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Research Article

Impact of Training on Modern Machineries and Improved Agricultural Technologies towards Cognitive Assessment of Farmers

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ABSTRACT

In the era of fast changing technology, training has become an integrated part of investment for accelerating transfer of technology to people of all walks of life. The well-established network of organizations spread over the length and breadth of the country. The budget spent on training has tremendously increased over the past few years. with this background the study under taken at Trichy district, Tamil Nadu state of a country India by employing purposive sampling procedure. Agricultural Engineering College & Research Institute, Kumulur is one of the constituent colleges of Tamil Nadu Agricultural University located in Trichy. It is a pioneer institute in Tamil Nadu doing research on Agricultural Engineering technologies and Machinery. It is being chosen by the Tamil Nadu Govt. for state level capacity development trainings of farmers under the Agricultural Technology Management Agency and Agrl. Engineering Department (AED). Using simple random sampling procedure 10 farmers (trainees) were selected from 18 Districts of Tamil Nadu who were visited the institution during the study period. (180 sample size). The major objectives, as study of socioeconomic profile and knowledge assessment during pre and post training on Farm Machineries, Bio-energy, Agricultural Processing, Soil and Water Conservation, Drip irrigation and improved Agricultural sciences. Among 180 respondents, Majority of them were old age group (38.89 %) studied primary education (30.00 %) equally spread in marginal and small land holdings (around 75 %), possessed high level of farming experience (38.89 %) had medium level of extension agency contact (47.78 %), possessed medium level of Information seeking behaviour (53.89 %) with a medium level of Innovativeness (42.78 %). Knowledge test was assessed prior to training, among 180 respondents, Majority of farmers belonged to the medium level of knowledge category on all six categories and the after training knowledge test showed that the respondents belonged to low level were distributed in medium to high level of knowledge category and the medium level was elevated to high level category. The alternate hypothesis (H1)was proved through ' t' test that there was a significant difference prevailed in the knowledge level of the respondents acquired through the trainings conducted on the recently developed Agrl. Technologies and modern machineries.

Keywords: *Farm Machinery, Bio-energy, Agricultural Processing, Soil and Water Conservation, Drip irrigation and improved Agricultural sciences.*

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INTRODUCTION

Indian Agriculture has step into gradual shift from dependence on human power and draft animal power to mechanical power, since maintenance of draft animal power and manual Labour become increasingly costly coupled with scarce availability of fodder and feed animals. The role of tractors in India reveals the increasing trend of tractorization in the country. The modern implements are mostly tractor-drawn. Custom hiring of farm equipment is a prevalent practice in India, particularly among small farmers for whom ownership of large equipment is expensive and uneconomical. Given the agricultural worker scarcity and the launch of several Government programs, the adoption of farm mechanization is found to be in an inclination path. Thus the use of modern farm, machinery (or) tools like tractors, power tillers, combine harvesters, irrigation pumps, drip irrigation, moisture conservation techniques, use of modern cultivation techniques, improved varieties and bio/solar energy are replacing the traditional methods. Mechanization also took a part in the value addition and processing of different produce. This makes Agriculture attractive and commercial instead of subsistence and makes the family an agreeable vocation for educated youth as well. In recent year, the non-availability of farm Labours and fragmentation of land holding are forcing many farmers to mechanize their farms. The state Govt.of Tamil Nadu facilitating the farmers to attend training programmes under the Agricultural Technology Management Agency (ATMA) to create Knowledge and skill on latest outcomes of modern machineries and improved Agricultural technologies. In order to increase the food grain production to 365 MT to feed the increasing population, this study is highly essential. Thus it is the need of the hour to sensitize and train farmers on recently developed technologies and modern machineries in agriculture. With this background, the study focussed on the following specific objectives:

- 1. To study the socioeconomic profile of trainees.
- 2.To assess the knowledge level of trainees on pre and post-exposure of the training

MATERIALS AND METHODS

The study was conducted in the Trichy District, Tamil Nadu state in India. Because Agricultural Engineering College & Research Institute, Kumulur is one of the constituent colleges of Tamil Nadu Agricultural University located in Trichy district. This is a pioneer institute in Tamil Nadu doing research on Agricultural Engineering technologies and Machinery. Also it is a hub of Farm machineries under NADP. So the farmers of Tamil Nadu are visiting the centre periodically to undergo capacity building trainings. Moreover Tamil Nadu was purposively selected for the study as the researcher belongs to the same state considering familiarity with respect to socio, economic and political lifestyle of the respondents. In such a way the farmers of 18 districts of Tamil Nadu state underwent the capacity building training under the Agricultural Technology Management Agency (ATMA) and Agrl. Engineering Department. Using simple random sampling procedure 10 farmers (trainees) were selected from 18 Districts of Tamil Nadu who were visited the institution during the study period. Thus drawn 180 sample size for this study. The trainees were imparted hands on skills in the technological dimensions of Farm Mechanization, Bioenergy, Agricutural Processing, Soil and Water conservation, Drip irrigation and Improved agricultural sciences. Further t-test was conducted to prove null hypothesis (H0) as no difference in knowledge level of the respondents owing to training or alternate hypothesis (H1) as there is a significant difference in knowledge level owing to training.

Table 1. Selected districts with sample size

S.No	Name of the Districts	Sample size
1.	Krishnagiri	10
2.	Dharmapuri	10
3.	Perambalur	10
4.	Trichy	10
5.	Salem	10
6.	Namakkal	10
7.	Coimbatore	10
8	Thirupur	10
9	Thiruvallur	10
10	Thiruvannamalai	10
11	Kancheepuram	10
12	Cuddalur	10
13	Dindigul	10
14	Virudhunagar	10
15	Thenkasi	10
16	Kallakurichi	10
17	Ramanathapurm	10
18	Pudukkottai	10
	Total	**180**

RESULTS AND DISCUSSION

In any social science study, socioeconomic assessment of the respondents will give a clear picture of the respondent's background, which in turn helps in giving appropriate study implications based on the derived conclusion. The results on the eleven socioeconomic profile of respondents studied are presented below.

I. To study the socioeconomic profile of trainees (farmers).

1. Age

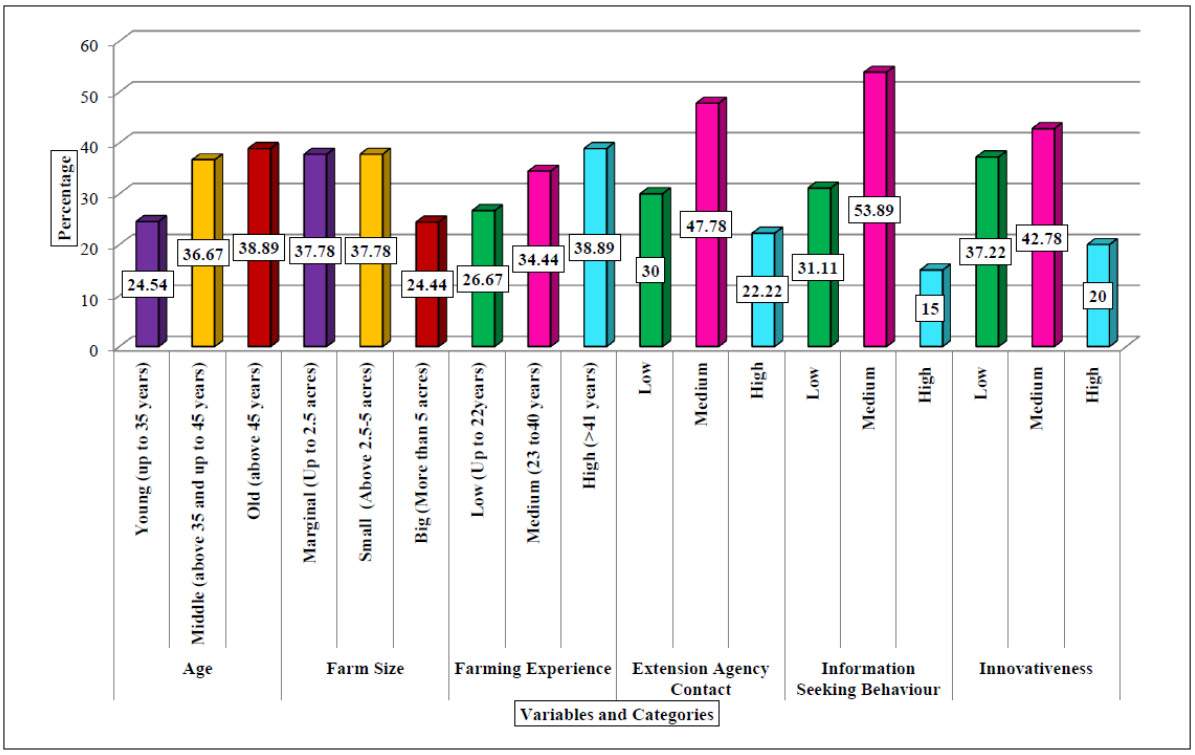
The physical and psychological development of an individual is related to age. It influences the interest and needs of an individual. It also plays a vital role in deciding future goals and expectations. Age is a natural phenomena going on in every human being. It is understood that younger aged farmers are more active, energetic and ready to experience frequent changes; middle aged farmers are stable in ideas and behaviour, while old aged farmers are unwilling towards changed and slow in accepting of new ideas due to their experience. Thus, age plays a crucial role in shaping the entrepreneurial behaviour of every individual. The distribution of respondents according to their age is presented in Table 2.

Table 2. Distribution of the respondents according to their age (n = 180)

S.No	Category	Number	Per cent
1.	Young (up to 35 years)	44	24.54
2.	Middle (above 35 and up to 45 years)	66	36.67
3.	Old (above 45 years)	70	38.89
	Total	**180**	**100**

From the data in Table 2, it is clear that nearly one third of the respondents (38.89 per cent) belonged to the old age group, followed by 36.67 per cent of the respondents in the middle age category. Only 24.54 per cent of respondents were classified under the category of young age group. Most of the respondents belonged to old aged group because they might have ability to handle the risk, solve problems with their adequate expertise gained in farming. This finding is similar to the findings of Mohanakumara (2018) and against to the findings of Kavya, R (2019) that Majority of farmers belonged to young age group (35-45). The results are depicted as an abstract diagram through Fig. 1.

Fig.1. Distribution of respondents according to age, farm size, farming experience, extension agency contact, information-seeking behaviour and Innovativeness (n = 180)



1.2 Educational status

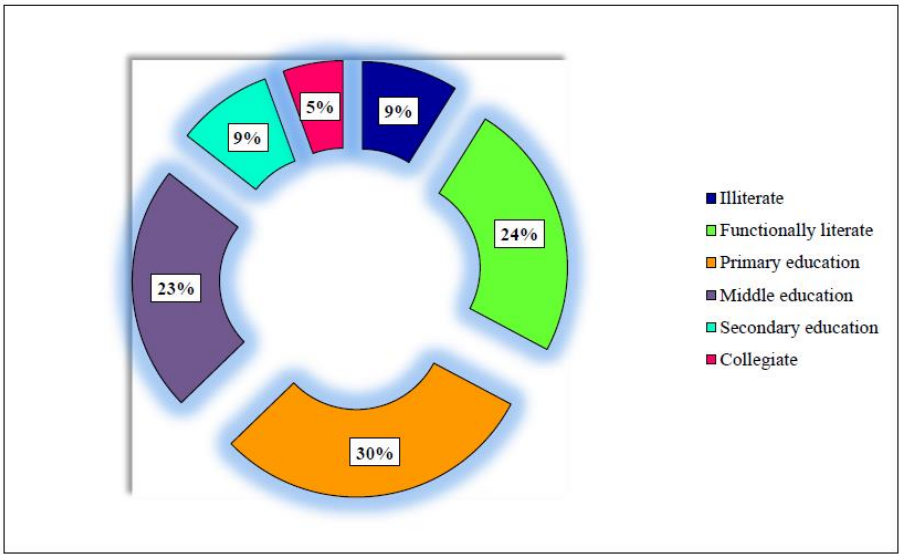
Educational status is considered as a crucial factor in influencing an individual while taking rational decisions for adopting technologies. The data collected on educational status are presented in Table 3.

Table 3. Distribution of the respondents according to their educational status (n = 180)

S.No	Category	Number	Per cent
1.	Illiterate	16	8.89
2.	Functionally literate	43	23.88
3.	Primary education	54	30.00
4.	Middle Education	41	22.78
5.	Secondary education	16	8.89
6.	Collegiate	10	5.56
	Total	**180**	**100**

The thorough perusal of the Table 3 expressed that 30.00 per cent of the beneficiaries had a Primary level of education. This is followed by more or less equal per cent in functionally literate (23.88 per cent) and middle education (22.78 per cent). Equal percentage of farmers distributed in Illiterate and secondary level of education (8.89 per cent). Only 5.56 per cent are educated at the collegiate level of education, which is illustrated in Fig. 2.

Fig.2. Distribution of respondents according to educational qualification (n = 180)



Most of the villages in the study area had educational possibilities up to primary level of education, where as for secondary education they have to travel far away from the village. This could be a possible reason for most of the beneficiaries having education up to primary level. The beneficiaries had education up to middle, secondary and collegiate level education would have completed their education on their nearby towns. This finding is in relation to the findings of Suganya, S. (2016).

1.3 Farm size

The farm size of an individual represents the extent of farming. It is also considered as an essential factor which influences Knowledge and adoption. The results are presented in the Table 4.

Table 4. Distribution of the respondents according to their farm size (n = 180)

S.No	Category	Number	Per cent
1.	Marginal (Up to 2.5 acres)	68	37.78
2.	Small (Above 2.5-5 acres)	68	37.78
3.	Big (More than 5 acres)	44	24.44
	Total	180	100.00

Data furnished from Table 4 revealed that equal per cent of the beneficiaries (37.78 per cent) were possessed small size and medium size of land holdings followed by big farmers (24.44 per cent). The findings are similar to the findings of Porchezhiyan (2013), who proclaimed that more than one-third (35.00 per cent) of the respondents were marginal landholders who possessed up to 2.5 acres of land, while 30.80 per cent were small landholders (2.51-5.00 acres) and negligible (3.30 per cent) respondents were large landholders. The large land holdings may pave way for adoption of latest technologies and mechanization in large scale.

1.4 Farming experience

It was operationalized as the number of years a farmer actually engaged in farming. Three categories were formed based on the farming experience of the respondents. The scoring procedure developed by Bidve. G. R (2017) was used in this study.

Table 5. Distribution of the respondents according to their Farming experience (n = 180)

S.No	Category	Number	Per cent
1.	Low (Up to 22years)	48	26.67
2.	Medium (23 to40 years)	62	34.44
3.	High (>41 years)	70	38.89
	Total	**180**	**100**

It can be observed from Table 5 that the Majority of the farmers (38.89 per cent) of the farmers possessed a high level of farming experience, followed by medium and low levels with the per cent of 34.44 and 26.67, respectively. The main reason behind that most of the beneficiaries of ATMA schemes are with high level of farming experience could be possibly due to their age, educational qualification and as they follow agriculture as a prime occupation. This finding is corroborated by the findings of Shanmuga Priya (2020) concluded that the majority of the respondents possessed (70.80 per cent) a high level of experience in cultivation, followed by 22.5 per cent of respondents with a medium level of experience and 6.67 per cent respondents having a low level of farming experience.

1.5 Extension agency contact

This referred to the degree to which an individual farmer contacts various extension agencies. The scoring procedure is followed by Satheeshkumar (2007).

Frequency of contact	Score
Regular	3
Sometimes	2
Never	1
Purpose of contact	**Score**
Agriculture	2
Non-agriculture	1
Total score	9

Extension agency contact refers to the respondent's contact with extension functionaries. The results on distribution of respondents according to their extension agency contact are presented in Table 6.

Table 6. Distribution of the respondents according to their extension agency contact (n = 180)

S. No	Category	Number	Per cent
1.	Low	54	30.00
2.	Medium	86	47.78
3.	High	40	22.22
	Total	**180**	**100**

The data in Table 6 indicated that less than half (47.78 per cent) of the respondents had a medium level of extension agency contact, followed by a low level (30.00 per cent) and 22.22 cent had a high level of contact with an extension agency. From the result it could be inferred that nearly fifty per cent of the respondents had medium level of interaction with the extension agency due to partial visit of extension functionaries may be the probable reason for medium level of extension agency contact. This finding is in parallel with the finding of Meena (2012).

1.6 Information seeking behaviour

The information-seeking behaviour has been studied with regard to various categories of

information sources like formal sources, informal sources, media sources and other sources. Information seeking behaviour of farmers influences the decision making pattern on crop production, processing, packaging and marketing. Thus, it directly supports the respondents to fetch higher income for their produce. The pertinent data on this variable were collected and furnished in Table 7.

Table 7. Distribution of the respondents according to their Information seeking (n = 180)

S.No	Category	Number	Per cent
1.	Low	56	31.11
2.	Medium	97	53.89
3.	High	27	15.00
	Total	**180**	**100**

It can be seen from Table 7 above that the Majority of the beneficiaries (53.89 per cent) belonged to the category of medium level of information-seeking behaviour, followed by the very meagre percentage of respondents who belonged to the category of low and high (31.11 per cent cent) and (15.00 per cent) respectively on Information seeking from officials and other farmer's relatives etc.,

From the above findings it could be observed that maximum number of beneficiaries were in medium category, because of this project team conducted more trainings and demonstrations. Most of the beneficiaries have attended the trainings regularly, so such a medium level of Information seeking behaviour was observed in this study.

1.7 Innovativeness

Innovativeness is defined as the degree to which a farmer perceives a technology as innovative and its relative faster adoption in the field. It was expected that Innovativeness will always have a direct positive significance over Knowledge and adoption regarding a recommended technology. The results obtained in relevant to the Innovativeness of the respondents were tabulated in Table 8.

Table 8. Distribution of the respondents according to their Innovativeness (n = 180)

S.No	Category	Number	Per cent
1.	Low	67	37.22
2.	Medium	77	42.78
3.	High	36	20.00
	Total	**180**	**100**

From the above Table 8 revealed that Majority of the farmers (42.78 per cent) had medium level of Innovativeness followed by low and high level categories as 37.22 per cent and 20.00 per cent respectively.

The attributed reason for this kind of results may be non adoption of recommended cultivation practices, even though the beneficiaries attend demonstrations and trainings. The medium level of adoption of technologies may be a reason in it.

II. To Assess the Knowledge level (Pre and Post-exposure) of the Trainees.

Knowledge is a prerequisite for adoption of an innovation, as this enables the farmers to understand completely the recommended technologies, innovation and its attributes. The innovation, diffusion and communication of relevant technologies will have little effect unless farmers gain the Knowledge about the technologies communicated and feel a need to put them into practice. Hence, it is necessary to

analyze the knowledge level of respondents. The farmers were imparted skill on Farm mechanization, Solar energy, Agricultural processing, Soil and water conservation, Drip irrigation and Agricultural practices. Pre exposure knowledge analysis was done prior to start the training programme, similarly post exposure knowledge analysis was carried out after completion of training programmes. Questionnaire was prepared to assess their knowledge level which consists of 20questions. Each question bears one mark. Percentage analysis was used to assess the knowledge test.

Knowledge test Before Training:

i) Acquiring Knowledge on Farm mechanization:

Table 9. Distribution of respondent according to their knowledge level on Farm mechanization before training (n = 180)

S.No	Category	Number	Per cent
1.	Low	62	34.44
2.	Medium	102	56.67
3.	High	16	8.89
	Total	**180**	**100**

The Table 9 revealed that 56.67 per cent of the respondent possessed Medium level of Knowledge on Farm mechanization which is followed by low (34.44 per cent) and High (8.89 per cent). Due to high pressure on completion of farm operations timely, the farmers are forced to use farm machinery for their farming activities.

ii). Acquiring Knowledge on Bio/Solar Energy

Table10. Distribution of respondents accordingly to their knowledge level on Bio/solar-energy before training (n = 180)

S.No	Category	Number	Per cent
1.	Low	42	23.33
2.	Medium	124	68.89
3.	High	14	7.78
	Total	**180**	**100**

From Table 10, it could be derived that 68.89 per cent of the respondents possessed a medium level of Knowledge on Bio-energy followed by low (23.33 per cent) and high (7.78 per cent)

The higher percentage of respondents under medium level of Knowledge on solar energy. The farmers were being supported and motivated by the government to utilize solar energy for pumping water and solar fencing with subsidy. This might be the reason for possessing medium to high level (7.78 per cent) knowledge on Bio-energy.

iii) Acquiring Knowledge on Agricultural Processing

Table11. Distribution of respondents according to the knowledge level an Agricultural Processing before training (n = 180)

S.No	Category	Number	Per cent
1.	Low	37	20.56
2.	Medium	118	65.56
3.	High	25	13.88
	Total	**180**	**100**

The Table 11 reported that more than 65 percent of the respondents had medium level of Knowledge on agricultural processing which was followed by Low level (20.56 percent) and High level (13.88 percent.) The reason could be a medium to higher level of Knowledge on agricultural processing is fetching higher income through value addition of farm produce.

iv) Acquiring Knowledge on Soil and Water Conservation

Table12. Distribution of respondents according to the knowledge level on Soil and Water Conservation before training (n = 180)

S.No	Category	Number	Per cent
1.	Low	40	22.22
2.	Medium	108	60.00
3.	High	32	17.78
	Total	**180**	**100**

The Table 12 revealed that the respondent possessed medium, low and high level of Knowledge as 60.00, 22.22 and 17.78 per cent respectively.

The soil and water conservation is the critical input for farming and due to continuous aberrations in the distribution of rainfall soil water conservation is essential for farming. Because of these reasons the knowledge level varies from medium level (60.00 per cent) to high level (17.78 percent).

v) Acquiring Knowledge on Drip Irrigation

Table13. Table Distribution of respondents according to the knowledge level on Drip Irrigation before training (n = 180)

S.No	Category	Number	Per cent
1.	Low	43	23.89
2.	Medium	124	68.89
3.	High	13	7.22
	Total	**180**	**100**

The Table 13 reported that 68.89 per cent of respondents had medium level of knowledge level followed by low (23.89 per cent) and high level (7.22 per cent)

The subsidy on government schemes like pipelines, drip irrigation system would encourage the respondents to have high level knowledge on drip irrigation.

vi) Acquiring Knowledge on Agriculture

Table14. Distribution of respondents accordingly to the knowledge level on agriculture before training (n = 180)

S.No	Category	Number	Per cent
1.	Low	22	31.11
2.	Medium	71	48.33
3.	High	87	20.56
	Total	**180**	**100**

The Table 14 inferred that the knowledge level of the respondents according to agricultural is 48.33, 31.11 and 20.56 per cent as medium, low and high level respectively.

Recent updates in High yielding crop varieties, low cost package of practices increase the farm income and also reduce the cost of cultivation. Hence awareness on latest improved technologies in agriculture is needed for farmers. This could be the reason for maximum distribution of respondents in medium level.

Knowledge test After training

i) Acquiring Knowledge on Farm Machinery

Table14. Distribution of respondents according to their knowledge level on farm machinery after training (n = 180)

S.No	Category	Number	Per cent
1.	Low	50	27.78
2.	Medium	95	52.78
3.	High	35	19.44
	Total	**180**	**100**

The Table 14 revealed that 52.78 per cent of the respondents possessed medium level of Knowledge on farm machinery which is followed by 27.78 per cent and 19.44 per cent low and high respectively.

This could be inferred from the result that the respondents in the low and medium were shift over to higher level of knowledge level, since the respondents were imparted hands on training and field demonstration on latest machineries. They have been facilitated to operate the machineries. The advantages of timely operations, cost effectiveness, to combat labour scarcity would be the reason to gain more Knowledge on farm machineries. So the eagerness towards mechanization resulted doubling of respondents migrated to the high level of Knowledge (19.44percent) when compared to pre training (8.89%).

ii)Acquiring Knowledge on Bio/solar energy

Table15. Distribution of respondents according to their knowledge level on Bio/ solar energy after training (n = 180)

S.No	Category	Number	Per cent
1.	Low	13	07.22
2.	Medium	116	64.44
3.	High	51	28.33
	Total	**180**	**100**

It could be observed from the Table 15 that 64.44 per cent of the respondents had medium level followed by 28.33 per cent respondents had high level and 7.22 per cent had low level of knowledge level towards bio/solar energy. When compared to before training nearly 20 percent of the respondents were elevated from low level (7.32 per cent) to high level (28.33 per cent).

This could be due to the interest showed by the respondents to know and utilize the subsidies provided by the government scheme towards the solar power based activities. This technology is also cutting the cost of electricity. The advantage of bioenergy was explained by the scientists elaborately, and they conducted demos on solar cookers, solar stoves, solar pumps, solar lights bio gas production, etc., training motivated them to gain more Knowledge about bio /solar energy.

iii) Acquiring Knowledge on Agricultural Processing

Table16. Distribution of the respondents according to their knowledge level on Agricultural processing after training (n = 180)

S.No	Category	Number	Per cent
1.	Low	15	8.33
2.	Medium	128	60.00
3.	High	37	31.67
	Total	**180**	**100**

The data could be revealed from Table 16 that 60.00 per cent, 31.67 per cent and 8.33 per cent of the respondents distributed medium, high and low knowledge levels, respectively, on agricultural processing.

More than 15 per cent of the respondents elevated to a high level of Knowledge (31.67) when compared to before training (13.88 per cent). The increase was due to fetching higher income through value addition. The Demo on pulse and millets processing machineries, bakery units, fruit processing, oil processing machineries would increase the confidence level of the farmers to get higher income through value addition.

iv) Acquiring Knowledge on Soil and Water Conservation

Table17. Distribution of respondents according to their knowledge level on soil & Water conservation after training (n = 180)

S.No	Category	Number	Per cent
1.	Low	32	17.78
2.	Medium	96	53.33
3.	High	52	28.89
	Total	**180**	**100**

From the Table17, it was stated that 53.33 per cent of the respondents had medium level and 28.89 per cent had high level and 17.78 per cent had low level of Knowledge on soil and water conservation.

More than eighty per cent of respondents had medium to high level knowledge on soil and water conservation techniques. The farmers might have realized after seeing the model fields, on no-cost and low-cost technologies, improved technologies such as polythene mulching, coir mulching and farm waste mulching and also the drip and sprinkler irrigation pave the way for the conservation of soil and water along with the the scientist's explanations on the advantage of these technologies and recycling of farm waste etc., cum demo on improved technologies.

v) Acquiring Knowledge on Drip Irrigation

Table18. Distribution of respondents according to their knowledge level on Drip irrigation after training (n = 180)

S.No	Category	Number	Per cent
1.	Low	29	16.11
2.	Medium	118	65.56
3.	High	33	18.33
	Total	**180**	**100**

It was derived from the Table 18 that around three fourth of the respondents were possessed medium to high level of Knowledge on Drip Irrigation 83.89%. It could be derived from the data that the respondents were elevated farm low level to medium level and medium to high level elevation was due to Demo and field visits made during the training programme. This knowledge increase might be due to the shortage of water availability and availing the govt. schemes on drip irrigation.

vi) Acquiring Knowledge on Agriculture

Table19. Distribution of respondents according to their knowledge level as agriculture after training (n = 180)

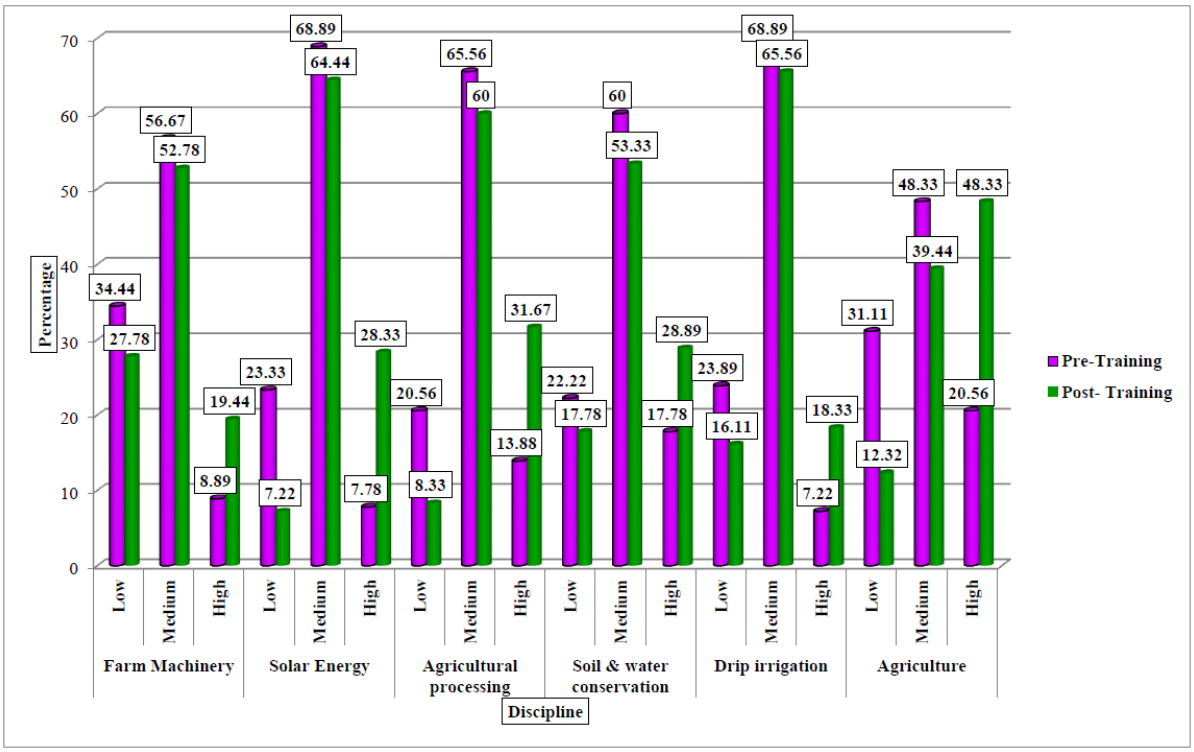
S.No	Category	Number	Per cent
1.	Low	22	12.32
2.	Medium	71	39.44
3.	High	87	48.33
	Total	**180**	**100**

The Table 19 revealed that 48.33 per cent of the respondents had high level of Knowledge followed by medium (39.44 per cent) and low (12.32 per cent) level of Knowledge on agriculture.

Generally farmers are keen to increase the farm income so they are interested to update their knowledge level on latest technologies. The scientists explained and conducted demo on the hightech nursery, high yielding rice varieties, millets, integrated farming and organic farming system, and subsidies available for seeds etc., This might be the reason for increase in the knowledge level of the respondents after training.

Fig.3. Distribution of respondents according to knowledge level of the farmers across different disciplines of recently developed technologies and modern machineries in agriculture

(n = 180)



III. Testing Significance of Knowledge acquired through Training among the respondents

Null Hypothesis (H_0) of paired sample t-test was assumed as there is no significant difference in the knowledge level of the respondents owing to the training conducted. And the alternative Hypothesis (H_1) was assumed to that there is significant difference in the knowledge level of the respondents owing to the conducted training. The results of the paired t –test is as follows as per Table 20.

Table20. Significance results of Paired Sample t - test(n=180)

Test Variables	Mean	Std. Deviation	Std. Error	t value	Degrees of Freedom	Significance or p-value
Knowledge level before and after training	-22.77	6.06	0.45	-50.42	179	0.000

According to the test results as per Table 20, t value of t (179) was found to be -50.42 and the corresponding 'p value' was found to be 0.000 which is clearly less than the significance level (0.05). Hence, the null hypothesis (H_0) was rejected and in turn the alternate hypothesis (H_1) was accepted. Thus, a significant difference occurs in the knowledge level of the respondents acquired through the trainings conducted on the recently developed technologies and modern machineries in agriculture. This result was coincided with the results of Kavya, R & Shobharani (2019) that the training on modern mechanization was accepted by 90 per cent of the respondents as the best way against 10per cent who preferred old practices.

SUMMARY AND CONCLUSION

Indian Agriculture has step into gradual shift from dependence on human power and draft animal power to mechanical power to bridge the gap of labour demand. Promotion of protected cultivation will also certainly help in creation of huge self-employments for unemployed educated youths and will also raise the national economy by sale of high-quality produce in domestic and international markets. The alternate hypothesis (H1) was proved through ' t' test that there was a significant difference prevailed in the knowledge level of the respondents acquired through the trainings conducted on the recently developed Agrl. Technology and modern machineries. To remain self–sufficient in the coming decades requires knowing the prerequisites for food production & taking necessary measures in advance. India's food production was 22 million tons at the time of independence by the year 1950. As of now, the population of India is about 1.43 billion (United Nations data), and present food production is around 330 million tons (2022-23), which is sufficient to cater to the needs of the nation with a bit of surplus. So the today's situation looks comfortable. Through calculations, by all means, the population of India is likely to be stabilized at 1.6 to 1.7 billion by 2050. Hence periodical training on Good Agricultural Practices would empower the cognitive skill of the farmers, ultimately to increase the production.

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Author Contribution
All authors have participated in critically revising of the entire manuscript and approval of the final manuscript.

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