



Monthly Workshop for Capacity Building of Extension Functionaries

Message for November

Agronomy

Crop	Operation/ Diseases/pests	Message/Impact points
Rabi Crops		
Wheat	<i>Delayed Sowing and Weed Management</i>	<ul style="list-style-type: none"> - If not sown in previous month then it should be sown as soon as possible. Delay in sowing leads to poor yield and delayed maturity. - Sowing should be done in rows keeping row to row distance of 23 cm and at a depth of 4-5cm to ensure proper germination. - Seed rate should be increased up to 120 kg/ha. - In timely sown crop if pre-emergence herbicide are not applied then weeds can be controlled by application of post emergence herbicide like sulfosulfuron @ 30 g a.i./ha or Isoproturon 1.5 kg a.i./ha + 2,4-D @ 0.5 kg a.i./ha at 30-35 days after sowing.
Brown Sarson	<i>Thinning and hand weeding</i>	<ul style="list-style-type: none"> - Partial thinning along with hand weeding should be done at 25-35 days after sowing of brown sarson.
Rabi Pulses		
Field Pea	<i>Field preparation / Sowing</i>	<ul style="list-style-type: none"> - Sowing of field pea can be done up to ending November. Delay sowing leads to yield reduction. - Recommended varieties: Shalimar Pea-1, Rachna and Prakash, HUDP-15, VL-45, &HFP-715 - For pea cultivation 2-3 ploughings accompanied by planking will be sufficient to obtain desired seed bed. - Apply well decomposed compost or FYM uniformly @ 10-15 t/ha and should be incorporated in the soil at the time of land preparation. Application of vermicompost @ 2.5 t/ha will replace 5 t FYM/ha and 25% NPK from recommended dose of fertilizers. - For pea, urea @ 0.75 kg/kanal, DAP @ 6.5 kg/kanal, and MOP 3.4 kg/kanal should be applied as basal dose at the time of last ploughing and then level the land by planking before seed sowing. - Seed rate of 60 to 65 kg /ha is recommended. In case of bold seeded varieties, seed rate can be increased up to 100 kg/ha. - Make 10% gur/jagary solution and mix <i>Rhizobium</i> spp. @ 5-10 gm /kg seed in the solution. - Do not treat seeds with fungicides in case seeds are being inoculated. - Line sowing with the help of seed drill or opening the furrows at 30 cm apart. The seed should be placed 5 to 6 Cm deep in the soil. - Pre-emergence spray of pendimethalin @ 1 kg a.i./ha at 2-3 DAS.
Lentil	<i>Field</i>	<ul style="list-style-type: none"> - Sowing should be completed up to first fortnight of November.

	<i>preparation / Sowing</i>	<ul style="list-style-type: none"> - Recommended varieties: Shalimar Masoor -1, Shalimar Masoor -2. - For preparation of land, minimum two ploughings are recommended. The soil should be worked with cultivator so that it is well pulverized. - Apply well decomposed compost or FYM uniformly @ 10-15 t/ha and should be incorporated in the soil at the time of land preparation. Application of vermicompost @ 2.5 t/ha will replace 5 t FYM/ha and 25% NPK from recommended dose of fertilizers. - For Lentil, urea @ 0.75 kg/kanal, DAP @ 6.5 kg/kanal, and MOP 2.5 kg/kanal should be applied as basal dose at the time of last ploughing and then level the land by planking before seed sowing. - Seed rate of Lentil 40 kg /ha is recommended - Seed should be treated with <i>Rhizobium</i>. Make 10% gur/jagary solution and mix <i>Rhizobium</i> species @ 5-10 gm /kg seed in the solution. Seed should be dipped in the solution for 10 minutes followed by drying under the shade. Do not treat seeds with fungicides in case seeds are being inoculated. - Seed should be sown in lines at a spacing of 25 cm apart. - Pre-emergence spray of pendimethalin @ 0.75 kg a.i./ha within 2-3 DAS to control the weeds effectively.
Oat fodder	<i>Delayed Sowing</i>	<ul style="list-style-type: none"> - If any farmer has not sown in the last month then it should be sown as soon as possible. Delay sowing leads to poor yield. - Sowing of seed should be done rows. - Seed rate should be increased up to 120 kg/ha.

Entomology (Horticulture)

Apple	<i>San Jose scale & Woolly aphid</i>	- Remove twigs infested with SJS and WAA during pruning and dispose them away from the orchard. Apply Chaubatia paste on cut areas.
	<i>European red mite</i>	- If the population is more than 20 mites per leaf, spray Fenazaquin 10 EC (40ml) per 100 litre of water. (Need based)
	<i>Apple fruit borer</i>	- To maintain good sanitation in the infested orchards, all the dropped fruits of apple or other fruits should be collected and buried deep in the soil.
		- Bur lapping practice should be followed and the overwintering stages should be destroyed along with the burlap.
	<i>Apple stem borer</i>	- Heavily infested branches, twigs and completely dried trees should be uprooted, removed from the orchard and burnt.
		- Insertion of petrol soaked cotton deep in the holes of apple tree, followed by plastering with mud containing insecticide dust/ Chlorpyrifos 1.5 % dust in 6:1 ratio, OR
		- Pressurized injection of Dichlorvos @ 3.0 ml/ lit. of water in the holes, followed by plastering as mentioned above,
	Other Insects	- If the population is observed in the orchards spray Chlorpyrifos 20 EC 100ml per 100 litre of water. (Need based)
Walnut	<i>Walnut fruit grub</i>	- Collection and disposal of fallen fruits to kill immature grubs inside fruit.

- Almond
Pomegranate *Fruit borer*
- Pruning and destruction of insect infested branches.
 - Collection and disposal of infested fruits, both fallen as well as on tree
 - Ploughing around the trees to expose overwintering pupae for predation/desiccation.

- **Note: All sprays are need based.**

Vegetables

- Rabi vegetables (Garden pea, Spinach, Kale) *Overwintering soil insect pests*
- Deep ploughing during day time for predation by birds. During last ploughing apply Carbofuran 3 % CG @ 32.5 Kg/ ha or Chlorpyrifos 10 G@ 25 kg/ha as soil application during last ploughing.
 - If cabbage aphids are observed removal and destruction of infested leaves are suggested.
- Solanaceous vegetables *Tomato fruit borer*
Brinjal shoot & Fruit borer
- Sanitation of field by removing left over stubbles.
 - Collection and destruction of infested fruits and plant debris.
- Bulb crops (Onion, Garlic) *Overwintering pests*
- Deep ploughing during day time for predation by birds. During last ploughing apply Carbofuran 3 % CG @ 32.5 Kg/ ha or Chlorpyrifos 10 G@ 25 kg/ha as soil application during last ploughing
- Rodent management *Horticulture*
- Field Sanitation.
 - Reduction in bund size.
 - Burrow Fumigation with local herbs and cow dung.

Chemical control(Rodent bait schedule):

- ✓ **Day 1:** Plugging of burrows.
- ✓ **Day 2:** Identification of live burrows/pre-baiting (pre-baiting with plain bait *i.e.* mix broken rice and wheat flour 100 g with vegetable oil 2 g and placed @10-15 g pre-bait/ burrow should be done prior to poison baiting).
- ✓ **Day 3:** 2.0% Zinc phosphide baiting (zinc phosphide is mixed with vegetable oil and any carrier such as crushed wheat and broken rice grains at 2 g: 2 g: 96g by weight to be placed inside the live burrow @ 6-10 g bait/ burrow).
- ✓ **Day 4:** Collection and burying of dead rodents. Close all burrows at evening hours.
- ✓ **Day 5:** Identification of live burrows.
- ✓ **Day 6:** Fumigate live reopened burrows with Aluminum phosphide pellets @ 2 pellets/burrow or 5-10 g pouch/burrow and cover with wet mud.

For residual rodent population :

Bromadiolone: Bromadiolone (0.25% BC) @ 10- 15 g per burrow to be placed inside the live burrows.

**** If treatment has been carried out in October then do not repeat during November.**

- Apiculture
- ☞ Protect colonies from wasp attack.
 - ☞ Extraction of honey from colonies and keep sufficient feeding in the colonies for winter.
 - ☞ Maintain proper hygiene in the colonies.
 - ☞ Remove super from colonies.
 - ☞ Shift colonies from hilly areas to planes.
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Plant Pathology (Horticulture)

Fruit

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| Apple/pear | <i>Foliar fungal disease</i> | - Collection and destruction of fallen leaves. |
| | <i>Fruit rots</i> | - The diseases fruits left in and around orchards should be buried in compost pits to avoid over-wintering of pathogens. |
| | Root rot | - Drench tree basin of affected tree with Carbendazim 50 WP @ 0.1% or Carbendazim 12% + Mancozeb 63% 75WP @ 0.5%. Apply fungicide suspension in 15-20 cm deep holes at a distance of 30 cm throughout the tree basin. |
| | <i>Collar rot</i> | <ul style="list-style-type: none"> - Clean the affected collar area and apply Chaubatia or Bordeaux paste. - Drench the soil under tree canopy with Metalaxyl MZ 72WP @ 0.5% or Mancozeb 75WP @ 0.6% or Copper oxychloride 50 WP 0.6%. |
| Almond, peach, plum cherry and apricot | <i>Foliar fungal and canker diseases</i> | <ul style="list-style-type: none"> - Collection and destruction of fallen leaves. - Prune cankered and other diseased twigs and ensure their destruction. - Apply Chaubatia or Bordeaux paste on pruned areas/wounds/scarified cankered parts. - Dormant Spray of copper oxychloride 50 WP @ 0.3%. |

Vegetables

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|---|-------------------------------------|---|
| Seed crops of tomato, chilli, Capsicum, & brinjal | - | <ul style="list-style-type: none"> - Select disease-free fruits for seed extraction - Wash extracted seeds thoroughly and sundry followed by proper storage. |
| Cabbage, cauliflower. | <i>Black rot/ bacterial disease</i> | <ul style="list-style-type: none"> - Pluck the leaves showing initial symptoms of the disease and ensure the destruction. - If severity is high spray streptomycin @ 0.02-0.03%. - Repeat spray at 10 to 15 days interval if required. |
| | <i>Alternaria leaf blight</i> | <ul style="list-style-type: none"> - Pluck the leaves showing initial symptoms of the disease and ensure the destruction. - If severity is more, spray the crop with hexaconazole 5 EC @ 0.3% or ziram 80 WP @ 0.2% or mancozeb 75 WP @ 0.3%. |
| Leafy vegetables (kale, knol-khol, spinach etc.) | <i>Foliar diseases</i> | <ul style="list-style-type: none"> - Pluck the leaves showing initial symptoms of the disease. However, in case of severe infection spray the crop with mancozeb 75 WP @ 0.3% or hexaconazole 5 EC @ 0.03%. |
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Vegetable Science

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| Garlic | <i>Sowing</i> | - Planting of garlic and pran may be continued. |
| | Impact Points: | |
| | ☞ | Avoid diseased and damaged cloves. |
| | ☞ | Cloves should be planted deep to avoid frost injury/bird damage. |
| | ☞ | Cloves may be treated with proper fungicides before sowing as prophylactic |

		measure against fungal disease
Spinach and Methi	<i>Sowing</i>	○ Sowing of spinach and methi may be continued
	Impact Points:	
	☞	Apply sufficient quantity of well rotten FYM to make soil loose and porous.
Cole crops	<i>Seed Production</i>	<ul style="list-style-type: none"> ● In in-situ method, rogue out undesirable plants and allow true to type plants to produce seeds. ● In transplanting method, select true to type plants and replant them at a spacing of 30x45 cm in kale, 30x45 cm in knol khol, 60x45 cm in cabbage and 45x45 cm in broccoli. ● Before replanting, apply well rotten FYM@1.5t and DAP and MOP @ 5kg per kanal. ○ Planting must be done in such a way that cabbage head and knob in case of knol khol rests on the soil.
	Impact Points:	
	☞	To avoid crossing, isolation distance of 1000 m for certified seed must be maintained.
	☞	Apical rosette in kale and crown in knol khol must not get damaged while transplanting.
	☞	Outer leaves in cabbage and broccoli must be removed
Root crops	<i>Seed Production</i>	<ul style="list-style-type: none"> ● Select true to type roots. Prepare stecklings by trimming two third of top leaving crown intact and by cutting roots about one fourth from tip. ● Before planting apply 1 t FYM, half Urea @ 4.5 kg, full DAP and MOP@ 10kg and 5kg per kanal respectively. ● Replant steckling at a distance of 60x30cm on well prepared ridges.
	Impact Points:	
	☞	To avoid crossing isolation distance of 1000 m should be maintained
	☞	Turnip should be isolated from sarson also.
	☞	During selection turnip and radish with pithiness and carrots with large core size should be discarded
Bulb Crop (Onion)	<i>Seed Production</i>	<ul style="list-style-type: none"> ● Plant healthy, true to type and medium sized bulbs at a distance of 60x20cm in well prepared land.
	Impact Points:	
	☞	Avoid double necked, wide necked, diseased and damaged bulbs.
	☞	Plant bulbs on raised beds for effective drainage.

Fruit Science

Fruit Harvesting

Apple (Late varieties)	☞	Fruit should be harvested only after ensuring that they have attained characteristic skin, flesh and seed colour (if not harvested yet).
Lam Ambri, Ambri, Granny Smith, White Dotted Red	☞	Mature fruits generally tend to hold less tightly to tress and as such detach easily.
	☞	Specified days after full bloom is another reliable guide for harvesting fruits.
	☞	Random samples should be subjected to starch-iodine test and starch rating should be from 2-2.5 on 1-6 rating scale for prolonged storage.
	☞	Fruit firmness test should be done with the help of pressure tester and fruit pressure should range between 15-17 lbs/ sq inch.
	☞	Make sure that fruits do not get any wound or bruises while harvesting and handling. It will cause rotting of the fruit.

Pecan nut	☞ Only store unblemished fruit to prevent rotting in storage.
	☞ Shuck dehiscence, colour making on shell and clean separation of packing tissues from kernel indicates that the nut is ready for picking.
Kiwi	☞ A maturity index of 6.2 % total soluble solids or more has been found very satisfactory for harvesting.
	☞ The fruits may be snapped off at base of the fruit leaving the stalk on vine.
	☞ Although the fruit is quite hard it should still be handled carefully.
Orchard layout and pit digging	☞ Layout the orchard in square/rectangular/hexagonal system (as deemed proper under existing circumstances). Pits measuring 1x1x1m should be dug and filling up of pits with a mixture of top soil and 20 kg well rotten FYM per pit should be done.
	☞ Pits of the same dimensions should be prepared for gap filling also.
Sanitation of the orchard	☞ Removal of suckers and water sprouts.
	☞ Cleaning of water channels.
	☞ Collect the fallen leaves and burn them so as to eradicate the primary source of inoculums of various diseases.
	☞ Ploughing/tractorization of orchard areas for clean cultivation.
	☞ Clean and store bamboo canes in the shed (or other dry place) to ensure they are still in good condition for the next year.
Rodents control	☞ Continue vigorous campaign against rodents.
Marking of trees	☞ Trees which are less productive, heavily infested, dry trees should be identified and marked with some paint for top working.
Pruning	☞ Arrangements of efficient pruning tools and white led paint should be made.
	☞ Start pruning of fruit trees in second fortnight.
	☞ Paint on pruned cuts.
Nursery land preparation	☞ Land should be ploughed to depth of 45cm followed by application of well decomposed FYM @ 13 t/ha.
	☞ Hardwood cutting can be taken this month for propagation in the coming season.
	☞ Procurement of seeds of stone and nuts fruits for sowing purpose
Planting of Strawberry	☞ Plant strawberry runners for early quality crop in the next season to fetch premium prices.

Food Sciences & Technology

Apple	Sorting & Grading	<ul style="list-style-type: none"> - Remove the damaged, diseased and underutilized fruits from the lot. - Grade the fruits on the basis of colour and size in four grades <ul style="list-style-type: none"> A = Extra Large B = Large C = Medium D = Small - Use the undersized mechanically damaged and irregular shaped apple for processing and value addition. <p>Impact Points:</p> <ul style="list-style-type: none"> ✓ Graded apples always fetch premium prize as grower gains the confidence of customers and customer gets satisfaction. ✓ Graded apples can be traded in international market also. ✓ Conversion of C grade apples into processed products increase their value by many folds. <p>Packaging</p> <ul style="list-style-type: none"> - Use CF Boxes for packaging of graded apples using fibre trays. - Do not use wooden boxes and avoid use of paddy straw as cushioning
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material.

- For long storage of apples in C.A and Cold Stores, use either plastic crates or CF boxes with outer polyethylene lining or laminations.

Impact Points:

- ✓ Use of CF boxes makes the pack attractive and produce fetches good price.
- ✓ Use of fiber board boxes is internationally accepted and thus the produce can be marketed in international market as well.
- ✓ Use of plastic crates or laminated CF Boxes doesn't absorb moisture during long storage and as such maintain the quality and increases shelf life of apples.
- ✓ Prevents microbial infection also.

Transportation - Use refrigerated transport for dispatch of apples to distant markets if possible.

Impact Points:

- ✓ Maintains quality and increases shelf life.
- ✓ Reduces transport losses.

Storage - Store the apples in on-farm storage structures for a very short period of time.

- For long term storage, store only healthy, firm and disease free apples (A and B grade apples) in the C.A Stores at 0-2^o C depending upon the variety.

O₂ = 2%

CO₂ = 1.5-3.0%

Impact Points:

- ✓ May help in regulating the market.
- ✓ Produce fetches good price.
- ✓ Leads to economic gains.

Whole Walnut

Size Grading ➤ The dried walnuts with a moisture content of 10-12% should be graded into following grades:

Grades	Length (mm)	Width (mm)	Thickness (mm)
Garde-I (very small)	≤ 25	≤ 22	≤ 20
Grade-II (small)	>25- ≤ 32	>22 - ≤ 29	>20 - ≤ 27
Grade-III (large)	>32 - ≤ 39	>29 - ≤ 36	>27 - ≤ 34
Grade-IV (extra large)	>39	>36	>34

- **Note:** - Grading can be done by using sieves already in use or by the power operated walnut developed by AICRP on PHET, Division of FST, SKUAST-K, Shalimar

Impact Points:

- ✓ Graded walnuts always fetch better return and help during extraction of kernels either mechanically or manually

Packaging of walnuts - Use plastic woven sacks for bulk packaging.

- Do not use gunny bags.

Impact Points:

- ✓ Use of gunny bags lead to quality deterioration and microbial infection of walnuts

Extraction of kernels - Do not wash the walnuts before extraction of kernels.

Impact Points:

- ✓ Maintains the quality of kernels.

- Conditioning of nuts** - Keep thin shelled nuts immersed in water for 8-10 hours only to get the moisture content of 15-18%.
 - Keep medium shelled nuts for conditioning for 10-12 hours and thick shelled for 18-20 hours

Impact Points:

- ✓ Conditioning helps in extracting the kernels without any mechanical damage or breakage.

- Extraction** - Use only experienced personals.

Impact Points:

- ✓ Minimizes the mechanical damage to the kernels and output is more.

- Drying of kernels** - Use solar tunnel dryers or cabinet dryers for drying of kernels to get final moisture content of 4-4.5%.
 - Avoid prolonged drying at high temperature (max. temperature of 40± 2° C)

Impact Points:

- ✓ Minimum quality deterioration of walnut kernels.
- ✓ Economical and time saving

- Packaging** - Use vacuum packaging for walnut kernels.

Impact Points:

- ✓ Maintains the quality and increases the shelf life.

- Storage** - Storage both walnuts and kernels at a temperature of 8-10° C with RH of 68-70% under dark conditions.

Impact Points:

- ✓ Maintains the quality and increases the shelf life.

- Quince** *Conversion into value added products* ➤ Quince being rich in pectin and other nutrients can be converted into following value added products:
1. Quince Jam
 2. Quince Jelly
 3. Quince Preserve
 4. Dried Quince rings

Floriculture and Landscape Architecture

- | | | |
|-----------------|---|---|
| Cut flowers | <i>Proper intercultural operations viz, Rose, Gerbera and carnation</i> | - Regular weeding, application of proper fertilizer doses, irrigation, right method of harvesting and post-harvest management. |
| Winter Annuals | <i>Transplanting</i> | - Transplanting of winter season seedlings Pansy, Phlox, Antirrhinum can be continued. |
| Shrubs/Edges | <i>Intercultural operations</i> | - Hedges/edges should be trimmed regularly. |
| Tulip, Hyacinth | <i>Planting</i> | - Planting operation can be carried out. |
| Bulbous crops | <i>Harvesting & storage</i> | <ul style="list-style-type: none"> - Harvesting of Gladiolus should be completed. - Care to be taken for avoiding any injury during harvesting. - Screening of bulbs/corms before storage - Shade drying and treatment with fungicides @0.2% - Gladiolus to be stored in well ventilated moisture free conditions. |

Ploy houses	<i>Management</i>	- Vents of polyhouse need to be closed so as to ensure proper temperature
Pot plants/indoor plants	<i>Exotic/ Indigenous</i>	- Shifting cold sensitive pot plants inside. Management of proper light, temperature & irrigation.
Turf grasses	<i>Seed sowing</i>	- Sowing of seeds of raising cool season turf lawn grasses like Lolium, Fescue etc. can be continued.

Soil Science

Before sowing of Rabi crop like brown sarson, wheat, pea, lentil oats etc composite soil sample should be collected and tested for available plant nutrients. Fertilizer application should be based on soil test values and crop requirement recommended Fertilizer dose of the crop must be applied in case the soil has not been tested.

Well decomposed FYM (@ 10 to 15 tones /ha) or vermicompost (@5tones/ha) or any other good quality organic material should be applied to the field before ploughing.

Root and bulk crops like onion, gralic tulip etc should be cultivated in well drained light texture soil and cultivation of these crops in compact or clayey soils should be avoided.

The procedure for collecting a composite soil sample is given as under.

Soil sample procedure

Soil sample is the most vital step for nutrient analysis. As a very small fraction of the huge soil mass is used for analysis, it becomes extremely important to get a composite soil sample of the field

For making composite sample, collect small portion of the soil up to the desired depth (0-15 cm or more) by means of spade or khurpi from 15 to 20 well distributed spots, moving in a zig zag manner from the sampling site.

Mix the soil collected from the various spots thoroughly by hand on a clean piece of cloth or polythene sheet. Reduce the bulk sample by quartering process in which the entire soil mass is spread, divided into four quarters, two opposite ones are discarded and the remaining two are remixed. Repeat this process until about 500 g soil is left put it in a clean cloth or polythene bag. A label of thick paper with identification mark and other detail such as location field number name of cultivator should be put inside the bag and another label carrying same details should be tied or pasted outside the bag.

For collecting a composite soil sample due consideration must be given to the following:

The sample must truly represent the field it belongs to. A field can be treated as a single sampling unit if it is appreciably uniform. Generally an area not exceeding 0.5 to 1 ha is taken as one sampling unit.

Variations in slope, colour, texture crop growth and management practices should be taken into account for sampling. Separate sample are required from areas differing in these characteristics.

Recently fertilized plots, bunds, channels marshy tracts and spots near trees, wells, compost piles or other non representative locations must be avoided during sampling.

Livestock Production Management

Sheep/Goat

- ❖ Providing bhusa after second week for meeting the requirements (insufficient biomass available for surface grazing).
- ❖ Providing pelleted feed initially @ 200 gm/adult and 150 gm/young from second week. Increased gradually.
- ❖ Keep sheds clean
- ❖ Avoid stress

Cattle

- ❖ Grazing should be avoided in orchards which have fallen apples to avoid choking of cattle.
- ❖ Ensure cleanliness in and around animals animal sheds to ward off flies.
- ❖ Ensure washing of udder of milch animals with a mild disinfectant solution (e.g Potassium permanganate) before and after milking to prevent mastitis.
- ❖ Ensure 6-8 hrs of daily grazing to animals if community pastures are available.

❖ Ration Table

Category	Concentrates	Greens
Cow (15litre milk/day)	6 Kg	Adlib*
Pregnant cow	6 kg +0.5 kg	do

*If quality green fodder is available, 7-8 kg can replace 1 kg of concentrate

❖ Homemade Concentrate

Feed ingredient	Parts
Wheat bran	20
Rice bran	15
Mustard oil cake	22
Maize	35
Molasses/Gur	5
Salts (mixture of iodized salt)	1
Mineral salts	2

Sd/-
Dr. S.K Raina
Assistant Professor (S.G.)

No. Au/De/MW/ 2021/361-400

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Prepared & Compiled by: **Dr. S.K. Raina (Assistant Professor, Soil Science) and Dr. Sushil Kumar (Assistant Professor, Entomology).**