2010 AARDO Workshop on
Technology on Reducing Post-harvest Losses and
Maintaining Quality of Fruits and Vegetables
180-185

Some Horticultural Post Harvest Aspects in Sudan with Special Focus to Banana

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Introduction

Sudan is one of the largest countries in Africa. It lies in the hart of Africa content between long. 21-38 E and lat. 4-22 N. Sudan enjoys wide variety of climates ranging from desert in the north, tropical and subtropical in the middle and equatorial in the south. It has been blessed with abundant water recourses from rivers, rain, and under ground water beside huge areas of fertile soil.

The country has got reasonable infra-structure including railways, paved roads connecting the regional capitals and the main production areas with the federal capital and the national seaport at. Also there are international airports, well established network of telecommunication.

In Sudan there is about 84 millions hectares available for cultivation of which about 17 million are actually cultivated.

The vegetables cultivated areas is about 273154.14hectares with total production of 3.4 M tons with average productivity of 12.5 ton/ ha. The fruit cultivated area is about 158864.85 ha with total production of 1.9 m tons with average productivity of 14.4 ton/ ha. Sudan has the capability of producing fruits and vegetables, ornamental plants, spices, and medicinal plants allover the year. Production for export is highly specialized for being trace naturally and free of chemical residues.

Problems Facing Fruits and Vegetables Export:

1. High cost of agricultural inputs.
2. Cultural practices still need a lot of extension, training, and applied research.
3. Improper harvest time and process.
4. Lack of precooling.
5. Bad access roads conditions leads to great losses and reduces the quality of the produce.
6. Insufficient centers for grading sizing and backing.
7. High cost of backing materials.
8. High cost of air transportation. For example, A ton of produce to Europe will cost more than one thousand $, also the trips are not regular.
9. Marketing problems which include:
   (a) No strict adherence to market specifications
   (b) Lack of regulatory and sustainability of export produces

(c) Non sufficient market information
(d) Weak government finance.
(e) Weak processing for surplus.

Solutions

1. Production cost must be reduced by reducing cost of inputs, charges, and irrigation cost.
2. Provision of necessary finance.
3. Improvement of production quantity and quality by:
   a. Training of farmers to improve their work in the field and post-harvest practices and create awareness.
   b. Strengthening and support of research and extension services.
   c. Implementation of suitable technical packages.
   d. Weed and pest control.
   e. Delegation of information to exporters.
   f. Improvement of nursery services.
4. Strengthening and support of necessary infrastructures for export.
5. Provision of market information.
6. Encourage investment in agricultural industry.
7. Diversification of exportable crops and creation of new markets through efficient market survey and study and recognition of market size.
8. Regulation and organization of air transport.
9. Introduction of sea transport which is cheaper.

Exportable and promising horticultural crops include mango, lime, grapefruit, banana, papaya, melon, onion, green beans, sweet and hot pepper, okra, potato, medicinal and aromatic plants.

Banana

The area cultivated with banana in Sudan is estimated at 41340 feddans with a total production of 400000-500000 tons per year. About 87% 0f total production comes from three states, namely Sinnar, Blue Nile, and Kassala. Within the three states, Sinnar state comes on the top (in fact the top of the country) as 73% of total production of banana in the country comes from this state. Then come Blue Nile state with 8%, and Kassala state with 6% of the total production.

In Sudan, there are a lot of factors in favour the production of banana. These factors include availability of fertile soil, suitable climate, experienced farmers, adequate technically qualified personnel in addition to that Sudan is near Gulf market. Almost only dwarf Cavendish variety of banana is produced in the Sudan. More than 95% if not 100% of banana produced in Sinnar and Blue Nile states is transferred to Khartoum state where is it ripened and sold in the local market.

The situation of banana can be discussed with regard to:

A. local market

Although the bananas are generally clean in appearance in the field, the quality presented in the market is poor and a lot of post harvest losses occur which are estimated at 30-40%. The reasons for that are:

1)Condition in the field:

The various cultural practices are not well paid attention, fertilisation is done occasionally. Although the temperature in the production areas (Sinnar, Blue Nile) range from 30-42 Celsius, it did not affect plant growth and development because of the irrigation by flooding which also add to the fertility of the soil. No serious pests and diseases are observed.

2)Harvest:

The farmer has good experience with regard to harvest time but the harvest process is not done properly. The bunches are cut and put over each other in a front of a pile in a place in most cases not shady waiting for truck which in most cases do not come in proper time. There is no any post harvest treatments.

3)Loading and transport:

Worker are not fully aware of right way of loading of trucks which are usually overloaded in addition people normally travel together with the banana on the same track with their luggage kept on the top of the load. The distance between the production areas and Khartoum is a bout 700-900 km. the truck at first has to pass through the bad access roads from the farm before reaching the paved road. Although the main road connecting the production area with Khartoum is paved but it is not in a good condition in many part of it where holes and cracks exist. A long the road there is a lot of tax points where the driver has to stop and pay for traffic taxes or to check his documents. Also drivers are not aware of the load they carry and they take a lot of time resting at service areas. Due to all these fact, the trucks take more than 16 hours before they reach the ripening rooms in Khartoum. During the rainy season the story is different. The truck can not move any more in access roads to farm so the truck wait beside the main paved road. The banana is lifted from the farm by a tractor-trailer to the place of the truck and then the load is transferred to the truck. Several tractor trips are needed for one truckload, which means more handling, more cost and more delay to the produce.

4)Unloading and ripening conditions:

On arrival at the ripening rooms, the handling of the bunches is rough. The bunches are thrown from the truck to a man waiting beside and he in turn throw it to the ground. The common practice in most ripening rooms is to dip the bunches one after another in a barrel of water which is usually not changed even if it becomes dirty. By doing so the fungal spores from banana will accumulate in the water which becomes a source of fungal infection. After unloading the bunches are then weighed and piled on the floor of the room almost up to the roof in this way air circulation will be severely hampered. The ripening rooms are seldom washed or cleaned and when washed on soap or disinfectants are used. As a result the rooms are conducive to growth of micro organisms. Most

if the rooms are cooled by a simple form of coolers and there is no device for regulating the fluctuation of the temperature and humidity.

5)Retail market:

Selling banana by retail is conducted in the central market, super markets and at the roadsides. Also the handling of the fruit in the retail market is bad and in most cases the banana is presented under the sun. The bad quality of banana presented in the retail market is the result of this bad fruit chain, which lack refrigeration.

B. Banana export

In spit of an area of 31340 feddans cultivated with an average production of 400000-500000 tons, only small trail shipments found their way to the export markets. To study the situation of banana export a comparative study was conducted (Imam, 2001) where banana production and export for five years (1993-1997) was compared with the production and export of other three horticultural crops namely mango, Lime and grapefruit for the same period.

By referring to table (1) banana production comes in the second level after mango with a percentage of 25.6%. table (2) shows that banana export comes at the bottom and the amount exported is very low and non-sustainable . Form the table ,the total amount exported during the five years equals only 19.5 tones, which represents only 0.06% of the total amount export of all fruits in the study, which equals 32315.19 tones. If we take the total amount of banana exported during the five years (19.5tones)as percentage of the amount of banana produced during the same years it constitutes only 0.0009% (table 3).from the three table (1, 2 and 3) , it is clear that the problem of banana export is not is not related to production . also the problem is not a lack of market because sudan is next door to gulf area where the market capacity is very large. Table 4 shows that a total amount of 688000 tones of banana is imported in gulf area in one year . total amount of banana exported from sudan in five years (19.5tones) constitute only 0.016% of the amount imported by Saudi Arabia in one year which is equal 125000 tons .

Table 1. Banana production for the period 1993-1997 as compared with other crops.

Year	Crop								
	Quantity produced (1000 tons)					Percentage (%)			
	Mango	Banana	Lime	Grapefruit	Total	Mango	Banana	Lime	Grapefruit
1993	793.2	405	228	121	1493.2	49.5	27.1	15.3	8.1
1994	776	414	234	217	1641	47.3	25.2	14.3	13.2
1995	821.6	436.5	237	224	1719.1	47.8	25.4	13.8	13
1996	870.4	459	240	238	1807.4	48.2	25.4	13.3	13.2
1997	960	486	252	254	1952	49.2	24.9	12.9	13
Total	4167.2	2200.5	1191	1054	8612.7				

Source: Horticulture Sector Administration.

Table 2. Banana expoert for the period 1993-1997 as compared with other crops.

Year	Crop								
	Quantity exported (tons)					Percentage (%)			
	Mango	Lime	Grapefruit	Banana	Total	Mango	Lime	Grapefruit	Banana
1993	5829.9	768.1	37.1	9.5	6644.6	87.7	11.6	0.6	0.1
1994	6528.2	200.3	13.9	10	6752.4	96.7	2.9	0.2	0.1
1995	5458	866	101	0.0	6425	84.9	13.5	1.6	0
1996	5095	114.1	110	0	5319.1	95.8	2.1	2.1	0
1997	5194	137.7	603	0	5934.7	87.5	2.3	10.16	0
Total	28105.1	2086.2	865	19.5					

Source: Sudan Airport quarantine office

Table 3. Banana export as percentage of production.

Year	Banana production (1000tons)	Banana export (tons)	Export percentage (%)
1993	405	9.5	0.002
1994	414	10	0.002
1995	436.5	0.0	0.0
1996	459	0.0	0.0
1997	486	0.0	0.0
Total	2200.5	19.5	0.0009

Table 4. Annual import of banana in Gulf area

Import country	Total amount imported (1000 tons)	Value (million dollars)
Saudi Arabia	125	78
Iran	145	60
kuwait	24	15
Lebanon	26	13
Libya	35	18.75
Syria	53	23.85
Turkey	165	82.5
UAE	60	36
Rest of Gulf	55	33
Total	688	359.5

Source: FAO, 1998.

The problems of banana export are

1. improper harvest methods and bad handling
2. absence of backing houses
3. lack of refrigerated trucks
4. improper mode of transportation
5. insufficient scheduling
6. lack of post-harvest treatment
7. other problems shared with other horticultural corps

Solutions

1. Roads must be improved specially access roads
2. Backing houses must be established
3. Training of farmers for suitable cultural practise
4. Farmers must be trained how to harvest and conduct post harvest handling for such delicate crop
5. Creation of awareness among workers and drivers about the need of care and gentle handling for banana
6. Loading operation must be organized in advance to avoid delays
7. Farmers must be trained to use traveler boxes instead of transporting banana as bunches
8. If the boxes are not affordable by they should but a layer of wood at the middle of the truck so that the load of bunches is separated into two parts to reduce damage of the fruit
9. Other solutions shared with other crops

Efforts to improve banana handling

An improved method of harvest and handling of banana was conducted [imam,2001] and compared with the traditional methods of handling. The improved methods involves careful cutting by two persons, dehanding under water treated with chlorine 100 ppm then dipping in fungicide (TBZ 300 ppm) as a separate treatment. The hands are then backed in traveller boxes ($\mathbf{69 \times 30 \times 25}$ cm). The boxes are then loaded in the truck and transferred to Khartoum for ripening. The result of the study showed that there is a significant difference in the percentage of losses and the grade of fruit. The total losses decreased from 41% to 12.3% and the quality percent raised from 6.6% to 58.1%. This method of dehanding, washing, backing is demonstrated several times in the field in front of the farmers for training purpose.

References

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