

Recommendations of Pearl Millet Agronomy (2012-2020):

S. No.	Recommendation	Year	Annual Group Meeting
Nutrient Management			
1.	<p>During the study of impact of application of different organic sources of nutrients in pearl millet – chick pea cropping sequence it was revealed that farm yard manure should be applied @ 7.5 tons/ha to obtain higher pearl millet equivalent yield, more net returns along with better B:C and to maintain/improve the physico-chemical properties of the soil.</p> <p>(Based on four years data during 2009-2012)</p>	2012-13	48 th AGM, JAU, Junagadh, 22 nd -24 th March, 2013
2.	<p>Based on the study to quantify the optimum dose of N & P nutrients to exploit the full yield potential in pearl millet hybrids under assured moisture conditions at different locations it is recommended that in Zone A1 at Mandor, at all the locations in Zone A (Jaipur, Hisar, Jamnagar and Kalai) and at Aurangabad in Zone B, 25% extra nitrogen of the existing RDN should be applied whereas the present phosphorus recommendations of the respective zone were found optimum.</p> <p>(Based on three years data during 2011-2013)</p>	2013-14	49 th AGM, RARI, Durgapura, Jaipur, 13-15 th March, 2014
3.	<p>The studies on nutrient management through organic and inorganic sources for major and trace elements in rainfed pearl millet revealed that the application of 20 kg/ha ZnSO₄ in combination with RDF either with 5.0 ton FYM/ha or without FYM produced quite higher yield compared to exiting recommendations in Zone A1, A & B and use of other nutrient sources (FeSO₄, Borax and Gypsum) along with RDF marginally improved the yield.</p> <p>(Based on three years data during 2012-2014)</p>	2014-15	50 th AGM, TNAU, Coimbatore, 23 rd -25 th April, 2015
4.	<p>INM experiments among different pearl millet hybrids in each zone showed the superiority of treatment 75% of RDF + PSB + <i>Azospirillum</i> + 5.0 t FYM/ha by 13.9 & 7.8% over RDF alone for grain yield in Zone A₁ & A, respectively besides improving the physico-chemical properties of the soil (lowering pH, improving organic carbon, available N & P) in the sandy loam soils of Haryana & Gujarat.</p> <p>In Zone B, the seed treatment with bio inoculants <i>Azospirillum</i> and <i>PSB</i> in addition to RDF improved the grain yield to the tune of 7.3% over the RDF but was found comparable with 75% of RDF + PSB + <i>Azospirillum</i> + 5.0 t FYM/ha.</p> <p>(Based on three years data during 2012-2014)</p>	2016-17	52 nd AGM, PAU, Ludhiana, 28-30 th April, 2017

S. No.	Recommendation	Year	Annual Group Meeting
5.	Based on the study to see the effect of FeSO ₄ as foliar application on growth, yield and quality of different pearl millet hybrids revealed that the grain yield was improved to the tune of 30.1, 16.3 and 28.1%, respectively by the best treatment of 0.50% FeSO ₄ foliar spray at tillering stage (25-30 DAS) over no foliar spray in Zone A1, Zone A and Zone B. (Based on three years data during 2015-2017)	2017-18	53 rd AGM, AU, Jodhpur, Rajasthan, 22 nd -24 th March, 2018
Weed Management			
6.	Integrated weed management (IWM) studies in pearl millet under rainfed situation revealed that post emergence application of Atrazine @ 0.4 kg/ha followed by one hand weeding at 35 DAS was found better than recommended pre-emergence application of Atrazine @ 0.5 kg/ha followed by one hand weeding at 35 DAS practice in Zone A1 whereas both these treatments were at par in other two Zones A & B.	2014-15	50 th AGM, TNAU, Coimbatore, 23 rd -25 th April, 2015
Irrigation Management {Summer Pearl millet}			
7.	The studies on irrigation requirement of the summer season grown crop revealed that the application of irrigation at 50 mm CPE recorded maximum grain and stover yield compared to critical growth stages (CGS) and 100 mm CPE treatments whereas the water use efficiency was recorded maximum in 100 mm CPE treatment. Among different summer pearl millet hybrid 86M64 in terms of yield and WUE was best performing as compared to ProAgro 9444 and Nandi 72. (Based on three years data during 2015-2017)	2017-18	53 rd AGM, AU, Jodhpur, Rajasthan, 22 nd -24 th March, 2018
Contingent Crop Planning			
8.	Experiment on maximization in the pearl millet productivity under late sown situations (July 25-30 & August 10-15) exhibited the superiority of the nutrient combination of RDF (RDF of respective zone) + FYM @ 5.0t/ha + NPK (19:19:19) foliar spray @ 0.5% at 20-25 DAS by 35.6, 26.2 & 23.9% in terms of grain yield over RDF alone in Zones A1, A & B, respectively. (Based on three years data during 2015-2017)	2017-18	53 rd AGM, AU, Jodhpur, Rajasthan, 22 nd -24 th March, 2018
Moisture Conservation			
9.	Based on the studies of effect of mulching and hydrogel on the productivity, water use efficiency and microbial activity of pearl millet exhibited 49.8, 40.2 and 52.2 % improvement in the grain yield by the treatment Recommended Dose of Fertilizer (RDF) + Crop residue	2019-2020	55 th AGM-Zoom meeting, 29 th April, 2020

S. No.	Recommendation	Year	Annual Group Meeting
	<p>mulch @ 5.0 t/ha+ Hydrogel @ 7.5 kg/ha over RDF alone in Zone A₁, Zone A and Zone B, respectively. The water use efficiency was recorded 70.24, 78.78, & 79.98 kg/ha-cm in the best treatment as compared to 36.60, 52.85 & 52.72 kg/ha-cm in RDF in Zones A₁, A & B, respectively.</p> <p>The soil microbial activities <i>viz.</i> the dehydrogenase activity, MBC, alkaline phosphatase, acid phosphatases and urease populations were recorded significantly higher among all the treatments of hydrogel, mulching and their combinations as compared to their population in the inorganic RDF treatment.</p> <p>(Based on four years data during 2017-2020)</p>		
Sowing Time (Summer Pearl millet)			
10.	<p>For the best sowing time for high yielding hybrids of pearl millet during summer season, it is recommended that crop should be planted in the first fortnight of February in Jamnagar and Aurangabad whereas during January month in Dhule. The Proagro hybrid 9444 was the best performing hybrid during summer season over the locations.</p>	2013-2014	49 th AGM, RARI, Durgapura, Jaipur, 13-15 th March, 2014

**Recommendations of Agronomy included in Package & Practices of Different States
(2012-2020)**

S. No.	Recommendation	Year	State	Remarks
1.	Use biomix (<i>Azotobacter</i> + <i>Azospirillum</i> + PSB) @ 100 ml as seed inoculants along with recommended dose of fertilizer in Bajra crop	2012	Haryana	Agriculture Officers <i>Kharif</i> Workshop, 2012 for inclusion in the <i>Kharif</i> Package & Practices of Haryana State
2.	Use 25 % extra dose of N (62.5 kg/acre) in comparison to RDN (50.0 kg/acre) to realize the higher yield potential of high yielding hybrids of pearl millet under irrigated conditions. (Based on experimental results at CCS HAU, Hisar and trials at farmer's field 2011-2014)	2014	Haryana	Agriculture Officers <i>Kharif</i> Workshop, 2014 for inclusion in the <i>Kharif</i> Package & Practices of Haryana State.
3.	In iron deficient soils (DTPA extractable Fe < 4.5 ppm), foliar application of FeSO ₄ @ 0.5 % at tillering stage (25-30 DAS) should be done in the pearl millet crop. (Based on experimental results at CCS HAU, Hisar and trials at farmer's field 2015-2019)	2020	Haryana	Agriculture Officers <i>Kharif</i> Workshop, 2020 for inclusion in the <i>Kharif</i> Package & Practices of Haryana State.
4.	The farmers of North Saurashtra Agro-climatic Zone growing summer hybrid pearl millet are recommended to sow the crop during Second fortnight of February (30 °C Av. Max. Temp.) to obtain higher yield and net realization	2014	Gujarat	Approved by 10 th AGRESCO of Crop Production Sub-committee during 2014 for Summer season
5.	Based on heat unit concept, the farmers of North Saurashtra Agro-climatic Zone growing hybrid pearl millet during <i>semi rabi</i> season are recommended to sow the pearl millet early maturing variety GHB 538 (HUE: 1.489 kg/ha °C days) during first week of October (HUE: 1.919 kg/ha °C days) to obtain higher yield and net realization. (Based on data during 2012-2013 to 2015-2016)	2016	Gujarat	For inclusion in the <i>Kharif</i> season Package & Practices
6.	The farmers of North Saurashtra Agro-climatic Zone adopting organic farming of pearl millet are advised to apply 10 t FYM/ha and sow pearl millet hybrid GHB 732, GHB 744 or GHB 538 for achieving higher yield	2018	Gujarat	For inclusion in the <i>Kharif</i> season Package & Practices

S. No.	Recommendation	Year	State	Remarks
	and net realization, maintaining soil fertility and improving quality of produce. (Based on data during 2016-2018)			
7.	PSB (75gm) and <i>Azospirillum</i> (75gm) should be treated in powder form to hybrid pearl millet and apply Recommended dose of fertilizer (60: 30: 30 NPK kg ha ⁻¹) for higher production and monetary return of <i>kharif</i> Pearl millet under integrated nutrient management is recommended.	2016	Maharashtra	-
8.	The scheduling of irrigation at 75 mm CPE (February 15 days, March 10 days, April 7 days interval) is recommended for getting maximum yield and monetary return for summer pearl millet in Marathwada region.	2018	Maharashtra	-
9.	Foliar application of FeSO ₄ @ 0.75% (75 g /10 lit of water) at 25-30 DAS is recommended for higher yield and monetary returns in <i>kharif</i> pearl millet for Marathwada region.	2018	Maharashtra	-
10.	Spray of salicylic acid@100ppm (1.5g/15 litre water) or thioglycolic acid @100ppm or thiourea @1000ppm at grain filling stage was found to be effective in mitigating the adverse impact of terminal heat stress in pearl millet. As a special precaution, wear hand gloves while using thioglycolic acid.	2016	Jaipur, Rajasthan	Recommendation generated & included in PoP of Zone IIIa for <i>Kharif</i>
11.	Foliar spray of 0.50% FeSO ₄ at 25-30 DAS produced significantly higher grain yield of pearl millet over control and found at par with 0.75% FeSO ₄ .	2017	Jaipur, Rajasthan	Recommendation generated & included in PoP of Zone IIIa for <i>Kharif</i>
12.	Effect of various types of mulches on moisture availability and performance of Pearl millet studies revealed that Green Vegetative mulch gave maximum grain yield, stover yield, net return and B: C ratio under rainfed conditions. (Based on data during 2017- 2019)	2019	Bikaner, Rajasthan	Recommendation for PoP

Agronomy technology recommendations included in the Package & Practices

S. No.	Recommendation	Year
1.	Atrazine is recommended as a pre-emergence herbicide at 0.5 kg a.i./ha followed by one hand weeding at 35 DAS for effective management of weeds. Application of the same herbicide atrazine @ 0.4 kg ai/ha as early post emergence when weeds were at 2-3 leaf stage followed by one hand weeding at 35 DAS was found effective in management of weeds in pearl millet and has given 61% higher grain yield as compared to unweeded control.	2014-15
2.	In rainfed ecosystem integrated nutrient management with use of bulky organic manures with micronutrients improves the soil water holding capacity and fertility. In pearl millet, application of Borax at 10 kg /ha or FeSO ₄ at 20 kg/ha along with recommended dose of fertilizer (50:25:0 kg NPK/ha) and FYM (2.5 t/ha) produced higher grain yield of pearl millet compared to recommended dose of fertilizer and FYM application.	2016-17
3.	Application of recommended dose of fertilizer (50:25:0 kg NPK/ha) and FYM (2.5 t/ha) at the time of sowing and FeSO ₄ @ 0.75% at 25-30 days after sowing as foliar spray produced higher grain yield compared to only RDF. It has recorded higher net returns and B:C ratio compared to application of RDF + FYM + 20 kg/ha FeSO ₄ .	2019-20

Year 2014-15



Atrazine 50% WP @ 1.0 kg /ha as pre-emergent + one HW at 35 DAS (RPP)



Atrazine 50% WP @ 0.4 kg /ha as early post-emergent + one HW at 35 DAS

Year - 2016-17



RDF + FYM + Borax at 10 kg /ha



RDF + FYM + FeSO₄ at 20 kg/ha

Year - 2019-20



Foliar application of FeSO_4 @ 0.75% at 25-30 DAS



Soil application of FeSO_4 @ 20 kg/ha