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Vinny John
Ph.D Scholar
Department of Plant Pathology
Sam Higginbottom University of Agriculture Technology and Sciences
Prayagraj, Allahabad
Uttar Pradesh
India - 211 007

Amit Kumar Maurya
Ph.D Scholar
Department of Plant Pathology
Sam Higginbottom University of Agriculture Technology and Sciences
Prayagraj, Allahabad
Uttar Pradesh
India - 211 007

Archana Udai Singh
Principal Scientist
Division of Nematology
ICAR-Indian Agricultural Research Institute
Pusa, New Delhi
India - 110 012

Corresponding Author
Archana Udai Singh
archanau2103@gmail.com

Seed Production of Onion and Disease Management

Onion is a vegetable crop grown in India and used for making subji, pickles, eaten raw, etc. It is rich in vitamin C, Calcium, phosphorus and potassium. There are two different methods of seed production in the plains of North India. This crop is affected by major Pests, Diseases and their Control is given in this popular article.

INTRODUCTION

Onion occupies an important place in all the vegetables grown in our country. It is a very important vegetable crop. It is used prominently in vegetable soup, pickles, salads and other forms. It is a good source of potassium, phosphorus, calcium and vitamin C. Its seed production can be done in tropical and temperate regions with different climates of India. The plant requires temperature of 14 to 21°C in the initial growth stage and 15 to 24°C temperature is favorable at the time of tuber formation. However, hot or dry weather is required at the time of seed ripening.

PROGRESSIVE VARIETIES

Suitable Varieties for Rabi Crop : Pusa Red, Pusa Riddhi, Pusa Ratanar, Arka Niketan, Agrifound Light Red, NHRDF Red, Pusa White Flat, Pusa White Round, Punjab White and Ali Grains etc.
Suitable Varieties for Kharif Crop: N-53, Agrifound Dark Red.

SELECTION OF FIELD

For onion seed production field should be selected in which Garlic or Onion flake or seed crop has not been grown in the past season. The soil of the field should be loam/ sandy loam and having a pH range between 6 to 7.5.

SEPARATION DISTANCE

The minimum distance between the two varieties should be 400 meters and 1000 meters for seed base crop during onion bulb production. Onion is a pollinated crop in which bees and other pests help in pollination, so it is necessary to have a minimum separation distance set for genetically pure seed production.

MANURES AND FERTILIZERS

50 tons of rotten manure, 240 kg of calcium ammonium nitrate or 60 kg of urea, 150 kg of single super phosphate and 80 kg of murate of potash and 10-12 kg of PSB culture per day required while preparing the field for onion bulb planting. They are mixed with soil at the rate of hectare. Apart from this, 35 kg of urea is sprayed after 30 days.

SEED PRODUCTION METHOD

There are two different methods of seed production in the plains of North India.

1. MAKING SEED FROM SEED

In this method seed is prepared from direct seed. Under this, sowing of seeds in the nursery is done in the month of August and planting of the plant in October. Seed is ready in April-May. This method produces relatively high seed and also saves the cost of storage and re-planting of tubers or lumps for seed. In this method it is not possible to maintain purity of onion seeds. Because of the color, shape, etc., properties of tubers cannot be tested in this.

2. MAKING SEEDS FROM FLAX

Mostly this method is used to produce good quality onion seeds; there are two methods under this

(a) ONE YEAR METHOD

In this method seeds of Kharif species like N-53, Agrifound, Dark Red etc. are prepared. In this, plants are prepared in the month of June and plantation is done in August. The tubers are prepared in the month of November-December. After 15-20 days of tuber digging, the seeds of selected healthy tubers are planted in the field. Flower punish comes in January-February and seed is extracted in April-May. This method takes about a year.

(b) TWO YEAR METHOD

In this method, seeds of Rabi onion species like Pusa Red, Pusa Madhavi, Pusa Riddhi, Pusa Light Red, NHRDF Red etc. In this, the seeds are sown in October-November and the saplings are planted from the December month to the first fortnight of January. Onion bulb is ready in April-May. After excavation, selected healthy broths are kept in storage till October. Those are planted in the field for seed production in October-November.

The seed is extracted in April-May. It takes about one and a half years to prepare seeds by this method. In North India, this method is offered for the production of onion seeds for good seeds and high quality, the details of which are as follows-

PREPARATION OF FLAX FROM THE SEED

The seed is planted in raised beds 15–20 cm to prepare the plant for producing flax. For planting in an area of one hectare, 80-100 beds of size 3 meters long and 60 cm wide are sufficient for plant production. After 2-3 yoke, they make the field flat and divide it into beds and drains. 8-10 kg of seed is sufficient for one hectare. Seeds should be sown in rows at a distance of 5-6 cm. After sowing, the seeds are pushed up to half a cm with well-rotted and filtered cow dung manure. In 6-7 weeks, the plants are ready for weeding. For kharif crop, seeds are sown in May-June and saplings are planted in July-August. Seeds for the rabi crop are sown in October-November. And plantation is done from December to first fortnight of January. The saplings are planted at an interval of 15x10 cm and irrigated immediately after transplanting. While preparing the field for plantation, 50 rotten cow dung fertilizer @ 240 kg calcium ammonium nitrate or 60 kg urea and 200 kg single super phosphate and 80 kg murate of potash and 10-12 kg PSB culture per hectare should be used in the soil. Additionally, 30 days after planting add 35 kg urea.

After weeding the shallow weeds grow the weeds. Generally, irrigate at an interval of 10-15 days in winter and 7-8 days in summer. There should be sufficient moisture in the soil at the time the flax is being formed.

EXCAVATION AND STORAGE OF FLAX

About 110-124 days after planting, the flax is ready for digging. After 8-10 days of drying of the leaves of the plants, digging of the broth is reduced in storage. After digging with leaves, the onion bulbs are kept in queues and dried in the shade for 5-7 days. Leaves are cut off by leaving 2-2.4 cm from the neck. To avoid damage in storage, the flax should not be dried under

direct sunlight and should also be avoided from getting wet.

After removing the onion bulb in May, it is cleaned and kept in a well-ventilated store till October. Sows good and monochromatic thin-necked bifurcate flakes in the sown variety. Pruned tubers are trimmed 2-3 times at the interval of 15-20 days and throw out the rotten throat and diseased tubers.

SEED PRODUCTION FROM FLAXSEEDS

For seed production, the flaxseeds of the rabi species should be planted in the first fortnight of November and the kharif species by mid-December. The onion bulbs are sorted on the basis of their color, shape and form, matching the properties of the variety chosen for sowing. Fully healthy monochromatic, thin-necked and 4.5–6.5 cm in diameter and 60–70 gm weight are selected for planting for seed production. A quarter or a third of the selected tubers are cut and removed and bottom of the cut tuber is soaked in 0.2% Carbendazim or Mancozeb solution for 5-10 minutes and planted in the field. The tubers can also be planted without pruning or whole. The treated flax is planted in a well-prepared field at a depth of 6–8 cm at a distance of 60x30 cm in flat beds. When the distance from row to row is less than 60 cm, the soil gets increased in the curry of the crop.

Light transplant can be made by tractor driven drills at a difference of 60 cm for transplanting flax, which reduces labor cost in transplanting. Approximately 25-30 quintal flakes are required to be planted in an area of one hectare. Dipping potassium nitrate 1% solution for 5 minutes before planting onion of Kharif species is good for germination.

IRRIGATION

Timely irrigation is required in the seed field, especially during flowering and seed development, maintaining proper moisture in the field is very important. Irrigation should not be done during day time or during strong wind conditions. A good seed crop is also obtained by using drip irrigation.

MANURES AND FERTILIZERS

50 tons of rotten manure, 240 kg of calcium ammonium nitrate or 60 kg of urea, 140 kg of single super phosphate and 80 kg of murate of potash and 10-12 kg of PSB culture per day while preparing the field for onion bulbs planting must be mixed in soil at the rate of hectare. After this, 35 kg of urea is applied after 30 days in field.

HARVESTING, SOWING AND STORING OF SEEDS

Germination starts after one week of sowing of tubers and after about two and a half months, flowering stalks begin to form. Seeds ripen within 6 weeks of the formation of a floral cluster. When the color of the seedlings becomes muddy and 10-15% of the capsules in them begin to appear outside, then the seedlings should be considered as in harvesting with 10-15 black seeds appearing outside. However, floral bunches with 10-15 cm long stalks should be cut.

Seeds are harvested by beating stems with sticks or by tracker. Remove residues, straw, stalks, etc. from the seed. In the absence of mechanical processing facilitifes, seeds should be dipped in water for 2-3 minutes for cleaning and heavy seeds at the bottom should be cleaned and dried. The seeds should be treated with fungicide after drying. Seeds are to be filled in clean tin containers, aluminum foil or plastic envelopes and should be dried to 5-6% moisture. For safe storage, the seeds should be kept at 18-20° temperature and 30-40% humidity.

SEED YIELD AND MINIMUM STANDARD

About 400-800 kg seed per hectare can be obtained from a good seed production.

Seed standard		Standard level	
		Aadhaar Seed	Certified Seeds
Pure seed (minimum)		98%	98%
Neutral substance (maximum)		2%	2%
Seeds of other crops (maximum)		5 per kg	10 per kg
Weed seeds (maximum)		5 per kg	10 per kg
Germination capacity (minimum)		70%	70%
Moisture (Maximum)	Normal packing with	8%	6%
	moisture resistant	8%	6%

MAJOR PESTS, DISEASES AND THEIR CONTROL

1. THRIPS

These insects are small and yellow in size which sucks sap of leaves; long green stains appear on leaves which later turn white.

CONTROL

Spraying of Dimethoate 1.0 ml or Cypermethrin 0.5 ml / 1 litre water and spraying at intervals of 10-15 days gives good control. Spraying 0.1% Tritone or Sandovit or Epsa-80 viscous material in the solution is also very beneficial.

2. CUT WORM

It occurs in night. This insect bites near the base of plant causing plant to wither.

CONTROL

At the time of land preparation add 500 kg of Neem cake in soil or it can also be controlled by adding Carbofuran or Phorate @ 0.5 kg /ha.

3. *Helicoverpa armigera*

The larva of this insect damages the crop by cutting leaves. This pest causes more harm in Onion seeded crop.

CONTROL

Spray Cypermethrin 0.5-1.0 ml medicine per water. The solution should be sprayed with 0.1% Tritone or Sandovit or Tipol or Epsa-80 viscous substances.

4. PURPLE BLOTCH

This disease is caused by a mold called *Alternaria pori*. The affected leaves and stems are covered with small pink spots that later turn purple. Onion bales are planted in the storehouse. Leaves of plants are yellow on one side and green on the other side.

CONTROL

Use Chlorothalonil or Mancozeb (0.2%) should be dissolved in 2 gm per liter of water and sprayed at a difference of 10 days. Make sure to add 0.1% Triton or Sandovit salt to the slurry.

5. DOWNY MILDEW

In this disease, there is a purple hairy growth on the surface of leaves and flowers which later turns yellow to green and in the end leaves and wreaths fall after drying.

CONTROL

Spray the crop with 0.14 to 2.0% solution (1.4- 2.0 gm insecticide per liter of water) of Mancozeb or Copper oxychloride. Re-spray at an interval of 10–15 days if necessary. Make sure to add 0.1% Triton or Sandovit salt to the slurry.

SEED YIELD

The average yield of seed is 900-1000 kg / ha.

CONCLUSION

Onion is an important crop grown in our Country. It is used in making subji, salads, pickles, soups and eaten as such. There are two different methods of seed production in the plains of India which are given in this article. The crop is damaged by Thirps, Cut worms and *Helicoverpa armigera* and management aspects covered. Besides this Purple blotch and Downy Mildew disease are also affecting this crop and how to control it is given in order to get good crop yield.