

**SKN AGRICULTURE UNIVERSITY
RAJASTHAN AGRICULTURAL RESEARCH INSTITUTE
DURGAPURA, JAIPUR**

**Proceeding of *Rabi* ZREAC meeting of Zone IIIa
03-04 October, 2023**

Venue	:	STR Hall, RARI, Durgapura
Chairman	:	Dr. A. S. Baloda, Director, Rajasthan Agricultural Research Institute, Durgapura-Jaipur
Co-Chairman	:	Sh. Ram Lal Meena, Additional Director Agriculture (Extension), Jaipur Division, Govt. of Rajasthan, SIAM Building, Jaipur.
Convener	:	Dr. S. K. Bishnoi, Assoc. Prof. (Plant Physiology), & In-charge, Technical Cell, Rajasthan Agricultural Research Institute, Durgapura, Jaipur
Rapporteurs	:	Dr. Arvind M, Assistant Professor (Plant Pathology), Rajasthan Agricultural Research Institute, Durgapura, Jaipur Dr. Raju Ram Choudhary, Assistant Professor (PBG), Rajasthan Agricultural Research Institute, Durgapura, Jaipur Dr. Bheem Singh Pareek, Assistant Professor (Agronomy), Rajasthan Agricultural Research Institute, Durgapura, Jaipur

Dr. Subodh Kumar Bishnoi, Technical Cell welcomed all the dignitaries viz, scientists of RARI, SKNCOA, ARSS (Ajmer, Diggi and Kotputli), KVKs (Ajmer, Chomu, Dausa, Bansthali and Kotputli), ATC, Tabiji, Ajmer, officers of state agricultural departments engaged in research and extension activities of Zone IIIa. Then, he invited, **Dr. A.S. Baloda, Director, RARI & Chairman** of the house for his opening remarks. In his talk, he urged the scientist to identify and discover the best technology for the benefit of farmers. He also requested the extension workers and government officials to provide important valuable feedback to the scientists on which research initiative can be planned & executed during the forth coming calendar year. He emphasized on the need to develop varieties/ technologies suited to present scenario of climate change and urged the extension workers and government officials to assess the impact of the technologies included in the PoP. He insisted the house to come forward to have detailed and focused discussion during the meeting in order to improve the existing package of practices (PoP) of crops.

Then he invited, **Sh. Ram Lal Meena, Additional Director (Agri. Extn.)** for his remarks. He emphasized about the importance of ZREAC meeting and also urged the scientists, researchers and extension officers for their valuable role in this meeting through fruitful discussion and interaction especially with the young scientists and extension workers.

After the initial session, the Convener invited the scientists of SKNAU and ATC, Tabiji, Ajmer for presentation of research findings of experiments conducted during Rabi, 2022-23. The results emanating from the experiments conducted at RARI & SKNCOA and adaptability performance at ATC, Tabiji, Ajmer were presented and the decisions were made, as per following details.

Crop	Discipline	Title of the experiment	Concerned Scientist	Remarks
Wheat	Breeding	(i) Performance of wheat variety Raj 4548 and Raj 4581	Dr. S. S. Punia	Recommended for testing at ATC
	Crop Production	(i) Efficacy of herbicides against diverse weed flora of wheat	Dr. Shweta Gupta	Recommended for testing at ATC
		(ii) Effect of nano urea on increasing N use efficiency and productivity of wheat under irrigated condition		Concluded
	Entomology	(i) Effect of insecticidal seed treatment on termite damage and yield of Wheat	Dr. B. N. Sharma & ATC	Recommended for inclusion in PoP
	Nematology	(i) Chemical management of Cereal cyst nematode, <i>Heterodera avenae</i> in Wheat	Dr. S. P. Bishnoi & ATC	Recommended for inclusion in PoP
	Adhok/Non Plan	(i) Effect of nano urea on crop growth of wheat (ii) Performance of wheat influenced by application of sea weed extract (iii) Effect of different methods of application of nano phosphorus in wheat	Dr. Pratibha Singh	Recommended for inclusion in PoP Concluded Recommended for testing at ATC
Barley	Breeding	(i) Performance of barley variety RD 3053, RD 3064, RD 3067 and RD 3080	Dr. S. S. Rajput	Recommended for testing at ATC
	Crop Production	(i) Yield maximization of barley through integrated nutrient supply and PGRs application (ii) Enhancing productivity of barley using silicon in low	Dr. Shweta Gupta & ATC	Concluded Concluded

		moisture areas (iii) Enhancing yield and nutrient use efficiency in barley through nano fertilizer (iv) Productivity and quality enhancement of barley through nitrogen and zinc scheduling (v) Enhancing yield and quality through sowing methods and seeding rate in different barley varieties	Dr. Shweta Gupta	Recommended for inclusion in PoP Concluded Concluded
Chickpea	Breeding	(i) Performance of chickpea variety RSGD 926 (Karan Chana 19)	Dr. S. K. Jain	Recommended for submission of proposal to SVRC
	Crop Production	(i) Response of potash and potash solubilizer on chickpea	Dr. K. C. Gupta & ATC	Recommended for inclusion in PoP
	Entomology	(i) Validation of IPM Module (NCIPM) for insect pests management of chickpea	Dr. Vipin Kumar	Repeat at RARI with addition of two more modules
MULLaRP	Agronomy	(i) Fortification of lentil through agronomic intervention of Zn and Fe (ii) Fortification of field pea through agronomic intervention of Zn and Fe	Dr. Sumitra Devi Bamboriya and Dr. Shweta Gupta	Concluded Concluded
	Soil	(i) Nutrient economy (P & Zn) through use of nutrient mobilizing bacteria in lentil (Expt. 2019, Modified 2020)	Dr. Pratibha Singh	Recommended for inclusion in PoP
Vegetables	Pathology	(i) Integrated Management of virus diseases in bitter guard (ii) Intensive management of soil borne diseases of French bean	Dr. R. K. Bagri & ATC	Recommended for inclusion in PoP Recommended for testing at RARI, Durgapura and ATC will visit
	Nematology	(i) Management of root knot nematode (<i>Meloidogyne sp.</i>) in lentil using bio-organics and biopesticides	Dr. Hemraj Gurjar & ATC	Recommended for inclusion in PoP

		(ii) Management of root-knot nematode, <i>Meloidogyne javanica</i> in protective cultivation through newer nematicides on cucumber, <i>Cucumis sativus</i> .		Recommended for inclusion in PoP
Arid fruits	Entomology	(i) Management of lemon butterfly, <i>Papilio demoleus</i> (Lepidoptera: Papilionidae) in bael through bio-ecological approaches	Dr. D. K. Bairwa & ATC	Recommended for inclusion in PoP
Taramira & Mustard	Adhok/ Non Plan	(i) Effect of Nano Urea on crop growth, yield and economics of mustard	Dr. Pratibha Singh & ATC	Recommended for inclusion in PoP
Seed Spices	Crop Production	(i) Response of foliar application of iron and zinc on growth, yield and quality of fennel	Dr. A. C. Shivram & ATC	Recommended for inclusion in PoP
		(ii) Intercropping of seed spices with vegetables for higher yield and income	Dr. A. C. Shivram & ATC	Recommended for inclusion in PoP
	Adhok	(i) Evaluation of ICAR Fusicont (Bio-Raj) 3% WP against wilt disease of Cumin	Dr. Anita Jat & ATC	Recommended for inclusion in PoP
AINP on Onion & Garlic	Crop Production	(i) Weed mangement studies in onion seed crop	Dr. Shweta Gupta	After reframing the trial, it is recommended for testing at ATC & RARI.
Pesticide residue	Entomology	(i) Safe waiting period of insecticide Flubendiamide 5.75 % + Emamectin Benzoate 1.92 % in/on maize crop.	Dr. B. N. Sharma	Recommended for inclusion in safe waiting period for consumption of vegetables in Kharif PoP and removal of banned pesticides
Weed manangem ent	Agronomy	(i) Effect of herbicides against diverse weed flora of Barley	Dr. Shweta Gupta	Recommended for testing at ATC
ARSS	Ajmer	(i) Effect of waste decomposer on grain yield of wheat (ii) Effect of INM on grain yield of wheat	Dr. Dinesh Arora & ATC	Concluded Recommended for testing at ATC

ATC	Ajmer	(i) Response of onion to waste decomposer (ii) Management of orobanche weed in tomato crop	Sh. U. S. Gupta	Concluded Concluded
NRCSS	Ajmer	(i) Performance of Dill seed variety- Ajmer Dill-3 and Anise variety- Ajmer Anise-2 (ii) Intensified seed spices based cropping systems for higher productivity, resource use efficiency and profitability (iii) Performance of fennel under organic cultivation	Dr. Arvind Kumar Verma Dr. Narendra Chaudhary	Recommended for testing at ATC, RARI and farmers field and recommended for submission of proposal to state varietal release committee Repeat the experiments at ATC, RARI with two additional cropping system modules

The Programme Coordinators of KVKs (Ajmer, Chomu, Dausa, Bansthali and Kotputli) presented the extension activities and seed production programme carried out during the Rabi 2022-23 at their KVKs and farmers fields. The presentations included the frontline demonstrations (FLDs) for the demonstration of new varieties/ hybrids, production, protection technologies and OFTs and feedbacks of latest variety from the farmers.

Joint Directors of Agriculture of Jaipur, Ajmer, Dausa and Tonk districts, Assistant Director, Horticulture, Jaipur & Dausa presented the overall scenario of extension activities viz., seed, fertilizer, mini-kit demonstrations including area, production & productivity of different rabi crops and rainfall situation in the district. They also presented the difficulties faced by the farmers regarding emerging weeds and nematode problems in different crops of the concerned area. The House Unanimously decided to include one brief page note on new crop Dill (Ajmer Dill-3) and Anise (Ajmer Anise -2) for creating awareness among farmers of the state. For this Director, NRCSS may be requested to submit the same.

Dr. Raju Ram Choudhary, Rapporteur, Technical Cell, appraised the house about the technologies approved for inclusion in the PoP (Annexure-III) and research finding finalized for adaptability testing at ATC, Tabiji, Ajmer (Annexure-IV).

Then Dr. S. K. Bishnoi, Rapporteur, Technical Cell, invited **Sh. Ram Lal Meena**, for his remarks. He quoted that the inputs and technologies are important in equal proportion because inclusion of technologies is necessary for proper use of inputs. He also emphasized the need for farmer friendly practices and technologies for fast and easy promotion. He also highlighted about the increasing problem of orobanche in the vegetable and mustard crop and

there is urgent need to find the remedy at the earliest possible. The performance of mustard variety, RS-725 found very suitable in the zone IIIa and thus, need to be included in the PoP.

Then Dr. S. K. Bishnoi, Rapporteur, Technical Cell, invited, **Dr. A. S. Baloda**, for his remarks. He applauded the house for having healthy and fruitful discussion during the two days meeting due to which some important findings could be finalized for the benefit of farmers of zone IIIa. Further, he also urged the extension functionaries to focus on increasing awareness among poly house crop raisers regarding use of biocontrol agent for effective management of nematodes & other diseases so that their income and production can be sustained. He also urged the house to initiate the preparation of horticultural PoP, which would be beneficial for fruits and vegetable farmers in the zone.

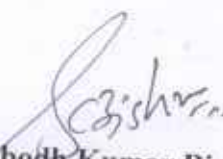
Dr. S. K. Bishnoi expressed sincere thanks to Chairman Dr. A. S. Baloda and Co-chairman Sh. Ram Lal Meena for their fruitful suggestions and guidance to bring out the final recommendations during the discussions and deliberations. He also acknowledged the rapporteurs for recording the minutes of the meeting and members of technical cell for extending valuable support.



Chairman and Director
Rajasthan Institute of Horticulture,
RARI, Durgapura, Jaipur
Durgapura, JAIPUR-302018

Copy of the proceedings of Rabi, ZREAC 2023 of Zone IIIa forwarded for information and necessary action to:

1. The Commissioner of Agriculture, Govt. of Rajasthan, Pant Krishi Bhawan, Jaipur.
2. The Commissioner of Horticulture, Govt. Rajasthan, Pant Krishi Bhawan, Jaipur.
3. The Director (Research), SKN Agriculture University, Jobner
4. The Director, Extension, SKN Agriculture University, Jobner.
5. The Dean, SKN College of Agriculture, Jobner.
6. The Dean, College of Agriculture, Lalsot, Dausa, Niwai.
7. The Dean, College of Agriculture, Kumher (Bharatpur).
8. The Dean, College of Agriculture, Fatehpur Shekhawati, Sikar
9. The Managing Director, Rajasthan State Seed Corporation, Pant Krishi Bhawan, Jaipur.
10. The Director of Millet Development, Govt. of India, II Floor, Block-A, Kendriya Sadan, Sector 10, Vidyadhar Nagar, Jaipur. 302023
11. The Addl. Director of Research (seeds), SKNAU, Rajasthan Agricultural Research Institute, Durgapura, Jaipur.
12. The Addl. Director of Agriculture (Extn.), Pant Krishi Bhawan, Jaipur
13. The Additional Director of Agric. (Extn.), Jaipur Division, Durgapura, Jaipur.
14. The Joint Director Horticulture, Jaipur Division, Durgapura, Jaipur.
15. The Joint Director Agriculture (ATC), Pant Krishi Bhawan, Jaipur.
16. The Joint Director of Agriculture (Extn.), Jaipur/Ajmer/Tonk/Dausa.
17. The Dy. Director of Agriculture (Extn.), Jaipur/Ajmer/Tonk/Dausa.
18. The Zonal Director Research, ARS, Navgaon (Alwar)/Fatehpur-Shekhawat (Sikar).
19. All Heads of Division/Department, RARI, Durgapura, Jaipur.
20. The Officer Incharge, Agril. Research Sub-Station, Tabiji (Ajmer)/ Diggi (Tonk)/ Kotputli.
21. The Programme Coordinator, KVK, Chomu/Tabiji/Banasthali/Dausa/Kotputli.
22. The Dy. Director Agriculture (Agronomy), ATC, Tabiji (Ajmer).
23. All Section/Rabi Crop Scheme In-charges, RARI, Durgapura/ Jobner, Jaipur.
24. In-charge, Technical Cell, RARI, Durgapura-Jaipur


(Subodh Kumar Bishnoi)

Associate Professor (Plant Physiology)

Convener of the Meeting,
RARI, Durgapura-Jaipur

ANNEXURE-I

Action Taken Report (ATR) on decisions taken in Rabi 2021-22 ZREAC meeting of Zone IIIa held at RARI, Durgapura, Jaipur

S. No.	Problems	Action taken
1	Inclusion of recommendation in package of practices	All the 14 production and protection recommendations have been communicated to the appropriate authority for inclusion in PoP.
2.	All the trials approved in ZREAC Rabi 2022 for adaptability performance have been conducted and visited by ATC, Tabiji, Ajmer and results were presented in ZREAC Rabi 2022-23	

ANNEXURE-II

Progress of Research on Feedback Problems submitted in Rabi 2021-22 ZREAC meeting of Zone IIIa

On all the feedback research work were initiated and results were presented soon

S. No.	Nature of problem	Progress of work/ Suggestions
1	Problem of orobanche in mustard and tomato	Research work is going on and will provide the technology soon
2	Lack of organic farming practices in PoP	Research work is going on and will provide the technology soon
3	Stem rot problem in mustard	Research work is going on and will provide the technology soon
4	Post harvest practices for the mustard and chickpea should be included in PoP	Research work is going on and will provide the technology soon
5	Wilting in Guava	Technology developed and incorporated in PoP
6	Malformation problem in chilli and tomato	Research work is going on and will provide the technology soon
7	Lack of nano-fertilizer recommendations in PoP	Technology developed and incorporated in PoP.
8	Mite and whitefly problem in vegetables	Technology developed and incorporated in PoP.
9	Incorporation of drip irrigation schedules in PoP for Rabi crops	Research work is going on and will provide the technology soon
10	Incorporation of biopesticides in PoP	Technology developed and incorporated in PoP
11	Development of horticultural PoP	Decision taken and will try to develop separate PoP for horticultural crops
12	Problem of rust in wheat and barley	Technology developed and incorporated in PoP
13	Nematode problem in protected vegetable cultivation	Technology developed and incorporated in PoP
14	Wilt problem in Lentil	Biocontrol agents have been identified and will be tested
15	<i>Pluchea lanceolata</i> problem in rabi crop	New molecules of weedicide have been added at national level and same will be tested at ATC
16	Unavailability of latest varieties of Oats	Technology will be borrowed from IGFRI, Jhansi

17	Unavailability of multiyear varieties of Lucerne	Technology will be borrowed from IGFR, Jhansi
18	Lack of new varieties of cumin and fenugreek	Technology will be borrowed from NRCSS, Ajmer
19	Problem of Alternaria blight in cumin	Research work is going on and will provide the technology soon

Production recommendations approved in Rabi ZREAC Meeting -2022-23 of Zone-IIIa

A. Varieties recommended for inclusion in PoP (Rabi)-

Wheat

DBW-327: DBW-327 recorded high mean yield of 79.4 q/ha and established yield superiority over HD 2967 (35.3%) and HD 3086 (13.6%) under three years of testing in the Co-ordination breeding trials. It has the yield potential of 87.7 q/ha. The variety has given high yield under optimum use of fertilizers and growth retardants. It is highly tolerant to drought, heat and resistant to brown and yellow rust. DBW-327 shows more resistance to Karnal Bunt as compared to other varieties.

डीबीडब्ल्यू-327 : अखिल भारतीय समन्वित अनुसंधान परियोजना गेहूँ के अगेती उच्च उपज क्षमता परीक्षणों में इस किस्म की औसत उपज 79.4 क्विंटल/हैक्टेयर पायी गयी है, जो कि एचडी 2967 से 35.3 प्रतिशत एवं एचडी 3086 से 13.6 प्रतिशत अधिक है। इस किस्म की उत्पादन क्षमता 87.7 क्विंटल प्रति हैक्टेयर है। इस किस्म ने अनुकूलतम उर्वरकों और वृद्धि नियंत्रकों के प्रयोग से सम्पूर्ण जोन में पैदावार के अच्छे परिणाम दर्शाए है। यह किस्म उच्च तापमान एवं सूखे के प्रति अवरोधी पायी गयी है। यह किस्म पीला व भूरी रोली रोग के सभी प्रमुख रोगजनक प्रकारों के लिए प्रतिरोधक पायी गयी है। अन्य किस्मों की तुलना में इस किस्म में करनाल बंट रोग के प्रति अधिक रोगरोधिता पायी गई है।

DBW-303: DBW-303 recorded high mean yield of 81.2 q/ha and established yield superiority over HD 2967 (30.3%) and HD 3086 (11.7%) under three years of testing in the Co-ordination breeding trials. It has the yield potential of 97.4 q/ha. The variety has given high yield under optimum use of fertilizers and growth retardants. It is highly resistant to yellow, black, brown rust, Karnal bunt (4.2 %) and wheat blast. It is having high protein content (12.1), a good chapati-making score (7.9), wet and dry gluten content (34.9 and 11.3) better bread quality (6.4- 10.0) and a biscuit spread factor of 6.70 cm.

डीबीडब्ल्यू-303 : अखिल भारतीय समन्वित गेहूँ परियोजना के अंतर्गत तीन साल के प्रयोगों के औसत अनुसार इस किस्म की उपज एच.डी. 2967, एच.डी. 3086 की तुलना में बेहतर पायी गयी है। इस किस्म की औसत उपज 81.2 क्विंटल/हैक्टेयर है। यह किस्म पीली एवं भूरी रोली रोग, करनाल बंट तथा ब्लास्ट रोग के प्रति अत्यधिक प्रतिरोधी है। यह किस्म बेहतर चपाती गुणों के साथ अधिक प्रोटीन (12.1 प्रतिशत) युक्त है।



DBW-222: DBW 222 recorded high mean yield of 61.3 q/ha and established yield superiority over HD 2967 (13.1%), DBW 88 (9.4%), DPW 621-50 (7.3%) WH 1105 (6.4%) and HD 3086 (4.0%) under three years of testing in the Co-ordination breeding trials. It has the yield potential of 82.1 q/ha. The variety has shown the minimum reduction in grain yield under late sown conditions which indicates wider adaptability for the varying sowing time and ability to perform better under terminal heat stress. It has shown resistance to prevalent pathotypes of yellow rust and leaf rust. It is highly resistant to Karnal bunt (9.1%) and loose smut (4.9%) as compared to the other prevalent varieties. It is having high bread loaf volume (648), a good chapati-making score (7.5), better bread quality (8.24) and a biscuit spread factor of 8.45cm. It has excellent protein quality with a perfect Glu-1 score of 10.

डीबीडब्ल्यू-222 : इस किस्म की औसत उपज 61.3 क्विंटल/हैक्टेयर है। यह किस्म बुवाई के विभिन्न समय के प्रति अनुकूल है एवं टर्मिनल हीट स्ट्रेस के तहत बेहतर प्रदर्शन की क्षमता रखती है। यह पीली एवं भूरी रोली रोग के प्रति सहनशील है साथ ही करनाल बंट एवं अनावर्त कण्डवा रोग के प्रति अत्यधिक प्रतिरोधी है। यह किस्म उत्कृष्ट प्रोटीन गुणवत्ता के साथ बेहतर ब्रेड क्वालिटी हेतु उपयुक्त है।



Barley

RD-2899: The feed barley variety RD 2899 is suitable for timely sown irrigated condition in Central Zone of India. The variety is also performing better in whole Rajasthan & gaining popularity among farmers. Plant height of this variety is 81 – 91 cm. The variety RD 2899 matures in 110 - 120 days. This variety has 110-130 tillers per square meter area. 1000-seed weight of this variety is 45- 49 grams. The grains are comparatively bold and attractive in colour. It shows high degree of resistance against yellow rust & brown rust diseases. Protein content of grains is 11.00 percent. Average yield of the variety RD 2899 is 42.50 quintals per hectare while yield potential is 55 - 60 quintals per hectare.

आरडी-2899 : सिंचित क्षेत्रों में समय पर बुवाई के लिए उपयुक्त इस किस्म के उपज क्षमता 55 से 60 क्विंटल प्रति हैक्टेयर है। इस किस्म के पौधों की उंचाई 81 से 91 सेंटीमीटर तथा कल्लों की संख्या 110 से 130 प्रति वर्ग मीटर तक होती है। यह किस्म पीली तथा भूरी रोली रोग रोधक है। इस किस्म की बालियाँ छः पंक्ति युक्त एवं मध्यम लम्बाई वाली होती हैं। दाने मोटे एवं आकर्षक पीले रंग के, 1000 दानों का वजन 45 से 49 ग्राम होता है। इस किस्म के दानों में प्रोटीन की औसत मात्रा 11.0 प्रतिशत होती है। इस किस्म की परिपक्वता अवधि 110 से 120 दिन है।



DWRB 137: The feed barley variety DWRB 137 is suitable for timely sown irrigated condition in Central Zone & NWPZ of India. It is six rowed feed barley. Plant height of this variety is 81 – 88 cm. 1000-seed weight of this variety is 41- 47 grams. The grains are comparatively bold (75.63 – 88.9% bold grains) and attractive in colour. Show high degree of resistance against yellow rust disease. Protein content of grains is 11.00 – 12.70 percent. Average yield of the variety DWRB 137 is 52.20 q/ha in NWPZ while, 42.49 q/ha in central zone.

डी.डब्ल्यू.आर.बी.-137 : सिंचित क्षेत्रों में समय पर बुवाई हेतु उपयुक्त इस किस्म की औसत उपज 52.20 क्वि./हैक्टेयर है। इस किस्म के पौधों की ऊंचाई 81 से 88 सेमी. होती है। तुलनात्मक रूप से मोटे एवं आकर्षक दानों वाली इस किस्म के 1000 दानों का वजन 41-47 ग्राम होता है। यह किस्म पीली रोली रोग के प्रति उच्च प्रतिरोधक है। इस किस्म के दानों में प्रोटीन की मात्रा 11.00-12.70 प्रतिशत होती है।



Mustard

- **RH 725:** This variety is suitable for rainfed conditions of Zone-II (Jammu, Punjab, Haryana, Delhi and northern Rajasthan). It has 22.8% superiority over the latest released variety RH 406 with 25-26 q/ha average seed yield under rainfed conditions with potential of 3.5 tons/ha. It is having long main shoot, bold seeds and long semi-appressed siliqua. It matures in 140-145 days.

आरएच-725 : यह किस्म जोन- II (जम्मू, पंजाब, हरियाण, दिल्ली और उत्तरी राजस्थान) की वर्षा सिंचित स्थितियों के लिए उपयुक्त है। 3.5 टन/हेक्टेयर की क्षमता के साथ वर्षा सिंचित परिस्थितियों में जबकि सामान्य परिस्थितियों में 25-26 क्विंटल/हेक्टेयर औसत बीज उपज के साथ नवीनतम जारी किस्म आरएच 406 पर इसकी श्रेष्ठता 22.8 प्रतिशत है। इस किस्म का मुख्य तना लंबा व इसके दानों का आकार मोटा तथा इनकी फलियाँ आधी दबी हुई होती है। इस किस्म की पकाव अवधि 140-145 दिन है।



B. Improved technologies (production and protection) recommended for inclusion in PoP (*Rabi*)

Wheat

- To increase the productivity and profitability of wheat, application of 2 foliar sprays of nano urea (2.5 ml/L) at 40-45 DAS and 60-65 DAS along with 75 % RDN is recommended.

गेहूँ की अधिक उपज एवं शुद्ध आय प्राप्त करने हेतु सिफारिश की गई नत्रजन उर्वरकों की 75 प्रतिशत मात्रा के साथ नैनो यूरिया के दो पर्णोय छिड़काव (2.5 मिली/लीटर), पहला बुवाई के 40-45 दिन बाद, दूसरा बुवाई के 60-65 दिन बाद करने की अनुशंसा की जाती है।

- Seed treatment with imidacloprid 600 FS @ 4ml Kg⁻¹ seed found effective for termite management in wheat crop.

गेहूँ की फसल में प्रभावी दीमक प्रबंधन हेतु गेहूँ के बीजों को इमिडाक्लोप्रिड 600 एफ एस 4 मिली/किलो बीज की दर से उपचारित करना उपयुक्त पाया गया है।

- Application of Fluensulfone 2% GR @ 25 Kg per hectare at the time of sowing in wheat found effective for the management of Cereal Cyst Nematode (Molya Disease of Wheat).

गेहूँ के मोल्या रोग के प्रबंधन हेतु फ्लुएनसल्फोन 2 प्रतिशत जीआर 25 किलोग्राम प्रति हैक्टेयर की दर से बुवाई के समय उपयोग करें।

Barley

- Application of 75% recommended dose of nitrogen in two splits i.e., 50% at the time of sowing and 25% at 25-30 DAS followed by two foliar sprays of nano urea 1000 ml in 600 litter of water at 40-45 DAS and 60-65 DAS, respectively is recommended to enhance the productivity of barley.

जौ की उत्पादकता को बढ़ाने के लिए सिफारिश की गई है कि 75 प्रतिशत नाइट्रोजन की मात्रा को दो भागों में, 50 प्रतिशत मात्रा को बुवाई के समय एवं 25 प्रतिशत मात्रा को 25-30 दिन पश्चात् देने के बाद एक लीटर नैनो यूरिया का छिड़काव 600 लीटर पानी के साथ क्रमशः बुवाई के 40-45 एवं 60-65 दिनों के बाद करें।

Chickpea

- In addition to recommended doses of N & P, application of 20 Kg K₂O/ ha and seed inoculation with potash solublizer @5ml/ kg seed significantly increased seed yield of chickpea which fetches maximum net return and B:C ratio

चना में सिफारिश की गई नत्रजन एवं फॉस्फोरस की मात्रा के अलावा 20 किलोग्राम पोटाश प्रति हैक्टेयर के उपयोग के साथ चना के बीजों को पोटाश कल्चर द्वारा 5 मिली प्रति किलो बीज की दर से बीजोपचार करने से चना फसल की उपज में सार्थक वृद्धि होती है जिससे अधिकतम शुद्ध लाभ एवं लागत अनुपात प्राप्त होता है।

Lentil

- Application of *Purpureocillium lilacinum* (Paecilomyces lilacinus) @ 2.0 kg / ha as soil treatment at the time of sowing with seed is found effective for the management of root-knot nematode in lentil through bio organics and bio pesticides.

मसूर में जड़-गांठ (मूल-ग्रंथि) सूत्रकृमि के नियंत्रण के लिए पर्प्यूरोसिलियम लिलासिनम (पेसिलियोमाइसिस लिलासिनस) जैव कारक की मात्रा 2.0 किलोग्राम प्रति हेक्टेयर की दर से बुवाई के समय भूमि उपचार कर बीज के साथ उपयोग किया जा सकता है।

- Seed inoculation with liquid biofertilizers (NPK) @ 5-10 ml/kg seed along with recommended doses of fertilizer recorded maximum grain yield of Lentil, net returns and B: C ratio.

मसूर की उत्पादकता बढ़ाने एवं अधिकतम शुद्ध आय प्राप्त करने हेतु सिफारिश की गई कि उर्वरकों की मात्रा के साथ मसूर के बीजों को (5-10 मिली/किलो) तरल जैव उर्वरकों (NPK) से बीजोपचार करें।

Cumin

- Seed treatment with ICAR-FUSICONT technology (*Trichoderma reesei*) 3%WP @50gm/kg seed followed by soil drenching with enriched culture @ 5.0 kg/ha at 30 DAS (5.0 kg Bio-raj + 1 kg jaggery mixed in 250 litre water and left for overnight) is recommended for effective management of *Fusarium* wilt disease incidence in Cumin.

जीरे में उखटा रोग के प्रभावी प्रबंधन हेतु आई सी ए आर – फ्यूजीकोन्ट तकनीक – (*ट्राइकोडर्मा रीसी*) 3 प्रतिशत घुलनशील चूर्ण से 50 ग्राम / किलो बीज की दर से बीजोपचार के बाद 30 दिन की फसल में संवर्धित कल्चर 5.0 किलोग्राम/ हेक्टेयर (5.0 किलो संवर्ध + 1 किलो गुड़ को 250 लीटर पानी में मिलाकर रात भर छोड़ें) की दर से मृदा ड्रेचिंग करना प्रभावी पाया गया।

Cucumber

- For the management of root-knot nematode in Cucumber under protected cultivation Fluopyram 34.48% SC at the rate of 0.625 ml per lit. per ten plants or 1.25 litre per hectare as soil drenching in root zone with 750-1000 litres of water after three weeks (21 days) from date of germination. This nematicide may be also used with drip irrigation.

संरक्षित खेती (प्रोटेक्टिव कल्टीवेशन) के अंतर्गत खीरा फसल में जड़-गांठ (मूल-ग्रंथि) सूत्रकृमि के नियंत्रण के लिए फ्लुओपायरम 34.48 एस. सी. की 0.625 एम. एल. मात्रा एक लीटर पानी में घोलकर समान मात्रा में दस पौधों में उपयोग करें अथवा 1.25 लीटर मात्रा प्रति हेक्टर की दर से अनुकरण के तीन सप्ताह बाद (21 दिन बाद) 750 से 1000 लीटर पानी में घोल कर जड़ क्षेत्र में मृदा ड्रेचिंग करें। इस सूत्रकृमि नाशी का उपयोग बूंद-बूंद (ड्रिप) सिंचाई के साथ भी किया जा सकता है।

- For the management of root-knot nematode in rabi pulses i.e. Chickpea and Fieldpea through bio pesticide (Fungal bioagent) i.e. application of *Purpureocillium lilacinum* (*Paecilomyces lilacinus*) @ 2.0 kg / ha as seed treatment at the time of sowing.

सभी रबी दलहन फसलों में जैसे, चना तथा मटर में जड़-गांठ (मूल-ग्रंथि) सूत्रकृमि के नियंत्रण के लिए परप्युरोसिलियम लिलासिनम (पेसिलोमिसिस लिलासिनस) जैव कारक की मात्रा 2.0 किलोग्राम प्रति हेक्टर की दर से बुवाई के समय बीज उपचार कर उपयोग किया जा सकता है।

Bitter gourd

- For the management of yellow vein mosaic virus of bitter gourd, three consecutive spray of Acephate @ 0.15, Neem oil @ 0.2 % and Pyriproxifen @ 0.1% respectively at 10 days interval after initiation of the disease is found effective.

करेले की फसल में पीत शिरा मोजेक वायरस के प्रबंधन के लिए, रोग की शुरुआत के बाद 10 दिनों के अंतराल पर क्रमशः एसीफेट (0.15%), नीम तेल (0.2%) और पाइरिप्रोक्सीफेन (0.1%) के तीन छिड़काव क्रमानुसार करें।

Mustard

- To increase the productivity and profitability of mustard, application of 2 foliar sprays of nano urea (2.0 ml/L) at 35-40 DAS and 55-60 DAS along with 75 % RDN is through traditional urea as recommended.

सरसों की अधिक उपज एवं शुद्ध आय प्राप्त करने हेतु सिफारिश की गई नत्रजन उर्वरकों की 75% मात्रा के साथ नैनो यूरिया के दो पर्णीय छिड़काव (2.0 मिली/लीटर), पहला बुवाई के 35-40 दिन बाद, दूसरा बुवाई के 55-60 दिन बाद करने के सिफारिश की जाती है।

Fennel

- Foliar spray of zinc sulphate @ 0.6% and iron sulphate @ 0.4% at 60, 75 and 90 days after sowing is recommended for higher yield and net returns in fennel crop. Micro nutrients solution for foliar spray should be neutralized with lime solution before spray with half concentration of micro nutrients fertilizer.

सौंफ की फसल में सूक्ष्म तत्व 0.6 प्रतिशत जिंक सल्फेट के साथ-साथ 0.4 प्रतिशत आयरन सल्फेट का बुआई के 60, 75, व 90 दिन बाद पर्णीय छिड़काव करके सौंफ की फसल से अधिक पैदावार व आमदनी प्राप्त की जा सकती है। इन सूक्ष्म तत्व उर्वरकों का पर्णीय छिड़काव करते समय विलयन को उदासीन करने के लिए विलयन की सान्द्रता की आधी सान्द्रता का चूना मिलाकर छिड़काव करना चाहिए।

- For obtaining higher yield and returns from inter cropping of seed spices and vegetables crops, two rows of garlic should be planted in between rows of fennel. It will also help farmers to safeguard against risk of crop failure

बीजीय मसाला व सब्जी वाली फसलों के अन्तर शस्य से अधिक उपज व आमदनी प्राप्त करने के लिए सौंफ की पंक्तियों के बीच में लहसुन की दो पंक्तियां (1: 2 अनुपात) लगाना उपयुक्त पाया गया है। इससे किसी फसल के खराब होने की जोखिम से भी बचा जा सकता है।

Bael

- Foliar application of Spinosad 45 SC @0.2 ml/litre proved very effective for the management of lemon butterfly (*Papilio demoleus*) in bael. The next effective treatment was *Bacillus thuringiensis* var. *kurstaki* @ 0.1%.

बील के बगीचे में नींबू की तितली (पैपिलियो डेमोलस) के प्रभावी प्रबन्धन हेतु स्पाइनोसेड 45 एस.सी. 0.2 मिलि प्रति लीटर या बी.टी. (कुरसटाकी) 1.0 मिली प्रति लीटर का छिड़काव करें।

Pesticide residue

- The Safe waiting period of 12 days was noticed when the insecticide Flubendiamide 5.75% + Emamectin Benzoate 1.92% ME @ 625 ml ha⁻¹ was sprayed at 15 days interval during the vegetable growth of maize.

मक्का की फसल में वृद्धि के समय 15 दिन के अन्तराल पर फ्ल्यूबेन्डीमाइड 5.75 प्रतिशत + इमामेक्टीन बेन्जोएट 1.92 प्रतिशत एम ई का 625 मिलीलीटर के दो छिड़काव करने के 12 दिन बाद मक्का के हरे भूट्टे, मक्का के भूट्टे के साथ दाने, मक्का के दानों एवं चारे में 12 दिन की सुरक्षित प्रतिक्षा अवधि पायी गयी है।

ANNEXURE-IV

Research Programmes of ATC, Tabiji, Ajmer finalized in Rabi, 2022-23 ZREAC Meeting of Zone-IIIa

Sr. No.	Experiments	Concerned scientists
1	Performance of wheat variety Raj 4548 and Raj 4581	Dr. S. S. Punia
2	Efficacy of herbicides against diverse weed flora of wheat	Dr. Shweta Gupta
3	Effect of different methods of application of nano phosphorus in wheat	Dr. Pratibha Singh
4	Performance of barley variety RD 3053, RD 3064, RD 3067 and RD 3080	Dr. S. S. Rajput
5	Effect of herbicides against diverse weed flora of Barley	Dr. Shweta Gupta
6	Effect of INM on grain yield of wheat	Dr. Dinesh Arora
7	Performance of Dill seed variety Ajmer Dill-3 and Anise variety Ajmer Anise-2	Dr. Arvind Kumar Verma
8	Weed mangement studies in onion seed crop	Dr. Shweta Gupta