CARIBBEAN FOOD CROPS SOCIETY

48

Forty-eight
Annual Meeting 2012

Playa del Carmen, Mexico
Vol. XLVIII
PROCEEDINGS
OF THE
48th ANNUAL MEETING

Caribbean Food Crops Society
48th Annual Meeting
May 20th – 26th 2012

Hotel Barceló Riviera Maya
Playa del Carmen, Mexico

“Education, Productivity, Rural Development, and Commercialization in the XXI Century”

Edited by
Wanda I. Lugo and Wilfredo Colón
Published by the Caribbean Food Crops Society

© Caribbean Food Crops Society 2013

**ISSN 95-07-0410**

Copies of this publication may be obtained from:

Secretariat, CFCS  
P.O. Box 40108  
San Juan, Puerto Rico 00940

or from:

CFCS Treasurer  
Agricultural Experiment Station  
Botanical Garden South  
1193 Guayacán Street  
San Juan, Puerto Rico 00926-1118

Mention of company and trade names does not imply endorsement by the Caribbean Food Crops Society.

The Caribbean Food Crops Society is not responsible for statements and opinions advanced in its meeting or printed in its proceedings; they represent the views of the individuals to whom they are credited and not binding on the Society as a whole.
IMPORTANCE OF BREADFRUIT GROWN IN HOME GARDENS IN ST. VINCENT AND THE GRENADINES

Micahel Gloster\textsuperscript{1} and Laura B. Roberts-Nkrumah\textsuperscript{2}, \textsuperscript{1} Ministry of Agriculture, St. Vincent and the Grenadines, \textsuperscript{2} University of the West Indies, St. Augustine, Trinidad and Tobago

ABSTRACT: St. Vincent was the first recipient of the breadfruit introductions to the Caribbean more than 200 years ago. Since then, the crop has become an important staple that is produced for both the domestic and export markets. The crop is grown both on farms and in home gardens, but there is no information on total levels of production or consumption. A survey was conducted in St. Vincent and the Grenadines in 2009 to determine the level of breadfruit production in home gardens and the contribution to household diets. Data are presented on tree population, germplasm diversity, levels of breadfruit consumption, methods of utilisation and factors influencing consumption. The information provided has implications for the future expansion of the breadfruit industry in St. Vincent and the Grenadines.

Keywords: Home garden, levels of consumption, utilization, germplasm diversity, tree population

INTRODUCTION

Breadfruit [\textit{Artocarpus altilis} (Parkinson) Fosberg] which has been grown throughout the Pacific islands since ancient times (Zerega, Ragone, and Motley 2004, 761) was introduced to the Caribbean by Captain William Bligh in 1793 to enhance food supplies (Powell 1977). St. Vincent was the first recipient of the breadfruit introductions to the Caribbean and today, a sucker of one of the original trees still stands in the Botanic Gardens where the first introductions were planted. In 1993, there was bicentennial celebration of its introduction. Since then, the crop has become an important staple that is produced for both the domestic and export markets. Breadfruit is an important carbohydrate source which has high levels of consumption in St. Vincent and the Grenadines (SVG), it is part of the national dish, and annual breadfruit festivals are held.

Breadfruit is grown for the local market and also for regional and international markets but there are no commercial orchards. All supplies are harvested from home backyard gardens, scattered trees on farm lands, river banks, or marginal lands. Given the emphasis on food security, and the role that breadfruit has played historically, it is important to determine the level of local consumption and the contribution of home garden to supplies for this use. According to the last agricultural census (Agricultural Census 2000, 110) there were 349 farm holdings growing breadfruit for home consumption; however, levels of production from home backyard gardens have not been documented in St. Vincent and the Grenadines.

In 2008, the Ministry of Agriculture, Forestry and Fisheries (MAFF) held a home/backyard garden competition as part of the National Agro-based, Industrial Exhibition (NAIE) to promote food security among home owners. Subsequently, the 2009 Home/Background Gardening Programme was implemented by MAFF in response to the rise in food prices during the year. Since breadfruit is a common plant in Vincentian home gardens, a survey was undertaken to determine the level of breadfruit production in home gardens, and its contribution to household diets.

115
MATERIALS AND METHODS

A survey was conducted among 57 out of a total of 96 home/backyard gardeners distributed throughout St. Vincent and the Grenadines during the months of June and July 2009. These home/backyard gardeners were actively involved in the Ministry of Agriculture, Forestry and Fisheries home/backyard garden programme and they were selected from the three agricultural regions (Table 1). The island is divided into three Agricultural Regions, which are sub-divided into nine Agricultural Districts. Agricultural Region 1 consists of Districts 1, 2, and 3; Agricultural Region 2 includes Districts 4, 5 and 9; and Agricultural Region 3 includes Districts 6, 7, and 8. A questionnaire was used to collect data from home garden owners (Figure 1).

Table 1: Number of respondents interviewed by Agricultural Regions in St. Vincent and the Grenadines, 2009.

<table>
<thead>
<tr>
<th>Agricultural Region</th>
<th>No. of Respondents interviewed</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>17</td>
<td>29.8</td>
</tr>
<tr>
<td>2</td>
<td>34</td>
<td>59.6</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>10.5</td>
</tr>
<tr>
<td>Total</td>
<td>57</td>
<td>100</td>
</tr>
</tbody>
</table>

Data were collected on demographics, tree population, germplasm diversity, and levels of consumption. Data were collected by the telephone from participants on the Grenadines islands of Canouan and Bequia, while on Union Island and the mainland, St. Vincent, interviews were conducted during home visits. Coding of the questionnaire was done for easy entry of the data. The data were then entered and summarized in Microsoft Excel 2007 and analyzed by using SPSS Computer Software.
RESULTS

1. Demographics of respondents

Among respondents, 63% were female and 37% were male. The household size of 53% of the gardeners was three to six persons, while 19% had households with less than three persons, and 14% had households with seven to 12 persons. There were no households with more than 12 persons. Figure 1 shows household size and number in all Regions.

![Bar Chart](image)

Figure 1: Size of household per Agricultural Regions.

There was little difference in the property status of home/backyard gardener in St. Vincent and the Grenadines, with 83% of respondents being property owners, 12% relatives of the property owners, and only 5% were tenants. None of the respondents were relatives of tenants (Figure 2).

![Status of Home gardener](image)

Figure 2: Ownership status of home gardeners.

2. Number of breadfruit trees in home gardens
The number of breadfruit trees in home gardens varied among respondents with 61% reporting that they had no trees in the garden, 23% had one tree, 14% had two to five trees, and 2% had more than five trees. Among Agricultural Regions, 60% of respondents with no trees were in Agricultural Region 2 with the least in Agricultural Region 3, 14%. Agricultural Region 1 had the highest amount of respondents with one tree, 54%, whereas Agricultural Region 3 had none (Figure 3).

Figure 3: Number of breadfruit trees in home gardens in St. Vincent and the Grenadines. Among those who had no trees, 63% indicated they would like to have a tree whereas 37% did not want a tree (Figure 4).

Figure 4: Respondents’ desire to have a breadfruit tree in the home garden.
Among those who did not want a tree, the most common reasons were inadequate space (40%), tree size (20%), the tree causes damage to houses (13%), and they already had trees on their farms (13%) (Figure 5).

![Reasons for not wanting a breadfruit tree in 2009.](image)

Figure 5: Reasons for not wanting a breadfruit tree in 2009.

### 3. Germplasm diversity in home gardens

‘Creole/Common’ was the most prevalent breadfruit variety in home gardens since it was reported by 80% of the respondents with breadfruit trees, whereas ‘Kashee’, ‘Dessert’, and ‘Cocobread’ were the less common. Other varieties reported by home gardeners included ‘White Bread’, and ‘Captain Bligh’ (Figure 6).

![Variety of breadfruit in home gardens in St. Vincent and the Grenadines, 2009.](image)

Figure 6: Variety of breadfruit in home gardens in St. Vincent and the Grenadines, 2009.
Among respondents with more than two breadfruit trees, 67% indicated they had no favourite varieties, whereas 37% indicated that they preferred ‘Creole/Common’ (Figure 6). Within agricultural districts, only respondents in Districts 3 and 9 indicated that they had no favourite variety, whereas those in District 3 indicated Creole/Common (Figure 6).

4. Consumption of breadfruit

Breadfruit was consumed in all households of the home gardeners. Breadfruit was consumed most commonly at the main meals, especially for lunch (36%) whereas it was not commonly consumed as a snack (Figure 7).

![Figure 7: Meals at which breadfruit is eaten by respondents in households, 2009.](image)

Among respondents with breadfruit trees, breadfruit was harvested from home gardens mainly for home consumption, as gifts for or for sale (Figure 8). An average of five to six fruits with a mean weight of 1.4 kg (3 lb) per fruit was harvested weekly from each home garden. Fruits are harvested 12 months of the year, with August being the main month and February the least productive (Figure 9). Therefore, approximately 92.4 kg (203 lb) (66 fruit) was harvested annually from home gardens and with 39% for home consumption and a mean household size of four persons, the estimated annual per capita consumption was 9 kg.
DISCUSSION

The results from the survey showed that with regards to demographics the number of home/backyard gardens is well distributed throughout the three Agricultural Regions and nine Agricultural Districts in St. Vincent and the Grenadines. Most of these home/backyard gardeners are found in Agricultural Region 2, Region 1, and Region 3, respectively.

Size of household was not large, with most having three to six, and fewer than three persons. There was no household with more than 12 persons. This finding was similar throughout Agricultural Regions and Districts.
Regarding sex, most respondents were females, with the highest proportions in Agricultural Regions 2 and 3, respectively. This finding may have been because of men being the main provider in the household, worked outside the home, whereas the women worked at home. This supports the Agricultural Census 2000, which reports a ratio of male to female agricultural holders of 72% to 28%, respectively. Most home gardens were on owner-occupied or family-owned properties. Lack of property ownership might be related to the absence of breadfruit trees in home gardens.

The major factors which seemed to influence the presence of breadfruit trees in home gardens were the availability of environmental conditions suitable for breadfruit growth and development, the availability of adequate space and access to fruit from trees owned by the respondents but growing elsewhere. Tree population in home gardens was quite variable among respondents, most of whom had no breadfruit trees in their home gardens. These were mainly respondents who were living in The Grenadines, where the very low rainfall and poor soil conditions do not meet the requirements for breadfruit growth. Most of these respondents would like to have a tree. For respondents whom did not have and did not want a tree, tree size in relation to the size of the garden appeared to be the main limitation, whereas other respondents had alternative access to fruit from trees on their farms.

Among gardeners with breadfruit trees, most had one tree, and this may have been mainly because of inadequate space, and tree size, which may have limited the ability to accommodate more than one breadfruit tree. Additionally, tree populations also varied greatly among agricultural regions. Agricultural Region 1, which is located on the leeward side of the island, had the most respondents with one tree. This may have been influenced by lower rainfall pattern and less fertile soil. In contrast, most respondents with two or more trees were in Agricultural Region 2, which has the best soil and climatic conditions for breadfruit production, whereas Agricultural Region 3 had the least. These results were similar to those reported in the Agricultural Census (2000), which showed that 42.3%, 36.2%, and 21.4% of holdings reporting breadfruit trees were in Agricultural Regions 2, 1, and 3, respectively.

Knowledge of breadfruit variety in home gardens among respondents was limited, even though Roberts-Nkrumah (1996) had previously reported that 25 varietal names were used in St. Vincent to identify 22 specimens. These specimens showed differences in tree and leaf morphology, and in external and internal features of the fruit; differences in eating quality were also described by local informants. In this survey, among respondents with two or more varieties, there was favorite or varietal preference as was reported in Trinidad by Roberts-Nkrumah and Badrie (2004). For those who had a preference, ‘Creole’/‘Common’ was the favourite. This preference was similar in all Agricultural Regions and Districts, and this variety seems to be the same as the ‘Yellow’ breadfruit which was reported by Roberts-Nkrumah (1996) as the favourite throughout the Caribbean.

The appreciation of breadfruit as a food crop was very high because it was eaten in all households, and at all major meals. Similarly, in Trinidad, Roberts-Nkrumah and Badrie (2004, 271) reported that breadfruit had the status of a highly appreciated staple among its consumers, and most ate breadfruit at lunch and dinner. These are two major factors for promotion of breadfruit production in St. Vincent and the Grenadines, because they indicate a high demand and available local market for the fruits.
In terms of level of consumption, approximately five to six breadfruits are harvested for home consumption weekly. However, Agricultural Census (2000) reports only 27% of holdings with breadfruit use it for home consumption, whereas 73% was sold. Fruits for consumption are available throughout the year, and there is no seasonality in production, even though the number of fruits harvested per week is lowest during the driest period. Annually, 180 to 216 lb of fruits may be harvested from each home garden. This has potential for food security both for the households with trees and those which receive fruit as gifts or through purchase. Breadfruit in home gardens can also enhance food security because they are also a source of income to the home. Therefore, breadfruit is a good alternative for Irish potatoes, which is a major imported carbohydrate source in St. Vincent and the Grenadines.

CONCLUSIONS

Breadfruit is a crop of significant importance with potential for food security, generation of income, and consumption on St. Vincent and the Grenadines. The fruit which is well-appreciated by Vincentians, is available year round. There is no preference for any specific variety. Although breadfruit is generally well distributed on mainland St. Vincent, there is a shortage of trees in The Grenadines, especially the southern Grenadines. However, home backyard gardening can play an important role in genetic conservation and production of breadfruit; therefore, this should be encouraged. Research will have to be done to address some of the constraints to growing breadfruit in home gardens. Also, the Ministry of Agriculture will have to play a role in promoting and developing a structured programme with incentives and support for the establishment of breadfruit in areas in which they can grow but their presence in home gardens is low.

ACKNOWLEDGEMENTS

The support and assistance of the Ministry of Agriculture Forestry and Fisheries, St. Vincent and the Grenadines, and the Department of Food Production, Faculty of Agriculture is greatly acknowledged.

REFERENCES