Directorate of Extension

S.K. University of Agricultural Sciences and Technology of Kashmir, Shalimar, Srinagar -190 025

SKUAST KASHMIR

"An institution striving to achieve excellence in Mountain Agricultural Systems"

Monthly Workshop for Extension functionaries of Developmental Line Departments and Subject Matter Specialist of KVKs.

Message for the Month August

Agronomy

Crop	*Operation/ Diseases/pests*	*Message/Impact points*
Rice	*Nutrient management*	- For varieties planted in lower belts, urea @ 3.6 kg/kanal, should be applied as second top dose at 35-40 days after transplanting of paddy. - For varieties planted in higher belts, urea @ 2.25 kg/kanal, should be applied as second top dose at 35-40 days after transplanting - For varieties planted in water logged areas, urea @ 2.45 kg/kanal, should be applied as second top dose 35-40 days after transplanting. - After anthesis stage (60-65 DAT) do not apply top dose of urea.
	Weed management	- Manual weeding should be carried out at 40-45 days after application of weedicide. - Wherever the incidence of weeds like *Potamogeton distinctus* and *Marsilia quadrifolia* is observed alternate wetting and drying should be carried out - Keep bunds and channels clean.
	Water management	- 2-3 cm level of water should be maintained as and when required - Completely drain out water from the field around panicle initiation stage (35-40 DAT) and apply 2nd top dose of nitrogen and re-irrigate the crop after hair like cracks appear in the field.
Maize	*Weeding/ Hoeing/ earthingup Tassaling stage*	- Weeding, hoeing and earthingup should be done wherever maize is at before tassaling stage (45-50 DAS)
	Nutrient management	For irrigated maize (per hectare) - Top dose of nitrogen application be restricted after silking stage. - For hybrid maize urea @ 4 kg/kanal should be apply as 2nd top dose if not applied earlier. - For composite varieties of maize 2nd top dose of urea @ 3.25 kg/kanal if not applied earlier. For rainfed maize (per hectare) - Top dose of nitrogen application be restricted after silking stage - For hybrids : urea @ 2.5 kg/kanal should be apply as 2nd top dose if not applied earlier.. - For composites : urea @ 2 kg/kanal should be apply as 2nd top dose if not applied earlier.. - Top dose of nitrogen should be preferred after a shower of rain. Avoid nitrogen application in dry field.
	Weed	- One hoeing Followed by earthingup should be done at 45-50 DAS.

	management	- No need to do hoeing and weeding after tasaling.
	Water management	- Most of the maize area is rainfed. If possible give irrigation at the most critical periods i.e. at, silking and grain filling stages whichever comes in this month as per sowing time.
Baby corn	*Management*	- All practices similar to that of main crop.
	Picking	- Baby corn can be picked at 3-4 days after silk emergence. - If new cob formation is stopped after harvesting of baby corn then plants may be harvested as green fodder.
Kharif pulses	*Weeding*	- If the crop has attained full canopy, weeding should be avoided. However, emergent weed above the canopy may be pulled out / cut out carefully.
	Irrigation	- If irrigation facility is available then avoid moisture stress at pre flowering and seed development stage which comes in this month.

Entomology **(Agriculture)**

	Aphid	- Dimethoate 30 EC @ 1ml/lit of water.
Cruciferous crops	*Flee beetles*	- Chlorpyriphos 20EC@ 1ml/lit of water (if needed)
	Pieris brassicae	- Hand picking of eggs and larva followed by their destruction - Chlorpyriphos 20EC @1ml/lit of water
Maize	*Maize stalk borer*	- Whorl application of carbofuran 3G @ 3-5 grannules per whorl
Tomato	*Fruit borer*	- Dimethoate 30 EC @ 1ml/l water.
	White fly	- Dimethoate 30 EC @ 1ml/l water.
Cucurbits	*Thrips*	- Chlorpyriphos 20EC@ 1ml/lit of water - Thiacloprid 21.7 SC@ 0.4ml/lit of water
Brinjal	*Shoot and fruit borer*	- Dimethoate 30 EC @ 1ml/lit of water - Removal and destruction of infested fruit

Impact Points:

- ☞ Spray should be carried out during early morning or late evening hours.
- ☞ Spray should be need based.

Entomology (Horticulture)

Apple	*San Jose scale/ Woolly apple aphid*	If more than 13 SJS crawlers/ cm^2 of twig or colonies of WAA on terminal shoots are observed : - Dimethoate 30 EC @ 100 ml./ 100 lit. of water OR - Chlorpyriphos 20 EC @ 100 ml/100 lit. of water - ***Note: Stop spraying of any insecticide/acaricide before 14 days of harvest of apple***
	European Red Mite	**Need Based** If population is more than 15 mites/ leaf - Propargite 57 EC @ 100 ml./ 100 lit. of water OR - Fenazaquin 10 EC @ 40 ml/ 100 lit. of water - ***Note: Stop spraying of any insecticide/acaricide before 14 days of harvest of apple***
	White grub	If beetles are observed in the orchard, then spray trees with any one of the insecticides: - Chlorpyriphos 20EC @ 100 ml/100 lit. of water. **OR** - Quinalphos 25EC@ 100 ml/100 lit. of water.

		- For immature stages (grubs), apply Carbofuran 3.0% CG @ 70-100 gm,/ tree OR drench the soil with Chlorpyriphos 20EC @ 3.0 ml./ lit. of water
Pomegranate	*Fruit borer*	- Remove and destroy the left over fruits Spray Dimethoate 30 EC @ 100 ml/ 100 lit. of water. **OR** - Chlorpyriphos 20 EC @ 100 ml/100 lit. of water
	Note: All sprays are need based.	
Vegetables		-
Brinjal	Brinjal Shoot and fruit borer	Regular clipping and destruction of drooped/wilted shoots and infested fruits. Moth can be mass trapped by installation of pheromone trap (lucin-lure) Dichlorvos 76 EC @ 70 ml/100 lit. of water
Tomato	Fruit borer	Installation of pheromone traps (*heli-lure*) @ 5-7 trap/ha. Lures should be changed after every 15 days. Collection and disposal of infested fruits
	White flies (in poly house)	Use of delta sticky traps for effective trapping of whiteflies Spay Imidacloprid 17.8 SL @ 30 ml/100 lit. of water.
Cucurbits	Fruit fly	Installation of cue lure pheromone traps @ 5-10 trap/ha. Lures should be changed after every 15 days. Infested fruits and dried leaves should be collected and burnt in deep pits. Poison baiting of saturated sugar solution 5ml+ Malathion 50 EC 0.5 ml + 100 ml of fermented pumpkin plup will reduce the population
Rodent management	*Horticulture*	- Field sanitation: Removal of left over debris and grasses from orchards to discourage rodents from availability of food and shelter. - Reduction in bund size (upto 30 cm): Reduce the size of bunds or boundaries around the orchards up to 30cm to force the rodents to leave the burrows - Burrow Fumigation Smoking the burrow with cow dung +Maize straw/maize pith + weeds with the help of burrow fumigator **<u>Chemical control</u>(Rodent bait schedule) :** ✓ **Day 1:** Plugging of burrows. ✓ **Day 2:** Identification of live burrows for pre-baiting prior to poison baiting; For pre baiting with plain bait (crushed rice (48 gm) + broken wheat grain (48 gm)+ sugar (2.0 gm and 2.0 ml. mustard oil) and place 10-15gm/ live burrow ✓ **Day 3:** 2.0% Zinc Phosphide* baiting during late evening with (crushed rice (48 gm) + broken wheat grain (48 gm) + Zinc Phosphide 2.0 gm and 2.0 ml. mustard oil, all mixed together)be placed inside the live burrow @ 6-10 g bait/ live 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. * **Precautions** : Since residual rodent population develops bait shyness after one baiting with Zinc Phosphide, a minimum of 50-60 days gap should be given before it is used again. ** **If treatment has been carried out during July then do not repeat during August.**

Apiculture	• Protect colonies from wasps. • Provide artificial feeding if required. • Regular vigil to check robbing. • Apply formic acid @ 5.0 ml/ day for two weeks. • Migrate colonies if needed to suitable area where flora is available.

Plant Pathology (Horticulture)

A Fruit

Apple	Scab and other foliar diseases, sooty blotch, and Flyspeck	- **Spray at fruit development stage-IV** **Need based: when leaf spot incidence is more than 20%** - Spray with Metiram 55% + Pyraclostrobin 5% 60WG (0.1%) or Captan 70% + Hexaconazole 5% 75WP (0.05%) or Hexaconazole 5EC (0.05%) or Myclobutanil 10WP (0.05%). - **Need based: For Marssonina/ Sooty blotch/ Flyspeck** **Spray at petal fall stage (60-70% petal fall)** - Mancozeb 75WP (0.3%) or Ziram 27SC (0.6%) or Propineb 70WP (0.3%) or Ziram 80WP (0.2%) -**Spray at Pre-harvest Stage** **(For long time storage 25 days before harvest)** - Mancozeb 75WP (0.3%) or Zineb 75WP (0.3%) or Ziram 80WP (0.2%) or Captan 50 WP (0.3%)
	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
	Collar rot	- Clean the affected collar area and apply Chaubatia or Bordeux 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, plum, peach, apricot and cherry	Foliar fungal disease	- Spray Carbendazim 50WP (0.05%) or Thiophanate Methyl 70WP (0.05%) or Carbendazim 12% + Mancozeb 63% 75 WP (0.25%).
Pear	Febrea leaf & fruit spot	- Spray Thiophanate Methyl 70WP (0.05%) or Carbendazim 50WP (0.05%) or Mancozeb 75WP (0.3%) or chlorothalonil 75 WP (0.25%).
Grapes	Anthracnose	- Spray with Thiophanate Methyl 70 WP (0.05%) or Carbendazim 50WP (0.05%) or Carbendazim 12% + Mancozeb 63% 75WP (0.25%)
	Powdery mildew	- Spray with Dinocap 48EC (0.05%) or Flusilazole 40EC (0.02%) immediately after disease appearance.

Impact Points

- ☞ Improve orchard sanitation
- ☞ Ensure proper aeration and drainage in orchards.
- ☞ Do not conduct sprayings during high temperature. Spray be conducted during evening hours.

B Vegetables

Tomato, chilli, brinjal & capsicum	Blight and leaf spot	- Spray with Mancozeb 75WP (0.3%) or Hexaconazole 5 EC (0.05%)
	Fruit rot	- Spray with Metalaxyl 8% + Mancozeb 64% MZ 72 WP (0.25%) or Mancozeb 75 WP (0.3%).
	Wilt/root rot	- Drench the soil with Carbendazim 50 WP (0.1%) or Carbendazim 12% + Mancozeb 63% 75 WP (0.5%).
Cucurbits Pumpkin, Bottle, gouard, cucumber etc.	Angular leaf spot	Spray the crop with Streptocycline (0.02%) - Repeat the sprays if needed.
	Powdery mildew	- Spray Flusilazole 40 EC (0.02%), Triadimefon 25 WP (0.05%).
	Downy mildew	- Spray crop with metalaxyl 8% + mancozeb 64% MZ 72 WP (0.25%).

Impact points

- ☞ Avoid water stagnation
- ☞ Ensure proper support to tomato, beans and cucurbit plants to avoid fruit/leaf contact with soil.
- ☞ Rogue-out wilted/rotted plants from the fields and ensure their safe destruction.

Vegetable Science

Cole crops	Transplanting	- Apply basal dose of manures and fertilizers before transplanting. - Avoid weak and lanky seedlings. - Transplanting should be done preferably during evening hours..
Turnip, Beet, root, Carrot, Radish	Sowing of root crops	- Prefer line sowing to broadcasting. - Sowing should be done preferably on ridges. - Treat seeds with Captan @ 1.5g per kg of seed.
Cucurbits	Pollination	- Bottlegourd, cucumber, musk melon may be hand pollinated with fresh pollen wherever pollinators are not sufficient in order to ensure proper fruit set. - Pollination in cucumber must be done in morning hours and in bottlegourd in evening hours. For production on commercial scale bee hives (5-7 per hectare) may be used for successful pollination and high fruit set. - Excessive fertilization especially nitrogen promotes foliage growth at the expense of blossom formation. So fertilizers should be applied as per schedule. - Encourage pollinators by planting companion crops like flowers favored by bees. - Use pesticides with caution and avoid their use between 9 am to 4 pm when pollinators are active.

Crop	Recommended varieties	Seed rate/ kanal	Fertilizer requirement kg/ kanal		
			Urea	DAP	MOP
Turnip	Purple Top White globe, Nageen-1	250-300 g	6.0	9.5	5.0
Beet root	Crimson Globe, Detroit Dark Red	500-600 g	6.5	3.0	5.0
Carrot	Early Nantes, Chamman, Local Black, Shalimar Carrot-1	150-175 g	7.0	6.5	5.0
Radish	White Round, Japanese White Long, Red Round	375-500 g	7.0	6.5	5.0

Fruit Science

Harvesting of Fruits

Apple and Pear
- Fruits must be harvested when they attain proper size and develop at least 50% of the variety colour. Fruits are easy to detach and collect them in baskets to avoid bruises and cuts.
- Sort and grade the harvested fruits.

Grapes
- Grapes are harvested when berries in the bunch have attained proper size, developed variety colour and sweetness.
- Keep the fruits under shade and clip-off damaged and diseased berries from bunches.

Almond
- Almond should be harvested when the hulls begin to separate on tree itself.

Impact Points

- Skilled labour should be engaged for picking the fruit.
- For every two picker 1 person should be deployed to collect the field basket.
- There should be at least two baskets for each picker.
- Finger nails of all persons handling fruit should be clipped short to avoid bruising or injury to the fruit with nails.
- The exact size, colour and stage of the maturity of the fruit to be picked must be explained to the pickers, when selective picking is desired.
- Picked fruit should be kept in the shade and shifted to the godown as soon as possible to extract field heat.
- Two to three pickings at weekly or fortnightly intervals should be carried out on each tree.

Nursery Operations
- Collect the bud material from the known mother plant.
- The budding operation should be continued in case of pome fruits
- For budding operation nursery should be irrigated if needed for effective sap flow.
- For seed purposes, stone extraction of wild apricot should be completed.

Other Operations
- Tree canopy should be mulched with any material to conserve moisture if not done earlier.
- Remember irrigation of the plants as per demand and need to ensure healthy development of fruits.

Food Science & Technology

Pear (variety Barlette)	Harvesting	➢ At yellowish green skin colour for direct marketing. Hand picking by expert pickers to avoid harvesting loss. TSS% = 14-15% and Acidity = 0.20-0.25%	➢ Develops full yellow colour and other organolaptic qualities till it reaches consumer. ➢ Develops TSS:Acid ratio of 60-70% at the time of consumption.
		➢ Hand picking by using cushioned and soft baskets.	➢ Minimizes the mechanical damage and improves shelf life.
		➢ Avoid harvesting during rains.	➢ Prevents microbial infection and high humidity in packs.
		➢ At green skin colour stage for long storage	➢ Being climacteric in nature develops all organoleptic qualities
Pear (variety	Harvesting	➢ At greenish yellow skin colour, for cold/ambient storage of 15-20 days.	➢ Helps in regulatory the market and to avoid to avoid glut.

Wikar of Winkfield)		➢ TSS = 10-12% and Acidity>0.25%.	➢ Develops desired TSS:Acid ratio during storage.
		➢ For direct marketing, harvest at yellowish stage. TSS= 14% and Acid ratio<40%	➢ Develops yellow colour and other organolaptic qualities and perfect TSS: Acid ratio during storage.
	Pre-cooling	➢ Keep the crop in open air under shade for 4-6 hours before packing and avoid heaping	➢ Removes field heat thus increases shelf life and prevents microbial infection.
		➢ For storage keep the harvested fruits in pre-cooling chamber at 5^0 C for 8-9 hours	➢ Removes field heat thus increases shelf life and prevents microbial infection.
Fresh table grapes	Harvesting	➢ At fully ripening stage ➢ TSS= 15-16% depending upon the variety ➢ TSS:Acid ratio = 25-30%	➢ At this stage has optimum organolaptic attributes.
	Pre-cooling	➢ At 4^0 C for 3-4 hours	➢ Reduces field heat and thus increases shelf life.
	Packaging	➢ Prefer modified packaging in non perforated LDPE or polypropylene packaging or cardboards. If packed in cardboard packs of 5-10 kg capacity, use grape guard or cathecol based sachets/pouches in the pack	➢ Increase shelf life and prevents fungal infection
	Storage	➢ for long storage store the grapes at 0.5 to 1.0^0 C	➢ Increases the shelf life and maintains the quality
Tomato	Harvesting	➢ At very firm and full red stage of maturity. ➢ At slightly yellowish red stage	➢ For immediate local market and use ➢ For processing for distinct marketing.
	Pre-cooling	➢ at 8-10^0 C for 1-2 hours	➢ remove field heat and extends shelf life
	Sorting and grading	On the basis of: ➢ Firmness ➢ Colour ➢ Size ➢ Mechanical Damages and surface defects.	➢ Graded product always fetches better price and makes handling easy. ➢ Use firm, fully coloured and uniform sized lot for fresh market and undersized, defective lot for processing to prepare tomato puree, sauce, paste and dehydrated tomatoes
	Packing	➢ For distant markets, pack in corrugated fibre boards of capacity of 10-12 kgs with cross ventilation . ➢ Use ethy-caps within the packaging ➢ Modified atmospheric packaging in LDPE or in CFB with shrink wrapping	➢ Maintains the quality and absorb ethylene. ➢ Maintains quality and freshness.

		or in polypropylene packagings	
	Storage	➢ At 8-19^0 C ➢ At 1.5-3^0 C	➢ Increase shelf life by 10-12 days ➢ Increase shelf life by 30-35 days

Soil Science

Leaf sampling in fruit Crops

- ✓ Leaf sampling in general is recommended between July 15 and August 15 Leaf sampling must be carried out in a proper and systematic manner. While collecting the samples due attention should be given to all sampling procedures. However, the general guide lines for collection of leaf samples from fruit crops are discussed as under:
- ✓ Judge the orchard for uniformity.
- ✓ Pick leaves from mid point of the current season mid terminal growth between 15 July to August, 15.
- ✓ Collect a composite sample from North, South, East and West.
- ✓ When sampling a commercial orchard of 8-40 canals (1-5 acres), 4-8 leaves be taken per tree, one leaf per shoot from not less than 25 trees, and that the composite sample should consist of not less than 100 leaves.
- ✓ Select leaves which are fully exposed to the sun, to overcome the shading effect.
- ✓ Do not take leaves from outside trees on the boarder of a block or from trees within the rows of dusty roads.
- ✓ Do not take diseased, insect damaged & discolored leave.
- ✓ Collect samples prior to fertilizer application
- ✓ Collect samples variety wise if possible.
- ✓ Remove leaves with a down ward pull so that petioles are intact with leaves.
- ✓ Do not expose the collected samples to the sun or excessive heat too long
- ✓ Leaf samples should be then brought to the laboratory in paper bags.
- ✓ If any symptom of calcium deficiency is observed in apple orchards then conduct spray of Calcium Chloride @ 3 gram per litre of water either in evening or morning

Dr. S.K. Raina
Assistant Professor (S.G.)

No. Au/De/MW/ 2018/161-180
Dated: 06-08-2017

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