

Onion

We will see from the start to the end and the timeline when we can do what about growing the Onion

Timeline-(4 weeks before seedling)

What to do -Site Selection for growing of Onion.below is all metioned about this

Here are optimal soil and climate conditions wherein we can start growing the Onion-

1)Onion is a temperate crop but can be grown under a wide range of climatic conditions such as temperate, tropical and subtropical climate.

2)The best performance can be obtained in mild weather without the extremes of cold and heat and excessive rainfall, however, onion can withstand freezing temperatures.

3)It requires about 70% relative humidity for good growth. ° It can grow well in places where the average annual rainfall is 650-750 mm with good distribution during the monsoon period.

4) Onion crops need lower temperature and shorter daylight during the vegetative growth while during the bulb development and maturity stage it needs a higher temperature and longer daylight.

5)The best soil for successful onion cultivation is deep, friable loam and alluvial soils with good drainage, moisture-holding capacity and sufficient organic matter.

6) The optimum pH range, regardless of soil type, is 6.0 - 7.5, but onion can also be grown in mild alkaline soils.

Timeline-(2 week before seedling)

What to do-Fertilization Chemical for growing of Onion.below is all metioned about this

1)Basal fertilization-*It is done during field preparation. The addition of farmyard manure is complemented by the application of mineral fertilizers containing the main nutrients, nitrogen (N), phosphorus (P), and potassium (K).*

2)For a successful crop, follow these recommendations:

1) Add farmyard manure (10 tons per acre) and incorporate well during the last ploughing.

2)Add 45 kg per acre of urea, 135 kg per acre of SSP and 35 kg per acre of MOP when ridges are opened.

3)An additional dose of urea should be applied later, one month after transplantation.

4) Onions are also very sensitive to zinc deficiencies. Zinc deficiencies result in stunted plant growth with noticeable twisting and faint discoloration between the veins of the leaves.

5)If you have witnessed such symptoms in your previous onion crop, add zinc sulfate to the basal fertilization.

6)Apply 50 kg per acre of zinc sulfate during the last ploughing or other recommendation based on your soil testing results.

Timeline-(3 weeks before seedling)

What to do-Plant Protection organic for growing of Onion.below is all metioned about this

1)Biological methods to treat seedbeds-*Several products are available in the market to treat seedbed soils and provide seeds and seedlings with the best environment to germinate and grow, thus enhancing their establishment in the soil.*

2) Below are some recommendations for biological treatments. To control dormant pests and nematodes:

1)Incorporate about 200-400 g/m² of Neem cake.

2)Alternatively, add Pongamia or Calotropis leaves to the mixture of soil and farmyard manure. To control fungal diseases:

3)Apply Trichoderma viride or Azospirillum (10-25 g/m²).

4) Alternatively, drench the soil with copper oxychloride. Ask your extension officer or local retailer which of these methods is best-suited for your purposes.

Timeline-(3 week before seedling)

What to do-Field Preparation for growing of Onion.below is all metioned about this

1)Sterilize the seedbed using solar radiation:

Below are the three steps to do this-

1)Solarization is an easy, safe, and cost-effective way to sterilize the soil and produce healthy seedlings. It consists of utilizing the radiation from the sun to create unfavorable conditions for pathogens and weeds in the seedbed soil. This

process will reduce soil borne diseases and break the life cycle of insects, pests, and seeds of weeds.

2)The best time for solarization is during the dry season with high temperatures.

3)To solarize soils, follow these steps:

- Apply water to moisten seedbed soil.*
- Cover the soil with transparent plastic sheets for 3-4 weeks.*
- Bury the edges of the sheets in the soil.*
- After 3-4 weeks, remove the plastic sheets and plow the soil lightly.*
- About 2-3 days later, level the soil and sow the seeds.*

2)prepareng raised seedbeds for plant nurseries

Below are the steps to do to this -

1)Plant nurseries are optimal for enhancing the survival rate of the seedlings. Raised seedbeds in protected, sunny places and with fertile soils are the preferred option for nurseries. To avoid weather extremes and pests/diseases, seedbeds are usually set up in open fields within protective structures (windbreaks, shelters, nylon tunnels) or indoors, for example in a greenhouse.

2) Here are the 6 steps to do this -

Step 1 -Choose an open, protected, sunny and well-drained area of the field. If you have a short growing season, you should consider to make your seedbed inside a greenhouse.

Step 2 -Mark the seedbed plots (2-3 m x 1 m) and mix the soil in the selected area thoroughly with a rake to soften its structure. Remove any weed and debris that you may see. Wooden planks may be used.

Step 3 -Incorporate well-decomposed farmyard manure at a rate of 4-5 kg/ m² into soils

Step 4 -Form raised seedbeds 15 cm or higher, 2-3 m in length and 80-100 cm wide to improve drainage. Water reasonably-to ensure good seed-to-soil contact.

Step 5 -Cover the soil with a plastic sheet and leave it for 10 days (solarization). This sterilizes the soil partly and warms it up for a better germination.

Step 6 -Set up a net-tunnels structure above the seedbeds with 32-to 60-mesh nylon netting to protect seedlings against rain, sun and insect pests. The seedbeds are now ready for sowing.

Timeline-(1 week before seedling)

What to do-Plant Selection of Onion.below is all metioned about this

Plant selection of Onion-

For your area,consider the following varities.Choosing the correct variety plays a very important role in achieving optimum yield.

When making your decision, consider: disease resistance,

fertilizer responsiveness, lodging and shattering resistance, and desired maturity. These are the shops where you can but this

- For Uttar Pradesh, Bihar: Pusa Red, Arka Kalayan, N2-4-1, Punjab Selection, Pusa ratna, Agri. found Dark Red, Kalyanpur Red Round, Pusa white round, Pusa white flat, S-48, Pusa Madhavi.
- For Madhya Pradesh, Rajasthan, Maharashtra, Uttar Pradesh and the central and eastern plateau and hill regions: Pusa Red, Arka Niketan, Arka Kalyan, N 2 4-1, Punjab Selection, Pusa ratna, N-53, N-257-9-1, Pusa white round, Pusa white flat, S-48.
- For Andhra Pradesh, Karnataka, Tamil Nadu and the western and southern plateau and hill regions of Madhya Pradesh and Maharashtra: Arka Kalyan, N 2 4-1, Punjab Selection, Arka Pragathi, N-53, N-257-9-1.
- For the east and west coast plains and ghat region (Andhra Pradesh, Orissa, Tamil Nadu, Kerala, Karnataka, Maharashtra): Arka Kalyan, N 2-4-1, Punjab Selection, Arka Pragathi, N-53, N-257-9-1.
- Western Himalayan region: VL-3. ◦ Gujarat plains and hills region: N 2-4-1.

Timeline-(1 week)

What to do -Planting of Onion.below is all metioned about this

Planting of Onion- here are plan of how we can plant the onion in our field-

1) **Setting up a nursery**-Here are some recommendations on setting up a nursery and rasing onion seedlings:-

(1)Ratio between nursery area and main field should be about 1:20. Therefore, plan 200 square meters of nursery for every acre of field (or 500 m² per hectare).

(2)Seed rate can vary from 3 to 4 kg per acre

(3)prepare good seedbeds

(4)Use freshly-produced seeds of selected varieties and treat them with fungicides.

(5)Sow the treated seeds in lines (10-15 cm apart).

(6)Use drip or sprinkler irrigation because it saves 40-50% water and ensures 90-100% seed germination.

(7)In the beginning, use partial shading to protect the seedlings from the harsh environment and from some insect pests.

(8)Remove the shade nets after 30-35 days to avoid etiolation and lanky growth

(9)Prepare to transplant the seedlings in 6-7 weeks.

2)Sowing The seeds- After preparing your seedbeds, follow these recommendations for sowing your onion seeds in the nursery:-

1)Create a continuous narrow and shallow drill with a hoe.

2)Lines should be 10 cm apart.

3)The seeds of onion are small, therefore the seeds should be mixed with fine sand.

4)Sow the seeds evenly at the recommended distance.

5)Cover the seeds lightly with sand or soil from the bed or finely-sieved compost that you have prepared separately.

6)Water cautiously as the seeds are small and sown shallowly.

Timeline-(1 week)

What to do -Irrigation schedule of Onion.below is all metioned about this

Below are the things to remember and follow for its irrigation-

1) Onion is a crop with a shallow root system and thus requires light irrigation.

2)However, irrigations should be frequent enough to maintain good soil moisture for proper crop growth and bulb development.

3)The first and second irrigation is done at the time of transplanting and 3 days after.

4) The irrigation interval is 7-10 days depending on soil moisture.

5)Stop irrigating at 10-15 days before the harvest.

Timeline-(1st week)

What to do -Plant protection chemical of onion.below is all metioned about this

1)Seed treatments to enhance seedling survival -

Many seeds acquired by farmers have been previously treated to avoid disease. If this is not the case, seeds can be treated or "coated" with the following chemical products to protect them from diseases and pests.

2)Here are some recommendations:

1)Solutions containing thiram (2 grams per kg of seed) and benomyl (1 gram per litre of water) can be applied to prevent and control damping-off of seedlings and smut diseases.

2)After chemical treatment, treat your seeds with the bioagent Trichoderma viride (2 grams per kg of seed) and with Azospirillum (400 grams per kg of seed) using rice gruel as an adhesive.

3)In all cases, after treatments, seeds should be left to dry in the shade for about 30 minutes to an hour.

Timeline-(2 week)

What to do -Weeding of Onion.below is all metioned about this

1)Herbicides for weed control-

Here are the steps to follow

1)The use of herbicides can help prevent and control the spread of weeds in your fields when used properly.Pre-emergence weeding consists of applying herbicides before the weeds are present to avoid their growth.

2)Post-emergence weeding consists of applying herbicides to eradicate existing weeds. Here are some recommendations for herbicides used in the nursery and in the main field:

1)In the nursery, pendimethalin 33% EC (2 ml per litre of water) can be applied as pre- and post-emergence herbicide, immediately after sowing and up to 30 days.

2)In the main field, pendimethalin 33% EC (3.5-4 ml per litre of water) and oxyfluorfen 23.5% EC (1.5-2 ml per litre of water) can be sprayed just before or immediately after transplanting of seedlings onion, followed by immediate irrigation.

3)Herbicide application can provide control of weeds up to 35-40 days.

Timeline-(2th week)

What to do-Prevention measure for Onion.below is all metioned about this

1)Prevent damping off in your plants .

Seeds rot in the soil and seedlings are often killed before emergence. If plants emerge, water-soaked, gray, brown, or black patches appear at the base of the stem. Young plants collapse at the soil line and a white or gray mold-like growth covers them.

2)To prevent damping-off your plants, make sure to:

- 1) Improve drainage of the soil before planting.
- 2)Not plant seedlings too deep when transplanting.
- 3)Remove infected plants as the first symptoms appear.

- 4) Always water in the morning so that the soil is dry by evening.
- 5) Not inadvertently transport mud from one field to another.

Timeline-(3th week)

What to do-Prevention measure for Onion.below is all metioned about this

1)Prevent fusarium wilt in your vegetables .

The youngest leaves are the first to wilt followed later by the whole plant. Roots and lower parts of the stem become brownish or red.

2)To prevent Fusarium wilt in your vegetables, make sure to:

- 1) Apply the recommended dose for your soil of potash fertilizer.
- 2)Remove affected plants and burn them.
- 3)Keep your equipment and tools clean and avoid damage to the plants, to minimize transmitting the fungus to healthy plants.
- 4)Plow and burn plant debris after harvest.
- 5)Cover the infected area with black plastic foil in full sun for a month (solarization).
- 6)Plan a crop rotation of up to 5-7 years to reduce levels of fungi in the soil.

Timeline-(4th week)

What to do-Prevention measure for Onion.below is all metioned about this

1)Prevent onion maggots in your crop -

Maggots feed on sprouting seedlings and seeds, damaging the growing tissues. Seedlings develop into withered, stunted, deformed plants with low yields.

2) To prevent onion maggots in your crop, make sure to:

- 1) Use cover crops such as grasses.*
- 2) Destroy weeds in and around the field.*
- 3) Install a fine mesh net on your seedbed to keep the maggot flies away.*
- 4) Plow and bury plant debris deep into the soil.*

Timeline-(6th week)

What to do-Prevention measure for Onion.below is all metioned about this

1)Prevent downy mildew in your crops -

Symptoms of downy mildew are characterized by yellowish diffuse spots of different sizes on the upper surface of leaves. These develop into irregular necrotic patches of varying shades of brown. A dense, white to grayish cottony coat develops beneath the spots. Fungal growth can also be observed in other plant parts.

2) To prevent downy mildew in your crops, be sure to:

- 1) Keep your plant dry, for example through proper ventilation. °
Make sure soils are well drained.*
- 2)Ensure balanced fertilization for plant vigor.*
- 3)Control weeds in and around the field.*
- 4) Remove plant residues from the field.*
- 5) Keep tools and equipment clean.*
- 6)Avoid distribution of infected soil and plant material.*
- 7) Fortifiers can be applied to strengthen the health of the plant.*

Timeline-(6th week)

What to do -Plant protection chemical of onion.below is all metioned about this

1)There are Several chemical treatments are available to prevent certain pests and diseases prior to transplantation of the seedlings,Here are :

1)To prevent soil-borne fungal infection, dip seedlings in a solution of carbendazim 50% WP (1 gram per litre of water).

2)To prevent thrips infection, dip seedlings in a solution of carbosulfan 25% EC (1.5ml per litre water).

3)In both cases, dip seedlings for 15 minutes before transplanting.

Timeline-(7th week)

What to do-How to transplant for growing of onion.below is all metioned about this

1)For good establishment, do not transplant seedlings that are too young or too old.

2)Seedlings are ready for transplanting around 35-40 days after sowing during the Kharif season and 45-50 DAS during late Kharif and Rabi seasons.

3) At the time of transplanting, trim the top off the seedling to ensure stronger plants. Use clean and sharp scissors to cut one-third to one half (10 cm after first true leaf develops) of the seedling top.

- 4) *Proper care should be taken while selecting seedlings for transplanting.*
 - 5) *Do not transplant infected or poor looking seedlings.*
 - 6) *Plant seedlings at 10 cm between plants and 15 cm between the rows.*
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Timeline-(8th week)

What to do-Prevention measure for Onion.below is all metioned about this

1)Prevent anthracnose in your crops -

The symptoms are caused by several species of fungi of the genus Colletotrichum spp., which are characterized by the appearance of water-soaked lesions on leaves, stems, pods or fruits. Lesions are oval to elongated, gray to tan-colored and often surrounded by a vividly colored margin. The lower part of the stem may get a dark-brown and a rough appearance. In severe cases, defoliation, lodging of plants or top dieback of branches may occur.

2) To prevent anthracnose in your crop, make sure to:

- 1) *Monitor fields or orchards for signs of the disease.*
- 2) *Remove volunteer plants and weeds in and around the field.*
- 3) *Plant trap crops or trees around the fields.*
- 4) *Practice good sanitation of the field or orchard by removing plant debris for example.*
- 5) *Avoid the movement of machinery or workers in the fields when the foliage is wet.*
- 6) *Clean your tools and equipment carefully.*

- 7) *If irrigation is necessary, plan it during the early morning and make sure the foliage is dry before nightfall.*
- 8) *Harvest early to avoid the worst symptoms.*
- 9) *Store fruits in a well-ventilated environment.*
- 10) *Leave plant debris on the ground instead as the fungus decomposes quicker there.*
- 11) *Alternatively, bury plant residues very deep in the soil to favour decomposition.*
- 12) *Plan a long-term crop rotation with non-host crops (3-4 years or more).*

Timeline-(10th week)

What to do-Prevention measure for Onion.below is all metioned about this

1)Prevent thrips in your plants -

Attacks by thrips are characterized by small silver patches on the upper side of leaves ("silvering") and marks on the fruit surface. Minute yellow or black insects 1-2 mm in length are visible on the underside of the leaves.

2)To prevent thrips in your plants, make sure to:

- 1) *Remove the infected plant and any plant debris and destroy it.*
- 2) *Control weeds in and around the field.*
- 3) *Use sticky traps over a large area for monitoring of the infestation level.*
- 4) *Keep plants well-irrigated and avoid excessive applications of nitrogen fertilizer.*
- 5) *Plow and remove all plant waste after harvest.*

Timeline-(11th week)

What to do -Fertilization Chemical of Onion planting.below is all metioned about this

1)apply split dose of fertilizer-

1)One month after transplanting your seedlings to the main field, apply the rest of the nitrogen dose.

2)Apply 45 kg per acre of urea as a top dressing.

Timeline-(11th week)

What to do -Monitoring or Monitor fields frequently for growing onion.below is all metioned about this

If you have applied pre-and/or post-emergence herbicides when transplanting your seedlings to the main field, a manual weeding may be required 40 to 60 days after transplanting. However, onions have shallow roots, thus cultivation is difficult because it might prune the roots. Mechanical cultivation must be avoided when onions begin to bulb.

Timeline-(12th week)

What to do -Prevention measure for Onion .below is all metioned about this

1)Prevent spider mites in your fields -

Spider mites feed on the underside of leaves and cause white to yellow speckles to form on the upper surface. As infestation becomes more severe, leaves appear bronzed or silvery first and

then become brittle, rip open between the leaf veins, and finally fall off.

2) To prevent spider mites on soybean, be sure to:

- 1) Monitor your field for signs of infestations with spider mites*
- 2) Remove affected plants and destroy them away from the field.*
- 3) Remove nettles and other weeds from fields and surroundings.*
- 4) Control the use of insecticides to allow beneficial insects to thrive.*

Timeline-(13th week)

What to do -Prevention measure for Onion .below is all metioned about this

1)Prevent helicoverpa caterpillars on your plants -

Symptoms are characterized by feeding damage on flowers and fruits, and to a lesser degree on leaves. The holes bored into fruits favor the rotting of tissues.

2) To prevent Helicoverpa caterpillar in your vegetables, make sure to:

- 1) Use light or pheromone traps to monitor or mass-catch the moths.*
- 2) Check plants for eggs and damage to flowers and fruits.*
- 3) Hand-pick larvae and leaves with eggs.*
- 4) Remove infected plants from fields.*
- 5) Plow deep after harvesting to expose the pupae for natural predators.*

Timeline-(15th week)

What to do -Prevention measure for Onion .below is all metioned about this

1)Prevent tobacco caterpillars in your crops -

Larvae feed on leaf tissues, scraping the leaf surface or leaving holes. During severe infestations, only the leaf veins, petioles, and branches may be left behind (leaf skeletonization).

2) To prevent tobacco caterpillars in your crop, make sure to:

- 1)Check your fields for signs of the disease (egg masses, feeding damage, larvae).*
 - 2)Collect egg masses and larvae from plants and destroy them.*
 - 3)Irrigate regularly to avoid prolonged mid-season drought.*
 - 4)Use light or pheromone traps to attract the moths.*
 - 5)Remove weeds 15-20 days after sowing.*
 - 6)Handle your plants carefully during cultivation to avoid injuries.*
 - 7)Disinfect your tools and equipment after fieldwork.*
 - 8)Plow deep after harvest to expose the insect to its natural enemies.*
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Timeline-(18th week)

What to do -Monitoring or Monitor fields frequently.below is all metioned about this

- 1)Monitor the growth of your crop often. Walk through your field in a random manner or zigzag and check for signs of diseases, pests, or deficiencies.*

2)Deficiencies are characterized by the discoloration of leaves and the poor vigor of the plants. Diseases are often visible as discoloration and spots or streaks on leaves.

3)Finally, remember that most of the insects present in the field are beneficial for your crop. Those that attack your crop will leave behind damage on leaves and buds in the form of holes.

4)Make sure to talk to your neighbors and exchange information about current diseases with your local community. Also, seek support with public extension services in your area.

Timeline-(22th week)

What to do -Prevention measure for Onion .below is all metioned about this

1)Prevent stemphylium leaf blight in your crops -

Stemphylium leaf blight is caused by a fungus and thrives under long periods of warm wet weather conditions.

2)The symptoms are characterized by:

- 1) Small, water-soaked, white to light yellow spots on leaves.*
- 2)Over time, sunken, elongated, brown blotches with tan to brown centers form.*
- 3)Extensive wilting and dying of the tissues. To prevent stemphylium leaf blight in your crop, make sure to:*
- 4)Avoid excessive nitrogen applications which can increase disease severity.*
- 5)Remove and bury plant debris through soil cultivation after harvest.*

6)Use proper crop rotation and keep the field free of hosts for a period of 3-4 years.

Timeline-(24th week)

What to do -Prevention measure for Onions .below is all metioned about this

1)Prevent purple blotch in your crop -

Small, irregular, sunken and whitish specks appear on older leaves and flower stalks. At high relative humidity, these lesions develop into elliptical brown or purple blotches, with concentric light and dark zones on their centre. Leaves and flower stalks wilt and die.

2)To prevent purple blotch in your plants, make sure to:

- 1)Control weeds in and around the fields.*
- 2)Take care not to injure plants during field work.*
- 3)Control thrips, as plants weakened by them are more susceptible to the disease.*
- 4)Fertilize accordingly with nitrogen and phosphorous.*
- 5)Remove debris and volunteer plants after harvest.*
- 6)Plow field 2-3 times in between growing seasons to expose the fungus to solar radiation.*

7)Store bulbs at 1-3°C and humidity 65-70% in a well-aerated cooler.

Timeline-(27th week)

What to do -Harvesting for growing onions.below is all metioned about this

1) When the bulbs that develop from the leaf bases of onions are fully formed, the leafy green tops begin to yellow and eventually collapse at a point just above the top of the bulb, leaving an upright short neck.

2)When the tops "go down" in this way, it indicates that the bulbs are ready for harvesting.

3)Harvest by pulling out plants when tops are drooping but still green.

4) Bulbs can be pulled out with a hand-hoe when the soil is hard during hot days.

5)Bulbs can be easily pulled out by hand with no tools if the soil is loose.

6) Depending on the weather, bulbs can be left directly in the field for curing or they can be removed and placed in the shade.

Timeline-(27th week)

What to do -Post Harvest strategy for onions.below is all metioned about this

Curing bulbs before storage The process of curing will allow you to maintain the quality and store your onions for a longer period. To avoid bulbs from sprouting rapidly and from rotting during the storage phase, they must be cured. Curing will reduce the moisture level and make the bulb more firm.

1) Under mild weather conditions, bulbs can be cured directly in the field after being pulled out of the soil.

2) Under hot weather conditions, bulbs should be removed from the field and left to cure in the shade.

3) During the kharif season, bulbs are cured for 2-3 weeks keeping the tops of the plants.

4) During the rabi season, bulbs are cured in the field for 3-5 days. Then, the tops are cut off leaving 2.0-2.5 cm above the bulb and again cured for 7-10 days away of the field.

5) In general, bulbs should be protected from rain and direct sunlight.

6) Injured, rotten, disease and thin-necked onion bulbs should be immediately discarded before storage.

Timeline-(28th week)

What to do -Storing onions.below is all metioned about this

In naturally-ventilated storage structures, make sure to follow these recommendations as bulbs can rot much faster than in cold storage.

1) After curing, bulbs should be stored in well-ventilated rooms by spreading them on dry, water-resistant floorings or on racks.

2) It is essential to periodically turn the bulbs and remove rotten or sprouted bulbs from storage to maintain the quality.

3) Chemical control can be effective to inhibit sprouting and controlling diseases during storage by treating the crop prior to harvesting.