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Agro-techniques for profitable production of onion under Tripura condition

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Onion is a *Rabi* season crop and belongs to the family Amaryllidaceae. It is rich in phosphorus, calcium carbohydrate and traces amount of protein and vitamin C. Quercetin, a bioflavonoides present in onion and garlic provide protection against cancer and heart diseases. Diphenylamine found in onion is effective against diabetes.

The economic cultivation of onion is influenced by cultural practices like planting time, spacing and the planting materials.

Soil: It prefers light soil rich in humus, friable well drained with ability to retain soil moisture. Avoid heavy soil. The optimum pH required for onion cultivation is 5.8-6.5.

Climate: Short day and low temperature are required during vegetative growth. High temperature and long day condition are essential for bulb formation.

Manures and fertilizers: 20-30 tons of FYM (Compost) per ha is required. In Tripura condition, Nitrogen (N), Phosphorus (P) and Potash (K) @ 125:60:60 kg/ha is found to produce the highest yield. One half dose of N and full dose of P and K should be applied as basal dressing and remaining portion of N in two split doses *i.e.* 30 and 50 days after transplanting.

Weed control: Stamp@ 3.5 lit/ha should be applied immediately after transplanting. There should not be any weeding and hoeing upto one month after the application of weedicides.

Soil treatment: A mixture of one gallon (3.8 lit) of formalin (37% strength) with 50 gallon (190 lit) of water should be applied@ 21 to 42 lit/sq.m. Then immediately soil should be covered with polythene sheet for 24 hrs. After 24 hrs, the covering material should be removed to complete the freeness of odour of formalin.

Raising of seedling: For raising seedling nursery bed of 3-5m long, 1m wide and 10-15cm above the ground is required. An area of 500 sq.m is required to raise seedlings for planting an area of 1 ha.

Seedling *:* *Kharif* – 6 to 7 weeks
Rabi – 8 to 10 weeks.

Seed treatment: Thiram@2-3 g/kg should be treated.

Sowing time : September-October (*Rabi*).

Seed rate : 8-10 kg seeds for 1 ha.

Transplanting : The seedlings are transplanted when the plants are about 10-15 cm in height. The planting distance is 15-20 cm x 10 cm. Prior to transplanting, the uppermost portion of the seedlings to the extent of 20-25 per cent is cut in order to facilitate quick establishment.

Irrigation: *Kharif* 8-10 times and in *Rabi* 15 -20 times. Critical stages are bulb formation and enlargement stage.

Harvesting: It starts when 50 per cent neck starts falling. The bulbs are harvested by hand pulling with the help of *Khurpi*: Harvesting depend on its types and purpose.

– **Onion to be used as green vegetable:** To get green leaves, Plants are pulled when bulb formation starts.

– **Immature bulbs:** For home consumption and supply to the market immature bulbs are pulled.

– **Mature bulbs:** Bulb are harvested when fully matured.

– **Curing:** Bulbs are cured by spreading in open shades and continue till the outer scales are dried and rustle.

Kharif : 2-3 weeks dryness

Rabi : 2-3 days drying and 7-10 days curing.

Yield: *Rabi*: 300-400 q/ha
Kharif: 200-230q/ha.

Seed production technology:

– Bulk to seed method

One year seed production method:

Seed sowing : June – July
Transplanting : August- September
Harvesting of bulbs : October-November
Replantation of bulb : February
Harvesting of Seed : May
(Suitable for *Kharif* onion)

Two years seed production method:

Seed sowing : Mid October-Mid November
Transplanting: End of December- beginning of January
Harvesting of bulbs : May-June
Planting of bulbs : October
Harvesting of seed : April-May
Varieties : Pusa Red, Hissar 2 N-2-4-1

Seed to seed method:

Seed sowing : 5th August
Transplanting : 5th October
Varieties : Early Grano, Pusa Ratnar, Rojo, Priya

Production technology of long day types for hills:

Seed sowing : August-September
Transplanting : September-November
Harvesting : August-September

Production of Kharif onion:

Sowing time : End of May-June, but for sets sowing in January and growing by using sets is recommended,
Transplanting : 1st week of August,
Harvesting : December- January

Varieties of *Kharif* Onion	Colour of bulbs	Days after Transplanting (DAT)	Yield (q/ha)
Agrifound dark red	Dark red	95-110	300
Agrifound light red	Light red	160-165	300-325
Hisar II		165	200-500
N 53		140	250-300

Physiological disorders:

Bolting : Premature seed stalk, bulb becomes light and hollow.
Control : – Using variety from reliable source.
– Planting on ridges
– Transplant the plant at right time

Splitting and doubling of bulbs:
Control : – Proper irrigation schedule
– Apply balanced quantities of N,P,K

Thick necking: Failure to develop mature bulb:
Control: – Sow at right time
– Over use of fertilizers is avoided.

Skinning: Cracking and subsequent loss of scale:
Control: Avoid mechanical injury to the bulb.

Nematodes, diseases and insect pests:

Nematode:

– Onion and bulb nematode (*Ditylenchus dipsaci*)

Control: Seed/bulb treatment in hot water upto 40° C for 1 hr.

Diseases:

– Purple blotch (*Alternaria porri*)

Symptoms: Water soaked areas develope on leaf sur face which turn brown.
Control: Spray Indofil M-45 3g/lit of water with sticker Sandovit or Triton@1 ml/2 lit of solution at 10 days interval

Stemphylium blight (*Stemphylium vesicarium*):
Symptom: Appear as small yellow to pale orange spots.
Control: Spray Dithane M-45 @2g/lit of water mixed with sticker Sandovit or Triton@ 1ml/litre of solution. Triton at fortnightly interval.

Neck rot of onion (*Botrytis* spp.):
Symptoms: Rotting, soft and brownish of tissues
Control: Hygienic storage at temperature below 4°C. Spray Captan or Ziram or Dithane M-45@2g/lit of water with the appearance of the disease.

Insect pests:

– Onion thrips (*Thrips tabaci*)

Symptoms: The plants become silverfish due to entry of air.

– Leaf minor (*Liriomyza trifoli* and *Chromatomyia horticola*).

Symptoms: The larvae mine through the chlorophyll and severe infestation results in leaf collapse.

– Onion fly (*Delia antiqua*)

Symptoms: Wilting of leaves, finally plant collapses and dies.
Control: – Spray Endosulphan@0.1 to 0.2% or Imidacloprid @0.02% at the time of flowering

– Use of parasitoids like *Trybliographa rapae*, *Aphaereta minuta* Nees.

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