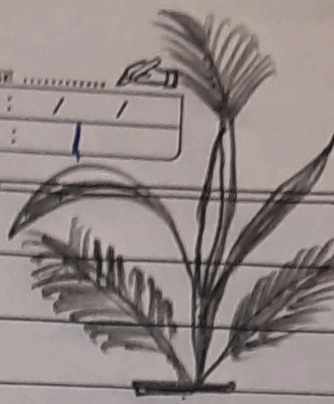
Rabi Crop - Wheat



Wheat is a major cereal crop of Punjab. It was grown on area of 34.95 lakh hectares during 2016-1 with production of 176.36 lakh tonnes and average yield of 50.46 quintals per hectare.

Climatic Requirements:- Wheat is a cool season crop. Higher temperature during early phase of the crop results in poor tillering and early heading. Higher temperature at ripening stag leads to premature ripening and reduction in grain w

Soil type:- Wheat can be grown on all kinds of soil expect the highly deteriorated alkaline and water logged soils.

Improved Varieties

1. PBW621 (2011): The average plant height of this variety is 100 cm and matures in about 158 days. It is moderately resistant to yellow rust and resistant to brown rust. Its average yield is 21.4 quintals per acre.
2. TL 2908 (2004): It is variety of triticale with an average plant height of 113 cm and matures in about 153 days. It is highly resistant to

yellow and brown rusts, Karnal bunt, loose smut and powdery mildew diseases. Triticale is suitable for poultry feed. Good quality biscuits, satisfactory breeds and Chapatis can be prepared from the flour of this variety particularly if blended with wheat to the extent of 50%. Its average yield is 16.4 quintals per acre.

Agronomic Practices

1. **Field Preparation:** One deep ploughing followed by two or three harrowing with disc or tines and two or three planking should be given to prepare a well pulverized seed bed. To protect your seedling from white ants and gujhia weevil mix aldrin 5% dust in soil @ 25 kg/hact. At the time of last ploughing. 40 kg urea/hact. should be added to improve seed gumination.

Soil treatment: Phosphetica culture 2.5 kg + azatobacter 2.5 kg + Mycoderma powder 2.5 kg mix with 100-120 kg. F.Y.M. and broadcast at the time of last ploughing.

Spacing and Sowing time:

- Row to row spacing should be 22.5 to 23cm
- The late sown wheat should be sown in rows spaced 15-18cm.

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Irrigation: First at 20-25 day after sowing
Second at 40-45 day after sowing
Third at 60-65 day after sowing
Fourth at 180-185 day after sowing
Fifth at 100-105 day after sowing
Sixth at 115-120 day after sowing

Weed control: • Only Grassy Weeds
1. Clodinafop @ 400 g/ha in 250-300 l of water/ha.

Diseases: Leaf Rust / Brown Rust - Puccinia recondita tritici

Distribution: Throughout wheat growing regions of India.

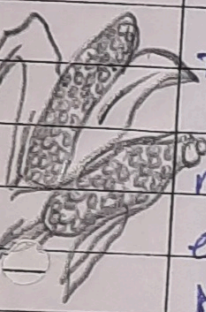
Development: Pathogen over-summers in low and mid altitudes of Himalayas and Nilgiris. Primary infections develop from wind deposited uredospores in eastern Indo-gangetic plains in middle of January where it multiplies and moves westwards by march.

Management: The presently recommended varieties in most of the wheat growing zones are rust resistant.

- Legume Pod-borer
- Army Worm
- Brown Wheat-mite
- Aphids

Harvesting and threshing: Harvest and thrush wheat as soon as fully ripe, to avoid grain shattering. Delayed harvesting results in high grain losses. Combine harvesters are generally being used for simultaneous harvesting and threshing of wheat. Stubbles can be bruished as fine wheat straw by using wheat straw combine. Straw recovery is about 60%. Wheat can be harvested manually or by tractor-operated vertical conveyer reaper windrowers. The syndicator type can be used to thresh the wheat crop with moisture content up to 20 per cent.

Maize: It is the most important crop grain in South Africa and produced throughout the country under diverse environments.



In developed countries, maize is consumed mainly as second-cycle produce, in the form of meat, eggs and dairy products. In develop countries, most people regard maize as a breakfast cereal.

Climatic Requirements: The most suitable soil for maize is one with a good effective depth, favourable morphological properties, good internal drainage, an optimal moisture regime, sufficient and balanced quantities of plant nutrients, and chemical properties that are favourable specifically for maize production.

Cultural Practices:-

- **Soil tillage:-** soil tillage, particularly primary tillage, is the foundation of any crop production system and is the biggest cost factor in maize production.

- **Planting date:-** Planting can commense as soon as groundwater and soil temperature are suitable for good germination. Virtually no germination or growth takes place below 10°C.

- **Planting depth and plant Technique:-** Planting depth of maize varies from 5 to 10cm, depending on the soil type and planting date.

Fertilisation of Maize:-

- **Phosphrous (P):** The general practice is to band-place at 50mm to the side and 50mm below the seed.

Deficiency symptoms usually occur on young plants, especially under cool, wet conditions. Leaves are dark green with reddish-purple tips and margins.

- Zinc (Cn)
- Pottassium (K)

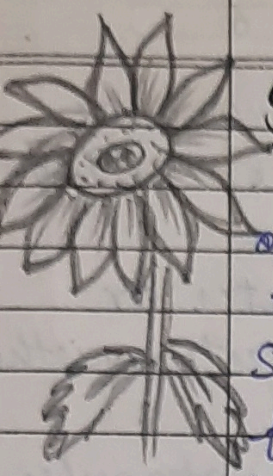
Weed Control:- Physical methods: Weeds can be removed mechanically, by implements or by hand.

- Cultural Practices:- Ploughing during winter or early spring is an effective method of destroying the majority of weeds.
- Chemical Methods:- Chemical liquids, granules or gases are used to kill germinating or growing weeds, or even weed seeds.

* Irrigation:- Maize can be regarded as an important grain crop under irrigation, as it produces very high yields. It is therefore one of the most effective grain crops in term of water. It is usually produced under full irrigation in order to obtain the highest yield.

* Harvesting:- It is done by two methods
  1) Hand harvesting
  2) Mechanical Harvesting

- Hand Harvesting:- Once its dry, the ears can be picked and threshed, or the entire plant with ear can be utilised as maize hay.
- Mechanical Harvesting:- Maize is usually left in the field until moisture percentages of 12,5 to 14,0 are reached before it is harvested and delivered to a silo.



Sunflower:- The spring season is most suited for assured crop and high yields of sunflower. Availability of honey bees during the season in abundance, also helps in good seed setting. Sunflower oil is very well suited for the manufacture of edible refined oil and vanaspati. Its oil can be also used soap making.

⇒ **Soil Type:** It requires well drained, medium textured soil. Avoid salt affected soils.

⇒ **Hybrids:-**

- SH3322 (1997): It is long duation medium tall hybird with an average plant height of 160cm. Its average yield is 8.3 quintals per acre. It contain 43.0% oil.
- Other Varieties: (i) NSFH-31:- It is tall, medium, maturing hybrid having oil content. However, its seed size is small.

⇒ **Land Preparation:-** Two or three ploughings, followed by planking, are necessary to get a fine seed bed for sunflower.

⇒ **Seed Rate:-** Use 2kg seed per acre.

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* Time of Sowing:- To realize high seed yield and to save irrigation water, the sowing of sunflower should be done in January. However, if the planting is delayed till first week of February hybrid PSH 569 should be preffered

* Method of Sowing: Sow the seed 4-5cm deep, in rows 60 cm apart with plant-to-plant spacing of 30cm. Row crop planter can be conveniently used for flat or ridge. Sowing of sunflower seeds. Apply irrigation to ridge sown crop 2-3 days after sowing. Place the seed about 6-8 cm below the ridge top.

⇒ Harvesting And Thrshing :- The crop is ready for harvesting when heads turn yellowish-brown at lower surface near the stalk and the discs start drying up. At this stage, the seeds give blackish look and are fully ripe. The harvest sunflower heads can be threshed immediately after harvesting by a sunflower thresher when the heads are relatively moist. After thrshing seeds should be dried throughly before storing.

Safflower :- It is one of the oldest cultivated annual oilseed crops which are well adopted to dry regions. The safflower seed also used to produce oil.

Climate Requirement: Basically, safflower crop is a cool season crop in India. The ideal temperature required for this crop is 22°C to 35°C for high yields. This crop is suitable in regions with annual rain fall of 60 to 100 cm.

Soil Requirements:- It can be grown in wide range of soils likely sandy loams, clay loams and alluvial shallow and light textured soils. However, well-drained fertile deep soils are the best for safflower cultivation.

Land Preparation: Land should be ploughed couple of times to bring the soil to fine tilth stage. Any weeds should be removed from previous crops. Any clods should be crushed and levelled in such a way that there won't be any water logging.

Seed preparation and treatment:- The safflower crop requires a cold free seedbed with sufficient moisture for good germination and establishment of seedling

Propagation, Sowing and Spacing:- Propagation is done by seeds. In India, usually this is sown as Rabi season crop from October to November. Avoid late sowing. When it comes to spacing for pure or solo crop, row spacing of 45*50cm x 20-25 cm and for mixed crop or intercrop, row spacing of 20-25cm x 20-25cm and for rainfed crop, a row spacing of 60cm x 30-35cm should be followed.

Harvesting And Threshing:- Safflower crop will be ready for cutting when most of the leaves turn into brown and stems are dry, but not brittle. Seeds should run off freely from the last mature heads. Usually, the high yielding varieties of safflower mature in 4 to 5 months. Cut the plant with the help of sharp sickles at the base of stalk. After that, thresh the safflower seeds either by beating with sticks or with the help of bullock drawn stone-rollers.

* **Celery:** Celery, commonly known as Kamauli, is grown mostly in districts of Amritsar, Gurdaspur and Tarntaran. The seed and its products are exported.

Climatic Requirements: It requires mild cool

environment for luxuriant growth in the early stages and warm dry weather at maturity.

Soil type: All soils, except the saline, alkali and waterlogged ones are suitable. It, however, thrives best on loamy soils rich in organic matter and retentive of soil moisture.

Variety: Punjab Celery 1 (2016): It is high yielding variety of celery. It produced an average seed yield of 4.5 q/acre. Its seeds contain 1.9% essential oil with total oil content of 20.1%. The seeds are brown in colour with characteristic odour and pungent taste. Punjab Celery 1 bearing flowers in March and matures in 140-150 days after transplanting.

Agronomic Practices:

- Preparatory Tillage: The land should be thoroughly levelled and seedbed prepared by giving 4 or 5 ploughings, each followed by planking

Seed Rate: 400 g seed per acre.

Time of Nursery Sowing: September 15 to October 15.

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Time and method of transplanting:- 60 to 70 days old seedling should be transplanted from November 15 to end December at spacing of 45×25cm. Apply light irrigation to the seedbeds a day before uprooting the seedlings.

Weed Control: Two or three hoeings preferably with improved wheel hand hoe are enough to keep the crop free from weeds.

Irrigation: Light and frequent irrigations should be applied.

Harvesting And Threshing:- The crops should be harvested when seeds in most of the umbels turn light brown in colour. Delay in harvesting results in loss through seed-shedding. Since the seed is very small and light, therefore, winnowing and sieving should be avoided, when wind velocity is high.

Insect Pests:- Aphids sometimes appear as pest. They suck cell-sap from the leaves and thus, adversely effect the crop growth.

* **Fodder Crops:-** The area under fodder crops in the state during 2016-17 was about 8.95 lakh hectares with the annual production of about 730 lakh tonnes of green fodder.

- **Senji:** Senji is an important forage legume suitable for cultivation under restricted moisture supply and can thrive under a wide range of climatic and soil conditions. Senji safed 76 and YSL 106 are recommended varieties, which yield about 128 quintals of green fodder per acre. YSL 106 is sown during second fortnight of November. Broadcast 15 kg husked seed per acre, mix it in the soil and irrigate there after. In all two or three irrigations are enough. Apply 25 kg of P per acre at sowing. Harvest the crop, when it is full blossom.

- **Ryegrass:-** It is multicut non-legume fodder and gives about five to six cuttings in rabi season. It is highly nutritious palatable and easily digestible fodder crop.

Climatic and Soil Requirements:- It needs mild temperature for germination and growth. It grows well on medium to heavy fertility soils.

Improved Variety:- Punjab Ryegrass No. 1 (1991): It is

quick growing variety with soft stem and leaves which are relished by the animals. Its average green fodder yield is 325 quintals per acre in five-six cuttings from November to May.

Agronomic Practices:-

- Preparatory Tillage: A good crop is raised on lands which had been properly levelled. Prepare a good seed bed with 3-4 ploughings each followed by planking.

Time of sowing: The optimum time of sowing is the last week of September to the first week of October.

Seed Rate and Sowing: Sow 4kg of seed per acre by broadcast method. Mix the seed with moist soil for even broadcasting in dry land followed immediately by planking and irrigation.

Irrigation: First irrigation should be applied immediately after sowing and second irrigation after about 5 days of sowing. Afterwards, irrigate the crop at an interval of about 10 days depending upon the prevailing

weather conditions.

Harvesting: The first cutting is ready in about 55 days after sowing. Subsequent cuttings are ready at about a month interval.

Caution:- Ryegrass is very sensitive to weedicides so no weedicides should be sprayed.