

PROEXAG II



EXPORT INDUSTRY TECHNOLOGY SUPPORT PROJECT (AGRICULTURAL COMPONENT)

ONION PRODUCTION IN NICARAGUA

Assignment Number: ST-115

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SWEET ONION PRODUCTION IN NICARAGUA

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Introduction and Pre-visit Assessment:

The Introduction and Pre-visit Assessment section of this report was prepared prior to a FARMER-TO-FARMER visit to Nicaragua on March 29 to April 10, 1992 to provide background information before observing the onion production and marketing situation in Nicaragua.

Worldwide, the per capita consumption of onions has changed very little during the past 50 years, but the demand for the mild or "sweet" onions has increased in most of the developed countries. Recent emphasis on the health benefits from eating onions will likely intensify this increase in per capita consumption of sweet onions.

Onions can be grown in a many locations, but the variety, soil, and production practices will determine the flavor and sweetness of the onions. The maximum level of flavor and pungency in onions is controlled by genetics; however, pungency levels below the maximum are determined primarily by cultural conditions.

The major short-day onions varieties grown in the United States (US) initiate bulbs in February and are harvested during April, May, and June. Bulb initiation and harvest are earlier near the equator; therefore, onions grown in the Rio Grande valley of Texas are harvested earlier than the same varieties of onions grown in the Vidalia area of Georgia. Wholesale onion prices in the US during the April-June period range from \$0.10 to \$0.30 per pound depending on supply and source.

If onion growers in Nicaragua are presently unable to compete with onion imports to their local markets, due to their present low level of production, handling, and marketing technology, it is unlikely that these growers can compete on the international market with established sweet onion producing areas in the US during April, May, and June. However, **this is not the period when onions destined for export to the US or other developed country should be harvested in Nicaragua.**

Production costs are about \$7.50 for transplanted and \$5.25 for direct seeded Vidalia onions. Production costs in Texas are somewhat lower, but the price paid for the same variety of onions grown in Georgia has been \$3.00-\$7.00 more due to the high quality reputation of Vidalia onions. During an "average" year the profit margin for both Texas and Georgia onion growers on the US domestic

market have been so small that the additional cost of export and transportation would have made onion production during the April to June period unprofitable for onion growers in Nicaragua. Both sweet onion production areas have begun an intensive (\$1-5,000,000) export market development program during the April-June harvest period. Georgia will likely need to export about 25,000,000 pounds (the production from 1,250 acres at a marketable yield of 20,000 lbs/A) of Vidalia onions in order to keep 1992 prices profitable.

In the US, only a single crop can be produced in a location each year; however, three crops are grown each year in areas of Nigeria at about the same latitude as Mexico City. The main (irrigated, dry season) crop of onions is seeded in October and November, transplanted in December and January, and harvested during March, April, and May. A second (wet season) crop is seeded in April, transplanted in June and harvested in August and September. The third a (wet season) crop is seeded in early June, transplanted in late July and harvested in November and December. Onions grown in Nigeria are more pungent than the sweet onions of the United States.

In Hawaii, Sweet onions can be harvested throughout the year. Production of sweet onions in Hawaii is limited by extremely high land prices. **These "Maui" onions wholesaled in the US for \$5.00 to \$7.00 in 1989. There is a good market for sweet onion for export to the US during the January to April period and to Japan year-round.**

If the volume of the January,

February, and March market in the US is only 50% as great as the Vidalia market during harvest (about 12,500,000 pounds/week), there is a US market for about 75,000,000 pounds of onions at a price (\$1 to \$3 per pound) that should be very profitable to Nicaragua sweet onion growers or some other sweet onion growers in tropical America. The supply is presently very short for these sweet onion markets. The Japanese market during this period may be as large and as profitable. Development of these markets will require the production of a consistent volume of very high quality onions.

After observing the 14 acres of onions and tasting onions that did not receive sidedress applications of ammonium sulfate, it was obvious that sweet onions could be grown in the Sebaco Valley if Nicaragua. The problem then became a matter of determining the most profitable period to grow and market these sweet onions. The following question was asked and answered during the FARMER-TO FARMER visit. **What is the profit margin for sweet onion production in the Sebaco Valley if we assume that:**

- 1) Nicaraguan sweet onion growers produce 300 bags(50 lb) or 15,000 lb of exportable onions per acre at a cost similar to that of Vidalia onion growers (about \$8.00 per bag or \$0.16/lb)

2) and that export costs add another \$1.00 per bag (\$0.04/lb) to result in a total production cost of \$0.20/lb to onions harvested during April?

Since the valley does not have the reputation for sweet onion quality that the Vidalia onion enjoys, we must further assume that the price received would be similar to the price for onions Texas onions during April. The 1982-1986 average price of Texas onions was about \$1.00 per 50 lb bag (\$0.04/lb) higher the week of May 5 than May 12. If we further assume that this rate of price increase remains the same throughout the month of April and that the price of these onions is \$8.50 per bag (\$0.17/lb) the week of May 5, then prices that Sebaco onion growers could expect to receive for their onions would be:

\$0.21/lb the week of April 28
 \$0.25/lb the week of April 21
 \$0.29/lb the week of April 14
 \$0.33/lb the week of April 7

then expected profit would be:

	<u>Price</u>	minus	<u>Cost</u>	equals	<u>Profit*</u>
April 28	\$0.21/lb		\$0.20/lb		\$0.01/lb or \$ 150/A
April 21	\$0.25/lb		\$0.20/lb		\$0.05/lb or \$ 750/A
April 14	\$0.29/lb		\$0.20/lb		\$0.09/lb or \$1,350/A
April 7	\$0.33/lb		\$0.20/lb		\$0.12/lb or \$1,800/A

*(NOTE: Profit as \$/A = \$/lb X 15,000)

If onion production costs increased 50% (\$0.10/lb) when onions were grown to be harvested during February and prices paid for "Sebaco Sweets" were only 30% of the price received for "Maui" onions (\$6.00/lb), then profit would only be:

	<u>Price</u>	<u>Cost</u>	<u>Profit*</u>
Winter	\$1.80	\$0.30	\$1.50/lb or \$22,500/A

*(NOTE: Profit as \$/A = \$/lb X 15,000)

If the Sebaco valley of Nicaragua grows only the volume as the "Maui" onions presently grown in Hawaii (about 150 acres), sales of "Sebaco Sweets" onions could produce a NET income of \$3,000,000 to \$3,500,000 to onion growers.

During the past 10 years, Vidalia onion production has been one of the most profitable crops for Georgia farmers. Vidalia onion growers would gladly reduce their production from the present 9,000 acres to about 650 acres if they could expect a PROFIT of \$15,000,000 in 1992. A profit of \$15,000,000 is more than the profit received by Vidalia onion growers from 7,500 acres of onions in 1990 (the greatest profit from growing Vidalia onions).

The article describing onion production in Hawaii (February 1990 Onion World, pages 16 and 17) indicates that high land cost (\$500,000/A) has been a major cause of reduced acreage of "Maui" onions. It does not seem reasonable that other areas such as the Sebaco Valley of Nicaragua or other areas of Central America at similar latitude have not considered or realized the potential profit level from sweet onion production for winter market. Vidalia onions marketed from controlled atmosphere storage from October to November have been sold for \$0.50 to \$0.80 per pound. Sweet onion growers in Georgia and Texas cannot presently grow or market their onions during January-March. If onion growers in the US could market onions during this time, the market potential would not exist for Sebaco Valley onion growers.

Summary of the FARMER-TO-FARMER visit:

After the FARMER-TO FARMER visit, the following recommendations were made.

Recommendation 1: Investigate the feasibility and requirements for year-round production and harvest of sweet onions. This can be accomplished through several plantings of 1-3 onion varieties at about 1 month intervals. It is further recommended that different varieties be used for the different seasons.

Round varieties that have a higher yield potential could be grown for harvest during the secondary (potentially lower profit) season lasting from April until November. These onions could be sold in marketing bags supplied by the marketing agency with little identification of the source of the onions. It is likely that production of this type of onion during this harvest period would result in a very low profit or a loss.

The more flat onions such as the several Granex hybrids should be grown for the main crop of onions for harvest during December, January, February, and March. The flat onions grown in the Vidalia area of Georgia and in Hawaii have commanded a premium price and have produced less pungent onions than most round varieties. Extreme care should be taken to assure that the eating quality of the Granex onions grown in the Sebaco Valley is as good as possible. These onions should be packaged in attractive boxes and sold as "**Sebaco Sweets**" or by some other name identifying the source of the onions. Since these are the onions that will determine whether the Sebaco Valley of Nicaragua will be effective on world markets, extreme care must be taken to assure that the appearance and shelf-life of onions identified as a product of the Sebaco Valley are the best possible. Limited supplies of Vidalia onions from controlled atmosphere storage during October and November will command wholesale prices of \$0.50 to \$0.80 per pound and retail prices of \$1.00 to \$1.50 per pound. The Maui onion, presently the only recognized sweet onions marketed during January and February, have commanded a retail prices of \$4.00 to \$7.00 per

pound. Hawaii would be the only competition from the US for freshly harvested onions. Production of these onions is very limited and decreasing. Since some round shaped storage onions would be marketed at this time, sweet onions having a round shape would be identified with the cheaper, more pungent storage onions.

Recommendation 2: Provide a training session in Georgia for the key technical personnel supplying information to onion growers in the Sebaco Valley during October of 1992. Doyle A. Smittle should conduct this training and much of it should consist of visits to several Vidalia onion growers that include the range of production and handling systems used in Georgia. During the course of this training, the trainees should gain insight into the many parameters in selecting a broker as well as production and handling equipment and systems.

Recommendation 3: If significant changes in harvest, curing, grading, and packaging are made, a repeat visit by Doyle A. Smittle may be needed to assure proper implementation of the changes.

Recommendation 4: Growers in the Sebaco Valley should consider the purchase of an onion cleaning, sizing, grading and packaging line. Used equipment may be available at a reasonable cost. These growers should maintain a good stock of spare parts for high wear items of either used or new equipment.

Recommendation 5: Both yellow and white selections of several "Traditional Varieties" should be included in the monthly planted variety test described in RECOMMENDATION 1 with production by the methods developed from this Farmer to Farmer Program visit. Selection of the best of these Bermuda onions should be based upon mildness, uniformity of bulb shape, size, and appearance. It is suggested that special consideration be given to the selection of white onions having a depth/diameter ratio of a 4-inch diameter bulb that not be less than 0.5 nor more than 0.75. **THESE ONIONS COULD BE THE SOURCE OF THE PREMIUM PRICED ONIONS GROWN IN THE SEBACO VALLEY AND OTHER AREAS OF NICARAGUA.** Since the source of these seeds could be controlled by the growers, they would be in full control of the supply of these onions. This could eliminate competition from other countries in Central America once a high demand has been developed for these onions. A white or red type may be a better choice for the "Sebaco Sweets" variety since yellow types such as Vidalia and Muai are already established as premium onions. **The development of the "Sebaco Sweets" variety is a long term program. This effort should not compete with the short-term goal of developing a reputation for producing mild, sweet onions using Granex varieties.** Use of resources of the Centro Experimental Valle de Sebaco to develop the "Sebaco Sweets" onion should be used **ONLY** if growers have control of the program. If this is not possible, APENN or onion growers should develop the variety using private funds.

Contacts were made between APENN and Robert Grist of Georgia Vegetable Company and Kurt Schweitzer of Keystone Fruit Marketing to sell sweet onions from Nicaragua. Problems developed that would limit my service through the FARMER-TO-FARMER program. Therefore, after this single visit, my service to the onion growers of the Sebaco Valley was mediated through the PROEXAG II Project of CHEMONICS.

REPORT OF ACTIVITY SINCE INITIAL CONTACT WITH CHEMONICS:

In early July, I was contacted by Mark Gaskell of the Guatemala office about continuing the sweet onion program in Nicaragua. During August, a decision was made that Ricardo Frohmader of CHEMONICS and Fernando Mansell of MANPROSA should come to Georgia to talk with Robert Grist and several onion growers and to observe the operations in the Vidalia onion production area. The visit was made during the week of September 14, 1992. In addition to establishing a market for SEBACO SWEETS onions and obtaining seeds for them, the tour of the Vidalia onion production area of Georgia provided Fernando with information that would have been extremely difficult to understand from words alone.

After a week to get some of my 1992-93 Vidalia onion research plans made and begin the design of the SEBACO SWEETS logo, I began service as a consultant for CHEMONICS to continue the sweet onion development effort.

Since growers will produce SEBACO SWEETS onions for profit, an update of the FARMER-TO-FARMER Pre-visit Assessment are presented are included to incorporate transit cost information obtained from Karl Ufer of CHEMONICS. The changes are shown in bold and begins with the a change of the answer to the following question.

What is the profit margin for sweet onion production in the Sebaco Valley if we assume that:

- 1) Nicaraguan sweet onion growers produce 300 bags(50 lb) or 15,000 lb of exportable onions per acre at a cost similar to that of Vidalia onion growers (about \$8.00 per bag or \$0.16/lb)
- 2) and that export costs add another **\$7.00** per bag (**\$0.14/lb**) to result in a total production cost of **\$0.30/lb** when onions are harvested during April?

Since the Sebaco valley does not have the reputation for sweet onion quality that the Vidalia onion enjoys, we must further assume that the price received would be similar to the price for onions Texas onions during April. The 1982-1986 average price of Texas onions was about \$1.00 per 50 lb bag (\$0.04/lb) higher the week of May 5 than May 12. If we further assume that this rate of price increase remains the same throughout the month of April and that the price of these onions is \$8.50 per bag (\$0.17/lb) the week of May 5, then prices that Sebaco onion growers could expect to receive for their onions would be:

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then expected profit would be:

	<u>Price</u>	minus	<u>Cost</u>	equals	<u>Profit or (loss)*</u>
April 28	\$0.21/lb		\$0.30/lb		(\$0.09/lb or \$1,350/A)
April 21	\$0.25/lb		\$0.30/lb		(\$0.05/lb or \$ 750/A)
April 14	\$0.29/lb		\$0.30/lb		(\$0.01/lb or \$ 150/A)
April 7	\$0.33/lb		\$0.30/lb		\$0.03/lb or \$ 450/A

*(NOTE: Profit or (loss) calculated as \$/A = \$/lb X 15,000)

With an export cost of \$7.00/50 lb bag, export of onions from the Sebaco Valley to the U S would not have been profitable with most of these projected prices. ALTHOUGH ONION PRICES WERE HIGHER THAN NORMAL DURING APRIL DUE TO HEAVY RAINFALL IN TEXAS, THE PRICE RANGE OF TEXAS ONIONS (\$0.30 - \$0.36/LB) WOULD HAVE NOT HAVE MADE EXPORT OF THE 1992 CROP TO THE UNITED STATES A VERY PROFITABLE VENTURE.

If onion production costs increased 50% (production cost increases to \$0.24/lb and export cost remains at \$0.14/lb) when onions were grown to be harvested during February and prices paid for "Sebaco Sweets" were only 30% of the price received for "Maui" onions (\$6.00/lb), then profit would be:

	<u>Price</u>	<u>Cost</u>	<u>Profit*</u>
Winter	\$1.80	\$0.38	\$1.42/lb or \$21,300/A

*(NOTE: Profit as \$/A = \$/lb X 15,000)

A more reasonable (expected initial) price for VERY GOOD QUALITY "SEBACO SWEETS" onions in 1992 is about the same price as has been paid for good Vidalia onions from CA storage (\$0.40 to \$0.50/lb). With this price for SEBACO SWEETS onions, the profit would only be:

	<u>Price</u>	<u>Cost</u>	<u>Profit*</u>
Winter	\$0.40	\$0.38	\$0.02/lb or \$ 300/A
	\$0.50	\$0.38	\$0.12/lb or \$1,800/A

*(NOTE: Profit as \$/A = \$/lb X 15,000)

If buyers and sweet onion consumers in the United States can be convinced that "SEBACO SWEETS" are a good buy marketing ONLY VERY GOOD onions during the January to March period of 1992, then 1993 demand and price should increase. Although the anticipated profit margin for "SEBACO SWEETS" onions 1992 is about normal for a sweet onion crop in the US, production of a VERY HIGH QUALITY ONION, CONSISTENTLY, will allow further increases in the price and profits from the production of "SEBACO SWEETS" onions.

THE DEVELOPMENT OF THE KIND OF REPUTATION THAT WILL ALLOW "SEBACO SWEETS" TO COMMAND A RETAIL PRICE OF \$2.00/LB (WHOLESALE PRICE OF \$1.00-1.25/LB CAN BE DEVELOPED IF NICARAGUA SENDS ITS BEST AND KEEPS THE REST. SINCE WE HAVE ALREADY SEEN THAT SWEET ONIONS

CAN BE SOLD IN NICARAGUA AT A PROFITABLE PRICE, THERE IS NO REASON TO JEOPARDIZE THE REPUTATION OF "SEBACO SWEETS" ONIONS BY EXPORTING ANYTHING BUT THE BEST.

Since I was in Nicaragua last March, the attitude of at least some major supermarket chains in the United States have changed from "I don't really think that a sweet onion will sell well during the winter." to "The market potential for sweet onion sales during the winter may be almost unlimited if the quality is very good." With this positive attitude about the market potential for sweet onions throughout the year in developed countries and the present inability to supply these December to March demands from present production areas, even with controlled atmosphere storage, some area of the tropics will develop a sweet onion industry. THE AREA THAT DOES IT FIRST AND BEST WILL PREVAIL AND PROFIT.

During the September 28 to October 3 assignment, the following activities and associated recommendations were made.

Activity 1. While in Guatemala City, Mark Gaskell and I discussed the overall onion program in Central America and the handling of data and the need for quality and shelf-life evaluations for the Variety-Planting Date-Location Test. Discussion of the variety test was continued in more detail with Karl Ufer, Fernando Mansell, and Miguel Angel Rodriguez upon arrival in Nicaragua. Due to late arrival of some seeds all varieties could not be included in all four planting dates, but variety-planting date combinations were to be the same at all locations.

Test A at each location will consist of plantings of 10 varieties at planting dates 1 and 2, then Test B will consist of plantings of 30 varieties at planting dates 3 and 4 (these 30 varieties will include those used for planting 1 and planting 2). I will be able to do quality and shelf-life analyses in my laboratory in Tifton, Georgia, but the cost of transport of the size sample needed for shelf-life to the US may be prohibitively expensive. Should transport cost be very high, it is suggested that shelf-life (grading to determine marketable bulb weight at 2 week intervals for 8 weeks) be done at Guatemala City. Presently, pungency assay requires laboratory facilities and skills that are not readily available. It will be almost impossible for a single person to harvest the onions at the proper maturity and collect other needed data at all locations; therefore, it is suggested that a person be hired (part time) at each location to collect the data. These individuals will serve under the direction of Mark Gaskell and Karl Ufer.

Activity 2 (September 30, 1992). After an evening of discussing onion physiology and research methods with Karl Ufer in Managua, James Johnson of APENN, Karl, and I traveled to the Sebaco Valley on September 30. Shortly after our arrival we met with a

group of farmers from the Leon area who were interested in producing sweet onions for export this season. Since we did not know whether they had the climatic conditions and expertise to grow suitable quality sweet onions; therefore, I suggested that they plant a small trial and we would evaluate their ability to grow sweet onions in that area. They secured some onion seeds and left the Sebaco Valley with the intent of planting them. We discussed onion physiology, production and marketing methods, equipment and personnel needs for successful production of Sebaco Sweets onions during the remainder of the morning and afternoon. The loss of some seedlings due to a scalded appearance was mentioned toward the end of this meeting. Most of the work force had gone at this time, so close evaluation was delayed until the following day.

Activity 3 (October 1, 1992). The loss of the onions was diagnosed as damping-off and a drench with fungicide was initiated immediately for ail emerged onions. Spray applications for damping-off were recommended before covering the seedbed with corn stalks and again before applying the rice hulls. The rice hulls were apparently absorbing all of the fungicide sprays applied after it was applied.

Samuel and Fernando Mansell requested that I identify, locate US sources, and advise them about equipment and facilities needed to implement the transfer to sweet onion production. This activity is ongoing and will likely continue for some time. We toured the local processing plant to determine whether any of their equipment could be used. Only some of the elevators and grading tables could be easily adapted to onion grading. We also discussed the method of changing the TEW grader-sizer to allow hand labeling and packing of the onions. We also toured the Experiment Station and discussed vegetable production problems and potentials.

Activity 3 (October 2, 1992). After an evening in Estile discussing crop production potentials and some sleep, Karl and I returned to the Sebaco Valley where we discussed the onion variety trial and visited with farmers who were growing sweet onions for export. One of these farmers was using the flood irrigation technique that had been unsuccessful for the previous crop. Karl and I alerted him to the problem and gave him a method that will allow production of good transplants. After lunch, we continued our discussion of the variety trial, then drove to Managua for a meeting with Johanna Fiallos of APENN and an evening meeting with Samuel and Fernando Mansell and Brian Rudert USAID/Managua. Long term plans for sweet onions and the potential for producing other nontraditional agricultural export crops were made. I left Managua on October 3, 1992.

Activity 4 After spending a relaxing week in Arkansas, I returned to Georgia and began developing the Sebaco Sweets onion box, getting the stickers ordered, and making plans for marketing these onions with Robert Grist of Georgia Vegetable Company. The

marketing plans were finalized in two planning sessions with Buyers from the Kroger Supermarket chain. Presently, the plan is to pay \$25 per box for the onions, with \$5 per box to be used in the US to promote the Sebaco Sweets onions.

I also talked with Kurt Schweitzer about marketing onions from Panama on October 23, 1992. During this discussion Kurt suggested that it may be a good idea to promote the sweet onions on a regional basis with onions from specific areas being trademarked. This could give a larger promotional base, but it is essential that the recognized product "SEBACO SWEETS" etc. be developed to allow excellent quality control.

We know that we can grow sweet onions for harvest in April or late March. However, we presently do not know whether we can grow these short day onions for marketing during the November-February period in the Sebaco Valley. Premature bulbing due to slightly longer days and higher temperatures may make it necessary to grow most of the short day onions for harvest during the November-February period at higher elevations. We could have established this if we had made monthly plantings of several onion varieties as was recommended after the March visit. We should continue to make small plantings of selected varieties (specifically Granex 33, Granex 429, Texas 1015Y, Texas 1025Y, and one or more white and red lines) at about 1 month intervals after the formal variety trial has been completed. This will give us some insight into the range of problems that may occur with year-round sweet onion production.