

TRAINING MODULE – SUNFLOWER

Introduction and Background:

Sunflower is one of the four most important annual crops in the world grown for edible oil. In Pakistan it was introduced as an oilseed crop 40 years back. Its seed contains 35-55% oil contents. This crop has great potential of growing under all the soil and climatic conditions in rain-fed as well as irrigated farming system.



Importance:

Edible oil is the essential component of our food but we are producing only 20% of our need and remaining 80% is imported to fulfill the requirement. Keeping in view the factor of population pressure we have to increase our local production of oil. Sunflower is an important oilseed crop and is successfully grown under different climatic conditions. It has great potential to bridge the gaps between the production and consumption of edible oil.

Sowing Season:

Though sunflower can be grown round the year, yet timely sowing of sunflower ensures more yield. In case of late sowing, oil content decreases and yield losses occur. Throughout the country, sunflower is grown in two seasons: Spring and Autumn.

Sowing season for Khyber Pakhtunkhwa:

Area	Spring	Autumn
Plain Areas (D.I.Khan, Bannu and Kohat)	15th Jan – 28th Feb	15th July – 20th Aug
Hilly Areas (Swat, Mansehra and others)	1st Mar – 30th June	-----

Average Yield:

The average yield in Pakistan is 1.3 tons/ha. Almost 99% area is under hybrids imported by different multinational seeds companies. However, local hybrids are also available which can be grown successfully.

Intercropping:

It has good prospects as intercrop with sugarcane

Soil type:

Heavy soils are most suitable for sunflower cultivation because of water and nutrients holding capacity. Sandy and water-logged soils are not desirable for sunflower production.

Seedbed preparation:

Sunflower has a well-developed root system, deep ploughing with a moldboard plough followed by cultivator and plank is necessary.

Seed rate:

Seed rate depends upon soil type, germination percentage, time of sowing and method of sowing. On average, 5-6 kg/ha seeds having germination percentage more than 90% should be used per acre.

Sowing & Geometry:

Sunflower sowing can be done through planter, single row cotton drill method.

Method of planting: Row to row spacing = 75 cm
 Plant to plant spacing = 25 cm

Fertilizer requirement:

Fertilizer requirement of sunflower is given below:

Fertilizer: Nitrogen = 150 kg/ha (1/2 at planting + 1/2 at first irrigation)
 Phosphorus = 60 kg/ha
 Potassium = 60 kg/ha

Irrigation requirement:

Generally, four to five irrigations are required for the crop but it also depends upon weather conditions. First irrigation should be given 20 days after emergence, second 20 days after first irrigation, third at head formation, fourth at grain formation and last at the milk stage. Details given in below.

Irrigations:	4-5	Spring crop	Autumn Crop
	1st	25 days after germination	15 days after germination
	2nd	15 to 20 days after 1st irrigation	10-15 days after 1st irrigation
	3rd	At the time of head initiation	At the time of flower initiation
	4th	At the time of flower completion	At the time of seed setting
	5th	10-15 days before harvest	

Thinning:

Thinning is one of the operations essential to maintain the desired plant population. For this purpose, weak

or abnormal seedlings should be uprooted before the first irrigation is given.

Weed control:

Control of weeds during the first eight weeks after emergence is crucial. Weed control can be done through hoeing and pre/post emergence herbicide application.

Insects of sunflower:

Jassid, Whitefly, Aphid, Cutworm, Armyworm and Mealy bugs are the major insects causing problems. Instead of chemicals application, Biological control should be used to control these insects.

Diseases of sunflower:

Charcoal rot, Head rot, Leaf blight, Downy mildew, Powdery mildew are the diseases affecting this crop. Seed treatment with fungicides can be helpful in controlling fungal diseases.

Harvesting and storage:

Sunflower crop matures when back of flower head turns yellow and the leaves become grayish white and moisture content of seed is 30-35%. For storage, the seed moisture content should be 8-10%.

Varieties:

Local Hybrid: PARC-92E, SMH-9706, SMH-0907, SMH-0917
Hybrid of Multinational: NK-265, SF-187, PI-6480, Hysun-33

Threshing: Dry for 4-5 days and thresh with thresher

Way of implementation:

DAY-1

Lesson 1	Introduction
Lesson 2	Training Obejectives
Lesson 3	Importance of Sunflower cultivation
Lesson 4	Sowing requirements
Lesson 5	Seedbed preparation
Lesson 3	Concept of seed coating by pesticides

DAY-2

Lesson 1	Overviews
Lesson 2	Sowing and Geometry
Lesson 3	Irrigation
Lesson 4	fertilizer application

DAY-3

Lesson 1	Overviews
Lesson 2	Insects and Weeds Control
Lesson 3	Diseases Control
Lesson 3	Harvesting and storage