**Abundant production technology of sorghum**

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| Sorghum is an important coarse grain crop in the world. Sorghum is the most suitable crop for rain-fed agriculture. Jowar crop provides double benefit along with grains for human food as well as bitter seeds for animal food. Sorghum crops can produce good yields even in low rainfall (450-500). On the one hand, tides can withstand drought efficiently. There it can also tolerate submergence in the ground for some time. Jowar plant produces less light absorption and more dry matter per unit time than other grain crops. Jowar's water use capacity is also higher than other grain crops. Presently jowar is being cultivated in Madhya Pradesh in about 4 lakh hectares of land. Despite the area under sorghum in Madhya Pradesh being less than the previous year, the average yield of the state is 27 percent more than the average yield of Raptr. Khargone, Khandwa, Barwani, Chhindwara, Baitul in Madhya PradeshIt is mainly cultivated in Rajgarh and Guna districts. Apart from this, sorghum grains are being used to make high quality alcohol and ethanol.    **Land choice:**  6.0 to 8.0 p. of clayey, loamy or moderately deep ground, substantial fossil and ground.H. Has been found most suitable.    **Land preparation:**  During summer, deep plowing of the field is necessary from the point of view of soil fertility, weeds and pest control. The field should be prepared for sowing by plowing it with tractor-powered cultivators or bullock-powered bakhar and plowing the land thoroughly.    **Bonnie time:**  From the point of view of production, sowing time in tide is very important. Sowing the sorghum crop in the dry one month before the arrival of monsoon has resulted in a 22.7 percent increase in yield. At the same time, due to early sowing, the incidence of its main pest stem fly in the crop is reduced. For sowing in drought, it is necessary to fry insecticides such as Chloropyrifas 2 percent powder at the rate of 20 to 25 kg per hectare.    **Seed quantity:**  For one hectare of area, 8 to 10 kg of healthy and 70 to:75 percent digitization capacity seed is sufficient.    **Use of seed treatment and culture:**  Moldkiller Thayamithoxem 70 W. S. Treat for 3 grams of medicine per kg of seeds. 10 grams of Azosprilium and P. after treatment with a fungicide and before boani.S.M. Use the culture by mixing it well per kg of seeds. With the use of culture, the yield of sorghum has been found to increase by 17.6 percent.    **Correct plant number to achieve higher production:**  It is recommended to keep the number of plants at 180,000 (one lakh eighty thousand) per hectare among the species and hybrid species that produce abundant production of sorghum. Which seed from 45.m. From 12 in queues at a distance.m. Can be obtained by keeping plants at a distance. New varieties with Vdiuddashi (grain and bitter) such as Jawahar Jowar 1022, Jawahar Jowar 1041 and C.H.Plant number of S.18 should be kept at 2,10,000 (two hundred ten thousand) per hectare. This plant number crop from queues to queues distance 45 to.m. And plant-to-plant distance from 10.m. Can be obtained by placing it on.    **Manure and fertiliser:**  For good yield, 80 kg of nitrogen, 40 kg of phosphor, and 40 kg of potash per hectare should be given. Give half the amount of nitrogen and the entire amount of phosphorus and potash under the seeds at the time of sowing. The remaining amount of nitrogen when the crop is 30-35 days, that is, about 10-12 to the plants when the plants are of the height of the mites.m. Give it as side dressing at a distance of 1000 meters and mix it in the ground by running a string. Where cow dung manure or compost manure is available, it is beneficial to give 5 tonnes per hectare and this leads to maximum production of sorghum.    **Weed control:**  For weed control on sorghum crop, wheel between queues or run 15 to 20 days after Dora Boani and 30 to 35 days after. After this, condemn with your hands inside the queues. If possible, tie a rope to the kulpa teeth and offer soil to the plants. Under chemical control, mix atrazine 0.5-1.0 kg per hectare of active ingredient in 500 liters of water and spray after sowing and before marking.  > For effective weed control in sorghum-based intermittent crops, mixing 75 percent of the 1.5 kg active ingredient of alachlor weed pest in 500 liters of water and spraying before germination has provided higher yield and income.  In a field suffering from angia, even when the weather is favorable for the tide, the corn does not fill with grains. Angia can also be prevented by spraying weeds or repellent drugs. Sodium salt of 2-4 D, spraying of 2 kg of active ingredients per hectare, prevents angia in tides. Agia can be uprooted and destroyed when the number of angias is limited.    **Interstitial crops with sorghum:**  The objective of this method is that the farmers who mainly cultivate jowar should get maximum yield at the same time per unit area. From 30.m. Two rows of tides at a distance of and from 30.m. But sowing two rows of soybean in such a alternating system gives the entire yield of sorghum and about 6 to 8 quintals per hectare of soybean.  From 45.m. 4 rows of tides at a distance of and from 45.m. Two rows of tuvar or two rows of jowar and one row of tuvar at a distance of 1000 meters. In this way, alternate system should sow the important field. There will be a partial reduction in the yield of jowar but the yield of tuvar will be 6-8 quintals per hectare.    **Moisture protection:**  Maximum production is achieved by sowing jowar through weir and pond technology. Also, the moisture of the land can be used extensively. Covering green weeds at the rate of 6 tonnes per hectare results in higher production and income.    **Plant protection:**  Many types of insects are found in sorghum crop, the main ones among which are stem borer, stem borer and Bhutto insects, mainly midge fly causes more harm.    **Stem borer fly:**  This moth is smaller in size than the adult housefly. Its females lay white eggs under the leaves. In 2 to 3 days, caterpillars come out of these eggs and enter the stems through the leaves. And it destroys the growing part of the stems by eating it, that is, it forms a pulse. Corns are not formed in such plants.    **Control measures:**  As mentioned earlier, if the jowar crop is sown in drought one month before the arrival of monsoon, then the loss caused by this insect is reduced. At the time of sowing, give 10 percent granular insecticide at the bottom of the seed at a value of 12 to 15 kg per hectare. When sowing late, sow Savaya seeds.    **Stem borer caterpillar:**  The adult female fly of this insect lays eggs on the lower surface of the leaves in clusters of 10 to 80, from which caterpillars emerge and enter the leaves in 4 to 5 days. They make tunnels inside the stems and ultimately form nadas. This insect can be identified by the holes made in the leaves. Which the caterpillars make at the time of entry into Bhogans.    **Control measures:**  When the plant is 25 to 35 days old, add 5 to 6 grains per plant of carbofyuran 3 percent granular insect nutrient to the leaf bangles. About 8 to 10 kg of insecticide is required for one hectare    **Bhutto's pests:**  Among these, the meze fly is prominent. Generally, when the temperature starts falling, the insect becomes visible. The adult female fly of this insect is orange-red in color. Which lays eggs inside the flowers, the caterpillars emerge from the eggs in 2 to 3 days and destroy the flower eggs by eating them. As a result, grains are not formed at many places in Bhutto.    **Control measures:**  Melathion 50 AD on cobs when 90 percent of the plants in the field come out of the cobs.C. (1 litre per hectare) Spray liquid insect exterminator by mixing it in 500-600 litres of water. If necessary, repeat the spraying after 10-15 days. If liquid insecticide is not available, fry the melathion 5 per cent powder at a rate of 12 to 15 kg per hectare.    **Plant diseases:**  Foliage spots are less visible on the leaves of hybrid varieties and new varieties because they have the genetic property of resistance to these diseases. Kandava disease also does not appear in new varieties. Control of plant rot or tendon is possible by treating the seeds with a fungicidal drug Since new varieties of sorghum ripen in about 95 to 110 days, precipitation at the stage of grain ripening shows black or pink mold growth on the grains. The rashes become pore, their marking capacity reduces and such rashes are not suitable for human diet.    **Control measures:**  For the successful control of this disease, if there is more moisture in the atmosphere due to rain at the time of tidal rise, then the solution of the mixture of Dethane-M.45 (0.3 percent) should be sprayed on Bhutto three times.   * At the time of swelling * When the grains are in the milk state, and * Then the grains are cooking     **Harvest:**  The crop should be harvested at functional maturity. Jowar plants are harvested and piled up. Later, the corn is separated from the plant and the cucumber is dried and stacked separately. It is later used in feeding animals. The grains should be dried and stored when the moisture is 10 to 12 percent. |

**Croprecommendations  
Kharif Crop - Jowar**

**Fertilizer Management**

**Use the following quantity of fertilizers**

* Sorghum crops require huge amounts of nutrients.
* Adding 12-15 cart compost per hectare increases the yield.
* The quantity of fertilizers is added depending on the variety sown.
* 100-120 K for irrigated hybrid variety.Gra./O Ntrajan, 50-60 K.Gra./O Phosphorus and 40-50 K.Gra./O Potosh is approved.
* 50-60 K for local varieties.Gra./O Ntrajan, 30-40 K.Gra./O Phosphorus and 25-30 K.Gra./O Potosh is approved.
* 60 K for unirrigated local varieties.Gra./O Ntrajan, 40 K.Gra./O Phosphorus and 30 K.Gra./O Potosh is approved.
* At the time of sowing, put half the amount of nitrogen and the entire amount of phosphorus and potash separately under the seeds.
* Fertilizers from 10 to 12.m. Give in pits in the depth of.
* Add the remaining amount of nitrogen 30-35 days after sowing.

Crop Recommendations

**Kharif crop - sorghum**

**Pest management - sorghum**

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| Insect | Etharrigona Sokkata |  |
| Popular Name | Shoot fly |  |
| Damage |  This insect of sorghum seeds Is.   Within 28 days of Akunran This insect is infested.   Economic damage to this insect Level 1 is oviparous per plant.   Due to eating of larvae The growing part of the plant dries up.   Of the plant within 1 to 4 weeks Becomes a dead heart. |
| I.P. M |  Sow before the rains arrive.   By increasing seed rate (12 to 15 That.Gra./O) Sow so that the damage of insect attack is reduced.   By uprooting dead heart plants Burn it. |
| Control |  Use of chemical pesticides There should be time when the number of pests crosses the economic threshold level Take.   Economic shoot fly The sill level 10 per cent dead centre (grunted stem) or One egg occupies 10 per cent of the plants per plant.   Furodon 50 S.P., 100 g/k.Gra. Treat seeds at seed rate.   Furodon 50 S.p., 100 g/k.Gra. Treat seeds at seed rate.   Soil at sowing at the rate of Furadon 3 per cent Mix in. |
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| Insect | Melanefis Sakari |  |
| Popular name | Champa (epheid) |  |
| Damage |  These are black in colour.   These plant juice suckers Is an insect.   Adult and baby leaves Sucks the juice of.   There should be motling in the leaves And yellow spots appear.   Sweet sticky on leaves The juice spreads.   This sticky substance is a shoe Promotes the growth of fungus. |  |
| I.P. M |  Adopt crop rotation.   Clean the fields from time to time.   Chinte,caxinellides or Sifdis is effective in controlling them. |  |
| Control |  Of chemical pesticides Should be used when the number of pests is at the economic threshold level Cross it.   Metasistokes 35 AD.C. 1 Liters/he 500 min.m. Mix it in water and spray. Or   Dimethoate 30 E.C. 800-1000 min.Li/He Spray in 500 liters of water. Or   Methyl Dematone 25 E.C. 800-1000 min.Li/He Spray in 500 liters of water. |  |
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| Insect |  |  |
| Popular name | Military insect |  |
| Damage |  This insect lives in the stem during the day And eats leaves at night.   Of their excessive eaters Due to this, the plant becomes leafless and only the stem remains. |  |
| I.P. M | * Outside the field Make water drains so that insects cannot enter the field. |  |
| Control |  Use of chemical pesticides There should be time when the number of pests crosses the economic threshold level Take.   Dimethoate 30 E.C. 800 1000 min to.Lee/Hey Ya Methyl dimetan 800 to 1000 min.Use at the rate of Li/Hey. 8 35 E.C. MOTESISTOX with 500 litres of water at a rate of 1 litre/ha Spray. |  |
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| Insect |  |  |
| Popular name | Shoot Matkun Shoot Bug |  |
| Damage |  Insect invasion 30 days of Akunran Happens after.   Adult and baby leaves They shrink and suck the juice of the leaves.   Top leaf yellow It falls.   The development of corns would have been slow Is.   Of their adults and infants Sweet sticky substance is released by. |  |
| I.P. M |  Plow deep in summer.   Destroy crop residues. |  |
| Control |  Of chemical pesticides Should be used when the number of pests is at the economic threshold level Cross it.   The economic threshold of this insect Level 10 is matkun per earring.   Carbafuran 3 G. Put it in the dam of tide. |  |
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| Insect |  |  |
| Popular name | Jowaraki midge |  |
| Damage |  This insect is in the month of September and October Is more active in.   This immediately after sunrise Later the work of causing harm starts. And this till sunset Continues the work.   Extremes of activism It happens in the afternoon.   Its larvae are of sorghum Eats the uterus (ovary or ovary) due to which the grains develop The action ends. |  |
| I.P. M |  Destroy old crop residues Do it.   Resistant varieties such as D.S.V. -3 sow.   Disease and damaged plants Uproot and destroy. |  |
| Control |  Use of chemical pesticides There should be time when the number of pests crosses the economic threshold level Take.   The economic threshold of this insect Level 5 is midges per earring.   Melatheon 5 per cent from 8 10 K.Do g/ha burqa before flowering. |  |
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| Insect | Chylogenalis portalus |  |
| Popular name | Stem borer |  |
| Damage |  This crop from two weeks of germination Attacks until ripe.   Sorghum leaves and cells Kaan eats this insect.   To the stems of the oviparous plant Makes it hollow.   The vigor of the plant would be lost And sometimes the growth stops due to drying of the central part of the plant Is. |  |
| I.P. M | * Do deep plowing. * Harvest Destroy the remains of. * Clean the fields from time to time. * At intervals of 7 days per harvest at all stages Harmful insects and parasites, number of predatory insects Do general visual inspection for assessment. |  |
| Control |  Use of chemical pesticides There should be time when the number of pests crosses the economic threshold level Take.   The economic threshold of this insect Level 10 percent of plant damage is accompanied by symptoms.   Furodon 3 G. 8 to 12 K.20 to 35 days of g/ha Use after Akunran. |  |

**Kharif crop - sorghum**

**Disease Management - Tide**

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| Disease | Charcoal rot |  |
| Hindi name | Black rot- |  |
| Causative bacteria | Mecrofemina Faciolina |
| Symptoms & Damage | 1. This is caused by fungus In the disease, the stems of certified plants dry up in the central part. 2. On tearing and looking Black colored sclerosia are visible. 3. Light wind blowing But plants break and fall. |
| Control | 1. Seeds Treat. |
| I.P. M | 1. Adopt crop rotation. 2. Time in the field But clean up. 3. Plant growth Adequate moisture in the soil for |
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| Disease | Anthrconose |  |
| Hindi name | Anthrconose |
| Causative bacteria | Colletotrichum Graminicalum |
| Symptoms & Damage | 1. Spots of this disease Round and elliptical with colored edges and white center. 2. These spots 2-4 Mr.m. Tall and 1.2 min.m. Are wide. 3. These spots Gradually they grow in size and have 'black dot' in their center Acer is called Bulai. 4. Many spots They are born and dry the leaves. 5. This disease It is produced from diseased seeds and leaves suffering from Kandvi disease. |
| Control | 1. 3.0 g/that.Gra. Seed thairam or 1.5 g/k.Gra seeds Treat seeds with carbandizim. 2. Menkojeb Spray the crop at a rate of 3.0 g/l. |
| I.P. M | 1. Weeds and crops Destroy the remains. 2. Adopt crop rotation. 3. Resistive varieties Like C.S.H.-1 and C.S.H.-2ka Boye. |
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| Disease | Sugar disease ( Argat ) |  |
| Hindi name | Sugar disease ( Argat ) |
| Causative bacteria | Sphecilia Sorgy |
| Symptoms & Damage | 1. This disease tide If it rains while the corn comes out, it is born. 2. After a few days The disease appears to have a structure similar to that of hard brown horns There are sclerosia of the parent. |
| Control | 1. Sclerosia Sow free seeds. 2. Before sowing seeds Sclerosia-free seed by immersing it in a 20 percent salt solution Treat tax |
| I.P. M | 1. Weeds and crops Destroy the remains. 2. Adopt crop rotation. 3. Resistive varieties Like C.S.H.-1, S.P.H-1 and S.P.Sowed V-191. |
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| Disease | Grain smut |  |
| Hindi name | Kandwa of grains Disease |
| Causative bacteria | Spherothica Sorghai |
| Symptoms & Damage | 1. Tuberculosis of grains Identification is easy. 2. While filling the grain This disease occurs. 3. Black in grains The powder is filled. 4. Breaking seeds But they appear to be filled with powder. |
| Control | 1. 3.0 g/ That.Gra. Seed thairam or 1.5 g/k.Gra seeds from carbon digim Treat seeds. 2. Menkojeb 3.0 Spray the crop at the rate of grams/litre. |
| I.P. M | 1. Adopt crop rotation. 2. Weeds and crops Destroy the remains. |
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| Disease | Downey Mildew |  |
| Hindi name | Mudromill disease |  |
| Causative bacteria | Slaerocola Sorgai |
| Symptoms & Damage | 1. Affected by disease The leaves of the plant are light yellow. And subtle on them Mudromil growth is visible. 2. The plants should be weak Goes and after 5-6 weeks white stripes appear on the leaves Is. 3. Leaves later It bursts into rags. 4. Growth of plants Stops. |
| Control | 1. 4.0 g/ That.Gra. Treat seeds with seed metalaxal. 2. Menkojeb 3.0 Spray the crop at the rate of grams/litre. |
| I.P. M | 1. Resistant variety Sow. 2. Adopt crop rotation. 3. Affected plants Destroy the remains of. |
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| Disease | Leaf Rust |  |
| Hindi name | Ochreous disease |  |
| Causative bacteria | Axonia Purpuriya |
| Symptoms & Damage | 1. Every stage of the crop Is affected by disease. 2. Disease lower Starts from the edges of the leaves. 3. Spots mostly Are on the lower surface. 4. Disease affected leaf It is surrounded by brown spots and color when hands rub on the spots Comes out. 5. Plant growth It stops and the leaves dry prematurely and fall. |
| Control | 1. 3 g/ha Mencojeb 10 S1 Sprinkle at 12 day intervals |
| I.P. M | 1. Adopt Sal Chakra. 2. Farm time time But clean it |

**Kharif crop - sorghum**

**I. P. M**

**Integrated pest management**

* Sow quickly as soon as monsoon starts.
* Adopt recommended crop rotation to reduce pest infestation.
* Tycoderma harzianum 4 K.Gra. Per kg. Treat seeds at seed rate.
* Destroy crop residues and do deep plowing during summer.
* Collect and destroy various stages of harmful insects with your hands in the beginning itself.
* The sensitivity of the crop to pests can be reduced by using fertilizers in balanced quantities.
* Use pheromone cusp or light cusp (containing a 125 watt mercurial vapor bulb) to assess the number and activity of adult borer insects.
* Use by increasing the seed rate for production as expected from the crop and later prune the affected plants as per requirement.
* Collect and destroy various stages of harmful insects with your hands in the beginning itself.

**Integrated disease management**

* Clean the field thoroughly.
* Adopt crop rotation.
* There should be moisture in the soil for the growth of plants.
* The sensitivity of the crop to pests can be reduced by using fertilizers in balanced quantities.
* Uproot and destroy previous crop residues, weeds and other nutritious plants of insects.
* Excessive irrigation should not be done.
* Do not allow water to accumulate at any stage of the crop.

**Integrated Bird Management**

* Plant the crop quickly.
* Destroy bird nests in and around the fields.
* To scare the birds, keep effigies in the field.
* Burst crackers.
* Cultivate sunflowers