent depends on the intensity, the sensitivity of a crop and geographical location and nature of a province.

At the regional level, compare the level of estimates with other provinces. Keep in mind the major producers/province of a certain crop. Check its standing among the provinces.

4. Check consistency of estimates and reasons for changes

At times, reasons for changes contradict to the trend. Such that, in spite of the increasing trend, the reason cited reflects for a decreasing trend. Trend and reason should be consistent with each other. Negative estimates should be accompanied by reasons that lead to a decreasing estimate. Conversely, positive estimates should be followed by reasons favorable to increasing estimates. The reasons should be strong enough to support the extent of change in the estimates.

Table 16 : Cowpea Production

1997	1998	1999	% Change	Reason
47,600	52,360	50,360	(3.82)	Favorable weather

Verify

Appropriate: poor weather during flowering stage

Examples to improve the reasons for changes.

POOR	BETTER
Due to typhoon	Due to typhoon Sedang Typhoon Sedang affected Leyte

Attacked by pests	Attacked by bunchy tops/damaged by rats Damaged by worms Damaged by aphids
Due to strong winds	Strong winds during flowering stage
Increase area	Newly opened areas
Bigger pods Cutting down of trees	Shift from planting tomato Bigger pods harvested due to sufficient water Cut down of senile/old trees Cut down of trees and replaced w/ mango

5. Check that the estimates of the annual/semestral total of area and number of trees should be:

- **Permanent crops** – pick up the highest area and harvested trees within the semester/year.

Table 17 : Coffee Area

	Verify			Correct		
	1997	**1998**	**1999**	**1997**	**1998**	**1999**
Coffee	331	357	357	313	247	247
Jan-June	183	110	110	183	110	110
July-Dec.	313	247	247	313	247	247

Table 18 : Calamansi Bearing Trees

	Verify			Correct		
	1997	**1998**	**1999**	**1997**	**1998**	**1999**
Calamansi	46,584	45,200	42,030	31,584	31,700	28,530
Jan-June	31,584	31,700	28,530	31,584	31,700	28,530
July-Dec.	15,000	13,500	13,500	15,000	13,500	13,500

Same area for the quarters in 3 barangays and another area for the quarter in another 5 barangays should be added. However, if the areas are the in every quarter, pick up the highest area and harvested trees within the quarters and semesters.

- **Temporary crops** – add the total area of the two quarters or semesters except for the multi-harvest crops (i.e. string beans, eggplant, squash, tobacco, etc). Said multi-harvest crops have been planted only ones but harvests continuous for a number of quarters. Such that:

Table 19 : Stringbeans (multi-harvest)

	Verify		Correct	
	Production (kg)	**Area** (Ha)	**Production** (kg)	**Area** (Ha)
July-Sept	3,000	2.50	3,000	2.50
Oct-Dec	27,000	2.50	27,000	2.50
July-Dec	30,000	5.00 ↙	30,000	2.50

Table 20 : Pechay (mono harvest)

	Verify		Correct	
	Production (kg)	**Area** (Ha)	**Production** (kg)	**Area** (Ha)
July-Sept	704,357	569,250	704,357	569,250
Oct-Dec	441,932	359,816	441,932	359,816
July-Dec	1,146,289	569,250 ↙	1,146,289	929,066 ↙

3.3.3 Regional Data Review

A. Personnel Involved

A.1 Data Review Team

RASO – Review Team Leader
RS/RPO – Review Assistants

All PASOs of the region – Members

A.2 RASO Responsibilities

The RASO shall:

- Monitor the completeness and timeliness of the provincial reports.
- Review extensively the reports submitted by the PASOs.
- Inform/clarify/feedback to the concerned PASO the changes/problematic figures observed in their submitted reports.
- Preside over the data review.
- Present the validated production/regional data during NDR
- Prepare the justification/reasons of estimates

Specific Procedures

1. Preparation of all the required review documents
   a. complete and validated provincial reports
   b. Data series
   c. Damage reports
   d. Data from other sources
   e. Ratios, trends and patterns of data set derived from C.O. validated estimates
   f. Industry outlook in the region
2. Presentation the tabulated provincial estimate on production, area and number of harvested trees of each crop. As done in the POC data review trend analysis shall also be done with the regional estimates.
3. Preparation of validated report for the region.

3.3.4 National Data Review

A.1 Review Team

- RASOs
- Technical support Unit heads of SOCOs
- Other Crops Section Staff
- CLPFSD Division Chief
- Representatives of Technical Divisions
- SOCO Chiefs

A.2 Responsibility

CIOC Responsibility

- Preparation of report forms, which consist, validated data series in soft and hard copy.
- Review the national level estimates
- Presentation of the validated national level estimates

- Prepare the reasons/justification of the national level estimates
- Maintain data files for other crops

SOCO Responsibility

- Remind ROCs/POCs on the submission of complete reports
- Assist the RASO s during the NDR at the CO
- Assist in the preparation of presentation of materials.
- Review the regional totals
- Review the submitted reports for its reasons/justification

B. Specific Procedures

- Presentation of regional estimates by the RASO
- Scrutiny of the regional reports
- Preparation the validated national level estimates

3.4 Finalization of Data

Finalization of data should be done immediately after the NDR and to be submitted not later than the next quarter. This is especially and particularly important for 4th quarter estimates when most estimates are forecast. In like manner, during the semestral reporting (July and January Rounds), final figure for the 1st quarter and 3rd quarter, if any, should also be submitted.

IV Future Direction

4.1 Short Term

- Updating Conversion Table
- Updating validation parameters

4.2 0Medium Term

- Crop Activity Calendar for all crops