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VEGETABLE MARKETING IN NIGER

AN ASSESSMENT AND OVERVIEW

by

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for the
Postharvest Institute for Perishables

in collaboration with the

Niger Irrigated Agriculture Sub-Sector Assessment Team
General Development Office
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EXECUTIVE SUMMARY

This report to the U.S. Agency for International Development/Niamey constitutes the vegetable marketing component of the Niger Irrigated Agriculture Sub-Sector Assessment. The amount of time available for collecting the information on which this marketing survey is based was limited, especially for developing primary data. Because of the time constraint, the approach taken in this report is: (a) to identify those areas of concern which are essential for understanding the current marketing system for vegetable crops in Niger and (b) to provide as complete a perspective of those issues as possible. The objective is to indicate possible areas of interest to direct further detailed study of the vegetable marketing system.

The role of marketing in any irrigated production scheme cannot be too strongly emphasized. In the absence of established and viable marketing channels, production must necessarily be limited to that amount which can be consumed locally or, in the extreme, by members of the producer's immediate household. Although producing at self-sustaining levels is not in itself an unworthy objective, it becomes impractical when costs of production must be covered in addition to meeting food requirements. Some level of output must be sold to provide cash for purchase of production inputs, meeting social and governmental obligations, and acquiring goods and services unavailable at the farm level. A viable marketing system provides the vehicle for exchanging agricultural production for cash.

Irrigated farming in Niger, even at the most basic technological level, involves some degree of investment. The water source must be provided. This typically involves digging a well or acquiring a pump. Seeds must be obtained, either by allocating some plants for seed production or purchasing/receiving seeds from another source. Other inputs must be supplied in some form, including soil enrichers, fencing, cultivating and irrigation equipment, etc. Even though these sometimes costly investments are required, increasing numbers of farmers are getting involved in some form of irrigated cropping enterprise.

RATIONALE FOR IRRIGATED AGRICULTURE IN NIGER

The individual producer seemingly has two objectives in producing irrigated crops. The first is to provide food for the household. The second is to provide an additional source of income. Each of these objectives is discussed in the following sections.

The role of irrigated production in supplying food needs

Irrigated crops, according to the information gathered during visits to the field, are viewed by producers as supplemental to traditional rain-fed crops grown on champs dunaires. The rain-fed crops, primarily grain crops, are considered to be the principal source of food for the household. This perception of irrigated crops as secondarily important to rain-fed crops has an important implication.¹ Because of the primary importance of the rain-fed crops, there is sometimes a delay in the timely preparation and planting of rainy-season irrigated crops which can negatively affect the latter's yields.

From a food production perspective irrigated crops are thought to provide some additional grain and to allow production of foods other than grain. Vegetables and some limited fruit production provide producers and their families with varied and more nutritionally complete diets to the extent that they are consuming their production.

A reasonable, though admittedly very rough and tentative, estimate of on-farm consumption would not exceed 30 percent of production for any vegetable crop. This estimate should be considered as an upper limit for on-farm consumption of vegetable crops. It is based on interviews with farmers and subjective (non-quantified) estimates made by them for several crops. The estimate is subject to confirmation or refinement by more detailed investigation.

It is expected that the percentage of on-farm vegetable consumption will vary according to:

- . hectarage planted
- . yield obtained
- . number of people in producer's household
- . type of crop

¹ Parenthetically, this perception is also reflected in the INRAN research program. Only a small proportion of INRAN's research effort is devoted to research on problems of irrigated crop production.

The first three variables are readily comprehensible and merit no further attention. Type of crop is important because the producer may tend to consume or keep a greater percentage of some crops relative to others.

As an example, consider onions and squash. Onions are frequently used in sauces as a condiment and also hold up well under storage. Thus, it seems reasonable to expect the farmer to keep a relatively high percentage of onions (perhaps approaching the 30 percent "limit"). This may be compared to squash which has limited use as a vegetable complement to other more "mainstay" foods. Squash is consumed relatively less frequently and in smaller amounts than onions. Consequently, a smaller percentage of total squash production is likely to be kept relative to onions.

Crops which are probably close to the 30 percent on-farm consumption level are okra, hot peppers and tomatoes, all of which may be stored in dried form, and lettuce and carrots, which are regularly taken from the garden for immediate consumption. Cabbages, melons and eggplants are most likely consumed in relatively low percentages-of-total production and are produced principally for the market. These estimates are, again, tentative and are intended solely to provide direction for further investigation.

With respect to on-farm consumption of grains, one study² of rice production on irrigated land estimated that about 40 percent of harvested rice was kept and consumed by the production unit. However, another study cites that 88 percent of the 1981 grain harvest for Dosso department was stored for household consumption.³ That 1981 was not a good crop year in Niger should be considered in interpreting this latter statistic. It does serve to demonstrate that there exists a wide margin of variation in how much is stored by the producer.

This nearly fifty percent difference, however, may be attributable to farmers' attitudes towards irrigated grain production. Grain produced under irrigation might provide the producer with a total grain surplus. Thus, the tendency to sell more and store less of the irrigated grain crop would seem to confirm farmers' stated perceptions of irrigated grain as supplemental to rain-fed crops.

2 Therèse Keita, "Développement de la Riziculture", MDR/FED, Niamey, août 1983. See especially tables 10, 23 and 24.

3 M. A. Cullen and A. Waldstein, "Grain Markets in Niger", USDA/ERS/IED, Africa and Middle East Branch, June 1983, pp. 65-66.

Irrigated crops as revenue producers

Unless the farmer has the goal of total food self-sufficiency, independent of purchased food stocks, production for market is bound to enter into the farmer's decision-making package. The entry into the market system encompasses the second objective for producing irrigated crops, that of providing a source of revenue to the producer. Especially for vegetable production, this production-for-profit goal is probably a more attractive incentive than the food-production objective.

Traditional crops, cotton and the various grain crops, have for many years been sold through controlled channels under the aegis of government-regulated marketing agencies. Farmers have considered the producer prices fixed by the government for the grain crops to be low. Producers have been selling only relatively small quantities of grain to the marketing agencies. In fact much of the grain coming into Niger's markets is collected by traders in Nigeria and brought across the border for resale. In recent years producers have sold indigenous grain production in such little quantities to the marketing agencies that the government has at times built up its stocks by purchasing grain brought by traders from Nigeria.

For vegetable production, the market has been unrestricted. Free access to the market coupled with favorable prices in recent years have encouraged many farmers to begin growing vegetables.

Vegetable production was initially begun in the Niamey area about 1955⁴ to supply what was then a homogeneous expatriate community with a supply of "European-type" vegetables. Since then two phenomena have taken place. First, the number of people consuming vegetables has increased many fold. This may be attributable to a number of causes but the increase in urban population coupled with changes in consumer dietary preferences appear to be the primary factors. Second, partly in response to increased demand and partly because of the additional opportunity to acquire revenue, numerous producers have entered into vegetable growing enterprises, predominantly at the small-holder level. This has resulted, especially since 1978, in market gluts during peak production periods.

⁴ Personal communication, Mr. Cissé Mamadou, MDR.

Conditions of over-supply have created a number of problems for producers. Prior to the occurrence of redundant stocks on the market, revenue from the sale of vegetables was used to offset investment costs, debts acquired through input purchases, and other costs associated with growing and marketing vegetables. After costs were covered, profits provided a ready source of income.

In recent years, however, even though overall sales of vegetables have increased, for most producers profit margins have decreased. Lower margins may be attributed to the depressive effect on price caused by excess supplies. For example, taking seasonal variations into consideration, prices for onions have remained at similar levels for about seven years. Still, the possibility of acquiring immediate cash through sales of fresh produce continues to serve as a strong production incentive.

One other problem which has created significant concern on the part of the producer is the inability to dispose of excess stocks. The lack of sufficient market outlets and the low demand relative to the quantity produced has resulted in surplus production. Coupled with the unavailability of processing and preservation facilities, large quantities of fresh, highly perishable produce are left to spoil in the fields or prior to delivery at the market.

The remainder of this report will examine several possible alternatives to these and other associated problems. Irrigated agricultural production is seemingly being increasingly adopted by Nigerien farmers as an integral part, if not the sole enterprise, of their production packages. The problems experienced at the marketing level hold very strong implications for the success of any irrigation program. It is hoped that the alternatives set forth in the following pages will contribute to understanding and seeking viable solutions to those problems.

SYSTEMS EMPLOYED FOR MARKETING OUTPUT

Three primary marketing channels are available to farmers cultivating under irrigation. These are: (1) producers selling at guaranteed prices to government agencies or their agents, (2) producers selling to intermediaries, and (3) producers selling directly to consumers. Each of these alternatives, and the marketing strategies associated with them, will be discussed in the following sections.

Producer sales at controlled prices

Three agencies currently operating in the Republic of Niger offer the producers of designated crops the option of selling their produce at controlled prices. Established by legislative decree, these agencies are effectively the most formalized, legally restricted marketing channels available to producers. These agencies are: CPVN which has responsibility for purchasing and maintaining stocks of grains including sorghum, millet, rice and corn; SONARA which oversees the trade of cowpeas and groundnuts; and CEDIT which manages the cotton trade under contract with the Nigerien government.

Each crop covered by one of these three agencies has a controlled price, a prescribed method of sale and payment, and a defined procedure for all cultural and marketing operations. In practice, producer prices are below current market prices. The margin which the marketing agency captures is used to cover the costs of collecting, transporting, storing, and administering the purchase/resale of the crop, plus a fair margin of profit. However, when market prices are unfavorable, the price established for produce controlled by one of the marketing agencies serves as a floor price, a guaranteed price which producers may receive even if current market prices are lower.

In most instances, the producer must be a member of the cooperative in order to sell to one of these agencies. Producers deliver their produce to the assigned assembly point for their cooperative. This point is typically in their village or in a nearby village and the distance from field to delivery point is minimal. After the produce is cleaned, inspected and weighed, the producer is given written confirmation of the delivery and receives a partial or total cash payment for the value of the delivery.

This system is subject to many external influences. In particular, market prices both in Niger and Nigeria affect the amount of a given product which growers may offer to the purchasing agency during the legislatively-set buying campaign. Sometimes, a producer may elect to bypass the officially established marketing channel and sell the produce to an alternative, and in some circumstances, illegal buyer.

This marketing approach does not currently extend to vegetable production. While it is not the purpose of the present discussion to recommend this approach as appropriate for vegetable marketing in Niger,

thought should be given to extracting the positive elements from this approach and applying them to private sector activities. These positive elements would include the organized delivery/transportation systems which have been developed under the aegis of the respective marketing agencies, the establishment of producer/consumer networks, and, if economically feasible, the establishment of guaranteed minimum (floor) prices to producers.

To the maximum extent possible, private sector commerce should be considered for any activities related to marketing vegetables. The record of government-controlled agencies with respect to agricultural trade has not demonstrated maximum efficiency, nor has such activity been particularly well-received politically. The next sections will discuss the current private sector practices which apply to vegetable marketing in Niger.

Producer sales to intermediate traders

The primary economic actors at this level are the small-trader Hausa merchants who traverse the countryside exchanging goods for money or vice-versa. Their trading is well-founded and is the present day manifestation of a generations-old tradition of commerce among the Hausa people.⁵

The manner in which the trades take place is also relatively well-established. Typically, a trader is familiar with a particular product from a particular area. The crops grown in that area are known to the trader who also knows how each crop performed during the previous growing season. The trader may also be aware of the evolution of prices as well as current market prices.

The Hausa collector makes a circuit of villages by animal-drawn cart or truck, depending on the scale of the trader's business. In each village the trader attempts to contact producers and encourage them to sell their produce. There is some limited negotiation which takes place, but prices are readily established for a particular zone and the trades usually take place within a certain, well-defined price range. The merchant bears the cost of all

⁵ Technically, it is not necessary to be ethnically Hausa. One can find traders from other ethnic groups (Yoruba, Tamachek, inter alia) conducting transactions throughout Niger, but it is the Hausas who are credited with the reputation of being formidable traders.

materials including packing and wrapping, transportation, labor costs, etc. Cash payment is made on the spot to the farmer. The trader continues to purchase produce until his capital is exhausted or the cart/truck is at capacity. The trader then heads for market.

Intermediate traders have limited impact on prices. In many instances they are price-takers as much as they are price-setters. Part of the reason that they cannot have too much influence on setting prices is that they operate in a relatively competitive environment and at comparatively small scale. Because they have limited capital and cash flow, they are neither able to accumulate large amounts of capital nor amass large stocks of produce. If these traders could hold on to stocks, their enterprise would most likely be more profitable because they could wait for prices to rise before selling.

An alternative to this trading pattern finds the farmer delivering his own produce to the trader, already wrapped or bundled. The farmer, of course, expects a higher price for the additional labor which he expended collecting and delivering the produce. This practice holds for those farmers living relatively close to concentrations of established merchants.

The advantage to the farmer of entering into a trading arrangement with an intermediary is that payment is received immediately in cash and no additional labor need be incurred for marketing. This is especially suitable for farmers who have little or no marketing expertise.

Many crops are handled in this manner, but the principal ones are dried peppers and tomatoes, onions, squash, and sweet potatoes. Grain crops are also collected by traders, although the practice is somewhat more common in Nigeria where the legislation covering grain trading is less restrictive than in Niger. The pattern followed by intermediate traders seems to be to choose those crops which are better suited for travel and storage. In this manner the trader is minimizing the risk he assumes in purchasing the produce, reducing the likelihood of having a large quantity of produce spoil in transport as he moves from market to market.

In the absence of concise data, it is difficult to estimate the exact percentage of trades which take place through the producer-middleman network. At minimum, an educated guess would place the percentage of such trades at between one-half and three-quarters of all producer sales of fresh and dried

produce. The remaining producer sales of fresh produce would be those made directly to the consumer by the producer or by a cooperative association of producers. These trades are discussed in the next section.

Producer sales directly to consumers

The number of producers who have the possibility of selling directly to consumers is very limited. It is limited because of (1) locational factors such as distance from markets, (2) informational factors such as lack of access to timely market situation reports, and (3) entrepreneurial predisposition and the ability of a given producer to succeed in the marketplace. Producers who try to sell directly to consumers place themselves in direct competition with other producers, some of whom may have higher quality produce or lower production costs, and with experienced traders who have specialized knowledge of the market. For small quantities of produce, the additional margin and the corresponding imputed wage earned by selling directly may not provide the producer with adequate compensation for his time. In such instances the producer may do better selling to an intermediary.

Direct sales to consumers are made either by individual producers or by groups of producers (cooperatives). The most common case is the individual producer who takes his/her produce to market, either weekly or daily markets depending on location, and offers it for sale. Prices are negotiated with each purchaser and are influenced by the selling prices of other vendors. Producer margins are reduced by the cost of packaging, transportation, market fees, losses due to spoilage, and incidental costs. Net profit and wages come from the portion of the margin which remains after costs are extracted. The other popular variation of this marketing system is the case of the cooperative of producers who sell their produce in common and proportionally divide the net profit according to the percentage of produce which each producer presented for sale.

The crops which are most frequently sold through this marketing channel are fresh tomatoes, peppers, cabbage, lettuce, and an assortment of other comparatively perishable products which must be sold soon after they are taken from the fields. More durable produce including onions, squash, okra and hot peppers are also offered for sale directly to consumers by producers. This channel is mostly used by producers who have perishable produce and live close to markets.

MARKET PROSPECTS FOR MAJOR IRRIGATED CROPS WITHIN NIGER

Some constraints on marketing produce

It is at the level of producers bringing their produce directly to the market that the most significant market problems occur. Most producers grow their produce with little attention to what other local farmers are growing. There is a tendency for many producers to plant the same vegetables at about the same time. Thus, when the crops mature, all at about the same period, and most of the farmers bring the same kinds of produce to market, there is a glut, an over-supply of undifferentiated, highly perishable vegetables in the market place. Compounding factors -- limited market demand and very hot weather in March and April when many vegetables become mature -- contribute to a great amount of spoilage, both in the marketplace and at farm level. In some areas, entire fields are left to go to seed or spoil before being picked.

There is relatively little processing, and what little is done is very rudimentary and produces a product which is of low quality. There are only a few producers who plant their fields with respect to a production/delivery schedule; that is, planning the planting date of the crop with reference to expected market situation at the time of maturity. The varieties of vegetables which are planted do not store very well in this climate, except for Violet de Galmi onions. The rugged transportation conditions through most of the region cause substantial bruising and damage to vegetables during transport which accelerate spoilage. These are some of the difficulties which must be addressed in any project proposal which includes a vegetable production activity. In the sections that follow some specific problems and possible corrective actions will be discussed.

Market access

Locational factors, distance from the producers' village to available markets, conditions of the transportation infrastructure, are important considerations in determining the kinds of vegetables which are to be produced. If road access is good, transportation readily available, and distance from a major marketing outlet is not far, then it is feasible to produce fresh, relatively perishable crop selections with reference to conditions of market demand capacity. Under such favorable circumstances many crop selections may be grown. Fresh tomatoes, peppers, okra, cabbage, lettuce, and a variety of other fresh vegetables do well under irrigation in Niger.

Their production should be undertaken subject to local consumer tastes and preferences, and the ability of the market to absorb quantities supplied by all producers within an acceptable time frame.

If market access is difficult, distance to a viable market outlet is far, road and transportation conditions are poor, and market capacity is relatively small, then production of crops of a more durable nature should be considered. Crop selections should be made according to the characteristics of the produce to withstand heat and bruising during long transport, its ability to endure medium- to long-term storage, as well as its adaptability to the production environment. Under such conditions storable vegetables such as squash, biennial onions, garlic, and thick-skinned potatoes, or vegetables which may be dried (tomatoes, peppers, okra) are recommended. Other crop selections, for example legumes such as cowpeas, pigeon peas, groundnuts or lentils, may also be grown. These crops tend to store relatively well, are not susceptible to damage during transport, and are readily marketable (there is considerable demand for them).

Market demand

The ability of a given market to absorb the quantity of produce presented for sale at a particular time must be considered by the producer when determining the amount of each crop selection to be grown. In many of the production areas visited, the problem of insufficient market capacity was raised. Producers were aware of the difficulty of introducing their produce for sale when the market was already gorged with similar produce from other producers. However, producers seem to respond slowly and somewhat ineffectively to changes in consumer demand.

Poor communication of market signals insufficient or totally lacking market information, and limited response options contribute to inefficient producer decisions. Changes in production patterns, crop mix, and cultural practices take one or two seasons to implement. Marketing strategies offer very little adaptability to change and the ability to react to changing market circumstances is restricted.

Improved sources of, and access to, market information are necessary. This action should be accompanied by increased extension efforts which can inform farmers about marketing problems and educate them on how to respond in more

timely ways to changes in consumer demand. Research and extension on appropriate techniques for scheduling/staggering planting dates should be undertaken. Planting various quantities of each crop selection at periodic intervals should be done with respect to expected market demand at time of maturity. The emphasis is on planned production with a well-defined planting program which is based on an understanding of the targeted market.

Many consumers who now purchase fresh vegetables such as lettuce, carrots, and other salad ingredients, have acquired the taste for salad only in recent years. This results partly from increases in the urban populations throughout Niger, changes in consumer tastes through increased exposure or access to new information, and expanded production of vegetable products and market availability. As demand has increased, so has the amount of vegetables being supplied. Areas which had no vegetables a few years ago, now have a variety of produce which consumers regularly purchase. Further increase in demand can be expected in the years to come as urbanization continues, population grows, information becomes more readily accessible, and vegetable production continues to expand in new areas.

Storage and preservation of produce

There is at present very little choice in how Nigerien producers store or preserve vegetables. If the vegetable cannot be stored directly, it is usually preserved by open-air drying, then sacked and stored. Vegetables are typically stored in buildings which were designed for other purposes and which are not well-adapted to vegetable storage. In every case, the technologies which are currently in use are rudimentary and can tolerate improvement.

The principal method of preserving vegetables in Niger is open-air, solar drying. This method is used for drying tomatoes, peppers, okra and small varietal onions. Tomatoes and peppers are slit in half across their widest part, okra is sectioned and onions are peeled layer-by-layer. The vegetables are then spread on straw mats that are placed directly on the ground, and left to dry for a week or so in the open-air. The area where the vegetables are dried is usually protected by a fence to keep goats, sheep, cattle and chickens away, but the fence does not keep smaller animals and insects off the vegetables. The drying is frequently done under windy conditions so the vegetables are covered with sand during most of the drying process. Because of

the accumulation of dirt, insects and other foreign matter during the drying process, the resulting product is of relatively low-quality.

The use of low-cost screened racks or solar driers would be a qualitative improvement over the techniques now used and would enable quicker and more hygienic drying to be done. The assumption behind this recommendation is that if qualitatively better (cleaner, with less extraneous content) dried vegetables were available, consumers would prefer to purchase them as long as prices remained relatively in line with "traditional" dried vegetables. Dried produce is not, however, differentiated at this time.

Storage is done in buildings which were designed for other purposes. Onions are stored in huts originally built for grain storage. These huts are poorly adapted to onion storage because they are insufficiently ventilated and allow humidity and moisture to accumulate. This permits bruised and injured onions to collect moisture and begin to spoil. Losses of 40 to 50 percent occur within three to four months of picking. This causes market prices to rise from about 4,000 CFA per sack at picking to as much as 20,000 CFA per sack when stocks begin to dwindle.

This situation can be easily corrected. The Violet de Galmi which most farmers use is a biennial variety that is capable of keeping for up to eight months without significant storage losses. The onion must be harvested at maturity. Presently, many onion growers harvest the onion prematurely and the moist "heart" of the onion favors rotting. The mature onion should be stored in a dark but well-ventilated room which is relatively dry. This improved storage method would help decrease storage losses considerably. If stocks could be stored over longer periods of time, price fluctuations would not be so radical and a supply of onions at a relatively constant price level could be offered to the consumer year-round.⁶

⁶ For a more complete discussion of onion storage problems see, "Culture et Commercialisation des oignons dans les pays du Sahel et l'Afrique de l'Ouest: Leur Développement dans le Cadre des Petites Exploitations Maraichères", by J. Coudert, L. B. Thrower, and J. Henry, ITC/DIP/22, CCI/FAO, 6 Avr 1981.

Onion leaves are also dried and stored. The fresh cut leaves are slightly pounded in a mortar, rolled into fist-sized balls and dried in the open-air. These onion leaf balls are used as condiments in a variety of African sauces. They are very easily stored in sacks and widely purchased by consumers throughout the year.

Nigeriens currently practice no traditional salting or brine storage, nor is any canning done by traditional growers. In Maradi, an entrepreneur has begun canning an assortment of fruit jams and other preserves on a small scale. If this effort is successful and economically feasible, it might be able to be duplicated in other towns or for other products, including vegetables.

Entrepreneurial capacity

One of the major problems with assuring a regular supply of fresh and dried produce to markets throughout Niger is the disorganized character of the entrepreneurial sector. Many of the merchants who deal in vegetables have relatively limited capital, tend to specialize in one or a few products, and maintain a regular trading circuit. Their primary objectives seem to be quickly turning over their product and maximizing short-term profits. There seems to be little long-term planning and expansion is done very slowly, if at all.

Risk-taking is kept to a minimum by these merchants. If vegetable marketing is to be expanded in this country, more risks will need to be assumed, both by producers and traders. In particular, as new crop selections are introduced, markets must be tested, the public must be made familiar with the product, and so a breaking-in period is needed. While this is theoretical, it does imply that any such new undertakings will require a relatively solid basis of support from a well-capitalized commercial sector.

Commercial signals at the wholesale level, like production/market signals at the retail level, need to be disseminated and clarified. At present, most potatoes sold in southern regions of Niger are imported, usually from Nigeria. This occurs even though substantial quantities of potatoes are being produced under irrigation in the Air Mountains, north of Agadez. Apparently, two influences are limiting the "importing" of Air Mountain potatoes into southern

Niger. First, the distance of nearly 1,000 kilometers serves as a constraining factor. Second, the potato trade is well established between Nigerian and Nigerien merchants and the latter are reluctant to explore alternative sources of supply; that is, they are avoiding taking chances. The result is that very small amounts of Air potatoes are brought south, and those only arrive on an occasional basis. Better information needs to be made available to the merchant network.

Two special cases

Vegetable production for the Petit Marché of Niamey

The center of vegetable trade in the city of Niamey focuses on the Petit Marché. This square block-area in the center of town is the daily vegetable marketplace for both Europeans and Africans. It is supplied by grower/vendors and by intermediary traders. The former grow their produce in gardens scattered throughout the city along the banks of the Niger River. The latter collect their offerings in Say, and other towns as far away as Galmi, and bring them to Niamey. There is an active demand for vegetables year-round, but each year the supply of fresh vegetables in Niamey is interrupted, usually near the end of April. This is attributed to the intense heat that occurs about that time. This market offers a diverse variety of vegetables. The grower/vendors who operate in this market have been producing vegetables for years. They have a relatively sophisticated cropping calendar, schedule their planting with respect to expected market demand at time of maturity, and report earning a fair recompense for their labor. Their experience in estimating the market demand at a given moment, and in adjusting their planting schedule to correspond to that demand, should be studied and applicable findings should be passed onto farmers in other vegetable production zones of Niger.

Galmi onion trade

The Galmi onion trade consists of a corps of merchants, who send collectors out to neighboring villages, or receive onions directly from growers who transport them into town themselves. The merchants place the onions in large burlap sacks, tie breathing caps made of braided palm strips on top of the sack, then wait for the trucks to arrive. The trucks come from

Abidjan, Lomé, Accra, Cotonou and Lagos. The onions are sold at fixed price throughout the town, on a per-sack basis, not by weight. This, despite the fact that a sack of onions can vary from 70 to 140 kilograms. The merchants must pay for collection, transportation, labor for packing and sewing the caps onto the sacks, and for the caps themselves. They perform no selection or other processing. Their profit ranges from about 250 to 750 CFA per sack.

MARKETING PROSPECTS WITHIN NEIGHBORING COUNTRIES

The countries to the south and west of Niger, particularly the coastal countries, present strong potential markets for Nigerien produce. These countries have large numbers of consumers, especially urban consumers. With urban populations growing throughout Africa, vegetable consumption can be expected to grow. As populations become urbanized, their dietary preferences change, their market basket composition changes and vegetable demand grows. Vegetable demand can reasonably be expected to grow at about the same rate as population growth. This estimate does not account for the changing tastes of non-urban consumers.

The Galmi onion trade offers the greatest potential for exports of Nigerien vegetable produce. This trade has already begun to establish precedents and earn a reputation for Nigerien produce in several neighboring countries.

Nigerien onions can be used to replace the onions currently being imported into Lagos and Abidjan. The onions from Niger should be able to be delivered to those cities at prices below delivery prices for onions coming from Spain and South Africa. In addition to shipping to the nearby coastal cities, if Nigerien onions can be delivered to the ports, they can be shipped to other areas of Africa. A substantial demand for onions, especially strong flavored, long keeping onions of the Galmi variety, exists throughout many parts of Africa.⁷

The revealed demand for onions is only one possible intervention for Nigerien produce in nearby countries. Nigerien producers could possibly replace other produce, such as lettuce or tomatoes, which are presently

⁷ An unconfirmed report claims that onions purchased in Galmi are shipped to Abidjan by truck, sacked in standard-sized sacks and delivered to the port at a total cost of 130 CFA/KG.

air-shipped from Europe to other African countries. For example, the flights from France to Abidjan load Spanish and South American produce in Marseilles for delivery to Abidjan. These same flights stop over in Niamey before flying on to Abidjan. If local producers could provide similar quality produce in attractive containers at a more favorable price, there is the possibility that Nigerien produce could replace ex-African imports. This needs to be investigated further and in detail.

There are several problems which must be considered before undertaking any attempts at international trade. The distance from southern Niger, where most vegetable production takes place, to the coast is between one and two thousand kilometers, depending on points of origin and destination. Conditions of travel can cause substantial damage to susceptible produce through bruising, poor handling, harsh road conditions, etc. Improved packaging and protection of produce shipments may help reduce such damage.

Customs policies and occasional political perturbations in neighboring countries can disrupt otherwise orderly trade routes. Fluctuations in exchange rates could also present barriers to profitable trade. If Niger becomes dependent on vegetable exports, such disruptions could cause considerable economic loss. Contingency plans should be formulated for shipping by way of alternate routes to the extent possible.

Price or product competition from within the target importing countries might exclude Nigerien produce from competitively participating in foreign markets. Nigerien growers should attempt to develop differentiated products and promote the strong qualities of those products. The Galmi onion is one such product. The uncontrolled sale of Galmi onion seeds by growers in the Galmi area may not be the wisest long-term strategy. There is a comparative advantage in growing onions with desirable inherent qualities. If the seeds are too widely disseminated, the farmers risk losing part of that advantage by compromising their market position.

To the extent that quality is a concern of targeted consumers, some changes may need to be made in the way in which Nigerien produce is presented at the market. Onions, for example, are packaged in recycled burlap sacks with gross weights of 70 to 100 kilograms, or more. Such non-standardization is

improper, if not unacceptable, for international commerce. Packaging the onions in standard size sacks, selecting the onions according to size,⁸ may permit Nigerien onions to be sold at slightly higher prices because of improved perceptions of quality. In certain markets, this improved packaging may be required.

Crops other than onions may also be considered for export to African markets. Dried vegetables, tomatoes, okra, peppers and onion balls, store very well, are not susceptible to bruising during transport, bring relatively high prices in the market, and are widely used by Africans in their daily food regimes.

Garlic is also a potentially exportable crop. Consumer demand for garlic is relatively high among Africans as well as Europeans. It is agronomically close to onions and would grow well in onion producing areas.⁹ Furthermore, garlic is already grown in the Air Mountains. Increased trade in garlic might have complementary effect and encourage potato trade from the Air region to the south.

Niger produces most of these products across a wide area of the country. An organized entrepreneurial effort is needed to promote and develop exports of Nigerien produce to other African nations. Regular shipments would have to be arranged, delivery schedules formulated and respected. Markets need to be identified, assembly points and shipping depots established, and importers need to be contacted. It is not known at this time if there exist sufficiently trained and experienced Nigerien merchants. If they do exist, there are questions as to why they have not entered into this trade on their own. Perhaps a system of incentives needs to be created to encourage entry into the export trade. Whatever the reasons, further study is recommended so that a more thorough understanding of the commercial circumstances facing the Nigerien merchant may be better understood.

It does not seem prudent to consider markets outside of Africa at this time. To be more precise, the following markets should be considered for Nigerien produce exports:

8 The CCI/FAO mission (op. cit.,) recommends selection of onions sized 35 to 45 millimeters and 45 to 55 millimeters.

9 Personal communication, Mr. Walter Firestone, Team Agronomist.

by road: Nigeria, Benin, Togo, and perhaps Upper Volta and Mali

by road and rail: Ivory Coast

by ocean-going vessels (from the ports of Benin, Togo and Ivory Coast): any markets in southern, West and North Africa which are regularly served from those ports.

Several enterprises in other African countries which have depended on exporting to Europe, notably BUD/Senegal, have gone bankrupt. The European vegetable market is very volatile. Competition and price fluctuations combine forces to create an unstable market environment. It is unlikely that Nigerien producers could compete effectively with Spanish, Argentinian, Brazilian and Israeli growers on the European market. By way of illustration, in the international market in Paris on January 15, 1984, tomatoes were being sold at the wholesale level for 60 CFA per kilogram, a price lower than tomatoes produced and sold locally in Niamey.

Nevertheless, local businessmen in Niamey have reorganized SONIPRIM, a former parastatal enterprise which went bankrupt, as a private sector venture. SONIPRIM is currently involved in exporting green beans to Europe. The beans are selected according to size and quality by the growers, packed into six kilogram cartons which say "Produce of Niger", and transported to Niamey for air shipment to Europe. Contracts have already been made with European importers for 600 kilograms of SONIPRIM green beans. If this operation is successful, it may be replicated for other vegetable crops. It is unlikely that the European export market will prove viable on a large scale. It is not recommended that Niger focus on the European market as a principal export target.

SUMMARY AND CONCLUSIONS

The principal objectives of this report are to (1) identify those areas of concern which are essential for understanding the current vegetable marketing system in Niger, and (2) provide a complete perspective of those issues to the maximum extent possible. A further objective is to indicate possible areas of interest to direct more detailed study of the vegetable marketing system.

The individual producer has two objectives in producing irrigated crops: (1) to provide food for the household, and (2) to provide a source of revenue. As a food crop, farmers tend to regard irrigated crops as supplemental to traditional rain-fed crops. This perception can cause delays in the timely planting of irrigated crops which can impact negatively on yields. Food crops planted under irrigation provide additional grain as well as foods other than grains, including vegetables and fruit. Producers who grow these crops benefit from diets which are more nutritionally balanced and have greater variety.

On-farm vegetable consumption varies according to production surface, obtained yields, number of people in producer's household, and type of crop. Other influences, such as market demand, market price, and availability of other foods to the household may also affect how much food the grower keeps for personal use. On-farm food consumption of produce from irrigated fields is estimated at not greater than 30 percent for any vegetable crop.

Irrigated crops also are grown as a source of revenue. Irrigated grain crops might provide the producer with surplus grain which is sold in greater proportions than grain grown on rain-fed fields. Vegetable production is largely oriented towards the market. Profit margins have been declining in recent years.

As more producers enter the market, markets become saturated, particularly during peak periods. There is an inability to dispose of excess stocks. Insufficient market outlets or processing and preservation alternatives exist. The result is that large quantities of perishable produce spoil either in the marketplace or in the fields.

Three primary marketing channels are available to farmers cultivating under irrigation: producers may sell at controlled prices to government legislated marketing agencies, or they may sell to intermediaries who have professional market experience, or they may sell directly to consumers by bringing their produce to market themselves.

Marketing agencies purchase specific crops at controlled prices. Each crop has a prescribed procedure for all cultural and marketing operations, and a defined method of sale and payment. In practice, producer prices are below current market prices. The advantages of this system are that transportation

and delivery systems are organized, producer/consumer networks are established, and producers are able to benefit from guaranteed prices. These advantages might be adapted to vegetable marketing circumstances but there is not, at present, a marketing agency for vegetables.

Private sector traders make collection circuits to producers' villages. Growers negotiate a price with the traders and the trader pays immediately in cash for any produce purchased. This is a marketing channel which is widely used by the farmers.

It is estimated that between one-half and three-quarters of all produce sales take place through intermediate traders. These traders are usually small-scale operators who have little impact on prices. They possess limited amounts of capital, are unable to accumulate and hold large stocks, and are oriented towards short-term profit taking. In this system, the traders assume the risk of marketing the produce.

The number of producers who have the possibility of selling directly to consumers is limited. Locational factors such as distance from viable markets, informational factors such as access to timely knowledge of current market needs and prices, and a given producer's entrepreneurial ability all limit the number of producers who may participate directly in the market. Competition is high. Producers must directly assume the risks of marketing. Their profit margins may be reduced by packaging and transportation costs, market fees, losses due to spoilage, and incidental costs.

Market access is determined by distance from markets, conditions of the roads leading to those markets, and availability of transport. If those conditions are favorable, it is practical to consider production of fresh, relatively perishable vegetable selections, subject to market demand constraints. If market access is difficult, crop selections should be made according to the characteristics of the produce to endure difficult transportation conditions, medium- to long-term storage periods, and adaptability to the production environment. In this instance, dried vegetable production seems most practical, as well as onion, garlic, and sweet potato production.

Market demand is a critically important factor which should be assessed before planting is begun. Ineffective communication of market signals and insufficient availability of market information contribute to poor production decisions. Marketing strategies are inflexible and alternative market outlets are limited or have not been identified. The result is that market gluts arise periodically during the growing season.

Scheduling of planting with respect to expected market demand is done by only a small percentage of vegetable producers. These producers seem to be concentrated in Niamey. Study of their marketing strategies might help identify appropriate planting calendars for Nigerien vegetable producers. Increased extension education would help farmers develop and understand the need for better production planning schedules.

There is presently very little choice in how Nigerien producers store or preserve vegetables. Preservation is limited to open-air drying. This typically results in a low-quality product which has accumulations of dust, insects and other debris. Improved, more hygienic drying techniques can be adopted at reasonably low-cost. This would permit higher-quality dried vegetables to be offered for sale. This course of action is dependent upon the extent to which quality is a consumer concern.

The inability to store vegetables for more than a few months creates substantial price variability in the marketplace. Current storage techniques utilize buildings which were not developed for, and are not well-adapted to, the storage of vegetable crops. Storage techniques which conform to the produce being stored can be developed at low-cost.

With respect to export markets for Nigerien produce, the countries to the south and west of Niger, particularly the coastal regions, present strong market potential. These countries have large numbers of consumers, especially in urban areas. Urbanization is typically associated with increased demand for vegetables. As population increases, it is expected that vegetable demand will continue to expand. In any case, the large urban centers along the coast are expected to remain viable markets for many years to come.

Onion trade seems to offer the greatest export potential for Nigerien growers. The Galmi onion variety has favorable flavor and storage characteristics and seems to be well-suited for a number of African markets.

Other crop selections which may potentially be exported include garlic, sweet potatoes, and dried vegetables including tomatoes, okra, and peppers. These crops benefit from broad-based consumer demand and frequent use in traditional African food preparations.

Some ex-African import replacement may be possible if Nigerien produce of equal quality perception can be offered at cheaper prices. Freight costs from Niger to nearby African countries should be less expensive than from countries which are thousands of kilometers further away. These crops include onions (imported from Spain and South Africa into Lagos, Abidjan, Monrovia and Dakar), and lettuce and other fresh vegetables (imported from Spain and South America to Abidjan via Marseilles, France). The extent to which this revealed demand may be satisfied with Nigerien produce needs to be carefully studied.

Technologically sophisticated food processing facilities do not seem appropriate for Niger's vegetable industry at the present stage of development. Before advanced technologies are introduced, extension efforts have to be increased, cultural practices need to be perfected and production must be oriented to demand constraints. This process will take several years to put into effect. Training of personnel is urgently required and more agronomic research is needed.

Because of the limited vegetable marketing opportunities currently available to growers, it is recommended that vegetable production be balanced by grain crop production to the extent possible on irrigated lands. Limiting the supply of vegetables can help create more stable prices for vegetables. The income from the higher-priced vegetables can be used to cover costs of irrigation for all irrigated crops.

ANNEX A. TERMS OF REFERENCE, VEGETABLE MARKETING SPECIALIST

OBJECTIVE:

The global objective of this technical assistance is to conduct a detailed study of the feasibility of increasing the quantity of Nigerien produce currently being marketed, both in domestic and export markets. Contractor will work under the direction of the General Development Officer, USAID/Niamey.

SPECIFIC OUTPUTS:

1. The contractor will be required to produce a written report which includes, at minimum, the following information:
 - a. Describe and assess existing situation in vegetable and other high value crop production. This includes type of crops, estimated production, postharvest handling and storage technology.
 - b. Describe and evaluate storage and processing techniques currently in use in Niger, estimates of kinds and quantities of vegetables stored and/or processed, spoilage percentages over time, and marketing channels currently in use for processed vegetables.
 - c. Assess and define constraints or problems to expansion of level of production currently being marketed domestically and to export markets. Identify higher valued crops which offer promise for expanding West African interregional trade, designate appropriate and feasible target markets, and develop seasonal and/or monthly market demand estimates.
 - d. Identify and investigate the feasibility of potential export markets for fresh or dried produce from Niger. Assess the market potential of each both in terms of quantities of each product demanded and consumer preference for particular product characteristics, if applicable.

- e. Develop list of potential importers for Nigerien produce, schedules of similar product amounts already imported, expressed or revealed demand for Nigerien replacement imports, market prices delivered, and availability and costs of transporting vegetable produce from production sites in Niger to export markets.
 - f. Identify food processing industries in neighboring countries which provide potential export markets for Nigerien produce. Assess the interest of plant operators in procuring regular supplies of produce from Niger. Determine the kind of produce, quantity and expected price delivered which would be demanded by such processors.
 - g. Determine customs and tariff costs and regulations pertaining to the commerce of fresh or dried produce across international boundaries.
2. The contractor will be required to visit some or all of the following locations: Lagos, Cotonou, Lome, Accra, Abidjan, Monrovia, Ouagadougou, and any other major potential export market which the contractor may identify. The contractor should expect to spend at least two weeks working in each location during which time he/she will contact appropriate government officials, commercial representatives, businessmen, and other people involved in vegetable trade and transport. In each foreign location, the contractor will be expected to assess the domestic supply of each vegetable crop to determine the extent to which Nigerien produce might be excluded from the export market, or at what price Nigerien produce would have to be delivered to effectively compete. The contractor will include the results of his/her investigations in the written report.
3. Investigations of vegetable supply within Niger should ideally be done during the peak production period (March/April) when market supply is at its highest levels, and during the hibernage period (June-September) when fresh produce is difficult to purchase in local urban centers.

REPORTS:

The contractor shall submit to USAID/Niger, in form and substance acceptable to USAID/Niger, five (5) draft typed copies in English of the report described above a minimum of three (3) days prior to departure from Niger. He will also be expected to participate in USAID/Niger review meetings.

ANNEX B. NOTES ON SUPPLY AND DEMAND OF VEGETABLES

Estimates of area under cultivation and total production for four selected vegetable crops -- onions, peppers (including hot and sweet peppers), okra and tomatoes -- are given in table Bl. These figures show an increase in area under cultivation in the mid-1970's. In 1975, and again in 1979, there was a surge in onion production and area under cultivation. Although the trend is not continued by the data for 1981 and 1982, the data for those two years is incomplete.

Table Bl. Area under Cultivation and Total Production, Selected Vegetable Crops, 1971 - 1982, Republic of Niger. (a)

Year	CROP							
	Onions		Peppers		Okra		Tomatoes	
	(b) A	P	A	P	A	P	A	P
1982	1491	23,635	2961	4510	--	--	1993	10,633
1981	1054	23,908	287	183	--	--	626	3,820
1980	4125	107,793	375	252	1100	600	390	1,325
1979	3400	104,300	400	200	1300	700	1100	5,600
1978	2900	78,400	400	200	2100	1000	1300	9,600
1977	2000	62,700	100	60	500	300	900	7,200
1976	2800	79,400	500	300	1700	700	900	13,300
1975	2600	70,800	500	200	2800	900	900	12,000
1974	2600	44,100	300	200	2600	1300	900	4,600
1973	1700	29,000	400	200	3000	1600	1600	4,100
1972	1500	20,300	400	200	2700	700	400	2,500
1971	2100	36,000	8900	600	3600	1100	300	2,700

Source: Service de Statistiques Agricole, Ministère du Développement Rural.

(a) Figures are only for total area and production reported. Figures do not uniformly include all seven departments, and may include as few as one department's data.

(b) A = Area in hectares; P = Production in thousands of Kilograms.

Onion production consistently appears to be the dominant vegetable crop. An excellent, detailed study on vegetable supply and demand done by the BDPA in the early 1970's confirms a similar pattern of production.¹ The study notes that about 70 percent of onions grown in 1969 and 1970 were sold. This remains the best available estimate of onion sales. It appears that the amounts sold of the other vegetable crops are not as high as the percentage sold for onions. The BDPA study also determined that vegetable consumption was expected to rise by 12 to 16 percent between 1970 and 1975, and about the same rise between 1975 and 1980.

In the same ten-year period, however, vegetable consumption in African households was projected to rise by 238 percent. The information which was gathered for the present study indicates that consumption of fresh vegetables in African households has increased, although exact data was not available. As stated in the main report, there is every reason to believe that vegetable consumption will continue to increase as population grows and urbanization continues.

Beyond the borders of Niger, neighboring countries are experiencing similar growth in demand for vegetables and vegetable products. Niger has the potential to capture a strong share of those markets. In future years, Nigerien produce might replace Spanish or Brazilian produce in the Trade Center of Abidjan or other similar wholesale markets. But production techniques must be mastered and marketing channels must be opened.

One major obstacle to continued smooth growth in vegetable demand is the annual shortage of fresh produce which occurs in the rainy season. From May, when the last of the cool-dry season production is sold, to November when a few scattered vegetables begin appearing on the market, there is virtually no domestically grown fresh produce available in Niger's markets.

1 Chappelle, G., et al, "Etude du développement de la production maraîchère: l'offre et la demande de légumes", Bureau pour le Développement de la Production Agricole, Paris, 1974.

This is in part attributable to the difficulty of growing vegetables in the hot-dry and rainy seasons. The vegetables are extremely susceptible to insect attack, they succumb to the intense heat or to water stress, and vegetable production competes with rain-fed crops for labor. Additionally, adapted varieties which can resist the climatic stresses have not been identified or, if they have, not been made available to Nigerien growers.

Niger has the production capacity for growing high-quality, high-value vegetable crops. The techniques used by Nigerien growers need to be perfected, both in terms of the nature and quality of their inputs, and the postharvest processing of their vegetables. This can only be done with an increased training and extension effort.

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