

Package of practices for millets

Name of the crop: Jowar

S. No	Operation	Details
1	Varieties	<p>KHARIF</p> <p>Varieties: PSV-1, Palem-2, CSV-10, CSV-11, CSV-13, CSV-15 and Srisaila (PSV 56)</p> <p>Hybrids: CSH-10, CSH-11, CSH-14, CSH-16, CSH- 18, CSH-21</p> <p>RABI</p> <p>Varieties : NTJ-2, NTJ-4, CSV 216R, CSV 14R, M35-1, Kinnera</p> <p>Hybrids: CSH-15 R, CSH-16</p> <p>Rice fallows: CSH-13 R, CSH15 R, CSH-16</p>
2	Land preparation	One deep ploughing with mould board plough followed by ploughing with wooden plough twice in summer season. Before sowing, secondary tillage with cultivator to prepare smooth seed bed. Minor land smoothening before sowing helps in better insitu moisture conservation
3	Seed treatment	Treat the seed with Thiomethaxam @ 3 g/kg seed and Thiram or Captan @ 3 g/kg seed.
4	Sowing time	Kharif: 1 st week of June to 2 nd week of July Rabi: 2 nd fortnight of September to October end
5	Seed rate and Spacing	8-10 kg/ha with 45 x 12-15 cm spacing Remove excess plants at 15-20 days age of the crop.
6	Fertilizer doses and time of application	FYM : 10 t/ha Light soils with low rainfall Basal : 30N + 40P + 30K kg/ha Top : (30-40 days crop) : 30 N kg/ha Fertile soils with assured rainfall Basal : 40N + 60P + 40K kg/ha Top : (30-40 days crop) : 40 N kg/ha
7	Weed control (name of chemical and mechanical)	<ul style="list-style-type: none"> • Two manual weeding along with two intercultural operations with danti are effective. • Pre emergence application of Atrazine @ 4 g/litre with in 48 hrs of sowing coupled with one manual weeding and one intercultural operation is also economical. <p>Witch weed:</p> <ul style="list-style-type: none"> • Pre emergence spray of Atrazine @ 4 g/L. • Spray Ammonium sulphate @ 50 g/l or Urea 200 g/l on striga plants. • Destroying the parasites before flowering.

8	Major disease and pest control	<p>Pests:</p> <p>1. Shoot fly:</p> <ul style="list-style-type: none"> • Deep ploughing to expose larval and pupal stages present in the stubbles. • Sowing with the onset of monsoon before 15th July. • In the late sown crop, use high seed rate of 10-12 kg/ha and thinning out the affected and extra plants at 4 weeks after sowing. • Seed treatment with Thiomethaxam @ 3 g/kg seed or Imidacloprid @ 4 ml/kg of seed or Carbosulfan 50 sp @ 100 g/kg seed. • In heavy infested areas, soil application of carbofuran 3G at 20 kg/ha in seed furrows. • Minimize damage by spraying thiodicarb @ 1g/l or lamdacyhalithrin @ 2 ml/l at 7 and 14 days after emergence. <p>2. Stem borer:</p> <ul style="list-style-type: none"> • Deep ploughing to expose larval and pupal stages present in the stubbles. • Sowing with the onset of monsoon. • Removal and destruction of dead hearts • Intercropping with the non cereal crop. • Whorl application of Carbofuran 3G @ 10 kg/ha at 25 and 35 days after emergence. <p>3. Corn leaf Aphid :</p> <ul style="list-style-type: none"> • Lady bird beetles and horse flies devour Aphids • Spraying of Methyldemeton or Dimethoate @ 2 ml/litre. <p>4. Ear head bug:</p> <ul style="list-style-type: none"> • Early sowing minimizes bug damage. • Application of carabaryl 5% or Malathion 5D @ 20 kg/ha at pre bloom and again at milk stages. <p>5. Panicle worm :</p> <ul style="list-style-type: none"> • Application of Malathion 5D @ 20 kg/ha • Spraying of Monocrotophos 1.6 ml/l. <p>6. Mite:</p> <ul style="list-style-type: none"> • Spray Dicofol @ 3 ml/l or Monocrotophos @ 1.6 ml/l. <p>7. Sorghum midge :</p> <ul style="list-style-type: none"> • Application of Malathion 5D @ 20 kg/ha at 90 % ear head emergence stage.
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		<p>Diseases:</p> <p>1. Grain molds:</p> <ul style="list-style-type: none"> • Spray Propiconazole (Tilt) @ 0.5 ml/l twice at 50% flowering and 10-15 days later. <p>2. Smuts:</p> <ul style="list-style-type: none"> • Seed treatment with Thiram @ 3 g/kg seed. <p>3. Ergot:</p> <ul style="list-style-type: none"> • Mechanical removal of sclerotia from seeds by washing in 2% salt solution followed by rinsing with plain water before sowing. • Spraying with benlate @ 1 g/l or Propiconazole (Tilt) @ 0.5 ml/l or mancozeb @ 2 g/l at 10% flowering and another spray at 50 % flowering
9	Irrigation schedule along with critical stages	In irrigated crop, irrigation should be given at sowing, 20-25 days after sowing, ear head emergence / flowering and grain filling stages.

Name of the crop: Bajra

S. No	Operation	Details
1	Varieties	<p>Open pollinated varieties (Composites & synthetics): ICMV 221, ICTP 8203, Raj 171</p> <p>Hybrids: HHB 67, ICMH 356, RHB 121 and PHB - 3</p>
2	Land preparation	One deep ploughing with mould board plough followed by ploughing with wooden plough twice in summer season. Before sowing, secondary tillage with cultivator to prepare smooth seed bed. Minor land smoothing before sowing helps in better insitu moisture conservation
3	Seed treatment	Treat the seed with Thiram or Captan @ 3 g/kg seed. Soak the seed in 2% (20 g /lit) salt solution for 10 minutes to remove ergot infected seed.
4	Sowing time	<p>Kharif : Complete sowings by 15th July</p> <p>Rabi : September- October</p> <p>Summer : January 15 – February end</p>
5	Seed rate and Spacing	<p>4 kg/ha</p> <p>45 x 12 - 15 cm</p> <p>Remove excess plants at 15-20 days age of the crop.</p>
6	Fertilizer doses and time of application	<p>FYM: 2-3 t/ha</p> <p>Irrigated conditions: Basal: 40 N + 40 P + 30 K kg/ha Top (30-35 days crop): 40 N kg/ha</p>

		<p>Rain fed conditions Basal: 30 N + 30 P + 20 K kg/ha Top (30-35 days crop): 30 N kg/ha</p>
7	Weed control (name of chemical and mechanical)	<ul style="list-style-type: none"> • Two manual weedings along with one or two intercultural operations with danti is effective. • Pre emergence application of weedicide Atrazine @ 4 g/lit with in 48 hrs of sowing coupled with one manual weeding and one intercultural operation is also economical.
8	Major disease and pest control	<p>Pests:</p> <p>1. White grub:</p> <ul style="list-style-type: none"> • Apply Phorate @ 12 kg/ha or Carbofuran granules @ 20 kg/ha in seed furrows at the time of sowing. <p>2. Shoot fly:</p> <ul style="list-style-type: none"> • Application of carbofuran 3G at 20 kg/ha in seed furrows • Minimize damage by spraying thiodicarb @ 1g /l or lamdacyhalothrin @ 2ml/l at 7 & 14 days after emergence. <p>3. Grey weevil and other leaf feeding and ear head pests:</p> <ul style="list-style-type: none"> • Dust Methyl parathion 2% or Fenvalerate 0.4% or Quinolphos 1.5% @ 25 kg/ha <p>Diseases:</p> <p>1. Downy mildew:</p> <ul style="list-style-type: none"> • Treat the seed with Apron SD 35 @ 6 g / kg seed. • Foliar spray of Ridomil 25WP @ 1 g/lit at 21 days after sowing if infection exceeds 5%. • Uproot and burn the infected plants. • Avoid monoculture of particular cultivar. <p>2. Ergot:</p> <ul style="list-style-type: none"> • Dip the seeds in 2 % brine solution, stir and remove the floating seeds and sclerotia, dry the seeds lying at the bottom and sow. • Need based spray of Mancozeb (2.5 g/lit) or Carbandazem (1gm/lit) or Ziram @ 2 g/litre at boot leaf and flowering stage. • Plough the field soon after harvest to bury the ergot inoculum
9	Irrigation schedule along with critical stages	In irrigated crop, irrigation should be given at sowing, tillering, ear head emergence / flowering and grain filling stages.

Name of the crop: Ragi

S. No	Operation	Details
1	Varieties	<p>KHARIF:</p> <p>Short duration (80-90 days): Maruthi and Champavathi</p> <p>Medium duration (100-115 days): Saptagiri, Kalyani, Bharathi, Godavari, Srichaitanya and Vakula</p> <p>RABI:</p> <p>Short duration (80-90 days): Maruthi and Champavathi</p> <p>Medium duration (100-115 days): Saptagiri, Kalyani, Bharathi, Godavari, Vakula and Hima (White ragi variety suitable for growing in Rabi season)</p>
2	Land preparation	One deep ploughing with mould board plough followed by ploughing with wooden plough twice in summer season. Before sowing, secondary tillage with cultivator to prepare smooth seed bed. Minor land smoothing before sowing helps in better <i>in situ</i> moisture conservation.
3	Seed treatment	Treat the seed with Carbendazim @ 2 g or Mancozeb @ 3 g/kg seed.
4	Sowing time	<p>Kharif: July- August</p> <p>Rabi: November – December</p> <p>Summer: January – February</p> <p>Spacing:</p>
5	Seed rate and Spacing	<p>5 kg/ha (Raise nursery in 400m²)</p> <p>10-12 kg/ha for Broadcasting.</p> <p>22.5 cm X 10 cm</p>
6	Fertilizer doses and time of application	<p>FYM : 2-3 t/ha</p> <p>Basal : 30N + 40P + 30K kg/ha</p> <p>Top (35-40 days crop): 30 N kg/ha</p>
7	Weed control (name of chemical and mechanical)	<ul style="list-style-type: none"> • In line sown crop, 2-3 inter cultivations with one hand weeding. • In broad cast crop, two hand weedings. • In assured rainfall areas: • Spray pendimethalin 30 % (stomp) @ 3 ml/lit as pre emergence weedicide application. • 2, 4-D Sodium salt @ 2 g/lit as post emergence weedicide application around 20-25 days after planting.

8	Major disease and pest control	<p>Pests:</p> <p>1. Army worms and Cut worms:</p> <ul style="list-style-type: none"> • Dust Malathion 5% or Phosalone 5% or Quinolphos 1.5% @ 20-25 kg/ha. • Spray chloripyriphos @ 2.5 ml/lit or quinolphos 2 ml/l <p>2. Leaf aphid:</p> <ul style="list-style-type: none"> • Spray Dimethoate 2 ml/l <p>3. Stem borers:</p> <ul style="list-style-type: none"> • Spray Dimethoate 2 ml/l or Phosphamidon 2 ml/l or Monocrotophos 1.6 ml/l <p>4. Ear head caterpillars:</p> <ul style="list-style-type: none"> • Dust Malathion 5% or Phosalone 5% or Quinolphos 1.5% @ 20-25 kg/ha. Spray chloropyrophas @ 2ml/L <p>Diseases:</p> <p>1. Blast:</p> <ul style="list-style-type: none"> • Treat the seed with Carbendazim @ 2g / kg seed • If necessary spray the nursery with Carbendazim 1g/l, or Kitazin 2 ml/l or Saaf 2.5 g/l • Spray any of the above fungicides at 50% flowering and repeat 10 days later to control neck/ finger blast. <p>2. Brown leaf spot :</p> <ul style="list-style-type: none"> • Damage could be severe if the crop is subjected to drought or nutrition deficiency. The disease can be effectively managed by proper nutrition and water management. • Need based spray of Mancozeb or Saaf 2.5 g/l <p>3. leaf blight:</p> <ul style="list-style-type: none"> • Seed treatment with captan or thiram @ 3g/l • Spray mancozeb @ 2.5 g/l
9	Irrigation schedule along with critical stages	In irrigated crop, irrigation should be given at 3 days after transplanting, tillering, ear head emergence / flowering and grain filling stages.

Name of the crop: Korra

S. No	Operation	Details
1	Varieties	KHARIF AND RABI Prasad, Krishnadevaraya, Narasimharaya, Srilakshmi, Suryanandi and SiA 3085
2	Land preparation	One deep ploughing with mould board plough followed by ploughing with wooden plough twice in summer season. Before sowing, secondary tillage with cultivator to prepare smooth seed bed. Minor land smoothing before sowing helps in better insitu moisture conservation.
3	Seed treatment	Treat the seed with Carbendazim @ 2g / kg seed
4	Sowing time	Kharif: July- August Rabi: December – January Spacing:
5	Seed rate and Spacing	5 kg/ha for line sowing 10 kg/ha for broad casting Line sowing : 25 x 10cm
6	Fertilizer doses and time of application	FYM : 5 t/ha Basal : 20N + 30P + 0K kg/ha Top (30 days crop) : 20 N kg/ha
7	Weed control (name of chemical and mechanical)	In line sown crop, 2-3 inter cultivations with one hand weeding. In broad cast crop, two hand weedings.
8	Major disease and pest control	PESTS: Army worms, Cut worms and Leaf scraping beetles: Need based dust application of Malathion 5% @ 20 -25 kg/ha. Spray chloripyriphos 2.5 ml or quinolphos 2 ml/l DISEASES: 1. Blast, Brown spot and Rust: If these diseases appear at the early stages of the crop, spray Mancozeb 2.5 g/l. 2. Grain smut: Seed treatment with Carbendazim @ 2 g/ kg seed. 3. Downy mildew: Seed treatment with Ridomil MZ @ 2 g/l or metalaxyl @ 3 g/Kg seed. Roguing out and destroying the affected plants. Spray 1g/l metalaxyl or 2.5 g/l mancozeb.
9	Irrigation schedule along with critical stages	In irrigated crop, irrigation should be given after sowing, tillering, ear head emergence / flowering and grain filling stages.

Name of the crop: Sama

S. No	Operation	Details
1	Varieties	KHARIF OLM 20, OLM 36, OLM 203 and Co 2
2	Land preparation	One deep ploughing with mould board plough followed by ploughing with wooden plough twice in summer season. Before sowing, secondary tillage with cultivator to prepare smooth seed bed. Minor land smoothing before sowing helps in better <i>in situ</i> moisture conservation.
3	Seed treatment	Treat the seed with Carbendazim @ 2g / kg seed
4	Sowing time	Kharif: June - July
5	Seed rate and Spacing	8 kg/ha 25 cm X 10 cm
6	Fertilizer doses and time of application	FYM: 5 t/ha 20:20:20 NPK kg/ha - Basal
7	Weed control (name of chemical and mechanical)	In line sown crops- 2-3 inter cultivations with one hand weeding. In broad cast crop- Two hand weedings.
8	Major disease and pest control	PESTS: Shoot fly: Early sowing; Reduce Nitrogen by 50 % and replace FYM or bio fertilizers. DISEASES: Grain smut: Seed treatment with carbendazim @ 2 g/kg seed
9	Irrigation schedule along with critical stages	In irrigated crop, irrigation should be given at tillering, ear head emergence / flowering and grain filling stages.