

Agricultural activities

during October

Seema Sepat

Division of Agronomy, ICAR-Indian Agricultural Research Institute, New Delhi 110 012

THE October month is the most important for agricultural activities. In this month, most of the *kharif* crops are ready to harvest. Meanwhile, sowing of *rabi* crops also starts in the rainfed regions. The timely sowing of *rabi* crop is important to utilize the stored soil moisture in rainfed regions. The sowing of chickpea, lentil and oilseed crop such as mustard and among the food grain crops, wheat and *rabi* maize starts in this month. Spring sugarcane can be sown in this month for higher profits. The harvesting of *kharif* rice is done in this month. Therefore, in this article, agricultural activity need to be done during October month has been described in detail.

Sowing of pulses

In *rabi* season, chickpea, garden peas and lentil are important pulses. In rainfed regions, chickpea is the most important crop. Sowing of chickpea, field pea and lentil can be done during the first week of October to first week of November. The selection of high yielding varieties is important for higher yield and profits (Table 1). In pulses, seed treatment with *Rhizobium* spp. and PSB need to be done. These three pulses requires about 15-20 kg N, 40-50 kg P₂O₅ and 20-30 kg K₂O/ha. In pulses, all the recommended amount of nutrients should be applied at the time of sowing. In chickpea, small and medium seed size seed varieties requires a seed rate of 60 and 80 kg, respectively for one ha. In case of bold seed size varieties, about 80-100 kg seed is required for one ha. A row spacing of 30-35 cm should be

maintained in chickpea. Field pea and lentil need to be sown at a spacing of 30 and 25 cm, respectively.

Sowing of oilseed crops

In *rabi* crops, mustard, linseed and safflower are the important oilseed crop. The raya and mustard crop can be sown upto third week of October. Selection of high yielding varieties is very important in oilseed crop for higher yield and profits (Table 2). In mustard, seed rate of 3-5 kg is recommended for one ha. Seed treatment with thiram or bavistin at 2-2.5 g for one kg of seed is recommended. Line sowing is always desirable for higher yield. The sowing of low spreading oilseed crop should be done at 30 cm while 45 cm is recommended for high spreading varieties. The sowing can be done upto 2-2.5 cm soil depth. A plant to plant spacing of 12-15 cm can be maintained through thinning. In mustard, application of 60-80 kg N, 40-50 kg P₂O₅, 30-40 kg K₂O and 20-30 kg S is recommended in irrigated conditions. In rainfed conditions, 30-40 kg N, 20-25 kg P₂O₅ and 15-20 kg K₂O is

recommended for one ha. In un-irrigated conditions, the recommended amount of nutrients needs to be applied at the time of sowing. In irrigated conditions, half amount of N and full amount of P, K and S need to be applied at the time of sowing. The remaining half dose of N needs to be applied during first irrigation.

The sowing of linseed can be done during October to second week of November. A seed rate of 25-30 kg is recommended for one ha. Seed treatment can save the crop from many diseases. Therefore, seed treatment with bavistin or thiram (2 g/kg seed) can be done. In irrigated condition, application of 90 kg N and 40 kg P₂O₅ is recommended for one ha. The half amount of N and full dose of P needs to be applied at the time of sowing. The rest half amount of N needs to be applied at the time of first irrigation. In rainfed regions, 40-60 kg N, 20-40 kg P₂O₅ can be applied at the time sowing.

Harvesting of *kharif* rice

The harvesting of rice is done

Table 1. High yielding varieties of chickpea, field pea and lentil

Crops	Varieties
Chickpea	Pusa-372 (BG-372), Pusa 329, Pusa-362, Pusa-391 (BG-391), Ganguar (GNG 1581), Arpan (RSG 896), Aruna (RSG 902), Sangam (GNG 1488), Akash (BDNG 797), Rajas (Phule-G-9425-9), Jawahar Gram 226 (JG 226), Abhilasha (RSG 974), BGD 103 (Resistant to Fusarium Wilt), Pank Kabuli Chana 1, Raj Vijay Kabuli Gram 201 (RVKG 201), BDNGK 798
Field Pea	DMR-7 (Alankar), DDR-23 (Pusa Prabhat), DDR-27 (Pusa Panna), Vivek Matar -10, Pant Pea -25, Pant Pea -42, Vikas, VL Matar 47, Dantiwada Field pea 1, JP-885
Lentil	JL 1, Pant lentil-4 (PL-81-17), Lens-4076, Pusa Vaibhav (L-4147), Narendra Masoor-1, VL Masoor 103, Haryana Masoor-1 (LH89-48), VL Masoor 126 (VL-126), Pusa Masoor 5 (L-45994), Pant Lentil 7, Pant Lentil-6, Pant Lentil 8, Shekhar Masoor 3

Table 2. High yielding varieties of linseed, mustard and safflower

Crops	Varieties
Mustard	Pusa Agrani (SEJ-2), Pusa Karishma, Pusa Mahak, Pusa Mustard 21, Pusa Vijay, Pusa Mustard 22, Pusa Tarak, Pusa Mustard 26 (NPJ-113), Pusa Mustard 28
Linseed	Pratap Als-2, Jawahar Linseed-41, Jawahar Linseed-66, NDL 2004-05, Himani (KL-214), Azad Als-1, JLS 67 Shival(Shival) NDL-2002, JLS-73
Safflower	NARI-H-23 (hybrid), PBNS-40, NARI-38, SSF-708, NARI-57, AKS-207, PKV-Pink (AKS-311)

during this month across the country. Irrigation should be stopped at 10-15 days before the harvesting. A proper drainage need to ensure for standing water in the field. Harvesting should be done when the colour of 80-90% rice grains changes to golden yellow. The moisture in the grain should be about 20-22% at the time of harvesting. Rice harvesting can be done through sickle, reaper and combine. Harvesting of rice through sickle generates lot of rice straw but it involves high cost of cultivation. Use of combine is found practical for rice harvesting as it saves time and money. This machine cut the rice crop above the ground surface and simultaneously does the cleaning of rice grains. The separated grain may be sundried and stored when the moisture reaches upto 12% in grain.

Sowing of fodder crops

In *rabi*, berseem, lucerne and wild oat are the important fodder crop. The improved varieties of fodder crops are listed in Table 3. The optimum seed rate of berseem is 25 kg/ha. Application of 20 kg N and 80-90 kg P₂O₅ is recommended for one ha. All the nutrients need to be applied at sowing time for the better growth of the crop. In lucerne, a seed rate of 20-25 kg/ha is recommended for broadcasting, while in line sowing a seed rate of 12-15 kg/ha is required. It can also be sown through seed drill or desi plough at a spacing of 25-30

cm. The seed should not be sown deeper than 1.5 cm. Being a perennial crop, it is beneficial to apply 20 t FYM/ha in every year. Besides this, basal dose of 20 kg N, 60-75 kg P₂O₅ and 40 kg K₂O/ha is recommended for higher crop growth. A seed rate of 80-100 kg/ha is recommended for uniform crop stand in oat. Nutrient requirement of oats for two cuts and multicut is 120 kg N/ha, 40 kg P₂O₅/ha and 180 kg N, 60 kg P₂O₅/ha, 40 kg K₂O/ha, respectively.

Sowing of *rabi* maize

The successful cultivation of *rabi* maize can be done in different parts of the country. The optimum time of sowing of *rabi* maize is second fortnight of October to second fortnight of November. Sandy loam soil is the desirable soil type for maize cultivation. In general, one or two tillage operations with harrow or disc plough is required for field preparation. A seed rate of 20-25 kg is recommended for one ha (Table 4). Seed treatment should be completed before crop sowing. A line spacing of

60 cm × 18-20 cm spacing is recommended for *rabi* maize. A dose of 150 kg N, 75 kg P₂O₅, 60 kg K₂O and 40 kg S is recommended for hybrid maize. In case of composite maize, 120 kg N, 60 kg P₂O₅, 40 kg K₂O and 40 kg S is recommended for one ha. A full dose of P and K, and one fourth amount of N need to be applied at the time of sowing. The remaining amount of N in two equal splits needs to be done at knee-high and tasseling stage. A dose of 20-25 kg ZnSO₄ is recommended in Zn deficient soils. The mixing of P and Zn should be avoided due to antagonistic effect on the plant growth.

Dhawal, *Sharadmani*, Hemant, Suwan and Lakshmi are the improved varieties of composite maize. Intercropping of short duration crops such as peas, tomato, carrot, beetroot and onion can be done in between the maize rows.

Sowing of sugarcane

This month is suitable for sugarcane cultivation. The optimum time of sowing is October to first fortnight of November (Table 5). The late sowing is not recommended as germination of sugarcane is reduced due to low temperature in late planting. Application of bio-compost, press mud and FYM can be done. The recommended amount of nutrients needs to be applied for higher yield.

A northern region seed rate

Table 3. Improved varieties of *rabi* fodder crops

Crops	Varieties
Berseem	Mescavi, Wardan (S-99-1), BL-1, BL-10, UPB-110, BC-180, JB-2, JB-3, BB-3, BB-2
Lucerne	Sirsa-8, RL 88, Anand-2, Anand-3, CO-1, T-9
Wild oat	HFO-114 (Haryana Javi-114), Algerian, Kent, Weston 11, Bruncker-10, OS-6, OS-7, Bundel Jai-822, Haryana Javi-8, Bundel Jai 992, Bundel Jai 2004, Harita

Table 4. Maize varieties for different states for *rabi* season

States	Varieties
Delhi	PMH 3, Buland, NK 61, Pro 311, Bio 9681, Seed Tech 2324, HM11, HM8
Punjab	PMH 3, PMH-1, Buland, Sheetal, Pro 311, Bio 9681, NK 61, Pro 311, Bio 9681, Seed Tech 2324, HM11, HM8
Andhra Pradesh	The late maturing hybrids of Kharif e.g. Kargil 900 M, Seed Tech 2324, Pro 311, Bio 9681, Pioneer 30 v 92, Prabal, 30 V 92, 900 M
Bihar	Rajendra Hybrid 2, Rajendra Hybrid 1, Pro 311, Bio 9681, Seed Tech 2324, 30 V 92, 900 M



Rice harvesting with combine machine



Sugarcane sowing in furrows



Pusa Rudhira - Carrot variety

generally varies from 35,000 three budded setts per hectares while in southern region it range between 25,000 to 40,000 three budded setts. Seed treatment with bio-fertilizers is 10-12 kg/ha in sugarcane crop.

Acetobacter, Azotobacter, Azospirillum (or Gluconacetobacter) and PSB are the major bio-fertilizers which are recommended for Sugarcane crop. Application of 150 kg N, 80 kg P₂O₅ and 80-100 kg K₂O is recommended for sugarcane. irrigations application needs to be ensured once in 7 days during germination phase (1 –35 days after planting), once in 10 days during tillering phase (36 – 100 days after planting), again once in 7 days during grand growth phase (101 – 270 days after planting) and once in 15 days during maturity phase (271 days after planting up to harvest) according to the rain fall pattern of the area.

Cultural practices in vegetables

- In this month, sowing of mustard for sag (Pusa Sag-1), raddish (Japanese White, Hill Queen, Pusa Mridula), palak (Palak Green, Pusa Bharti), turnip (Pusa Sweti, Punjab Safed 4, Pusa Chandrima, Golden Ball, Pusa Swarnima), bathua (Pusa Bathua-1), methi (Pusa Kasuri), knol khol (White Vienna, Purple Vienna) and coriander (Pant

Haritima) can be sown.

- In cucurbits, regular monitoring is required for white fly. Methyl eugenol trap can be used for this purpose. A spray of malathion (0.1%) can be done in case of severe infestation. Plant infested with viral infection need to be roughed out in tomato and chilli. In case of high infestation, spray of imidacloprid at 0.3 ml in one litre of water can be done.
- Root vegetables such as radish and carrot can be sown on raised bed in this month. Pusa Rudhira and Pusa Kesar are the improved varieties. A seed rate of 4 kg is recommended for carrot. Seed treatment with captan at 2 g for one kg seed is recommended before the sowing. Apply potassium and FYM for higher vegetable production.
- Use pheromone trap (3 in one acre) for monitoring of fruit borer, top borer, diamond back moth. In case of high infestation, spray of spinosad 45 SC at 1 ml dissolved in 4 litres of water can be done.
- A regular monitoring of mites, jassid, hoppers is required in okra, chilli and vein crops. Spray of dimethoate at 2 ml dissolved in one litre of water can be done for the control of jassids and hoppers.
- Potato sowing can be done in this month. Kufri Badshah, Kufri Jyoti

(short duration varieties), Kufri Alankar, Kufri Chandramukhi are the improved varieties. A spacing of 45×20 cm or 60×15 cm is recommended. Seed treatment with mancozeb at 2 g or carbendazim 50 WP at 1 g dissolve in one litre of water can be done for one kg of seed. The seed must be dissolved in the solution for 5 minutes.

- Garlic and onion can be sown in this month. G-1, G-4, G-50 and G-2821 are the improved varieties. Apply phosphorus and FYM for higher yield. A seed rate of 10 kg is recommended for one ha in case of onion. Seed treatment with captan at 2.5 g for one kg seed is recommended.
- Do the regular picking of bottle gourd, ridge gourd and round gourd. Prepare the nursery for broccoli, cauliflower, knol khol and tomato. Sowing of these crops need to be done on raised bed.

Cultural practices in fruits, flowers and plantation crops

- Picking and selling of ripe and healthy guava and citrus fruits should be done in the market. Earthing and weeding need to be done in the orchards according to the need. Remove the old and diseased twigs from the fruit and plantation trees.
- Planting of marigold, chrysanthemum, dahlia, sweet william, sunflower, xenia, poppy and larkspur, calendula can be done in this month.
- Pruning of roses can be done in this month. Bavistin can be applied on cuttings to prevent the fungal infection. In already established roses, watering and manuring need to be done in this month.
- Apply recommended amount of N in ber orchards. In papaya, proper drainage is ensured in case of water stagnation. In lemons, proper pruning can be done to discard the old and diseased twigs.

Table 5. Improved sugarcane varieties for different states

States	Varieties
Andhra Pradesh	Early varieties: Co.6907, 84A125, 81A99, 83A30, 85A261, 87A298, Co.8014, 86V96, 91V83. Mid-late Varieties: COA7607, CO8021, COT.8201, Co7805, COV92102 (83V15), 83V288. Late varieties: Co.7219, CoR8001, 87A380, Co7706
Karnataka	Co 94012, CoC 671, Co 92020, Co 8014, Co 86032, Co 62175, Co 8371, Co 740, Co 8011.
Maharashtra	CoC 671, Co 86032, Co 8011, Co 94012, CoM 265, Co 92005
Uttar Pradesh	CoS 8436, Coj 64, CoS88230, CoS 98231, CoS 767, CoS 8432, CoPt 90223, CoS 92423, CoS97264, CoLk 8102.

Dr Seema Sepat, Division of Agronomy, ICAR-Indian Agricultural Research Institute, New Delhi 110 012. Corresponding author's e-mail: seemasepat12@gmail.com