International Agribusiness
2015-2016

De rentabiliteitsstudie van paprika en het karteren van de beschermde teeltstructuren in Commewijne, Paramaribo, Saramacca en Wanica anno 2015

Afstudeerverslag ter verkrijging van de graad van
Bachelor of Applied Technology (B. Tech.)
in de studierichting International Agribusiness

M. Zweevel
Paramaribo, 17 februari 2016

Summary

Protected cultivation is defined as changing the natural environment of the plants to control or improve plant growth under a protected structure by adjusting major environmental factors to achieve optimal crop growth and production. Structures for protected cultivation are micro tunnels, covered structures and greenhouses. Protected cultivation can lead to increasing crop yield and quality.

Protected cultivation in Suriname is already being done by some vegetable growers. In 2012 the research “Inventarisatie huidige status van beschermde teelt in Suriname” was done by the department “Groentenonderzoek” of the Ministry of Agriculture, Livestock and Fishery. This research has shown that, in the districts of Paramaribo, Commewijne and Wanica 32 active vegetable growers were cultivating crops under protected structures. Unfortunately, not all vegetable growers are registered at the Ministry of Agriculture, Livestock and Fishery. As a result, there is a limited amount of data for research on the protected cultivation in Suriname. A very important research for the protected cultivation is the profitability. It should be proven that cultivating in protected structures is actually profitable. Based on these facts a decision is made to carry out a research in the districts of Commewijne, Paramaribo, Saramacca and Wanica with the problem statement "Is cultivating in protected structures actually profitable for the Surinamese horticulture? What are the developments within the protected cultivation in the research area in the year 2015 in terms of number, location, type structures, applied systems and problems?"

The goal is to demonstrate the growth of the protected cultivation under vegetable growers in the research area by means of a questionnaire and by mapping with Global Positioning System. Also to specify how profitable the protected cultivation is by means of a profitability comparison of the crop bell pepper in soil cultivation under both protected structures and in open field. Also the production per m² and the revenue of bell pepper cultivation in substrate under protected structure has been viewed.

From the research there are a total of 51 vegetable growers surveyed, 100 structures localized, both covered structures and greenhouses. The materials of the structures are different in type, quality and durability. All 51 vegetable growers cultivated vegetables for commercial purposes during the research and only 46 were active in cultivating crops. Up to the year 2005, crops were only grown under covered structures. Since 2005, crops are also cultivated in greenhouses. The total area used for protected cultivation in the research area is 1.8 hectares for covered structures and 1.4 hectares in greenhouses. The most cultivated crops are taro leaf, celery, bell pepper and lettuce and the cultivation methods in soil, and hydroponic culture by means of water and substrate. The source of water supply for irrigation comes from waterworks, rain, gutter, pond, ground, creek and channel water. All this water is stored in different ways or comes straight from the source. The applied irrigation methods are using hydroponics techniques, use of sprinklers attached to water or pressurized water pumps and irrigate manually with garden hoses. Maintenance practices are conducted for the management and maintenance of the structures. Setting up a protected cultivation structure can have high investment costs which vary from SRD 900.00 to USD 20,000.

The comparison of the bell pepper cultivation is made based on the cultivation method carried out during the growing season, production per plant, the duration of the growing season and duration

of the harvest period. Also, the cultivation in soil both in the greenhouse as in open field are compared to the theory for cultivating bell pepper. The growing season in the greenhouse in soil is 3 weeks longer than on open field. However, the harvesting period is 1 week longer on open field than in the greenhouse. Also the production per plant in the greenhouse is twice as much as in open field.

The profitability equation of the crop bell pepper has shown that the sales per m^2 in substrate with the market price are 4 times more than the cultivation in soil in the greenhouse. With the selling price of SRD 2.50 it is 12 times more in substrate than in soil in the greenhouse. Furthermore, the revenue per m^2 for soil cultivation in the greenhouse is 6 times more than the revenue per m^2 for soil cultivation in open field. The net profit in open field lies with SRD 7.00 higher than in the greenhouse. The investment cost per m^2 are three times higher in the greenhouse as in open field. After the recovery of the cost of the greenhouse, the investment costs are still higher than the cultivation in open field, but the net profit is SRD 16.00 more in the greenhouse than in open field.

Based on these facts of the research it can be concluded that, despite the high investment costs for protected cultivation structures, there is a growing trend of plant production under protected structures especially in greenhouses. This cultivation method is after recovery of the cost of the greenhouse based on production per plant and net profit per m^2 calculated in this study more cost effective than the cultivation in open field. It is recommended to stimulate the protected cultivation by good registration of the producers at the Ministry of Agriculture, Livestock and Fishery, facilitating structures and inputs, encourage educational institutions to do research of different cultivation methods and innovative structure opportunities for protected cultivation, performing profitability comparisons for crops grown under protected structures and finally doing research on Good Agriculture Practices under protected cultivation in Suriname.