

CARIBBEAN AGRICULTURAL RESEARCH AND DEVELOPMENT INSTITUTE



BELIZE HOT PEPPER PRODUCTION:

a viable option for small farmers

by
Ardon Iton

January 2012

CARDI - Belize
Central Farm, Western Highway, Cayo District
P.O. Box 2, Belmopan, Belize
Tel: 011-501-824-2934; Fax: 011-501-824-2936; Email: cardi@btl.net

CARDI - Headquarters
P.O. Bag 212, Frederick Hardy Building, University of the West Indies,
St. Augustine Campus, St. Augustine, Trinidad and Tobago W.I.
Tel: 1-868-645-1205/8120; Fax: 1-868-645-1208; Email: infocentre@cardi.org
www.cardi.org

PSC # HQ/003/10

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As agrifood markets globally continue to undergo transformation, small farmers in developing countries are finding it increasingly difficult to participate in high-value markets. Modern high-value markets demand large volumes of high quality produce, high levels of food safety (including traceability), year-round supply and generally lower prices. All attributes small farmers appear to have great difficulty achieving.

Hot pepper production in Belize offers several avenues to contribute to the economic development of rural areas, such as:

- (a) Employment to small farmers and other value chain actors
- (b) Foreign exchange earnings from fresh berry and process product exportation
- (c) Opportunities for the development of cottage industries, such as the production of pepper jellies, pepper flakes etc.

However, successfully competing in global fresh produce markets today calls for a market-oriented approach to agriculture.

Aligning fresh produce chains to the needs of consumers/customers and developing a system that is responsive to changing customer needs is a must for success in today's competitive business environment. In the case of hot peppers the whole crop must be marketed so that farmers can maximize their returns and other actors along the value chain can be adequately compensated for the value they add. Theoretically this would mean that the best berries should be targeted at the fresh export market, where the best price tends to be obtained. Those that do not meet the stringent export standard could be targeted at the fresh domestic market and domestic processing. A word of caution is required here; specific markets have specific varietal and stage of maturity requirements.

This brief illustrates the returns possible from the cultivation of 0.4 ha of "West Indies Red" hot pepper in the Central Farm District, Cayo, Belize. Agro-ecological conditions, planting density and market conditions could affect the returns demonstrated here. For simplifying purposes the focus here is on returns on operational expenses, as such, cost of land and professional management are not accounted for. Also, a barrier crop of corn (3 rows) was used in the production system.

Planting density	17,290 plants/ha (7,000 plants/acre)
Time of seedlings in nursery	5 weeks
Time between transplanting and harvesting	13 weeks
Frequency of harvesting	weekly
Harvesting length	16 weeks

Table 1 illustrates the major cost items of production, while tables 2 and 3 are revenue estimates under different scenarios.

Table 1: Major costs summary

Activity	Costs (EC\$)
Seedling trays (ST), seeds & germinating mix (GM)	1,317.13
Land preparation (machinery) (LP)	197.65
Labour	4,840.08
Material inputs(fertiliser etc)	4,533.49
Equipment (mulch, irrigation etc.)	6,002.54
Total	17,815.49

Total marketable yield: 11,363 kgs.
 Cost of production per kg: EC \$1.57

In an attempt to maximize the returns to the farmers, every effort must be made to sell the largest percentage of the harvested berries. In this regard the top quality berries can be sold for export to the USA and the remainder to local processors.

Assuming 80% of the harvested peppers are sold to exporters at EC \$2.95/kg (BZ\$2.20/kg), and the remainder are sold to processors at EC\$ 2.36/kg. Table 2 indicates that the farmer will have a revenue stream of EC \$32,180.02, which gives a gross margin of EC \$14,364.53 or BZ \$10,719.80. The farmer will make a return on his investment of 81 percent.

Table 2: Estimated revenue under scenario 1

Market outlet	Revenue (EC\$)
Exporter	26,816.68
Processors	5,363.34
Total	32,180.02

Note, under scenario 1 a plant produces approximately 1.6 kgs. of marketable pepper, which is on the high end of the spectrum for “West Indies Red” if a farmer does not follow the production technology package for “West Indies Red” meticulously.

Let us assume under scenario 2 a plant produces approximately 1.0 kg of marketable pepper, and the same ratio is sold to the exporter and processor. Adjusting only the harvesting cost at a rate of EC\$0.24/kg, total costs become EC \$16,815.49. Table 3 illustrates the possible revenue under scenario 2.

Table 3: Estimated revenue under scenario 2

Market Outlet	Revenue (EC\$)
Exporter	16,520.00
Processors	3,304.00
Total	19,824.00

In scenario 2, the farmer makes a return on his operational expenses of 18%, which is still positive. However, in some cases small farms/farmers have substantive cost advantages – particularly in labour intensive, high maintenance, production activities with relatively small economies of scale. Hot pepper is one of those crops where savings on labour costs are very likely when using own and family labour. With labour costs being the second largest cost component (29%), as is seen in figure 1 (data from table 1), any savings made will go a long way in improving the farmer’s returns. Further, if the farmer harvests his own peppers the marketable yield can be enhanced from 80% to possibly 90%, again positively impacting the farmer’s returns.

Given Belize’s proximity to the USA which is a major hot pepper importer, varied agro-ecological conditions that are well suited for all year round production, hot pepper production appears to be a viable option for small farmers as diversification alternatives are explored.

Figure 1: Major costs of production

