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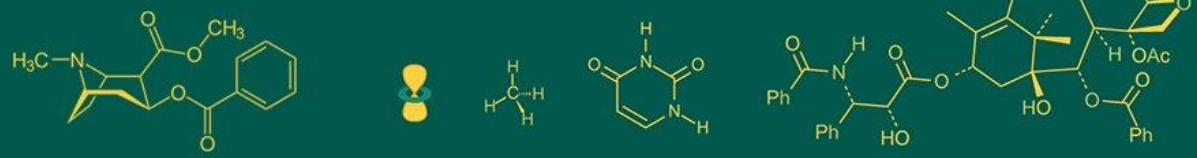

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Assessment of millet Stakeholders perception towards millets training program during international year of millets

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Abstract
The study aimed to evaluate the efficiency and knowledge gained by various stakeholders through millet training courses organized by ICAR-Indian Institute of Millets Research (IIMR). The millet short course on "Recent advances in millets crop production, processing, value addition, and marketing" and the refresher course on "Millets (Shree Anna) – model crops for sustainable farming, value addition, entrepreneurship development, and nutritional security," were designed to impart knowledge and skills related to millet cultivation, processing, and marketing. The study was conducted at ICAR-IIMR, Hyderabad to evaluate the effectiveness of short-course training programs on millets, with the participation of individuals from pan India. A total of 450 participants who had undergone millet training were selected for the study. The data was collected by using well well-framed interview schedule during the period 2023-24. The study design appears robust for assessing the knowledge acquisition and perception of participants in the millet training programs organized by ICAR-IIMR. The statistical analysis showed the significance among the selected factors in the context of millet-related practices, research, and value addition in providing valuable insights through short course training.

Keywords: Training, millets, sustainable agriculture, ICAR-IIMR, Shree Anna

Introduction
Millets, renowned for their exceptional nutritional qualities and ability to thrive in challenging conditions but unfortunately face underutilization despite being rich in minerals, vitamins, and offering benefits such as food security, high nutrition, fodder, fiber, health, livelihood, and ecological sustainability. Millets often referred to as "Miracle Grains," "Nutri-cereals," or “Shree Anna.” They have the potential to play a crucial role in sustainable agriculture, especially in delicate ecosystems. The Indian Institute of Millets Research (IIMR), under the auspices of ICAR, stands out as a distinguished agricultural research institution committed to fundamental and strategic investigations in millets. IIMR plays a crucial role in overseeing and advancing millet research nationally and internationally, managing All India Coordinated Research Projects (AICRP) focused on various millets and establishing connections with numerous global organizations.

Recognizing the need to disseminate knowledge and skills about millets, ICAR-IIMR has emerged as a premium institute offering extensive training programs (Boukamcha 2015) [2]. These programs are crucial for stakeholders such as farmers, students, and entrepreneurs who may lack adequate knowledge about millets despite their interest in consuming millets (Gautam *et al*., 2023) [5]. The training endeavors cover various aspects, from cultivation to harvesting and marketing millet products (Karim *et al*., 2019; Sathish *et al*., 2023) [8, 16]. ICAR-IIMR has organized notable initiatives, including a millet short course focusing on recent advances in millet crop production, processing, value addition, and marketing, as well as a refresher course on millets as model crops for sustainable farming, value addition, entrepreneurship development, and nutritional security.

The thematic content of these courses is thoughtfully designed by scientists and research experts at IIMR, targeting a diverse audience comprising researchers, academicians, scientists, FPO staff, entrepreneurs, research scholars, and graduates with the aim to provide comprehensive insights into various aspects of millet cultivation and utilization (Kirkpatrick and Kirkpatrick 2016; Kavwanga *et al*., 2013) [7, 9].

In light of the above context, a comprehensive study was undertaken with the objective of evaluating the efficiency and knowledge gained by stakeholders through these millet training courses (Phillips 2016) [11]. The study seeks to assess the impact of these training programs in bridging the knowledge gap and empowering participants with the necessary insights into millet cultivation, processing, and marketing (Steele *et al*., 2016) [15]. Ultimately with this study the efforts of ICAR-IIMR in promoting millet training programs underscore the institution's commitment in advancing sustainable agricultural practices and ensuring the widespread adoption of millets for their manifold benefits.

Materials and Methods

The study was conducted at ICAR-IIMR in Hyderabad, where short course training programs on millets were organized for stakeholders, attracting participants from across India. The primary objective of the training was to inspire individuals to recognize millets as a viable and nutritious food source, emphasizing the development of millet cultivation, processing, and marketing skills with the latest knowledge. The training comprehensively covered advanced millet cultivation practices, modern post-harvest techniques, pest and disease management, value addition, nutritional benefits, innovative extension approaches, marketing strategies, and the concept of Farmer Producer Organizations (FPOs). The thematic areas were divided into six categories: Millet FPOs, ICAR-IIMR as a Global Center of Excellence in Millet Research, Millet Cultivation Practices, and three segments on Post-Harvest Mechanization. Resource persons, including scientists from ICAR Institutes, industry experts, and subject domain experts, delivered the lectures. The training methodology employed interactive sessions with audio-visuals (Ritzmann *et al*., 2014; Steele *et al*., 2016) [12, 15]. A total of 450 participants were involved for the study. The study was conducted during the period 2023-24. Data collection utilized a well-developed interview schedule, and participants received reading materials covering millet cultivation techniques and recent developments. Feedback forms utilizing five-point Likert scale were employed to gauge participant perceptions towards lectures and to assess the knowledge acquired regarding millets (Emmanuel 2012, Borthakur *et al*., 2023) [4, 3]. Likert scale responses ranged from strongly agree (5) to strongly disagree (1). Data analysis involved correlation, frequency analysis, Likert scale assessment, and t-tests. This comprehensive approach allowed for a thorough evaluation of the impact and effectiveness of the millet training program at ICAR-IIMR. The formula for calculating the Pearson correlation coefficient (r) between two variables X and Y is as follows:

$$r = \frac{\sum[x_i - \bar{x}][y_i - \bar{y}]}{\sqrt{\sum[x_i - \bar{x}]^2[y_i - \bar{y}]^2}}$$

- *Xi* and *Yi* are individual data points for variables *X* and *Y* respectively.
- $\bar{X}$ and $\bar{Y}$ are the means of variables *X* and *Y*, respectively.

Results and Discussion

In the present study, various lecture approaches presented by the resource persons were chosen as criteria for evaluating the participant's perception of Millet-related concepts.

Demographic characters of registered participants

Among the 450 enrolled participants, 52% (236 individuals) were female, while 214 were male. Of these participants, 276 were affiliated with ICAR institutes, and 174 from non-ICAR institutes. Majority of the participants consisted of Assistant Professors (88 members), followed by PhD students (85 members) and Scientists (57 members). In terms of educational qualifications, the majority (88 members) held BSc in Agriculture degrees, and an equal number were PhD scholars. Geographically, the highest number of registrations came from Karnataka (97 participants), trailed by Andhra Pradesh (58 participants) and Uttar Pradesh (38 participants).

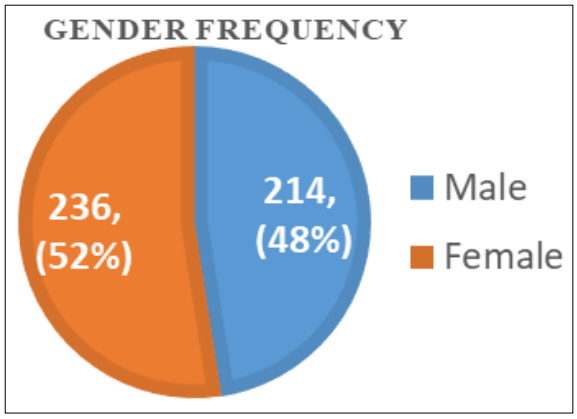

Fig 1: Age Category of Respondents

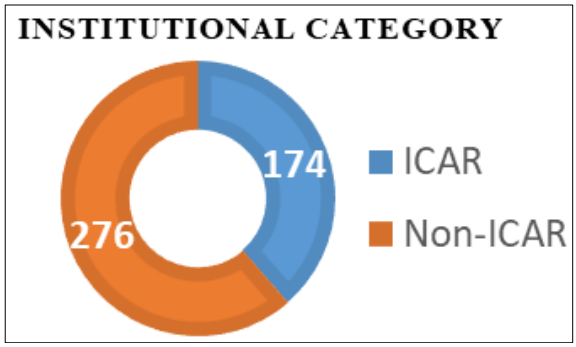

Fig 2: Institutional Category of Respondents

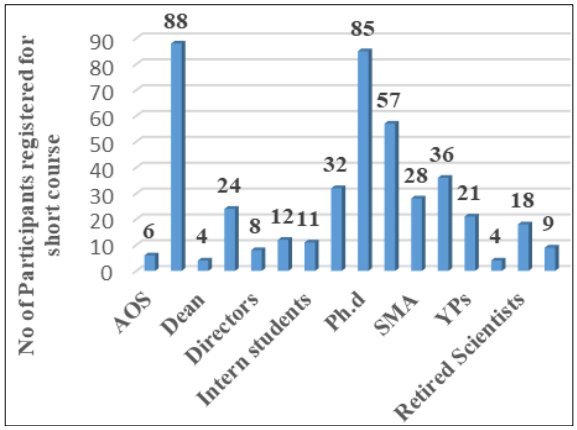

Fig 3: Designation of Registered Participants

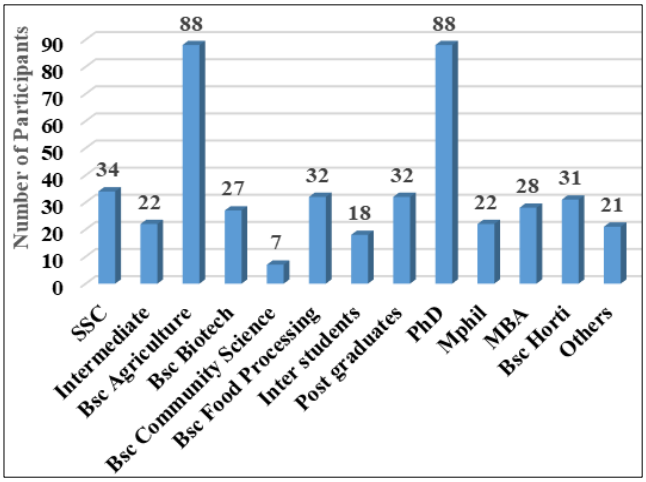

Fig 4: Qualification of Registered Participants

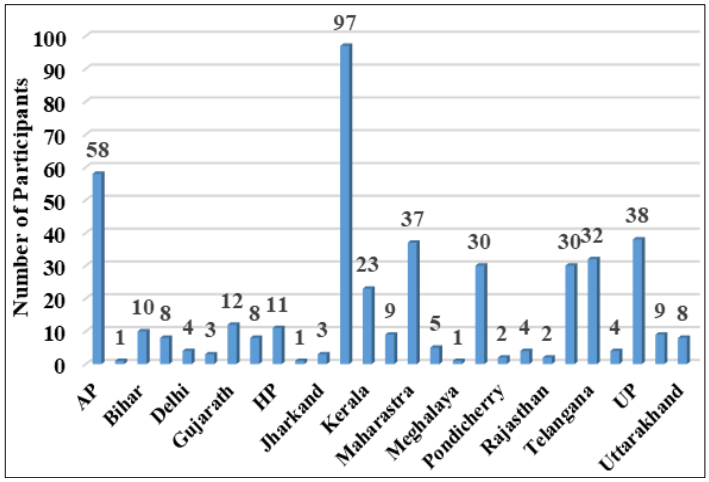

Fig 5: State Wise list of Registered Participants

Perception of millet stakeholders towards millets training programs: The concepts covered under "Millet FPOs- Connecting dots between farmers & consumers" were shown in the Table-1. The results revealed that, majority (64.4%) of the participants have understood and gained knowledge about Millet FPOs and only 3.8% of the participants were neutral about this concept. 59.3% of the participants had developed a positive perception that millet FPOs plays a major role in establishing market linkages. Around 52.7% of the participants strongly agreed that Millet FPOs assisted farmers in accessing the credit and financial services which are often challenging for individual farmers to obtain. But in the case of the concepts that millet FPOs play major role in connecting farmers with government programs, subsides & schemes and Millet FPOs help farmers in adding value to products through processing, packaging and branding, majority of the participants 43.6% and 46.9% respectively were neutral about the concepts because many participants have limited knowledge on functioning and major activities of FPOs. Adupa and Shireesha (2023) [1] in their research concluded that the farmer collectives had strengthen the millet value chain.

Table 1: Millet FPOs- Connecting dots between farmers & consumers

S. No	Concepts	Mean	Std. Deviation	Frequency					N
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
1.	Concept of Farmer producer Organizations	4.59	0.59	290 (64.4)	141 (31.4)	17 (3.8)	2 (0.4)	0 -	450
2.	Millet FPOs helps in establishing the market linkages	4.54	0.61	267 (59.3)	165 (36.8)	15 (3.3)	2 (0.4)	1 (0.2)	450
3.	Millet FPOs assist farmers in accessing credit and financial services	4.43	0.68	237 (52.7)	175 (38.9)	33 (7.3)	5 (1.1)	-	450
4.	Millet FPOs play major role in connecting farmers with government programs, subsidies, and schemes	3.24	1.09	75 (16.7)	84 (18.6)	196 (43.6)	67 (14.9)	28 (6.2)	450
5.	Millet FPOs help farmers in adding value to products through processing, packaging, and branding	3.30	1.05	76 (16.9)	85 (18.9)	211 (46.9)	56 (12.4)	22 (4.9)	450

(Figures in parenthesis indicates percentage of participants)

The findings from Table -2 shed light on the perceived contribution of ICAR-IIMR as a Global Centre of Excellence in Millet Research. A significant majority, constituting 63.3% of the participants, recognized ICAR-IIMR as a Center of Excellence (COE), acknowledging its active engagement in millet breeding programs aimed at developing novel millet varieties. Additionally, a substantial 60% expressed strong agreement with the notion that ICAR-IIMR has played a pivotal role in innovating new technologies for millet-based products. Participants, at a rate of 58.9%, strongly agreed that the institute actively advocates for increased millet consumption and the inclusion of millets in diets. Furthermore, 55.8% of respondents demonstrated a strong agreement with the concept that ICAR-IIMR has been instrumental in conserving the genetic diversity of millet species. The frequencies of agreement across these concepts indicate a clear understanding among participants regarding the roles and responsibilities of ICAR-IIMR in the realm of millet research. However, concerning the concept of ICAR-IIMR's advocacy efforts with policymakers, a notable 41.6% of participants expressed a neutral stance, suggesting a potential need for further clarification regarding advocacy measures.

Table 2: ICAR-IIMR, Hyderabad as Global Center of Excellence in Millet Research

S. No	Concepts	Mean	Std. Deviation	Frequency					N
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
1.	ICAR-IIMR as Global COE	4.62	0.52	285 (63.3)	160 (35.6)	4 (0.9)	1 (0.2)	- -	450
2.	Role of ICAR-IIMR in conserving and cataloging the genetic diversity of millet species.	4.52	0.57	251 (55.8)	185 (41.1)	12 (2.7)	2 (0.4)	- -	450
3.	Promotion and inclusion of millets in the diet	4.53	0.60	265 (58.9)	163 (36.2)	21 (4.7)	1 (0.2)	-	450
4.	Development of research and value added millet-based products	4.55	0.58	269 (59.8)	162 (36.0)	18 (4.0)	1 (0.2)	-	450
5.	ICAR-IIMR engages with policymakers to advocate for policies that support millet cultivation, marketing, and consumption	3.33	1.10	87 (19.3)	88 (19.5)	187 (41.6)	66 (14.7)	22 (4.9)	450

(Figures in parenthesis indicates percentage of participants)

Table-3 outlines various concepts related to the production and cultivation practices of millets discussed during the session. The focus of the session was on advanced practices with substantial impacts on millet crop yield and quality, including crop rotation, the use of advanced machinery, disease identification and management, techniques for producing high-quality seeds, and understanding climatic requirements for profitable millet seed production. The consistently low standard deviations (ranging from 0.55 to 0.60) across all concepts indicate a tight clustering of responses around the mean, suggesting a high level of agreement among participants regarding their understanding of millet production and cultivation aspects. Among the concepts presented, a significant 62.2% of participants strongly agreed that the utilization of genomic selection plays a crucial role in accelerating the breeding progress of various millet varieties, with only a minimal 2.7% expressing neutrality on this concept. Furthermore, 61.1% of participants strongly agreed that variability in millet germplasm developed by ICAR-IIMR is unique and helps for future. Other concepts with higher levels of strong agreement include advanced cultivation practices impacting yield and quality (59.6%), cultivation techniques enhancing millet seed production (58.9%), use of genetically pure and healthy planting material by ICAR-IIMR for quality seed production (58.4%), factors contributing to profitable millet seed production (58.0%), climatic requirements for increasing millet production and productivity (58.0%), and understanding types of diseases affecting millet production and their management (57.3%). Notably, a small percentage (2-4%) of participants expressed neutrality on these concepts, indicating a generally high level of comprehension and agreement among the majority.

Table 3: Production or Cultivation practices of Millets

S. No	Concepts	Mean	Std. Deviation	Frequency					N
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
1	Advanced cultivation practices of millets	4.55	0.58	268 (59.6)	167 (37.1)	14 (3.1)	1 (0.2)	- -	450
2	Millet crop diseases and their management	4.52	0.60	258 (57.3)	172 (38.3)	18 (4.0)	2 (0.4)	- -	450
3	Overview of cultivation techniques and methods used by IIMR for enhancing millet seed production	4.56	0.55	265 (58.9)	174 (38.7)	10 (2.2)	1 (0.2)	- -	450
4	Planting material used for quality seed production in millets.	4.53	0.60	263 (58.4)	167 (37.2)	18 (4.0)	2 (0.4)	- -	450
5	Factors that make millet seed production a profitable business venture	4.53	0.59	261 (58.0)	172 (38.3)	15 (3.3)	2 (0.4)	- -	450
6	Climatic requirements for millets cultivation	4.54	0.58	261 (58.0)	173 (38.5)	14 (3.1)	2 (0.4)	- -	450
7	R ole of genomic selection in accelerating the breeding process for different kinds of millets	4.58	0.57	280 (62.2)	156 (34.7)	12 (2.7)	2 (0.4)	- -	450
8	Variability of Millet germplasm developed by ICAR-IIMR	4.58	0.55	275 (61.1)	163 (36.3)	11 (2.4)	1 (0.2)	- -	450

(Figures in parenthesis indicates percentage of participants)

Topics covered under post-harvest mechanization segment of the short course training program was delineated in Table-4. After completing the training, a significant majority of participants (61.8%) exhibited a clear understanding of how to use, maintain, and mechanize both primary and secondary machinery. They acknowledged the crucial role played by mechanization in optimizing millet production by reducing post-harvest losses. Additionally, 60.9% of participants concurred that post-harvest engineering technologies involve a broad spectrum of practices and innovations designed to preserve and enhance the quality of millet grains after harvest. Furthermore, 59.1% strongly agreed that mechanization can ease the burden on farmers, enabling them to cultivate larger areas and, in turn, improving overall productivity and the economic well-being of farmers. A notable 58% of participants recognized that adopting post-harvest mechanization in millet farming could effectively decrease

labor requirements and post-harvest losses. This, in turn, has the potential to improve millet processing and storage, enabling farmers to access more stable markets and secure better prices for their produce, thereby contributing to economic development. Moreover, 58.9% of participants became aware of subsidies and schemes available for acquiring post-harvest machinery. In summary, these results collectively indicate a favorable reception and understanding of post-harvest mechanization concepts among the majority of participants (Kheya *et al*., 2023) [10].

Table 4: Post-Harvest Mechanization

S. No	Concepts	Mean	Std. Deviation	Frequency					N
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
1	Millet post-harvest Engineering technologies	4.57	0.57	274 (60.9)	165 (36.6)	8 (1.8)	3 (0.7)	- -	450
2	Millet mechanization impact on productivity of millet farming	4.55	0.58	266 (59.1)	168 (37.4)	14 (3.1)	2 (0.4)	- -	450
3	Millet primary and secondary processing machineries	4.58	0.57	278 (61.8)	161 (35.8)	7 (1.5)	4 (0.9)	- -	450
4	Economic implications in adopting post-harvest mechanization in millet farming	4.53	0.58	261 (58.0)	171 (38.0)	17 (3.8)	1 (0.2)		450
5	Availability of government policies or initiatives promoting the adoption of post-harvest mechanization in millet cultivation	4.53	0.62	265 (58.9)	168 (37.4)	13 (2.9)	2 (0.4)	2 (0.4)	450

(Figures in parenthesis indicates percentage of participants)

The concepts related to marketing of millets, encompassing various activities such as product development, branding, packaging, distribution, and consumer education was shown in Table-5. Half of the participants (50.0%) demonstrated a clear understanding of the production economies of millets in India, with only a small percentage (3.3%) expressing neutrality towards this concept. Approximately 55.3% of participants acquired knowledge on marketing strategies applicable to millet products, while a minimal 3.3% gained limited understanding in this area. A significant 59.3% of participants strongly grasped the factors influencing the pricing of millet-based fodder in the market, considering aspects such as production cost, market demand, and the quality and nutritional value of fodder. Additionally, 52.2% of participants obtained a clear picture of online digital platforms like ONDC and GEM, where customers can access millet products through business-to-consumer (B2C) channels. The session also covered the onboarding process on ONDC, including the required documentation.

Table 5: Marketing opportunities in Millets

S. No	Concepts	Mean	Std. Deviation	Frequency					N
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
1.	Availability of digital platforms for millets marketing (Ex ONDC, GEM)	4.47	0.60	235 (52.2)	195 (43.4)	19 (4.2)	1 (0.2)	-	450
2	Primary factors influencing the pricing of millet-based fodder in the market	4.54	0.60	267 (59.3)	166 (36.9)	13 (2.9)	4 (0.9)		450
3	Overview of Marketing aspects of millets in India	4.46	0.57	225 (50.0)	209 (46.5)	15 (3.3)	1 (0.2)	- -	450
4	Challenges in marketing millets in regions where they are less commonly consumed	3.35	1.05	83 (18.4)	86 (19.2)	207 (46.0)	55 (12.2)	19 (4.2)	450
5	Marketing strategies that can be employed to market the millet based products	4.50	0.61	249 (55.3)	182 (40.5)	15 (3.3)	4 (0.9)	-	450

(Figures in parenthesis indicates percentage of participants)

Table-6 outlines the theme of value addition to millets, involving the processing of millets into a variety of products such as flour, flakes, pops, and ready-to-eat items. Value addition aims to enhance shelf life, taste, ease of consumption, and increase the nutritional value of the products. A majority (66.4%) of participants agreed and demonstrated a clear understanding on nutritional abundance and health benefits associated with millets. Additionally, 63.8% of participants gained a brief understanding of innovative technologies optimizing the nutritional potential of millets and millet bio fortification, providing a sustainable solution to combat malnutrition and micronutrient deficiencies. Regarding other concepts, a substantial proportion of participants (62.9%, 61.6%, 60.7%, 59.8%, 59.3%, and 59.1%) exhibited a solid grasp of various topics. These include FSSAI criteria and classifications for millet products, composition of sweet sorghum and biomass sorghum and their implications for ethanol production, the nutritional content of millets suitable for industrial applications, the nutritional value of millet-based animal feed, the significance of millet value-added technologies and their contribution to the overall millet industry, and shelf-life enhancement techniques in millets, respectively.

Table 6: Value addition of millets

S. No	Concepts	Mean	Std. Deviation	Frequency					N
				Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	
1	Significance of millet value added technologies in millet industry	4.55	0.57	267 (59.3)	165 (36.7)	18 (4.0)	- -	- -	450
2	Overview on shelf-life enhancement techniques in millets	4.54	0.59	266 (59.1)	165 (36.7)	17 (3.8)	2 (0.4)	- -	450
3	Value-added technologies that enhance the nutritional content of millet products	4.60	0.56	287 (63.8)	149 (33.1)	13 (2.9)	1 (0.2)	- -	450
4	Nutritional content of millets-based fodder compare to other common fodder options	4.56	0.59	269 (59.8)	168 (37.4)	10 (2.2)	2 (0.4)	1 (0.2)	450
5	Key nutrients that targeted for enhancement through bio fortification in millets and it's importance in human health	4.60	0.57	287 (63.8)	150 (33.3)	10 (2.2)	3 (0.7)	- -	450
6	Nutritional content of millets that optimized for industrial applications	4.56	0.58	273 (60.7)	158 (35.1)	18 (4.0)	1 (0.2)	- -	450
7	Composition of sweet sorghum and biomass sorghum for ethanol production	4.57	0.59	277 (61.6)	157 (34.9)	14 (3.1)	1 (0.2)	1 (0.2)	450
8	FSSAI's grading and standards for millet products that contribute to consumer safety and product quality	4.59	0.55	283 (62.9)	153 (34.0)	14 (3.1)	- -	- -	450
9	Nutritional properties of millets and its health benefits	4.63	0.56	299 (66.4)	138 (30.8)	11 (2.4)	2 (0.4)	- -	450

(Figures in parenthesis indicates percentage of participants)

The one-sample t-test results indicated significant findings across various factors related to millets as shown in Table-7. The test value was set at 0, and each factor's average test value, t-statistic, degrees of freedom (df), and p-value (Sig. 2-tailed) were reported. The mean differences and corresponding 95% confidence intervals shed light on the statistical significance of the selected factors. Millet FPOs focused on connecting farmers and consumers, demonstrated an average test value of 156.78 with a statistically significant mean difference of 4.02 (p<0.001), emphasizing its impact. Similarly, ICAR - IIMR as a Global Center of Excellence in Millet Research yielded a substantial average test value of 214.45, and the mean difference of 4.31 was statistically significant (p<0.001), highlighting its significance in millet research. Production or cultivation practices of millets, with an average test value of 203.481, exhibited a statistically significant mean difference of 4.55 (p<0.001), emphasizing the importance of these practices. Post-Harvest Mechanization, with an average test value of 199.93, also showed a statistically significant mean difference of 4.55 (p<0.001), underlining its impact on millet processing. Marketing opportunities in millets, represented by an average test value of 196.41, displayed a statistically significant mean difference of 4.26 (p<0.001), emphasizing the significance of effective marketing strategies. Finally, the value addition of millets, with an average test value of 208.057, exhibited a statistically significant mean difference of 4.58 (p<0.001), highlighting the importance of processing millets into various products for enhanced nutritional value.

Table 7: Relation between the selected factors

One-Sample Test						
Factors	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence interval of the difference	
					Lower	Upper
Millet FPOs- Connecting dots between farmers & consumers	156.78	449	.000	4.02	3.97	4.07
ICAR -IIMR as Global Center of Excellence in Millet Research	214.45	449	.000	4.31	4.27	4.35
Production or Cultivation practices of Millets	203.48	449	.000	4.55	4.51	4.60
Post-Harvest Mechanization	199.93	449	.000	4.55	4.51	4.60
Marketing opportunities in millets	196.41	449	.000	4.26	4.22	4.31
Value addition of millets	208.05	449	.000	4.58	4.54	4.62

The correlation matrix reveals strong positive correlations among various factors related to millets as shown in Table-8. Millet FPOs, connecting farmers and consumers, demonstrate significant associations with ICAR - IIMR as a Global Center of Excellence in Millet Research (r = 0.649, p<0.01), production or cultivation practices of millets (r = 0.443, p<0.01), post-harvest mechanization (r = 0.423, p<0.01), marketing opportunities in millets (r = 0.688, p<0.01), and value addition of millets (r = 0.434, p<0.01). Similarly, ICAR - IIMR exhibits strong positive correlations with all other factors, emphasizing its broad influence. Production or cultivation practices of millets are strongly correlated with post-harvest Mechanization (r = 0.880, p<0.01), underscoring the link between cultivation practices and mechanization. Post-harvest mechanization correlates significantly with all other factors, highlighting its integral role (Hemamalini *et al*., 2021) [6]. Marketing opportunities in millets show strong positive associations with millet FPOs, cultivation practices, post-harvest mechanization, and value addition of millets (Srivastava *et al*., 2023) [14]. Finally, value addition of millets demonstrates significant positive correlations with all other factors, indicating its comprehensive impact on the millet industry. Overall, these correlations suggest interconnectedness and mutual influence among key aspects of millet-related activities.

Table 8: Correlation between the selected factors

Correlations							
Particular		**Millet FPOs- Connecting dots between farmers & consumers**	**ICAR –IIMR as Global Center of Excellence in Millet Research**	**Production or Cultivation practices of Millets**	**Post-Harvest Mechanization**	**Marketing opportunities in millets**	**Value addition of millets**
Millet FPOs- Connecting dots between farmers & consumers	Pearson Correlation	1	.649**	.443**	.423**	.688**	.434**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	450	450	450	450	450	450
ICAR –IIMR as Global Center of Excellence in Millet Research	Pearson Correlation	.649**	1	.631**	.663**	.747**	.650**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	450	450	450	450	450	450
Production or Cultivation practices of Millets	Pearson Correlation	.443**	.631**	1	.880**	.749**	.910**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	450	450	450	450	450	450
Post-Harvest Mechanization	Pearson Correlation	.423**	.663**	.880**	1	.715**	.891**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	450	450	450	450	450	450
Marketing opportunities in millets	Pearson Correlation	.688**	.747**	.749**	.715**	1	.764**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	450	450	450	450	450	450
Value addition of millets	Pearson Correlation	.434**	.650**	.910**	.891**	.764**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	450	450	450	450	450	450

**. Correlation is significant at the 0.01 level (2-tailed).

Conclusion

In conclusion, the comprehensive study undertaken at ICAR-IIMR in Hyderabad sheds light on the significant impact and effectiveness of millet training programs in bridging the knowledge gap and empowering stakeholders. The findings revealed that the training initiatives have successfully imparted knowledge and skills related to millet cultivation, processing, marketing, and various other aspects to a diverse audience, including farmers, students, and entrepreneurs. The participants displayed a high level of understanding and positive perception across different thematic areas, such as Millet FPOs, ICAR-IIMR as a Global Center of Excellence in Millet Research, production and cultivation practices, post-harvest mechanization, marketing opportunities, and value addition. The one-sample t-test results emphasize the statistical significance of each factor, reinforcing their importance in the context of millet research and promotion. Furthermore, the strong positive correlations among these factors highlight the interconnectedness and mutual influence, showcasing the holistic approach adopted by ICAR-IIMR in promoting sustainable agricultural practices and ensuring the widespread adoption of millets. Overall, this study underscores the pivotal role of ICAR-IIMR in advancing knowledge dissemination and skill development, contributing to the promotion of millets for their manifold benefits in the realms of nutrition, food security, livelihoods, and ecological sustainability.

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