Toria is sown as cash crop between Kharif and Rabi season. By its cultivation, additional profit can be earned.

Preparation of field

First plough should be done by disc harrow and 2-3 plough by local plough, cultivator/harrow followed by leveling to covert the soil into fine tilth.

Improved Variety

SN	Variety	Date of Redemption	Date of Notification	Duration of Ripening (in days)	Production Capacity (quintal/ hectare)	Remarks
1	T. 9	1961	21.08.75	90-95	12-15	Whole UP
2	Bhavani	1985	14.05.86	75-80	10-12	- Do-
3	P.T -303	1985	18.11.85	90-95	15-18	- Do -
4	P.T -303	1985	06.03.87	90-95	14-16	For tarai areas.
5	Tapeshwari	2014	16.02.2014	90-91	14-15	Whole UP

Quantity of seed

Use seed of torai/ lahi at the rate of 4 kg per hectare.

Seed Treatment

Sow only treated and certified seed to protect from seed borne diseases. For this, treat the seed with thiram at the rate 2.5 gram per kg of seed. If the thiram is not available then the seeds can be treated with mancozeb at the rate of 3 gram per kg of seed. If the seed is treated with metalexyl at the rate of 1.5 gram per kg of seed, white gerui and tulasita disease can be prevented.

Time of sowing

Toriya should be sown in September. To get good crop of wheat, toriya should be sown in first fortnight of September when the time is available. Sow Bhawani variety only in second fortnight of September.

Quantity of fertilizer

Use fertilizer only after soil testing. If soil testing is not possible, use fertilizer as given below:

- In non-irrigated condition, use 50 kg nitrogen, 30 kg phosphate and 30 kg potash per hectare.
- In irrigated areas, 80-100 kg nitrogen, 50 kg phosphate and 50 kg potash per hectare should be given. Use of potash in the form of S.S.P is more

beneficial because it supplies 12% sulphur. Use full quantity of phosphate and potash and half quantity of nitrogen at the time of last plough through funnel (Chonga) below 2-3 cm of the seeds. Remaining quantity of nitrogen should be given at the time of first irrigation(after 25-30 days of sowing) in the form of top dressing.200 kg gypsum must be used to full fill the requirement of sulphur and use 40 quintal per hectare rot farm yard manure.

Method of sowing

Sowing by local plough is beneficial and it should be done at a depth of 3-4 cm and distance of 30 cm in rows and cover the seeds by using leveler.

Weeding and Hoeing

Keep the distance between 2 plants as 10-15 cm by uprooting dense plants within 15 days of sowing and hoe also to destroy the weeds. If the weeds are more, spray pendimethylene 30 EC at the rate of 3.3 liter per hectare dissolved in 800-1000 liter water after sowing and before germination.

Irrigation

Toriya is more susceptible to deficiency of water before flowering. Hence to get good yield, irrigation is essential at this stage. Keep suitable arrangement of water drainage.

Crop Protection

(a) Critical Insects

- **Ara Fly:** The larva of this insect is black grey in color which eats the leaves from the sides or bores the leaves. In case of intense menace, the whole plant becomes leaf less.
- **Painted Bug:** The infant and adults of these insects are spotted and black, orange and red in color. The infant and adults sucks the juice from leaves, branches, stems and fruits. The infested leaves dry and start falling. Grain formation is also adversely affected in infested pods.
- **Haired larva:** The larva is black and orange in color and the whole body is covered with hair. In early stage, the larva lives in cluster and eats the leaves and spread in the whole field afterwards and eat the leaves. . In case of intense menace, the whole plant becomes leaf less.
- **Mahu:** The infant and adults of these insects are yellowish green in color that sucks the juice of soft stem, leaves, flower and new pods and weakens them. Mahu secrets the honey on which black fungus grows which hinders the photosynthesis.
- **Leaf borer insects:**The larva of this insect bores the leaves and eats the green part as a result white, irregular shaped lines are formed in the leaves.

Economic Loss Level

SN	Name of Insect	Stage of Crop	Economic Loss Level

1	Ara Fly	Vegetative stage	One larva per plant
2	Leaf Borer Insect	Vegetative stage	2-5 larva per plant
3	Haired larva	Vegetative stage	10-15% infested plant
4	Mahu	Vegetative stage to flowering and pod formation	30-50 mahu per 10 cm on the mid upper branch or 30% plant infested by mahu.

Control Measure

- Deep plough in summers.
- Use balanced fertilizers.
- Collect the larva of Ara fly in the morning and destroy them.
- Catch the larva in the early stages found in clusters and destroys them.
- In early stages flowers, infested pods and branched should be plucked and destroy them along with mahu.
- If the insect menace has crossed economic loss level, use following insecticides:

    - For control of Ara fly and haired larva, spray malathion 5% DP at the rate of 20-25 kg per hectare or malathion 50% EC1.50 liter or di chlorvas 76% EC 500 ml or quinolfos 25% EC at the rate of 1.25 liter per hectare dissolved in approximately 600-750 liter of water.
    - For control of Mahu, painted bugs and leaf borer insects, spray 1 liter of di-methoate 30% EC or methyl-o-dematon 25% EC or chlorpyrifos 20% EC or monocrotofos 36% solution at the rate of 500 ml per hectare dissolved in approximately 600-750 liter water. Azadirechtin (Neem oil) 0.15% EC can also be used at the rate of 2.5 liter per hectare.

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(b) Main Disease

- **Alternaria Leaf Blight:** In this disease, dark brown colored spot are formed on leaves and pods which clearly appears ring shaped on the leaves. In case of intense menace, the spots are jointed. This burns the whole leaf.
- **White Gerui:** White blisters are formed on the lower surface of the leaves. Because of which the leaves turn yellow in color and start drying. The florescence becomes distorted at flowering stage which results in no pod formation.

- **Tulasita Disease:** In this disease, a small spots appear on the upper surface of older leaves and white haired fungus grows on lower surface of the leaves. Slowly the whole leaves turn yellow and dry.

Control Measures

- **Seed Treatment**
    - For control of white gerui and tulasita disease, sow the seed after treatment with metalaxyl 35% WS at the rate of 2 gram per kg of seed.
    - For control of alternaria leaf blight, sow the seed after treatment with thiram 75% WS at the rate of 2.5 gram per kg of seed.

- For control of white gerui and tulasita disease, sow the seed after treatment with metalaxyl 35% WS at the rate of 2 gram per kg of seed.
- For control of alternaria leaf blight, sow the seed after treatment with thiram 75% WS at the rate of 2.5 gram per kg of seed.
- **Soil Treatment**
    - For control of soil and seed borne diseases, mix the bio pesticides trichoderma biridi 1% WP or trichoderma harzanium 2% wp at the rate of 2.5 kg per hectare with 60-75 kg of rot farm yard manure, sprinkle light water on it and keep it in shade for 8-10 days. Mix it in the soil at the time of last plough before sowing. This will help in management of seed/soil borne diseases of rye/ mustard.

- For control of soil and seed borne diseases, mix the bio pesticides trichoderma biridi 1% WP or trichoderma harzanium 2% wp at the rate of 2.5 kg per hectare with 60-75 kg of rot farm yard manure, sprinkle light water on it and keep it in shade for 8-10 days. Mix it in the soil at the time of last plough before sowing. This will help in management of seed/soil borne diseases of rye/ mustard.
- **Foliar Treatment**
    - For control of alternaria leaf blight, white Gerui and tulasita disease, spray 2kg of mancozeb 75% WP or zineb 75% WP or zirum 80% WP or copper oxy chloride 50% wp at the rate of 3 kg per hectare dissolved in 600-750 liter of water.

- For control of alternaria leaf blight, white Gerui and tulasita disease, spray 2kg of mancozeb 75% WP or zineb 75% WP or zirum 80% WP or copper oxy chloride 50% wp at the rate of 3 kg per hectare dissolved in 600-750 liter of water.

(c) Critical weeds

Bathua, Santhi, Krishna neel, Hiran khuri, chatri-matri, Akra, forest carrot, gajri, pyaji, khartua, satyanaashi etc.

Control Measure

- For weed control by weed herbicides, mix flucloralene 45% EC at the rte of 2.2 liter per hectare dissolved in approximately 800-1000 liter of water in

the soil just before sowing or spray pendimethylene 30% EC at the rate of 3.3 liter per hectare dissolved in water as above through flat fan nozzle uniformly within 2-3 days of sowing.

- If the weed herbicide has not been use, control the weeds by hoeing with hand hoe.

Harvesting and Threshing

When the pods turn 75% golden in color, reap the crop and dry it. Thresh and separate the seed afterwards. If the harvesting is delayed, there is possibility of shredding of seeds. Store the seeds after drying well so that the fall out are not adversely affected.