

Socio – economic Impact of Improved Soybean Technology on Farmers

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ABSTRACT

The present study entitled “Socio – economic Impact of Technologies Developed by Agricultural University on Soybean Farmers” was undertaken as Joint AGRESCO Project for the year 2012-13 in Amravati district of Maharashtra State. An ex-post facto design of social research was used. A sample of 100 adopters of Univ. recommended soybean technology as respondents were drawn and information was obtained from them which were considered for tabulation and analysis of data.

Findings revealed that nearly three fourth (71.00%) of the soybean growers had high adoption level followed by medium (29.00%) adoption level. Impact of soybean technology was measured in terms of change in yield which was 10.42q/ha. before adoption of soybean technology. It was increased to 19.35 q/ha. after adoption of soybean technology. It was 85.70 per cent change in yield. There was change in income by 40.67 per cent. Land use under soybean crop was changed by 39.39 per cent, whereas one third (33.69%) change was noticed in case of family education. In case of annual spending pattern the change was (28.09%). In case of type of house the change was 19.32 per cent. Change in monthly thrift habit was noticed very less (14.21%). In case of social participation the change was 10.93 per cent. Change in assets was noticed very less (10.84%). Less than 10.00 per cent change was noticed in case of cropping pattern (9.09%), in case of land utilization pattern (7.90%), in case of occupation (6.25%) and in case of employment the change was only 5.97 per cent. Overall impact change was 21.69 per cent.

Key words: *Socio – Economic impact, Technology and Soybean farmers*

Soybean is known as golden bean in India. Soybean is grown successfully in various agro climatic conditions ranging from temperate region to subtropical and tropical regions. The area and production of the soybean crop has increased in the entire world during the last decade. USA ranks first in the area under soybean (29.31 million hectares) followed by Brazil (18.40 million hectares), Argentina (12.60 million hectares), China (8.72 million hectares), and India (5.8 million hectares). The major soybean growing states in India are Madhya Pradesh, Maharashtra, Uttar Pradesh, Rajasthan, Karnataka and Gujarat. Madhya Pradesh and Maharashtra constitutes about 86.9 per cent of total area. In production of soybean Madhya Pradesh ranks first (4.98 million tones), and Maharashtra second (3.23 Million tones). While Andhra Pradesh is first in productivity (12.78 quintals / hectares) with second rank of Maharashtra (12.21 q/ha).

Data regarding impact of agricultural technology on farmers are very scanty. For this purpose, it is necessary to find out the adoption of technologies developed by agricultural universities regarding major crops namely Soybean, Pomegranate and Mango by farmers. The study also aims at finding out the changes occurred due to adoption of recommended technologies developed by university on farmers with respect to major crops. In view of the above, the present investigation entitled ‘Socio-economic impact of improved soybean technologies developed by agricultural universities on farmers’ was undertaken with the objectives to assess the socio – economic impact of recommended technologies developed by University on soybean farmers.

METHODOLOGY

An ex-post facto research design was used for the research study. The present study was conducted in Amravati district of Vidarbha region. In Vidarbha region the district namely Amravati was selected as university Regional Research Center of soybean is situated in Amravati district and from this district two tahasils namely Nandgaon khandeshwar and Tiwasa were selected purposively. From each tahsil five villages were selected purposively. From each selected village 10 adopters of university recommended soybean technology were selected as respondents. The list of soybean adopters of university recommended technology was obtained from Regional Research Center, Amravati, KVK, Durgapur, Dist. Amravati and KVK, Ghatkhed, Tal. Chandur Railway Dist. Amravati. Thus, 100 adopters of university recommended soybean technology constituted the sample size for the purpose of the study.

RESULTS AND DISCUSSION

The detail research report with all relevant data has been furnished here under.

Adoption of university recommended soybean technology

The frequency and percentages of adoption of respondent about soybean technology was ascertained and the findings are given in Table 1.

Table 1 mentioned that about practicewise adoption of soybean technology. It is noticed that cent per cent soybean growers have adopted completely the practices like use of recommended varieties of soybean, sowing time and seed rate. Weed management was the major problem in the study area due to non availability and high cost of labour, therefore it was

observed that great majority (86.00%) adopted weed management. Seed treatment with rhizobium culture (85.00%), pest management (78.00%) and seed treatment with fungicides were adopted completely by the majority of the respondents.

Intercropping soybean and tur (4:2) was adopted by 67.00 per cent of the respondents. The soybean growers in the study area had good source of irrigation hence they followed irrigation management (52.00%) during flowering and pod formation stage of the soybean crop. Fertiliser management and disease

Table 1
Distribution of respondents according to their adoption of Univ. recommended soybean technology

Sr. No.	Soybean technology	Complete adoption	Partial adoption	Non adoption
		Frequency (n=100)	Frequency (n=100)	Frequency (n=100)
1	Soybean variety	100 (100.00)	00 (00.00)	00 (00.00)
2	Sowing time	100 (100.00)	00 (00.00)	00 (00.00)
3	Seed rate	100 (100.00)	00 (00.00)	00 (00.00)
4	Seed treatment with fungicides	72 (72.00)	00 (00.00)	28 (28.00)
5	Seed treatment with rhizobium culture	85 (85.00)	00 (00.00)	15 (15.00)
6	Intercropping	67 (67.00)	00 (00.00)	33 (33.00)
7	Irrigation management (protective)	35 (35.00)	52 (52.00)	13 (00.00)
8	Fertilizer management	30 (30.00)	70 (70.00)	00 (00.00)
9	Weed management	95 (95.00)	00 (00.00)	05 (05.00)
10	Pests management	78 (78.00)	21 (21.00)	01 (01.00)
11	Disease management	29 (29.00)	39 (39.00)	32 (32.00)

Figure in parentheses indicates percentage

management were adopted completely by 30.00 per cent and 29.00 per cent respectively.

The technologies namely fertiliser management (70.00%), irrigation management (35.00%), disease management (39.00%), pest management (21.00%) were adopted partially by the respondents.

From the above discussion and data in Table 2 revealed that 71.00 per cent of the soybean growers had high adoption level followed by medium (29.00%) adoption level. The distribution of the respondents according to their overall adoption level is shown in the Table 2.

It was observed that 71.00 per cent of the respondents had high adoption level followed by medium (29.00%). Therefore, it can be inferred that majority of the respondent beneficiaries had high level of adoption of soybean technology.

Table 2
Distribution of respondents according to their overall adoption level

Sr. No.	Adoption index level	Respondents	
		Frequency (n=100)	Percentage
1	Low (Up to 33.33)	00	00.00
2	Medium (33.34 to 66.66)	29	29.00
3	High (66.67 and above)	71	71.00

Impact of soybean technologies

Impact of technologies was assessed in terms of family educational change, change in social participation, change in annual spending pattern, change in income, change in house, change in employment status, change in occupation, change in assets, change in monthly thrift habit, change in area, change in cropping pattern, change in land utilization pattern and change in yield. Comparison between pre and post situation was done for assessing the impact of technologies on the farmers.

Family educational change

Table 3 revealed that there were 83.00 per cent of the respondents were under high category of change in family education after adoption of technology, whereas it was 90.00 per cent under medium category before adoption of technology.

At overall level there were 33.69 per cent change noticed after adoption of technology. The ratio between observed means was computed as indicated by 'Z' value (0.41NS) which was observed to be non significant at 0.05 level of probability. It could, therefore, be inferred that the farmers did not differ significantly before and after adoption of technology.

Table 3
Distribution of the respondents according to per cent change in family education

Sr. No	Category	Before adoption of technology		After adoption of technology		'Z' Value
		Freq.	%	Freq.	%	
1	Low	09	09.00	09	09.00	0.41 ^{NS}
2	Medium	90	90.00	08	08.00	
3	High	01	01.00	83	83.00	
	Total	100	100.00	100	100.00	
	Mean std.	7.35	Mean std.	10.00		
Per cent change 33.69						

NS=Non Significant at 0.05 level of probability,
Freq. – Frequency, % - Percentage

Change in social participation

From the Table 4 it was observed that there were meagre change was noticed in high category of before and after adoption of soybean technology in social participation which was 10.00 per cent before adoption of technology and it was 15.00 per cent after

Table 4
Distribution of the respondents according to per cent change in social participation

Sr. No.	Category	Before adoption of technology		After adoption of technology		'Z' Value
		Freq.	%	Freq.	%	
1	Low	82	82.00	82	82.00	0.04 ^{NS}
2	Medium	08	08.00	03	03.00	
3	High	10	10.00	15	15.00	
	Total	100	100.00	100	100.00	
	Mean	1.28	Mean	1.42		
Per cent change 10.93						

NS= Non Significant at 0.05 level of probability

Freq. – Frequency, % - Percentage

the adoption of technology. Majority of the respondents (82.00%) were under low category of change in social participation before and after adoption of soybean technology.

The ratio between observed means was computed as indicated by 'Z' value (0.04NS) which was observed to be non significant at 0.05 level of probability. It could, therefore, be inferred that the farmers did not differ significantly in change of social participation before and after adoption of soybean technology by the respondents.

Change in annual spending pattern

Annual spending pattern shows the resourcefulness of the individual. Table 5 indicated that

the significant change was noticed before and after adoption of the soybean technology. Before adoption of technology 7.00 per cent of the respondents were under high category of annual spending pattern whereas, it was increased to 20.00 per cent after adoption of technology. The mean expenditure was Rs.54,696.05 before adoption of technology whereas, it was Rs. 76,015.30 after adoption of the technology. The 28.09 per cent change noticed in annual spending pattern.

The ratio between observed means was computed as indicated by 'Z' value (2.16*) which was observed to be significant at 0.05 level of probability. It could, therefore, be concluded that the soybean growers differs significantly in change of annual spending pattern before and after technology adoption.

Change in income

Adoption of soybean technologies helped to increase the income of the farmers through increase productivity and area under soybean crop. The distribution of the respondents according to per cent change in income has been presented in Table 6.

It is revealed from Table 6 that before adoption of the soybean technology only 6.00 per cent respondents were under high category those were increased 12.00 per cent under the high category of the change in income. The average yearly income was Rs.1,03,378.1 before adoption of the technology those were increased Rs. 1,45,425 after adoption of technology. There was 40.67 per cent change in income

Table 5
Distribution of the respondents according to per cent change in annual spending pattern

Sr. No.	Category	Before adoption of technology		After adoption of technology		'Z' Value
		Frequency	Percentage	Frequency	Percentage	
1	Low	64	64.00	59	59.00	2.16*
2	Medium	29	29.00	21	21.00	
3	High	07	07.00	20	20.00	
	Total	100	100.00	100	100.00	
	Mean	Rs.54,696.05	Mean	Rs.76,015.3		
Per cent change 28.09						

* Significant at 0.05 level of probability

Table 6
Distribution of the respondents according to per cent change in income

Sr. No.	Category	Before adoption of technology		After adoption of technology		'Z' Value
		Frequency	Percentage	Frequency	Percentage	
1	Low	81	81.00	70	70.00	2.39*
2	Medium	13	13.00	19	19.00	
3	High	06	06.00	12	12.00	
	Total	100	100.00	100	100.00	
	Mean	Rs.1,03,378.1	Mean	Rs.1,45,425		
Per cent change 40.67						

* Significant at 0.05 level of probability

was noticed due to adoption of technologies.

The ratio between observed means was computed as indicated by 'Z' value (2.39*) which was observed to be significant at 0.05 level of probability. It could, therefore, be revealed that the soybean farmers differs significantly in per cent change in income due to adoption of soybean technology.

Change in type of house

The type of house indicates the status of an individual. In rural area the houses are prepared from mud with kavelu roofing. Table 7 shows the per cent change in type of houses. It was observed that the houses of the soybean growers were under low category before adoption (94.00%) and after adoption

Table 7
Distribution of the respondents according to per cent change in type of house

Sr. No.	Category	Before adoption of technology		After adoption of technology		'Z' Value
		Freq.	%	Freq.	%	
1	Low	94	94.00	93	93.00	0.50 ^{NS}
2	Medium	02	02.00	04	04.00	
3	High	02	02.00	03	03.00	
	Total	100	100.00	100	100.00	
	Mean index	7.08	Mean index	8.45		
Per cent change 19.32						

NS=Non Significant at 0.05 level of probability
Freq. – Frequency, % - Percentage

(93.00%). Medium quality houses were 2.00 per cent before adoption of technology increased to 4.00 per cent after adoption of technology. There was little change under high category of houses, i.e. 2.00 per cent (before adoption) to 3.00 per cent after adoption. The mean index was 7.08 before adoption and it was 8.45 after adoption of technologies. The per cent changes noted was 19.32.

The ratio between observed means was computed as indicated by 'Z' value (0.50) which was non significant at 0.05 level of probability. It could therefore be inferred that the soybean growers did not differ significantly in constructions & status of houses due to adoption of soybean technology.

Change in employment

Employment of respondents and their family employment before adoption of technology was under low category (89.00%) after adoption of technology the respondents under the low category were decreased (58.00%) and increased it under medium category (40.00%) which were 9.00 per cent before adoption of soybean technology. There were no change in employment under high category due to adoption of technology. The 5.97 per cent change in employment was noted before & after adoption of technology.

The 'Z' value was 0.63 which was non-significant at 0.05 level of probability. It could,

Table 8
Distribution of the respondents according to per cent change in Employment

Sr. No.	Category	Before adoption of technology		After adoption of technology		'Z' Value
		Freq.	%	Freq.	%	
1	Low	89	89.00	58	58.00	0.63 ^{NS}
2	Medium	09	09.00	40	40.00	
3	High	02	02.00	02	02.00	
	Total	100	100.00	100	100.00	
	Mean man days	96.26	Mean man days	102.01		
Per cent change 5.97						

NS=Non Significant at 0.01 & 0.05 level of probability
Freq. – Frequency, % - Percentage

therefore be inferred that the soybean growers did not differ significantly in creating more mandays i.e. employment due to adoption of technology.

Change in occupation

The occupation of soybean growers includes, farming only, farming + labour, farming and business, farming + services and farming + other subsidiary occupation. Under per cent change occupation mentioned in Table 10 noticed that there were no change in occupation of small and marginal farmers due to adoption of soybean technologies which was 19.00 per cent comes under low category of before and after adoption of technology. There were little change noticed under medium category of occupation i.e. 77.00 per cent before adoption of technology reduced to 65.00 per cent under after adoption of technology.

Table 9
Distribution of the respondents according to per cent change in Occupation

Sr. No.	Category	Before adoption of technology		After adoption of technology		'Z' Value
		Freq.	%	Freq.	%	
1	Low	19	19.00	19	19.00	1.04 ^{NS}
2	Medium	77	77.00	65	65.00	
3	High	04	04.00	16	16.00	
	Total	100	100.00	100	100.00	
	Mean index	41.60	Mean	44.20		
Per cent change 6.25						

NS=Non Significant at 0.05 level of probability
Freq. – Frequency, % - Percentage

Under high category, the occupation change was 4.00 per cent before adoption of technology and it was 16.00 per cent after adoption of technology. The mean index was 41.60 per cent before and it was 44.20 per cent after adoption of technology. There was 6.25 per cent change was observed due to adoption of soybean technology.

The ratio between observed means was computed as indicated by 'Z' value (1.04) which was non significant at 0.05 level of probability. It could, therefore be inferred that the soybean growers did not

differ significantly in occupation before and after adoption of soybean technology.

Change in assets

Assets includes the furniture, electric appliances, improved implements, equipments, machinery, bullocks, animals, transport means etc. which was categorized into low, medium and high as shown in Table 10. The data revealed that there were little increase in assets under high category due to adoption of soybean technology (before -16.00%, after-19.00%). There was little difference noticed in possession of assets by the soybean growers before and after adoption of technology. The mean was 5.44 (before) which increased to 6.03 after adoption of technology. The percent change was 10.84.

The ratio between observed means computed as indicated by ‘Z’ value was 0.90 which was observed to be non-significant at 0.05 level of probability. It could, therefore, be inferred that soybean growers did

not differ significantly in possessing of assets due to adoption of soybean technologies.

Change in monthly thrift habit

Table 11 revealed that there was no change in monthly thrift habit due to increase of expenditure pattern.

Before adoption of technology 71.00 per cent respondents were under the low category of monthly thrift habit followed by medium (28.00%) and only one respondent was in the high category of monthly thrift habit. There was little change noticed in monthly thrift habit due to adoption of soybean technology. Nearly two-third (64.00%) respondents were under low category followed by medium (15.00%) and high (11.00%) after adoption of technology. There were 14.21 per cent change observed due to adoption of soybean technology.

The ratio between observed means computed as indicated by ‘Z’ value was 0.76 which was noticed to be non-significant at 0.05 level of probability. It could therefore, be inferred that soybean growers did not differ significantly in monthly thrift habit due to adoption of soybean technology.

Change in area : Table 12 showed per cent increase in area under soybean crop due to adoption of soybean technology. It was noticed that majority of the respondents (96.00%) were under low category in per cent change in area which was decreased (92.00%) after adoption of technology. Whereas, 36.00 per cent respondents were under medium category after adoption of technology. The respondents were distributed equally (2.00%) under high category before and after adoption of the technology. There was 39.39

Table 10
Distribution of the respondents according to per cent change in assets

Sr. No.	Category	Before adoption of technology		After adoption of technology		‘Z’ Value
		Freq.	%	Freq.	%	
1	Low	55	55.00	53	53.00	0.90 ^{NS}
2	Medium	29	29.00	28	28.00	
3	High	16	16.00	19	19.00	
	Total	100	100.00	100	100.00	
	Mean	Rs. 5.44	Mean	Rs. 6.03		
Per cent change 10.84						

NS= Non Significant at 0.05 level of probability
Freq. – Frequency, % - Percentage

Table 11
Distribution of the respondents according to per cent change in monthly thrift habit

Sr. No.	Category	Before adoption of technology		After adoption of technology		‘Z’ Value
		Frequency	Percentage	Frequency	Percentage	
1	Low	71	71.00	64	64.00	0.76 ^{NS}
2	Medium	28	28.00	15	15.00	
3	High	01	01.00	11	11.00	
	Total	100	100.00	100	100.00	
	Mean	Rs.160.89	Mean	Rs.183.74		
Per cent change 14.21						

NS= Non Significant at 0.05 level of probability

Table 12
Distribution of the respondents according to per cent change in area

Sr. No.	Category	Before adoption of technology		After adoption of technology		‘Z’ Value
		Freq.	%	Freq.	%	
1	Low	96	96.00	92	92.00	2.11*
2	Medium	02	02.00	06	06.00	
3	High	02	02.00	02	02.00	
	Total	100	100.00	100	100.00	
	Mean area	1.98 ha.	Mean area	2.76 ha.		
Per cent change 39.39						

* Significant at 0.05 level of probability
Freq. – Frequency, % - Percentage

per cent change was noticed in per cent change in area due to adoption of soybean technology

The ratio between observed means was computed as indicated by ‘Z’ value (2.11) which was observed significant at 0.05 level of probability. It could therefore, be stated that the soybean growers differed significantly in per cent change in area under soybean crop.

Change in cropping pattern

It was noticed from Table 13 that there was no much difference in per cent change in cropping pattern. Under low category, it was 16.00 per cent

before and 15.00 per cent after the adoption of technology. Under medium category 59.00 per cent of the respondents before adoption of technology whereas, it was 42.00 per cent after adoption of technology. The major change was noticed under high category. It was 25.00 per cent before and 43.00 per cent after adoption of soybean technology. There were 9.09 per cent change was noticed in cropping pattern of the soybean growers due to adoption of soybean technology.

The ratio between observed means was computed as indicated by 'Z' value (2.00) which was observed significant at 0.05 level of probability. It could therefore, be stated that the soybean growers differ significantly in per cent change in cropping pattern.

Table 13
Distribution of the respondents according to per cent change in cropping pattern

Sr. No.	Category	Before adoption of technology		After adoption of technology		'Z' Value
		Freq.	%	Freq.	%	
1	Low	16	16.00	15	15.00	2.00*
2	Medium	59	59.00	42	42.00	
3	High	25	25.00	43	43.00	
	Total	100	100.00	100	100.00	
	Mean	2.39	Mean	2.58		
Per cent change 9.09						

* Significant at 0.05 level of probability
Freq. – Frequency, % - Percentage

Change in land utilization pattern

There were no difference in per cent change in land utilization pattern as shown in Table 14. The data revealed that there was no change under land utilization pattern except in high category. The respondents were 7.00 per cent (before) increased by 1.00 per cent i.e. 8.00 per cent after technology adoption. In low category there was decrease by 1 per cent (81.00 % before and 80.00% after). The 7.90 per cent change was noted in land utilization pattern between before and after adoption of technology.

The ratio between observed means was computed as indicated by 'Z' value (0.16) which was observed that there was no significant change at 0.05 level of probability. It could therefore be inferred that the farmers did not differ significantly in land utilization pattern due to change in technology adoption by the soybean crop.

Change in yield

It is evident from Table 15, only 6.00 per cent respondents were in low category of technology adoption before whereas, 'no' respondents observed under this (low) category after adoption of technology. Majority of the respondents (93.00%) were in medium category of before adoption which turned into high

Table 14
Distribution of the respondents according to per cent change in land utilization pattern

Sr. No.	Category	Before adoption of technology		After adoption of technology		'Z' Value
		Freq.	%	Freq.	%	
1	Low	81	81.00	80	80.00	0.16 ^{NS}
2	Medium	12	12.00	12	12.00	
3	High	07	07.00	08	08.00	
	Total	100	100.00	100	100.00	
	Mean	7.34 ha	Mean	7.92 ha		
Per cent change 7.90						

NS= Non Significant at 0.05 level of probability
Freq. – Frequency, % - Percentage

category (86.00%) after adoption of technology. The per cent change was noted 50.57.

The ratio between observed means was computed as indicated by 'Z' value (3.41) which was observed significant at 0.05 level of probability. It could therefore be stated that the soybean growers differ significantly in per cent change in yield of the soybean crop.

Table 15
Distribution of the respondents according to per cent change in yield

Sr. No.	Category	Before adoption of technology		After adoption of technology		'Z' Value
		Freq.	%	Freq.	%	
1	Low	06	06.00	00	00.00	3.41**
2	Medium	93	93.00	14	14.00	
3	High	01	01.00	86	86.00	
	Total	100	100.00	100	100.00	
	Mean yield	10.42q / ha	Mean yield	15.69q / ha		
Per cent change 50.57						

** Significant at 0.01 level of probability
Freq. – Frequency, % - Percentage

Overall impact of soybean technology

The overall impact of soybean technology was computed with the help of formula as given in methodology section of this report

$$\text{Overall impact of soybean technology on farmers} = \frac{33.69+10.93+28.09+40.67+19.32+5.97+6.25+10.84+14.21+39.39+9.09+7.90+50.57}{13} \text{ i.e. 21.30 per cent}$$

The overall socio-economic impact of recommended technologies developed by Dr. Panjabrao Deshmukh Krishi Vidyapeeth Akola on soybean growers was calculated by summing up all the thirteen dimensions of impact and converted it into per cent change.

It could be stated that soybean technology recommended by the University had created 21.30 per cent socio-economic impact at overall level on the soybean growers.

Table 16
Distribution of respondents according to overall impact of technology

Sr. No.	Category	Respondents	
		Frequency (n=100)	Percentage
1	Low (Upto 33.33)	70	70.00
2	Medium (33.34 to 66.66)	30	30.00
3	High (Above 66.66)	00	00.00

On the basis of overall impact of soybean technology of each respondents they were categorized into low, medium and high categories of overall impact formed by equal interval method which is mentioned in Table 16. It was revealed that majority of the respondents belonged to low category followed by medium (30.00%). No respondent was observed under high category of overall impact.

The ratio between observed means indicated by 'Z' value mentioned in Table 17 revealed that the change in yield (3.41**) was highly significant at 0.01 level of probability, whereas, change in annual spending pattern (2.16*), change in income (2.39*), change in area (2.11*) and change in cropping pattern (2.00*) were significant at 0.05 level of probability. These parameters differs significantly due to adoption of soybean technology by the soybean growers. Rest of the parameters namely, family educational change, change in social participation, change in type of house, change in employment status, change in occupation, change in assets, change in monthly thrift habit and change in land utilization pattern did not differ significantly before and after adoption of soybean technology.

Impact statements

Mean land area under soybean increases from 1.98 ha. to 2.76 ha. Mean cropping pattern rise to 3 from 2 crop Mean yield increases from 10.42 q/ha to 15.69 q/ha Mean land utilisation pattern increases from 7.34 ha. to 7.92 ha. Mean annual spending pattern increases from Rs.54,696.05 to Rs. 76,015.3. Mean income increases from Rs.1.01 lakhs to Rs.1.45 lakhs. Mean employment days rises from 96.26 man days to 102.01 man days. Mean assets increases from Rs. 5.44 lakh to Rs. 6.03 lakh. Mean monthly thrift habit saving increases from Rs.160.89 to Rs.183.74. Overall impact of Soybean Technology on farmers was 21.30. Soybean Technology helps to increase the income as well as production of soybean crop.

Table 17
Testing the significance of the difference between two independent means

Sr. No.	Impact of technologies in terms of	'Z' Value
1	Family educational change	0.41
2	Change in social participation	0.04
3	Change in annual spending pattern	2.16*
4	Change in income	2.39*
5	Change in house	0.50
6	Change in employment status	0.63
7	Change in occupation	1.04
8	Change in assets	0.90
9	Change in monthly thrift habit	0.76
10	Change in area	2.11*
11	Change in cropping pattern	2.00*
12	Change in land utilization pattern	0.16
13	Change in yield	3.41**

** Significant at 0.01 level of probability

* Significant at 0.05 level of probability

CONCLUSION

Level of impact of soybean technology showed that soybean technology had created a low impact on 70.00 per cent soybean growers followed by medium impact on 30.00 per cent soybean growers. The overall impact on all soybean growers was 21.30 per cent. Nearly three fourth (71.00%) of the respondents had high level of adoption about Soybean technology. Before adoption of soybean technology majority of the respondents (93.00%) were in medium category which turned into high category (86.00%) after adoption of technology. The per cent change in yield was noted 50.57 which was highly significant at 0.01 level of probability. Impact of soybean technology showed that before adoption of technology respondents had mean income of Rs.1.01 lakh from soybean crop . After adoption of technology respondents had mean income increased upto Rs.1.45 lakh from soybean crop.

University recommended soybean technology created significant economic impact on soybean growers in terms of increased yield, income, area, cropping pattern, annual spending pattern., however, socio impact was found very low as far as social participation, is concerned. It is, therefore, recommended to enhance the participation of soybean growers in formal and informal organizations for getting their active participation in rural development.

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