

Training Module

Three Days/cycles Training

On

**Capacity building of the Date Palm's growers of on
Improved Orchard Management and post-harvest
process**



Topics:

1. Introduction and importance of Date Palm:

Date *Phoenix dactylifera* is one of the most important fruit. Dates are rich in several vitamins, minerals and fiber. The benefits of dates include relief from constipation, intestinal disorders, heart problems, diarrhea, abdominal cancer, and many other conditions. Dates are good for gaining weight also. Some health specialists have said that eating one per day is necessary for a balanced and healthy diet.



2. Important Varieties

There are more than 100 varieties of dates are grown in Pakistan. Among them commercial varieties Dhakki, Basra, Mazawati, Zaidi and wild dates are grown on large scale. Dhakki variety liked by the consumer because of taste, softness and large size.

3. Rationale for Date Palm Orchards Management Training:

The farmers of the area have great potential but they have little know how of the improved orchard management practices viz. proper time of irrigation, fertilizer application, insect/ pest control and possessed very limited knowledge of post-harvest processing that greatly affect fruit production and income of the growers. Below are some of the basic points needs attention could lead towards higher yield and quality.

a. Climate/Weather

The successful cultivation of date palm requires a long summer with high day as well as night temperature, a mild winter without frost, and absence of rain at the time of flowering and fruit setting with low relative humidity and plenty of sunshine. Hot and dry weather is ideal for dates palm production.

b. Soil

Dates can be grown on almost all types of soil, however to get best results Deep, sandy loam soils ideal for maximum water–holding capacity and good drainage are desirable.

c. Time of Sowing

Dates are sown in spring and autumn. Suckers can be cultivated in both the seasons but the Dates cultivated in the month of June gives better results. The climatic condition in the month of June is ideal for dates sowing.

d. Propagation

Dates are grown by .1. **Through seed** 2.**Through suckers.**

Date palm is mostly propagated by off- shoots (suckers) emerging from the base of the palm. Since plants raised form seeds not only bear inferior quality fruits but almost half of them may be non-bearing males. The off shoots (suckers) could be separated from mother plants 4-5 years after planting. Thus, 8-20 off shoots of 8-15 kg size can be obtained during its fourth and tenth year of life and none therefore. Prior to the removal of offshoots, the outer leaves are cut back to two thirds of their lengths and the inner leaves to half. The stalks of the pruned old leaves are tied together to protect the tender apical growing bud. It is ensured that offshoots have well –developed root system. The offshoot separated by cutting the connection with the help of a sharp chisel in such a way that no injury is caused to the mother palm. The copper fungicidal paste should be applied to cut end of the off shoot.



e. Cultivation

Date palm is a perennial tree and bears fruits for 40-50 years. Therefore, adequate planting distance is very essential. In general, planting is done at 5 m distance between rows and plants in square system, which facilitates intercultural operations and proper development of the palms. A total of 156 palms are accommodated in one hectare. Since it is dioecious, 10% of these must be raised by planting male offshoots to provide adequate pollen-grains. The field should be thoroughly ploughed, leveled and pits of 1m x1m x 1m size are dug during simmer.



They are kept open for about a fortnight and refilled with a mixture of garden soil and well decomposed farmyard manure. Care should be taken that the crown of the planted suckers remains at least 10-15 cm higher than the ground level so that the irrigation water does not touch it or enter into it. Young offshoots should be protected against intense heat and low winter temperature for at least 2-3 years by providing partial shade. Rainy season (July-September) is ideal time of planting.

f. Pollination

Date palm is highly cross pollinated due to its dioecious nature. Natural pollination by wind, bees and insects is found to yield a fair fruit set however, in commercial plantation and fruit production, mechanical or hand pollination is done. For this, 2-3 male trees are enough to pollinate 100 female

palms. About 2-3 strands of male flowers are inserted between the strands of female flowers. Dried pollen grains pollination technique is more economical and allows proper use of the pollen as well as adequate control of the timing of pollination. Dried pollen could originate from the last season, from early maturing males of the same season, or from few days old male flowers.

g. Irrigation

Irrigation is very essential in date palm because it is grown in hot and dry, low rainfall areas. Further, the water requirement of date palm is high although it can withstand prolonged droughts. Date palm likes wet feet but is damaged under prolonged stagnation. Mulching with black polythene or available organic mulch materials like date palm leaves or weeds in the basin helps conserve moisture and increase irrigation interval.



h. Manuring & Fertilization

Nutrient application is important for satisfactory production of quality dates. Fertilization programs start after harvest, in the autumn or early winter months. The aim of this application is to replenish the trees energy reserves.

i. Fruit Thinning

Fruit thinning is necessary to ensure adequate flowering in the following year, to improve fruit quality, prevent delayed ripening and reduce compactness and increase ventilation of the bunches. Thinning can be done manually or by chemical sprays. Manual method is common which involves removal of some bunches or strands from each bunch or shortening the length of strands. The number of fruit that a palm can sustain depends on variety, age, vigor and number of green leaves. Three to four bunches/palm is recommended from fifth year onwards.



j. Pest and Diseases

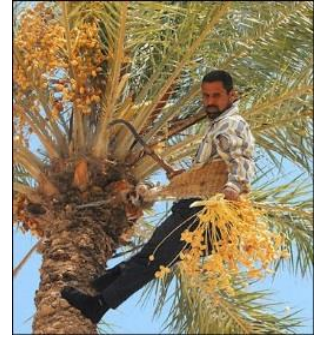
Borer: Borers enter into the trunk of the tree and make tunnels. The tree appears green but gradually it bends over and breaks. Use any recommended emulsion or carbon bisulphide granules which should be dropped into the holes and plugged with cotton wool and plastic.



Scales: All the recommended varieties are attacked by this insect. It sucks the sap from the leaves and small brown spots appear on the leaves. Use Folidol or Metasystox at the rate of 1 litre in 450 litres of water per acres for its control.

k. Harvesting

The dates are eaten at different stages of maturity depending upon the varieties and thus harvested at different stages according to local demand, customs and climate. The dates harvested at doka stage have 70-80 % moisture. They have very poor keeping quality. Therefore, these fruits should be marketed soon or may be cured or processed. Since Doka or dang fruits cannot be stored for future use, curing should be done. Doka fruits are successfully processed to prepare Chhuhara. The technique involves boiling fruits for 5-10 min. The doka fruits can also be artificially ripened to bring them to the final stage of maturity by dipping them in boiling water for 20-25 seconds.



l. Post-harvest management

The harvested fruit is transferred into containers for transport to the packing house. Dates that are rotten, sour, with remains of insects, crushed, shriveled up, unfertilized, or unripe fruit which are not intended for artificial ripening should be removed from. In the packinghouse there are a number of processes, designed to improve or maintain fruit quality. These processes are: fumigation, washing, storage, refrigeration, hydration, dehydration and curing.



Training Agenda

Day One /Cycle-1			
Name of Module	Time	Topic	Mode of Delivery
MODULE 1: Introduction and Get to Know	07:30- 7: 50 AM	Opening ceremony and participant's introduction	Training opening & discussion
	07:50- 7:55 AM	Course Overview and Participants Expectation	Discussion and QA
MODULE 2: Capacity building of the Date Palm's growers of Tehsil Mir Ali on Improved Orchard Management and post-harvest process	07:56 - 08:10 AM	Session 1.1: Introduction and importance of Date Palm & why go to all the effort?	interactive lecture, discussion & QA
	08:11 – 9:00 PM	Session 2.1: Introduction to Climatic Requirements, Soil Requirements and Important Cultivars	interactive lecture, discussion & QA
	09:01- 10: 00 AM	Session 3.1: introduction to the basics of Orchard design, Cultivation Practices, Pits preparation, Propagation and Irrigation	Group work, interactive lecture, discussion & QA
	10:01-11:00	Session 4.1: Field demonstration and overview of the session through group discussion to identify problems and Tea break	Interactive lecture, discussion & QA
	11:01- 12:00 PM	Session 4.1: Importance, Application time of FYM and its dose, Application time of Fertilizer and its dose, Use of available micronutrients. Making compost in home	Group work, interactive lecture, discussion & QA
			End of Day One/Cycle-1

Day Second/Cycle-2

Name of Module	Time	Topic: <u>Integrated Pest Management</u>	Mode of Delivery
MODULE 1: Recap	07:30- 7: 50 AM	Review of the previous sessions	Training opening & discussion
	07:50- 08:10 AM	Course Overview and Participants Expectation	Discussion and QA
MODULE 2: Capacity building of the Date Palm's growers of Tehsil Mir Ali on Improved Orchard Management and post-harvest process	08:10 - 09:00 AM	Session 1.1: Role of pollination in fruit formation, Importance of artificial pollination, Male and female flower identification, Flower initiation, Collection and care of male pollens, Application of male pollens and Pollination tools	interactive lecture, discussion & QA
	09:01 – 10:00 AM	Session 2.1: Important factors during fruit formation, Fruit thinning, Use of growth regulators, Bunch protection and Pruning leaves and thorns removal	interactive lecture, discussion & QA
	10:01- 11: 30 AM	Session 3.1: Integrated Pest Management. Difference b/w Insect attack and diseases, Important disease, Diseases control, Important insects, Insect control, Making organic insecticides at home	Group work, interactive lecture, discussion & QA
	11:31 -12:00	Session 4.1: Field demonstration and overview of the session through group discussion to identify problems and Tea break	Interactive lecture, discussion & QA
End of Day Two/Cycle -2			

Day Third/Cycle-3

Name of Module	Time	Topic: <u>Food processing</u>	Mode of Delivery
MODULE 1: Recap	07:30- 7: 50 AM	Review of the previous sessions	Training opening & discussion
	07:50- 08:10 AM	Course Overview and Participants Expectation	Discussion and QA
MODULE 2: Capacity building of the Date Palm's growers of Tehsil Mir Ali on Improved Orchard Management and post-harvest process	08:11 - 09:00 AM	Session 1.1: Important equipment used in harvesting, Proper time of Bunch harvesting, Post-harvest techniques	interactive lecture, discussion & QA
	09:01 – 10:00 AM	Session 2.1: Importance of value addition in dates, Fruit curing, Fruit Packing techniques and Waxing	interactive lecture, discussion & QA
	10:01- 11: 30 AM	Session 3.1: Important techniques of date palm preservation for marketing, Transportation care and maintenance, Important factors during Marketing	Group work, interactive lecture, discussion & QA
	11:31 -12:00 PM	Session 4.1: Field demonstration and Date Palm growers experience in Dates marketing through group discussion and Tea break	Interactive lecture, discussion & QA
			End of Day Third/Cycle -3