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**FARMERS' PERCEPTIONS ON SELECTED SOCIO-ECONOMIC AND AGRICULTURAL PRODUCTION ASPECTS AND THEIR RELATION WITH THE AGRICULTURAL EXTENSION SERVICE IN SURINAME**

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**ABSTRACT:** The government of Suriname has prioritized development of sustainable agricultural production in Suriname, especially in the rural areas, and has integrated the millennium development goals in their strategies and policy vision (Van Eeckhout, 2008). Policymakers, scientists and entrepreneurs (including farmers) are convinced that the agricultural sector in Commewijne has potential to assist Suriname in realization of the millennium goals in 2015 so that poverty will be reduced in communities in Commewijne, and sustainable agricultural activities must play an important role in the development of this district. To get an overall view of the farmers' perspective on the socio-economic problems, the quality of the Agricultural Extension service, and the bottlenecks with regard to all aspects of agricultural production, a base line agricultural survey was developed, modified and validated by a panel of experts. With this instrument one hundred farmers were interviewed in Commewijne and the data was analyzed using SPSS statistics. Findings revealed the following problems: (1) drinking water is a problem for many farmers in this district; (2) the standard of living is low; (3) shortage of water in the dry season; (4) excessive water on the agricultural soils in rainy periods; and (5) high price fluctuations for agricultural products. Findings also reveal that farmers are experiencing problems with: (1) pest and disease management; (2) farm bookkeeping; and (3) insufficient technical information about plant cultivation, and crop protection. Furthermore, farmers felt that the information from field extension staff was insufficient with regard to pesticide education, fertilization, good agricultural practices, integrated pest management (IPM) and with irrigation and drainage aspects. Recommendations include training for farmers in: GAP, FFS, weed knowledge and weed control, farm bookkeeping and farm administration, pesticide education and pesticide control, fertilizer education and fertilizer deficiencies of crops, and use of sustainable cultivation systems (mulching, compost, IPM, etc.). Furthermore, recommendations also include training of the field extension staff on technical aspects of agricultural production.

**INTRODUCTION**

Commewijne is one of eleven districts of Suriname. The district is situated on the right banks of the Suriname River, and to the east of Paramaribo. Commewijne borders on the north to the Atlantic Ocean. To the west it borders the districts of Marowijne and Wanica; and to the South district Para and to the east the district of Marowijne. The capital is New Amsterdam. Commewijne is the third most populated district in Suriname. The coastal area in Commewijne is intensively cultivated. Matapica is a very important nature reservation. The population of this district is about 25.088 inwoners (2006). Commewijne has a land area of 2353 km<sup>2</sup> which is less than 2% of Suriname's total land area (van Eeckhout, 2008).

## **Climate**

There are four climate seasons in the district in Commewijne as is the case in all the other districts in Suriname. The seasons include the big and small dry seasons and the big and small rainy seasons. The average temperature over the whole year is 27<sup>0</sup> C. The relative humidity in Commewijne is not different from that of the rest of the coastal area of Suriname. In the dry period, the relative humidity lies between 75 to 80% and in the rainy season between 80 to 85%. The relative sunshine fluctuates in the dry season from 65 and 75% and in the rainy period between 45 and 50%. The average relative sunshine is 58%. The average wind force over the whole year is 1.2 on the scale of Beaufort. The average yearly rainfall fluctuates from 2200 to 2300 mm.

## **Common Soils in Commewijne**

Commewijne is one of the oldest cultural areas of Suriname. It is situated in the Young coastal zone area, and the fertile clay was also the reason that Commewijne was known as the largest district with big plantation agriculture. This is also why this plantation agriculture has maintained itself the longest. In the district, there are sand-clay-and swamp soils. However, the majority portion of Commewijne consists of clay, followed by swamp and sand. Along the East-West Connection, more sandy-soils are situated.

## **Irrigation and Drainage systems in Commewijne**

The drainage system in Commewijne has been deteriorating throughout the years. This deterioration is caused mostly by the lack of maintenance and lack of expansion. In addition, there are some problems with the functionality of the system. The causes of malfunction include:

1. The drainage and irrigation systems are poorly maintained, resulting in great crop losses, waterlogging, soil salinity or water shortages.
2. No proper divided system for agricultural- or urban use.
3. The spatial planning in Commewijne is inadequate and not divided in different land-uses. Throughout the years, more people are living in Commewijne and a part of Commewijne has been slowly developed into a town.
4. Farmlands are very scattered over the district of Commewijne. There are some parts of concentration of farmers, but even then the distances are great. This makes it difficult to organize farmers, give them access to information, access to markets and proper working drainage systems.
5. The cooperation between the farmers is very difficult; that is why the drainage system as a polder-model; polder model is when everyone is working together to benefit each other. It is not a success. Problems with soil salinity, especially during the dry season, when there is a shortage in water.

## **Socio-economic situation in Commewijne**

There are also aquaculture activities on a small and midsize scale. The majority of the economic activities are taking place at the East-West connection and the banks of the Suriname and Commewijne rivers. Aside from aquaculture, fisheries and agriculture, Commewijne has also some wood sawmills for furniture factories. In the last few years, tourism has become important in this district, due to the building of the bridge over the Suriname River.

## **Agricultural Extension Status in Suriname**

In Suriname, extension work started around 1935 by individual institutions. The scope of these services was very limited due to lack of technicians, equipment and poor communication. In 1956, the Ministry of Agriculture (MOA) established the division for Agricultural Extension. For organizational purposes the country has been divided into three regions: Region East, Region Central and Region West. Each region has a regional coordinator and resort-and rayon leaders. In the 1960s and 70s the Extension Service was in full operation.

Since 2004, the Farmers Field School (FFS) and the Good Agricultural Practices (GAP) approaches are being used as a tool to increase farmer's knowledge and skills in the various subjects. Resort leaders and sub-resort leaders generally have leadership at extension activities within the region or the resort. In the past, this position was meant only for people with minimal Community College training in agricultural sciences (Ori and Ori, 2011).

The main tasks of an Extension Agent at the MoA include:

1. Transfer of appropriate agriculture technology and related information to the farmer.
2. Collecting statistics on crops, land, animals, fruits and vegetables for statistical purposes.
3. Training farmers on the principles and concepts of GAP, and monitoring agricultural activities of farmers (trace back system, etc).

Communications with agricultural producers usually take place through the radio or newsletter but have an incidental character. Visits to farmers do not take place that often because of budget limitations. There is no compensation for the use of private transport and there are no incentives to extension personnel for visiting the farmer's field. It happens that the agricultural producers contact the extension agents when needed. Since the introduction of Good Agricultural Practices (GAP) and Farmers' Field Schools (FFS), the communication with farmers has been intensified since 2003 (Agricultural Sector Plan, 2006).

### **Training in GAP**

In February 2003 a project was being financed by a loan of the IDB in the frame of the Agricultural Health and Food Safety Program. Since this program was implemented, the farms of the producers have been registered and information of their cultivated crops has been submitted on a regular basis to the MoA. Emphasis has been placed on registration of the amount and usage of chemicals on a specific, by LVV designed form. A computer program then processes this information, so that the specialists at the MoA get information on the type, the amount and the frequency of use of chemicals used on planted crops. The ultimate goal of the program has been to provide safe food production. The objective of the FFS is to provide active agricultural producers with more knowledge about the ecology and "Integrated Crop and Pest Management" (Agricultural Sector Plan, 2006).

## **Research Methodology**

The sample population involved in this study consisted of 100 farmers in Commewijne engaged in agricultural production in various parts of Commewijne. Farmers were identified from a list of contact farmers provided by the MoA and the “Stichting SAV” (Foundation Women in Agriculture) in cooperation with the Extension Service of the MOA in Suriname. It was required that selected farmers were actively involved in some aspect of agricultural production.

This study was conducted as a descriptive survey. The questionnaire was designed, and developed by the researchers keeping in mind the job requirements for the farmer. A validation panel was used to validate the questionnaires. It was tested for reliability and validity.

Members of these similar populations had served as panelists during the validation process. Comments from the validation panelists were incorporated in the questionnaires before interviewing the target population.

Data was collected by using a questionnaire for each farmer respectively. Questionnaires were organized and administrated by trained enumerators. Follow-up procedures included e-mails and telephone calls to the respondents. Each questionnaire was coded. Categories were developed for the open ended questions of the instrument.

Descriptive statistics such as percentages and frequency counts were applied to measure some of the variables. The data was analyzed based on their relationship to one of the specific objectives of the study. The data was analyzed using computer software Statistical Package for Social Sciences (SPSS) and Microsoft Excel.

## **RESEARCH FINDINGS**

### **Demographics**

From the data, it can be concluded that the majority of farmers are older than 40 years. The number of men and female participants who were engaged in agriculture was the same in the Hulp, Welbedacht en Nieuwzorg. However, more male farmers were engaged in agriculture in Tamaredjo and Alkmaar. Survey results reveal that the majority of farmers in Tamaredjo and Alkmaar were javanese while there were more creole farmers living in Nieuwzorgweg and Sinabo. Land area of most farmers varied from 1-3 ha. Because income from agriculture is limited or uncertain, farmers prefer to get other jobs to get a fixed income. This is the reason why most farmers are labeled as part time farmers. They work on an average of 3-3.5 hours a day in agriculture on their land while full timers work for 6-6.5 hours a day in their fields. The survey also revealed that there are more full-time farmers in Welbedacht, Commewijne, De Hulp, Sinaba en Nieuw Zorg than in Alkmaar and Tamaredjo.

Both full-time and part-time farmers worked only with their family on the farm. Usually, no outside labor is being sought since these farmers in general cannot afford to pay labor on a daily basis.



Most farmers from Commewijne have completed a primary or secondary education. This means that training and training tools need to be designed on a very low educational level. Most farmers do not hire labor to assist them in the fields. More than half of the farmers earn a monthly income of less than US \$500 while the rest of the farmers earned a monthly income ranging from US \$ 500 to US \$1,000. Only about 1/4 of the farmers' income is 100% earned in agriculture. The majority of farmers earned an income which relies for 40% to 50% on agriculture. The crops that were frequently planted in the last 2-3 years by the farmers included: hot pepper, eggplant, bittergoar, antruwa, cabbage, tomatoes, cucumber, paprika, cassava, parsley, green onions, string beans, sweet pepper, green beans, and greens, pumpkin and tomatoes. Aside from these crops, the farmers also cultivated fruits such as oranges, papaya, watermelon, limes, and tangerines, and bananas. Results indicated that farmers often did not know what variety of crop they planted. Usually they get the information from other farmers who have already gained good experiences with these crop varieties. Farmers are mostly relying for agricultural information on their personal experiences. They also get their information from other farmers, NGO's and TV.

The majority of farmers used the telephone as a means of communication. More than half of the respondents prefer to communicate on a one-to-one basis with each other. They also like to communicate about agricultural matters at meetings.

### **Living Conditions**

The majority of problems which farmers face include:

1. Absence of a drinking water distribution net
2. Improperly maintained waterways or channels, resulting in problems of waterlogging during the rainy season and water shortage in the dry season.
3. Financial problems, such as a low monthly income
4. Difficulties to purchase agricultural inputs of equipment as a result of the long distances farmers have to travel
5. Power failures on a regular basis
6. Fluctuations in the wholesale buyer-prices of the agricultural products
7. Unfertile soils (according to farmers)
8. No or limited garbage collecting service
9. Absence of telecommunication
10. No medical services
11. No recreation
12. No title on land (land property rights)

Eighty percent of farmers in Commewijne are born in Commewijne. The reason why some farmers have re-located themselves in this district is because of their work and or their spouse who is from Commewijne.

### **Water management**

The irrigation/drainage capacity in Commewijne is not adequate. All farmers in Commewijne are experiencing problems with excessive water and/or water shortages. Water shortages occur very often in the dry season, and excessive water occurs in the rainy season.

To solve these problems, farmers need to include measures such as:

1. Establishment of a good drainage system
2. Investing in water pumps
3. Placing of a well
4. Clearance of vegetation in the channels and raising the embankments of the channels

However, it is also noted that many farmers are not concerned with solving the problem. A sustainable solution for this problem of excessive water or water shortages in the fields can be reached if the irrigation/drainage system is adequately maintained. The Ministry of Public Works is in charge of the maintenance of the primary infrastructure.

### **Production aspects**

The training needs in vegetable farming include knowledge of proper:

1. Seeding methods/techniques of planted vegetables.
2. Timing of vegetable planting
3. Irrigation requirements of planted vegetables in both rainy and dry seasons throughout the year.
4. Agro-ecology concepts to use legumes with regard to nitrogen cycle.
5. Soil conservation measures.
6. Organic production.
7. Crop protection guidelines for vegetables.

Training needs in crop protection include farmers' understanding of:

1. The causes of diseases of planted crops.
2. Usage of weed chemicals in planted crops.
3. Identification of insect/pest in planted crops.
4. Usage of control measures of insect/pest of planted crops.

### **CONCLUSIONS**

1. The farm family is the main source of farm labor in Commewijne.
2. Total land area of farmers varied from 0.1 to 6 ha; the planted area varied from 0.1 to 1 ha.
3. There is little contact among farmers, researchers, and extension field workers.
4. Farmers lack competency in agricultural practices to increase their agricultural production.
5. The majority of farmers earn an income of less than US \$500 a month.
6. They rely mostly on their personal experiences as a source of agricultural information.

### **RECOMMENDATIONS**

1. Farmers need more training in agricultural practices to produce more qualitative agricultural products.
2. There should be better communication among national agricultural research institutions, researchers, field extension agents and farmers.
3. Farmers should invest in a more adequate infrastructure on their land in order to enhance quality and production.

4. The Agricultural Extension Service needs to be strengthened in its services to farmers.
5. The living conditions of farmers in Commewijne need improvement.

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