**Suriname: FAO/IaDB Agricultural Policy Loan**

**Agricultural Services Study**

**Agricultural Statistics**

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**Introduction**

On request of the Government of Suriname, the Inter-American Development Bank is preparing a programmatic based loan to improve the competiveness of the agricultural sector in Suriname by enhancing the efficiency in the provision of agricultural services and supporting other policy instruments oriented towards promoting private farm investments.

In support of the design of this loan, the IaDB through its cooperative program with FAO/TCI, has requested the support of FAO to analyze, inter alia, agricultural information system in Suriname. The Statistical Technical Officer in collaboration with IaDB and other FAO staff will accomplish the following tasks:

* Assess the current data and information needs for agriculture and food security planning, management, monitoring and evaluation as well as the existing capacity of the National Agricultural System for meeting these needs.
* Support the discussion/ negotiation process between national agencies on integration of agriculture statistics within a national statistics development policy, and mechanisms for shared resources and work program.
* Produce a report with recommendations for the development of the national agricultural statistics system (including fishery statistics). The report will provide a description of the priority data requirements of users; capacity building requirements; the most appropriate methods and means of collecting data; the related organizational and institutional arrangements for data production and identify priority areas for technical assistance.

**Characteristics of the Agricultural Sector in Suriname as portrayed by the Agricultural Census**

The Fifth Suriname Census of Agriculture (VLT) was done in 2009 with reference year 2008 and it has captured fundamental structural statistics for the agricultural sector. Such data are indispensable in the process of realizing the full potential of the agricultural sector’s limited resource base and competitive markets as well in the way to guarantee food security for all Surinamese families. The information now available within the agricultural data management system will undoubtedly serve to guide the process of further research, policy formulation and action geared towards the sustainability of rural and agricultural livelihood systems. However, four years after the VLT was done no official results have been released. The information in this report comes from an FAO internal report.

One important aspect that the census highlighted was the small holdings

dominance of the agricultural landscape in Suriname. This signals the need for official recognition of the social and human development dimensions of development and the implications of development of the agricultural sector for poverty alleviation as well as food security and the sustainability of rural livelihoods.

**Current Situation of agriculture and fisheries statistics in Suriname**

The Division of Agricultural Statistics (DAS), part of the Planning Directorate of the Ministry of Agriculture, Animal Husbandry and Fisheries (MAAHF), is the principal data source for agricultural data in Suriname. Even the 2008/09 Agricultural Census was done by the DAS with assistance of the General Bureau of Statistics (GBS).

The DAS publishes every year a report that includes statistics on: crops areas and production; products farm prices; gross production value, number and production of livestock and poultry by type; export quantity and value of marine fishery and agricultural products; import quantity and value of agricultural products; crops areas and quantity by farm size (large and small) and by district (Nickerie and others); crop production by processing and destination; export quantity and value of rice by type and destination; area grown and quantity harvested and export by type of vegetables; average consumer price of agricultural products; area grown and quantity harvested, quantity exported and value exported of bananas and citruses; area grown, quantity harvested, value of production, quantity and value of imports of peanuts; area grown, quantity harvested and consumer prices of tubers by type; number, prices and import values of poultry and its products; production of animal feed by region and type; and production, value of production, import quantity and value, and consumption of milk.

Results from the last Agricultural census (2008/09) have not been published yet. The reason provided was that they are finishing the thematic reports and that all the results should be published together.

The only social farm household and farm infrastructure data is that collected in the Agricultural Census. The household survey and household budget survey done by the GBS do not cover rural areas. Currently there are results published for the 2008-2010 Household Survey and for the 2007-2008 Household Budget Survey.

All publications are available only in hard copies and on demand, those from DAS for free and those from the General Bureau of Statistics (GBS) by paying a fee.

**Agricultural and livestock surveys**

An agricultural survey is run quarterly for annual crops and annually for permanent and semi-permanent crops. These surveys collect basic data, area sown/planted, area harvested, production, yield, area lost split by 3 causes: bad seeds, plague or flood/drought. The survey form also includes fertilizer and pesticides used, however these variables are not collected because farmers do not know the answers.

In the survey they also collect livestock and poultry information: number of cattle, pigs, sheep, horses, birds and others, feed consumed by type of livestock and milk produced and purpose of production (Note: I had problems with the translation of the questionnaire, but it is more or less the variables indicated).

Even though it is called a survey, it is not a probabilistic survey. Extension officers visit the farms and on top of doing their extension work, they collect the survey data. It is assumed that every farm with annual crops in the coastal zone is visited 4 times a year and those farms with permanent or semi-permanent crops are visited once a year. It is rather doubtful that every farm is visited the number of times it is supposed to be visited, as extension officers have on average at least 350 farms each and they are not provided with transportation by the MAAHF, they have to provide their own. Since probably not every farm is visited and the survey is not probabilistic, it is not possible to statistically estimate the totals or survey errors.

Another area of concern in the data collection is the education level of the extension officers who in most cases only have primary schooling. It is necessary to have data collectors with at least high school education to have a more sophisticated system of data collection, by more sophisticated meaning a larger questionnaire, a probabilistic survey and using maps and electronic devises.

The survey data is collected on a paper form and entered in the computer system at the regional office, usually by Senior Extension Officers who also check it for consistency. Once in the system, the data is sent to the DAS where it is processed. The data processing consists of compiling it at the National and Regional levels and checking for consistency with previous years. Once the data is processed the report is compiled. The report consists mainly of tables and very little analysis and it is only published in hard copy.

**Farms geo-referencing**

The DAS has done a pilot in one district geo-referencing farms. The field work has been done but the data has not been processed due to lack of expertise in this area. Technical assistance and training in processing geo-referenced data is need.

**Agriculture**

Area cropped and agricultural production come mainly from the surveys. For the rice and banana sectors there is also information produced by each industry. Survey data and the data coming from industry for these two sectors is considered by DAS and the Director of Agriculture to be reliable but the data for other crops not so much so.

Import and export data of agricultural products is provided by customs and compiled in the DAS. Price data is collected by DAS in the main markets but the methodology is not very clear, especially how the different types of prices (producer, consumer, etc) are collected for vegetables and fruits other than bananas.

**Livestock**

Information on animal products is considered to be rather bad by the Director of Animal Production and Health. The main sources for livestock data are slaughter houses registration and the extension officers information. In this Department, very rightly so, they do not consider the extension officers information to be a survey.

Production information coming from slaughter houses registration for pigs is good as most production is registered. For cattle the information coming from those registries is not good as in this industry there is a large layer of middlemen. Data on poultry production is also very difficult to collect as, although most production is processed in the livestock market, there is also many small slaughter places scattered all over the country.

Milk data is from the milk processing plant that buys almost all the milk produced in the country and although there is some milk trade outside the plant, the amount is very small.

Extension officers collect farm livestock production data in the surveys. However, this data is not considered to be good as the education level of extension officers is rather low as mentioned previously.

**Fisheries**

Fisheries data is collected by two systems: a census of industrial vessels and a survey of all the other vessels.

Industrial vessels are registered and are obliged to report their landings to the Fisheries Department, but as there is not much reinforcement, they do not always report and when they do they usually underreport. This system has about 80 per cent coverage.

For all the other vessels, landings are collected using a survey. Data collectors go to port in the morning where they register all vessels, stratify them by zone and gear select at random 3 out of 10 from each stratum and make 8 observations for each. From the selected vessels they collect landings and effort measured by number of days out at sea fishing and number of people working in the vessel. This system has about 60 per cent coverage.

All the data collection and entry is done by hand. The data is entered in Excel spreadsheets and there is not a database set up. The survey design and data processing is done by the only statistician in the department with the assistance of another officer with some statistical knowledge. The statistician is looking to automate the system so it does not depend on one person, however this is difficult to do with the scarce resources in the department. Currently there is only 1 statistician who is training a second professional on the methodology and 3 data entry personnel. There are no observers who can go out on the vessels as observers to estimate the amount and type of catch and there are very few people who can scientifically identify species in the landing surveys.

No catch data is collected and hence discards cannot be estimated. There are no stocks assessments done since the 80s and there are no human resources or sufficient data to do them.

**Recommendations**

*Short term*

1. Proposed: Set up an Agricultural Information System (AIS) that can be accessed, at different levels, by all the departments in the MAAHF. This should include a central database where data in raw form can be entered and the relevant departments have access to process it and analyze it. The AIS should be also linked to a Agricultural Market Information System (AMIS).

Implementation: Contract a consultant to perform an Information Technology (IT) audit to assess the equipment, human resources, training and technical assistance needed to set up the AIS and AMIS, including MAAHF web page. Also, a database specialist will be needed to assist on the AIS database design and construction. These two consultants should overlap in the country as much as possible. Once the audit is done and database designed, proceed to implementation.

1. Proposed: Provide DAS staff training in and technical assistance with:
2. Processing and analyzing geo-referenced data
3. Surveys design and analysis
4. International Statistical Standards
5. Statistical packages like SPSS.

Implementation: Contract an international consultant for each of the technical assistance points, the same consultant could do points b and c. These consultants could be contracted through an FAO project that is currently in the process of developing the activities.

1. Proposed: Statistical reports, and processed and analyzed data should be published in the internet. These could be directly linked or be part of the AIS. Data should be standardized to international statistical standards. If possible the FAO CountrySTAT system should be implemented, FAO can provide technical assistance to set up this system.

Implementation: Initially statistical reports could be published on the MAAHF web page. Once the AIS is implemented it should have a public web page that includes compiled and analyzed data and reports for the general public. Also, the FAO CountrySTAT system could be implemented so data is publicly available in FAO’s web page, for this implementation a CountrySTAT consultant can assess the system and recommend a way forward.

1. Proposed: Update equipment of the fisheries statistics, provide technical assistance in systems automation, data collection, analysis, and stock assessments, increase and capacitate personnel.

Implementation: The IT audit and the database design should include fisheries and it should be proceeded according to their founding. A fisheries statistician consultant should provide technical assistance in data collection and catch and landings estimation.

*Long term*

1. Proposed: Replace the current surveys by probabilistic surveys. This will allow to estimate national totals and averages with their sample error estimates. The GBS might be able to assist DAS in the design of these kind of surveys. If this is done in not a very distant future the Agricultural Census can be used as sample frame, otherwise will be necessary to think of alternatives.

Implementation: Contract an Statistical Consultant to provide technical assistance with survey design and analysis and revise questionnaires. Also, capacitate data collectors as data collection will be a bit more difficult. Further in the future, might be good to implement electronic data capture devises for data collection. Also, capacitate extension officers as data collection will be a bit more difficult. To maintain data frequency as currently, crop areas and production should be collected two to four times a year depending on sowing and harvesting times while infrastructure, household and livestock data can be collected once a year. This could be done under the FAO project. Extension officers should keep reporting about once a month on the state of crops and any incidences like flood, drought or the break out of diseases to adjust production forecasts. The whole system needs to be thought together.

1. Proposed: Collect farm household social and farm infrastructure data periodically, at least once every two or three years. This could be done by extending the current farm surveys questionnaire or by expanding the GBS households surveys to rural areas. Usually, the first option is better as households can be linked to farms.

Implementation: Include in questionnaires revision.

1. Proposed: Separate the data collection from the extension service. Once the move to probabilistic surveys is done, an small proportion of farms will be surveyed and a lot fewer data collectors will be required; so data collectors with the relevant qualifications could be contracted and trained to collect the data and enter it in the system only.

Implementation: Hire and capacitate data collectors as data collection will be a bit more difficult. Further in the future, might be good to implement electronic data capture devises for data collection.

1. Proposed: Introduce a traceability system for livestock and animal products.

Implementation: Contract a consultant/s to design and implement this system. I am no expert in this area, but to work, the system needs to include regulations like making compulsory to put micro-chips in livestock.

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| Chronogram | | | | | | | | | | | | | | | | | | | | | | | | | |
| Chronogram | | Month | | | | | | | | | | | | | | | | | | | | | | | |
| Main Activities | | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | | 11 | | 12 | |
| 1 | IT audit (including fisheries) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | Database design and development (including fisheries) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3 | Training in processing and analyzing geo-referenced data |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | Training in International Statistical Standards |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 5 | Training in specialised statistical packages |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 6 | Training in surveys design and analysis |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | Evaluate CountrySTAT development |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | Technical assistance in fisheries data collection and analysis |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 9 | Technical assistance survey design and analysis |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 10 | Training data collectors |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11 | Training extension officers in continuous monitoring |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 12 | Pilot new data collection system |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 13 | Implement new data collection system |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 14 | Analyze the implementation of a traceability system |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**Characteristics of the Agriculture Information System**

Although it is called Agriculture Information System, this system should include information on agriculture, livestock, livestock products and fisheries.

The data collection would consist of three components: probabilistic surveys, administrative data and information from qualified informants. These three components would be coordinated so they feed the Agriculture Information System in a consistent manner; for example: the probabilistic surveys provide a forecast of the season rice production and the qualified informants keep updating this forecast depending on the conditions (weather, plague, etc) and then the next survey will provide an estimate of the actual production that should be consistent with the forecasts.

Fisheries should have also the three components in their data collection.

*Probabilistic surveys*

These surveys would be designed using probabilistic methodology, if possible using the Agricultural Census as sample frame. Sample sizes will depend on the disaggregation and estimates accuracy desired.

The main items that should be collected are: farm land size, areas sown/planted, harvested and lost by crop, production by crop, crops production use (sold, seeds, family consumption, etc) number on farm, number sold, number bought of livestock by type and age, main farm infrastructure, farmers characteristics and farmers household characteristics, expected area sown/planted for the following season and expected production of crops on the ground. Annual crops data should be collected several times a year, depending on the crops seasons, all other data can be collected once a year.

*Administrative data*

These data is collected in different registries. For example: customs trade registries or animals slaughtered in abattoirs. This data needs to be compiled, analyzed and checked for consistency with other data sources like surveys.

*Qualified informants*

Qualified informants would provide mainly qualitative reports with rough forecasts estimates. This information should also be analysed and checked for consistency with other data sources.

Also price data collection could be considered in this category as data is not collected using probabilistic methods but it is collected in certain markets and it does not come from administrative records.