The Status of Date Palm Cultivation and Date Production in Sudan

Khairi, Mohamed Mohamed Ali*,
Meryem I. Elhassan**
and Fatima A. Bashab**
Khairy5@hotmail.com

Abstract With annual production of about 330 thousand tons and a date palm (Phoenix dactylifera L.) population of about 8 million, Sudan ranks number 8 in the list of top date producing countries of the world. But, Sudan has tremendous potential to rank much higher in this scale due to extensive stretches of land between latitude 12 N and Tropic of Cancer, availability of irrigation water and suitable climate for date production. Traditionally accustomed to live on date palms by merely pollinating and harvesting the palms, growers in Sudan have to cope with environment changes and adjust to adopt proper management practices to earn a decent income from date palm cultivation. Sudan has been relying on growing indigenous varieties of dry and some semi-dry dates; but the past few years have been an influx of highly reputed date varieties imported from the tissue culture laboratories in UAE and Saudi Khairi, Mohamed Mohamed Ali*, Meryem I. Elhassan** and Fatima A. Bashab** Khairy5@hotmail.com Arabia. Research programs on date palms in Sudan are progressing with focus on local selection for promotion of promising indigenous germplasm, male selection studies, propagation, protection, storage and cultural practices. Some efforts to utilize date palm parts in light industry have started, but large scale enterprises are yet to come. An overall improvement in harvest, postharvest handling and preparation of dates for marketing in Sudan are required. Sudan is yet free from the devastating Red Palm Weevil (Rhynchophorus ferrugineus) Oliv, but termites (Microcerotermes diversus, Odontotermis classic) Sjosted, white scale (Parlatoria blanchardii).Targ., greater date moth (Arenipsis sabella hampsim), dust mites (Oligonychus afrasiaticus) McGregor, and (O. pratensis). Banks and some rodent pests are endemic. The store pests Raisin Moth (Ephestia sp) and the Grain Saw Beetle (Oryzaephilus surinamensis) cause a lot of damage. The recently brought in Green Scale (Astrolecanium sp) is a menace in Sudan probably due to lack of predators, vulnerability of local cultivars, climate and lack of growers' awareness to handle an exotic pest. Sudan is yet free from the destructive Bayyoud disease caused by the fungus (Fusarium oxysporu. albedinis). Black scorch (Thielaviopsis paradoxa)

Fig. 1. Elshamil Nurseries-Kadaro, Sudan: Torpedoes and Advanced Date Palm Plantlets

j.Graphiola leaf spot (Graphiola phoenicis) and inflorescence rot (Mauginiella scaettae) are known to exist. The organisms Fusarium moniliforme, Fusarium oxysporum, Aspergillus sp. and Helminthosporium sp. were isolated. Nematodes have also been isolated from infected date palms. But, several endemic diseases that are known by local names only exist, awaiting a thorough survey to diagnose and identify these diseases. *Consultant horticulturist **Agriculture Research Corporation, Sudan.

Introduction

Area and Production

Date palms (Phoenix dactylifera) are intimately linked to the culture, history, heritage, religion and everyday life of the people of northern states of the Sudan. FAO (Stat, 2005) statistics indicate that date palm population in Sudan is about 8 million and that date production is about 330 thousand tons. This puts Sudan about number 8 in the list of top date producing countries of the world. Current date palm plantations are mainly strips along the Nile banks north of Khartoum and pockets in Kassala and the Red Sea in the east, and Kutum in the west. But Sudan is a vast country with tremendous potential for expansion in date palm areas. Stretches of flat land from latitude 12 N to the Tropic of Cancer across the entire width of the country is suitable for date production. Expansion in date palm areas of Sudan has been slow until tissue culture laboratories availed huge amounts of date palm plantlets of most outstanding date varieties of the world. Sudan benefited from this source and the past two decades were an era of influx of thousands of tissue culture propagated date palm plantlets into the Sudan (Fig. 1). A big portion of these introductions was planted

Fig. 2. Bearing Barhee- Elnifaidy Orchard, Soba, Khartoum

Fig. 3. Candidate date palm cultivars for local selection (Merowe, Sudan).

Fig. 4.Training nationals in removal of date palm leaf bases and climbing by ropes.

in Khartoum area where growers have the capability to purchase these relatively expensive imported tissue culture propagated plantlets. There are 5 national tissue culture labs in the country working to propagate date palms, yet the country still relies on imports of date palm plantlets.

Variety Improvement

For centuries, Sudan's date production relied on the six commercial varieties Barakawi, Abattamoda, Gondaila, Madeena, Mishrig Wad Laggai and Mishrig Wad Khateeb, with the dry variety Barakawi dominating the area. Several seedling cultivars also exist, some of which are known to have very desirable merits. Tissue culture propagated imports from labs in United Arab Emirates and Saudi Arabia have brought in highly reputed varieties of date palms which include Barhee, Khalass, Abu-Maan, Anbara, Fard, Nubboot saif, Nubtat Sulatan, Khinaizy, Khudry, Sukkary, Rizaiz, Saqae, and Sultana. Early introdctions of these varieties are producing well and are being marketed locally (Fig. 2). These introductions are also envisaged to change the nature of Sudan's predominantly dry dates to softer dates which are more palatable and appealing to consumers. A switch in this trend is also envisaged by influence of a new dam which was recently constructed on the River Nile at Mirwy in the heart of date production area. This dam is envisaged to modify the micro-climate of the area and avail a more humid atmosphere that will soften the dry dates. It may also avail reliable and cheaper source of electric power that may facilitate cheaper means for date palm irrigation, rutab cold storage and power for packaging and processing factories .The variety improvement program in Sudan also includes surveys to locate candidate date palms with outstanding merits for evaluation, selection and promotion of the best. The authors are evaluating a wide selection of these cultivars for local selection (Fig. 3).

Male Selection

Despite the existence of a prehistoric date palm culture in Sudan, no named males exist and commercial date palm growers still depend on random males for pollen collection. Yet date palm growers in Sudan realize that some difference in pollen effects can be

observed and growers evade taking pollen from certain male palms. The only named males are probably New Halfa 1 and New Halfa 2 which were recently released for pollinating Mishrig Wad Lagai and Mishrig Wad Khatib cultivars, as well as the recent tissue culture propagated male introductions. Realizing the need to work for male selection, the authors are evaluating some local males for selection and multiplication. Diverse xenia and meta- xenia effects were detected, emphasizing the need to pursue these studies.

Cultural Operations

Date palm culture in Sudan is still traditional, apart from few plantations where implentation of recent techniques are being examined. Multiple stemmed clumps due to lack of desuckering are common, resulting in crowded offshoots that harbor rodents, impede cultural operations and reduce the quality of dates. Dry fronds are not properly removed. Leaf bases, which are sometimes weak and infested by pests, are used for getting to the tops of date palms. As a result, occasional incidents of injuries and tragic deaths of people falling from date palm tops may occur. In collaboration with Iraqi expertise, efforts to improve the techniques of climbing date palms using safety ropes like neighboring countries are in progress (Fig. 4) No bunch management techniques are practiced apart from few trials in recent plantations. Harvest, handling, storage and means of date display for sales need to be improved.

Packing and Processing

There is one government date packaging factory in the country. Some private companies process medical alcohol and vinegar from dates. But these operations need to be improved by construction of more modern plants to cope with the expanding date production.

Utilization of Date Palm Parts

There was a time when date palm parts were extensively used in construction of houses, water wheels for pumping water off the River Nile, containers, mattresses, ropes, fencing, fire wood and the like. While traditional means of utilization of date palm parts continue, means of utilizing date palm parts is expanding to include manufacturing furniture, beds and innovative products (Fig. 6).

Protection

Pests

Fortunately, Sudan is yet free from the devastating Red Weevil pest Rhynchophorus ferrugineus Oliv strong prohibitive measures to restrict its entrance into the country are effective to date. Indigenous pests the important of which are termites Microcerotermes diversus, Odontotermis classic Sjostedt, white scale Parlatoria blanchardii.Targ., greater date moth Arenipsis sabella hampsim, dust mites Oligonychus afrasiaticus McGregor, and O. pratensis.Banks exist in the country and control measures continue. Store pests like raisin moth Ephestia sp. and the grain saw beetle Oryzaephilus surinamensis L. cause serious damage to dates and proper care from the palms to consumers is undertaken. Rodents like mice, rabbits, birds such as house sparrow Passer domesticus Arbreus and bats are endemic and cause a lot of damage. The exotic green scale Astrlecanium, which is relatively a new pest in Sudan, poses a real threat to the date wealth of Sudan (Fig. 7). This pest is devastating and control measures are very expensive. Chemical, IPM and burning have been tried but the final control measure seems to be biological control. The reason why green scale which is not considered to be a serious pest in countries where it is endemic, while so serious in Sudan, could be because there are no effective predators in Sudan, or because some Sudanese varieties are more susceptible to the pest attack or the availability of a more favorable environmental factor. Further, there is a lack of technical

Fig. 6. Furniture manufacturing from date palm parts (Curtsey of Muthanna K.Chechani).

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knowhow in handling an exotic pets. With failure of strong quarantine measures to confine the pest to the spot of its first appearance and effective demolishing measures, it has not been possible to eradicate the pest completely. Since the pest is wide spread now, current control measures are IPM, sanitary, coupled with chemical control and adoption of plant quarantine legislations. Predators for biological control are being introduced from areas of similar habitats in Saudi Arabia and Iran for breeding and release in green scale infested areas.

Diseases

Sudan is so far free from the devastating Bayyoud disease (Fusarium oxysporum albedinis), But several diseases, many of which are only known by local (names exist. Black scorch (Thielaviopsis paradoxa)j, inflorescence rot (Mauginiella scaettae) and Graphiola leaf spot (Graphiola phoenicis) are known to exist. The organisms Fusarium moniliforme, Fusarium oxysporum, Aspergillus sp. and Helminthosporium sp. were isolated. Nematodes have also been isolated from infected date palms. A thorough survey to diagnose and identify the endemic diseases of date palms in Sudan awaits investigation.

Closure

The prospects for establishment of an advanced date industry in the Sudan are enormous, vast areas with suitable climate and irrigation facilities are available. Infrastructure and human resources with high technical capabilities also exist. With current availability of date palm plantlets from tissue culture laboratories, boosting the date palm area with highly esteemed date varieties are in progress.

Collaboration

Intimate regional collaboration to develop the date palm sector in the region and improve the livelihood of date palm growers is extremely vital. Relevant areas for collaboration are research work, propagation, date palm service improvement, postharvest handling, and packaging, processing and marketing. Establishment of regional institutions to facilitate such linkages and exchange of experience is crucial to achieve the ultimate goals. The long time dream of establishment of an international palm and date centre waits to become true.