



Mahatma Phule Krishi Vidyapeeth, Rahuri

Micronutrient Research Project, Department of Soil Science & Agril. Chemistry

1.	Year of Start	:	State Scheme (Non Plan) was established during 27.8.1971 at Pune and shifted to M.P.K.V., Rahuri during 2.6.1999 at Rahuri as per UR No.MTG/2(145) 329/03 dt. 06.06.2003																															
2.	Contact Details	:	Department of Soil Science and Agril. Chemistry, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar																															
	Postal Address	:																																
	Phone No.	:					(02426)243209 Extn:213																											
	Fax	:					(02426)243209																											
	Email	:	headssacmpkv@gmail.com , durgudeag@rediffmail.com																															
3.	Objectives/Mandates	:	<ul style="list-style-type: none">Assessment of micronutrient status of soils of Western Maharashtra.Studies on response of different crops to application of micronutrients.Establishment of critical levels of micronutrients of different soils and crops.																															
4.	Infrastructure	:	2.00 ha.																															
	Land	:																																
	Irrigation facilities	:					Nil																											
	Laboratories	:					01																											
	Advance facilities	:	AAS-200 Instrument																															
5.	Human Resource	:	<table><tr><th>SN</th><th>Designation</th><th>Discipline</th><th>Remarks</th></tr><tr><td>1</td><td>Analytical Chemist</td><td>Soil Science & Agril. Chemistry</td><td>Filled</td></tr><tr><td>2</td><td>Junior Research Assistant</td><td>Soil Science & Agril. Chemistry</td><td>Filled</td></tr></table> <table><tr><th>SN</th><th>Designation</th><th>No of posts</th><th>Remarks</th></tr><tr><td>1</td><td>Agril. Assistant</td><td>02</td><td>Filled</td></tr><tr><td>2</td><td>Lab Attendant</td><td>01</td><td>Filled</td></tr><tr><td>3</td><td>Peon</td><td>01</td><td>Vacant</td></tr></table>				SN	Designation	Discipline	Remarks	1	Analytical Chemist	Soil Science & Agril. Chemistry	Filled	2	Junior Research Assistant	Soil Science & Agril. Chemistry	Filled	SN	Designation	No of posts	Remarks	1	Agril. Assistant	02	Filled	2	Lab Attendant	01	Filled	3	Peon	01	Vacant
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6.	Research Achievements	:	Nil																															
	Varieties	:																																
	Recommendations	:					17																											
	<ol style="list-style-type: none">Application of 20 kg ZnSO₄ ha⁻¹ to medium deep black clay loam soil, low in zinc is recommended for wheat.Application of Borax @ 5 kg ha⁻¹ for groundnut on sandy clay loam soils every year and for clay loam soils once in two or three years is recommended.Zinc sulphate @ 20 kg ha⁻¹ is recommended for adsali sugarcane (CO-740) grown on vertisol deficient in available zinc.																																	

4. For obtaining higher yields of **rice** on zinc deficient soils, application of 25 kg ha⁻¹ zinc sulphate is recommended to rice soils of the Western Ghat Zone of Maharashtra.
5. Application of borax @ 10 kg ha⁻¹ is recommended for **adsali sugarcane** (CO-740) grown on vertisol deficient in available boron.
6. For achieving targeted yield of **soybean** in zinc deficient medium deep black soils, the application of 20 kg ha⁻¹ zinc sulphate along with nitrogen, phosphorus and potassium fertilizers is recommended.
7. The soil application of 20 kg ha⁻¹ zinc sulphate to **onion** grown on zinc deficient shallow soil along with recommended dose of fertilizer (NPK 100:50:50 + 10 t ha⁻¹ FYM) is recommended.
8. Two foliar spray of ferrous sulphate (0.5 %) and zinc sulphate (0.5 %) after 30 and 45 DAS along with recommended dose of fertilizer (60 kg N + 80 kg P ha⁻¹) for higher economic yield of **French bean** in iron and zinc deficient soils of plain zone of Maharashtra.
9. Soil application of 20 kg ha⁻¹ ferrous sulphate along with recommended dose of fertilizers (NPK 100:50:50 + 10 t ha⁻¹ FYM) is recommended for higher yield and profit of **onion** on iron deficient soils of Western Maharashtra.
10. Application of 20 kg ZnSO₄ ha⁻¹ and 2 t vermicompost ha⁻¹ along with recommended dose of fertilizer (25:50:0 kg NPK ha⁻¹) is recommended for higher grain yield of **chickpea** in zinc deficient medium deep soil.
11. Foliar spray of 0.5 % zinc sulphate during September at flowering stage of sapota is recommended to higher and economical benefit of **sapota** zinc deficient soil.
12. In Iron, Zinc and Boron deficient soil, application of FeSO₄ + ZnSO₄ @ 20 kg ha⁻¹ each (50 g each per tree) + Borax 5 kg ha⁻¹ (13 g per tree) is recommended at the time of bahar for better yield and quality of **fig** fruits and for maintaining soil micronutrient status. (NARP., RFRS (Plain Zone) Ganeshkhind, Pune).
13. Soil application of FeSO₄ @ 25 kg ha⁻¹ + ZnSO₄ @ 20 kg ha⁻¹ with recommended dose of nutrients to **Bt cotton** in iron and zinc deficient soil is recommended for higher yield, monetary return, decrease in reddenning and increase in availability of iron and zinc in Inceptisols of Western Maharashtra.
14. Two soil applications of FeSO₄ + ZnSO₄ @ 5 kg ha⁻¹ each at sowing and 30 days after sowing with general recommended dose of nutrients to hybrid **maize** in iron and zinc deficient Entisols of Western Maharashtra is recommended for higher yield, monetary returns and increase in availability of iron and zinc in soils.
15. Application of zinc sulphate @ 20 kg ha⁻¹ incubated for one week with cow dung slurry (1:4 fresh cow dung : water ratio) at 30 days after sowing through irrigation to **rabi sorghum** with general recommended dose of nutrients (80:40:40 kg ha⁻¹ N:P₂O₅:K₂O + 5 t ha⁻¹ FYM) is recommended for increase in nutrient use efficiency, uptake of micronutrients, yield of **rabi sorghum**, higher monetary returns and for enhancing soil fertility in zinc deficient medium deep black soils of Western Maharashtra.
16. Application of two foliar sprays of Phule micro grade-II 'B' (Fe 3%, Zn 5%, Mn 0.5%, B 0.5%, Cu 0.5%) @ 0.3 % at 35 and 55 days after transplanting of **onion** along with general recommended dose of fertilizer (100:50:50 kg ha⁻¹ N:P₂O₅:K₂O + 20 t ha⁻¹ FYM) is recommended for increase in bulb yield, nutrient uptake, agronomic efficiency and for higher monetary returns on shallow soils of Western Maharashtra.
17. Foliar sprays of Phule micro grade-II 'B' (Fe 3%, Zn 5%, Mn, B, Cu 0.5% each) @ 0.3 % at 55 and 65 days after planting of **onion bulb** along with general recommended dose of fertilizer (100:50:50 kg ha⁻¹ N:P₂O₅:K₂O + 20 t ha⁻¹ FYM) is recommended for higher seed yield, micronutrient uptake and monetary returns in medium deep soils of Western Maharashtra.

7.	Ongoing Research	: 1. Efficacy of seed coating in ameliorating iron and zinc deficiency in soybean on Inceptisol. (3 rd year). 2. Effect of soil and foliar application of silicon on yield of onion. (3 rd year). 3. Effect of nano zinc oxide on yield and quality of spinach grown on sodic soil. 4. Effect of liquid Phule micronutrient grade II on yield and quality of pomegranate grown on Entisol 5. Effect of liquid Phule micronutrient grade II on yield of okra grown on Inceptisol.
8.	Other information	: Commercial production of Phule micro grade II (micronutrient nutrition) of government notified grade II [Fe (2.5%), Zn (3.0%), Mn (1.0%), Cu (1.0%), Mo (0.1%) and B (0.5%)] for foliar spray of all field and fruit crops