

# **Effect of demographic features on adoption of technology in groundnut: a study in Raichur district, Karnataka**

## **Introduction:**

The demography is an important feature reflects on the socioeconomic status and asset position of the farming community which had direct bearing on the extent and levels of adoption of technology in farming. Effective adoption of technology resulted in enhancing production at the farm level which ultimately improves the livelihood security of the poor by pushing the income as well as savings at the farm level.

Demographic features such as ownership of farming, educational status, occupation of the households including primary and secondary, distribution of land holdings like rainfed, irrigated, permanent fallow, household durable assets and their valuation, farm implements and their economic valuation, financial assets, liabilities and savings of famers, sources of household income, cropping pattern, annual consumption expenditure will influence on the decision making with regard to use of resources, adoption of technology,

## **Objective:**

1. To study effect of demographic features on adoption technology in groundnut.

The following hypothesis is formulated for the study.

**Hypothesis:** 1. Demographic features are significantly contributing towards adoption of technology in groundnut.

## **Methodology:**

- 1. Study area:** The study is undertaken in Raichur district of Karnataka.
- 2. Sampling procedure:** The three taluks of Raichur district namely Lingasugur, Deodurga and Raichur were purposively selected based on the maximum area under groundnut.
- 3. Nature of data:** The primary data was collected from the groundnut growers in kharif season during 2007-08. The study is based on primary data obtained from 135 sample households belongs to six villages of three taluks of Raichur district. The data was collected with the help of pretested structured schedule. The time

series data on area, production and productivity of groundnut was collected from Directorate of Economics and Statistics, Bangalore and was analyzed using the compound growth rate which is expressed in terms of percentage.

**4. Method of Analysis:** The collected data was analyzed using simple percentages and Garrett scores, compound growth rates and Triennium averages.

## **Results and Discussion**

Socio economic profile of groundnut growers in Raichur district of Karnataka is presented below (Table-1). The ownership of groundnut growers is purely dominated by males and there were no female households individually operating on the farm. The average age of groundnut growers in adopted and control villages were 42 and 36 years.

Educational status is an important socio-economic feature which influences the decision making in farming and influence on managerial ability of the farming community. The average schooling of groundnut growers in adopted and controlled villages was 8.5 and 2.5 years. The participation of groundnut growers in local bodies in very poor with 11 and 7 per cent of the farmers in adopted and control villages.

Agriculture sector constitutes the major occupation of sample households in adopted and control villages with 96 and 93 per cent of the respondents (Table-2). Business constitutes the major occupation for only 3 and 4 per cent of the sample households. The employment opportunities or social work constitute the major occupation of one and two per cent of the farmers in adopted and control villages. Agriculture sector constitutes the secondary occupation of sample households to the extent of 14 and 22 per cent of the respondents (Table-2). Business constitutes the secondary occupation of sample households to the extent of 18 and 04 per cent of the respondents. There was no secondary occupation for almost 67 and 73 per cent of the households in adopted and control villages.

The distribution of average dry land, irrigated and permanent fallow in adopted village is 4, 5 and nil acres respectively while in control villages, the average rainfed, irrigated and permanent fallow land is 3, 4 and 2 acres respectively. The entire leased

in land was irrigated with an average holding size of 7 and 3 acres in adopted and control villages of groundnut growers (Table-3).

In adopted village, the groundnut growers owning electric pumpsets, manual/power sprayer, bullock cart, trucks/four wheeler and sprinkler sets to the extent of 120, 58, 53, 4 and 3 per cent respectively. Similarly in control villages, the proportion of groundnut growers owning electric pumpsets, manual/power sprayers, bullock cart, tractor and its implements and diesel pumpsets were 89, 49, 47, 4 and 4 per cent respectively (Table-4). In adopted village, the groundnut growers owning one implement per farm with respect to tractor with implements, manual/power sprayer, harvester/thresher, sprinkler set and electric pumpsets. Similarly in control villages, the same situation exists with respect to tractor with implements, harvester/thresher, sprinkler set and electric pumpsets (Table-4).

The overall average value of farm implements owned by groundnut growers in adopted and control villages for tractor with implements, electric pumpsets, sprinkler sets, bullock cart, pipeline and diesel pumpsets were Rs. 157500, Rs. 18023, Rs. 12000, Rs. 10802, Rs. 8619 and Rs. 4833 respectively (Table-4).

The groundnut growers in adopted village are better off with regard to distribution of ownership of household durable assets compared to control villages (Table-5). In adopted villages, the percentage of farmers owning residential house and plots, fans, two wheelers, television sets, radio and farm house were 100, 56, 50, 38, 34 and 18 per cent respectively. Similar scenario observed in control villages with a distribution of ownership of residential house and plots, two wheelers, fans, radio, farm house and television were 100, 49, 40, 31, 24 and 13 per cent respectively. The groundnut growers in adopted village are better off compared to control a village which is reflected in terms of average value spent on household durable assets (Table-5). In adopted villages, the average expenditure spent on residential house and plots, farm house, two wheelers, television sets, radio and fans were Rs. 90285, Rs. 11604, Rs. 6757, Rs. 3705, Rs. 1313 and Rs. 716 respectively. Similarly in control village, the expenditure incurred on residential house, two wheelers, farm house, television sets, radio and fans were Rs. 44982, Rs. 6703, Rs. 4153, Rs. 2125, Rs. 1718 and Rs. 438 respectively. In total, the overall average investment on household durable assets in adopted and control villages were Rs. 114380 and Rs. 60118 respectively.

The financial assets and liabilities of groundnut growers in Raichur district is presented here under (Table-6). The groundnut growers are borrowing credit from both institutional as well as from non institutional sources to the extent 77 and 23 per cent. The outstanding loan to be repaid to co-operatives, nationalized banks, regional rural banks and self help groups were to the extent of 31, 23, 17 and 6 per cent respectively. Similarly the outstanding loan to be repaid to non institutional sources such as money lenders and friends and relatives were 14 and 09 per cent. The overall average outstanding loan to be repaid by the groundnut growers including adopters and non adopters group was Rs. 141412 per household. The interest rate charged by institutional sources were in the order of self help groups, nationalized banks, co-operatives and regional rural banks with 24, 14, 11.5 and 11.5 per cent respectively. The interest rate charged by non institutional sources, money lenders and friends and relatives were 24 and 19 percent respectively.

The groundnut growers were lending loans to a limited extent to friends and relatives and villagers to the extent of 96 and 04 per cent. The average amount of lending by groundnut growers was Rs. 19717 per household. The lending to friends and relatives and villagers was given at an interest rate of 23 and 16 per cent respectively.

**Savings:-** The groundnut growers were saving money to a limited extent. They saved money by investing in LIC policies, banks and in self help groups with 35, 32 and 17 per cent of the investment.

The different source of income of households of groundnut growers in Raichur district is presented here under (Table-7). The net income from crops occupied the first important source of net income with Rs. 28050 per household. **Regular salaried jobs, rental income, non-farm work, business activity and labour earnings occupied the second, third, fourth and fifth sources of net income with Rs. 25500, Rs. 23167, Rs. 21152, Rs. 20833 and Rs. 19055 per household per year respectively. In control villages, rental income was the major source of net income with Rs. 66667 per household per year. This was followed by pension from employer, income from crops, labour earning from farm, income from selling of sheep's, goats, chicken, meat and eggs with a net income of Rs. 44000, Rs. 23358, Rs. 17200, Rs. 13981 and Rs. 12998 per household per year. The overall trend indicated that rental income occupied the first place with Rs. 44917 per household per year. This was followed by net income obtained from crops, pension form the employer, labour earnings from the farm work,**

business activities and income from selling of goats, sheep's, chicken, meat and eggs with a income of Rs. 28050, Rs. 23600, Rs. 18128, Rs. 15417 and Rs. 15266 respectively per household.

**Table-7: Major sources of household net income per year (Rs/Household/Year)**

Sources of income	Raichur district		
	Adopted	Control	Both
1. Income from crops	32742	23358	28050
2. Farm work (labor earnings)	19055	17201	18128
3. Non-farm work (labor earnings)	21152	6000	13576
4. Regular Farm Servant (RFS)	9600	0	4800
5. Livestock (milk and milk products selling)	11171	12998	12084
6. Income from hiring out bullocks	5000	1667	3333
7. Income from selling sheep, goat, chicken, meat, eggs	16551	13981	15266
8. Selling of water for agriculture purpose	3333	0	1667
11. Rental income (tractor, auto, sprayer, & truck etc.)	23167	16667	44917
12. Rent from land, building and machinery etc.	12433	0	6217
13. Caste occupations (specify)	6000	0	3000
14. Business (specify)	20833	10000	15417
15. Regular salaried jobs (Govt./private)	25500	0	12750
16. Out migration	14222	11833	13028
17. Remittances	0	1000	500
18. Interest on savings and from money lending	2217	9000	5608
19. Cash and kind gifts including dowry received	6667	0	3333
20. Pension from employer	3200	44000	23600
21. Government welfare/development Programs	4800	4000	4400
22. Others 1	5000	0	2500
23. Others 2	4500	0	2250
<b>TOTAL</b>	<b>247144</b>	<b>221705</b>	<b>234424</b>

### **Cropping pattern of groundnut growers in Raichur district:**

In Raichur district, the groundnut is grown in both Kharif and Rabi seasons under rainfed and irrigated conditions as both sole as well as inter crop (Table-38). In Kharif season, the area under irrigated groundnut grown as a sole crop was 71, 28075 and 50 acres respectively in adopted, control and pooled conditions. Similarly the area under irrigated groundnut grown as inter crop was 16.50, 6.50 and 12 acres respectively in adopted, control and pooled conditions. The area under rainfed groundnut grown as a sole crop was quite less with 12, 4.5 and 8 acres respectively in adopted, control and pooled conditions. Similarly the area under rainfed groundnut grown as a inter crop was 9, 5 and 7 acres respectively in adopted, control and pooled conditions.

In Rabi season, the area under groundnut was much higher than Kharif season. The area under irrigated groundnut which was grown as a sole crop was 277.13,

124.25 and 201 acres respectively in adopted, control and pooled conditions. Similarly the area under irrigated groundnut grown as a inter crop was 2, 8 and 5 acres respectively in adopted, control and pooled conditions. In case of rainfed situations, the area under groundnut grown as a sole crop was only 2, 0 and 1 acre respectively in adopted, control and pooled conditions.

There was a wide variation in yield obtained under rainfed and irrigated conditions. The yield obtained for both sole crop and inter crop were pooled and presented here under. In case of Kharif groundnut, the average yield of irrigated groundnut in adopted, control and pooled conditions was 420, 495 and 458 kgs per acre respectively. Similarly, in rainfed situation, the average yield obtained in adopted, control and pooled conditions was 305, 279 and 292 kgs per acre respectively. The yield obtained under Rabi groundnut was much higher than Kharif groundnut. In Rabi season, the average yield obtained under irrigated conditions in adopted, control and pooled conditions was 492, 432 and 463 kgs per acre respectively. Since only a smaller proportion of groundnut was grown under rainfed condition, the average yield obtained in adopted, control and pooled conditions was 450, nil and 250 kgs per acre respectively.

In Kharif season, the gross returns obtained for irrigated groundnut grown as a sole crop in adopted, control and pooled conditions was Rs. 9027, Rs. 8619 and Rs. 8823 per acre respectively. Similarly the gross returns obtained for irrigated groundnut grown as a inter crop in adopted, control and pooled conditions was Rs. 7835, Rs. 9667 and Rs. 8751 respectively. In case of rainfed groundnut, the gross returns obtained for sole crop was quite less with Rs. 5947, Rs. 5522 and Rs. 5735 per acre respectively in adopted, control and pooled conditions. Similarly the gross returns obtained for groundnut grown as an inter crop in adopted, control and pooled conditions was Rs. 6703, Rs. 4320 and Rs. 5512 per acre respectively. In rabi/summer season, the gross returns obtained were much ahead of the Kharif groundnut in both rainfed and irrigated conditions. Under irrigated conditions, the gross returns obtained for sole crop groundnut in adopted, control and pooled conditions was Rs. 12114, Rs. 10259 and Rs. 11187 per acre respectively. Similarly for irrigated groundnut grown as an inter crop the gross returns obtained was Rs. 11300, Rs. 9314 and Rs. 10307 per acre respectively for adopted, control and pooled conditions. In case of rainfed conditions, the groundnut was grown purely as sole

crop. The gross returns obtained in adopted, control and pooled conditions was Rs. 11100, nil and Rs. 5550 per acre respectively.

### **Annual consumption expenditure of groundnut growers in Raichur district:**

The groundnut growers are spending an average of Rs. 38473 per year per household on consumption expenditure (Table-39). Out of the total, major proportion of the expenditure was spent on consumption of sorghum, rice, milk products, pearl millet and cooking oil with a share of 21, 18, 13, 10 and 8 per cent respectively, while the remaining 30 per cent of the consumption expenditure was spent on consumption of Pigeonpea, wheat, groundnut and other pulses.

In Raichur district, the groundnut growers were spending on average of Rs. 25117 per household per year on non-food expenditure. Out of the total, the major share was spent on health expenditure with 21 per cent followed by clothing, educational purpose, performing religious ceremonies, entertainment, consumption of alcohol, taxes/phone bills, smoking and cosmetics with 20, 19, 16, 5, 5, 5, 5 and 4 per cent respectively. The average market price of those commodities which were consumed by the groundnut growers was taken in to consideration in arriving at the consumption expenditure.

**Table 1:- Socio-economic profile of groundnut growers in Raichur district**

Sl. No.	Particulars		A	% total	C	% total	Overall	% total
1	Land ownership	Male	90	100	45	100	135	100
		Female	0		0		0	0
2	Age (years)		42		36		39	
3	Schooling(years)		9		3		6	
4	Membership to local bodies		10	11	3	7	13	9.6

**Table 2:- Occupation-wise classification of groundnut growers of Raichur district**

Main	Particulars	A	% total	C	% total	Overall	% total
Main	Agriculture	86	96	42	93	64	95
	Business	3	3	2	4	2.5	4
	Service/Employment	1	1	1	2	1	1
	<b>Grand Total</b>	<b>90</b>	<b>100</b>	<b>45</b>	<b>100</b>	<b>67.5</b>	<b>100</b>
Secondary	Agriculture	13	14	10	22	11.5	17
	Business	16	18	2	4	9	13
	Service/Employment	1	1	0	0	0.5	1
	None	60	67	33	73	46.5	69
	<b>Grand Total</b>	<b>90</b>	<b>100</b>	<b>45</b>	<b>100</b>	<b>67.5</b>	<b>100</b>

**Table 3:- Land ownership pattern and operational farm size in the study area  
(Average/Farm)**

Farm size	Land pattern	Raichur District			
		Land status	Adopted	Control	Overall
Overall	Operated land	Dry land	4	3	3.5
		Irrigated land	5	4	4.5
		Permanent fallow	0	2	1
		<b>Total land</b>	<b>9</b>	<b>9</b>	<b>9</b>
	Leased/shared-in	Dry land	0	0	0
		Irrigated land	7	3	5
	<b>Grand total</b>	<b>16</b>	<b>12</b>	<b>14</b>	

Sl. No.	Farm implement/asset	Raichur District								
		Adopted			Control			Overall		
		No.	%	Value	No.	%	Value	No.	%	Value
1	Tractor with implements									
2	Harvest /Thresher /Groundnut sheller									
3	Sprinkler sets/Groundnut sheller									
4	Trucks/autos/4 wheelers									
5	Electric pumpset (1)									
6	Electric pumpset (2)									
7	Diesel pump sets									
8	Bullock cart									
9	Manual/ power sprayers									
10	Others (pipeline)									
	<b>Overall</b>									

**Table 4:- Overall average distribution of ownership of farm implements by sample farmers (Percentage farmers)**

Sl. No.	Farm Implement/asset	Raichur District					
		Adopted			Control		
		No.	%	Value	No.	%	Value
1	Tractor with implements	1	1	150000	1	4	165000
2	Harvest /Thresher /Groundnut sheller	1	0		1	0	
3	Sprinkler sets/Groundnut sheller	1	3	12000	2	0	
4	Trucks/autos/4 wheelers	0	4		1	0	
5	Electric pumpset (1)	1	120	19014	1	89	17033
6	Electric pumpset (2)	0	12		0	4	25000
7	Diesel pump sets	1	0		1	4	14500
8	Bullock cart	0	53	11570	0	47	10034
9	Manual/ power sprayers	1	58	693	0	49	493
10	Others (pipeline)	1	2	45250	0	0	
	<b>Overall</b>			<b>22335</b>			<b>58522</b>



**Table 5:- Overall distribution of sample farmers according to ownership of household durable assets (Percentage farmers)**

Durable assets	Raichur District								
	Adopted			Control			Overall		
	No	%	Value	No	%	Value	No	%	Value
Residential house and plots	90	100	90285	45	100	44982	135	100	67634
Farm house	16	18	11604	11	24	4153	27	20	7879
Two wheelers/bicycles	45	50	6757	22	49	6703	67	50	6730
Television sets	34	38	3705	6	13	2125	40	30	2915
Radio/tape recorder	31	34	1313	14	31	1718	45	33	1516
Air coolers/fans	50	56	716	18	40	438	68	50	577
<b>Grand Total</b>			<b>114380</b>			<b>60118</b>			<b>87251</b>

**Table-6:- Financial assets and liabilities as on July 2007 – Average outstanding loan amount (Rs/household)**

Sources	Adopted			Control			Overall		
	Amount	% total	Int. rate	Amount	% total	Int. rate	Amount	% total	Int. rate
<b>A. LOANS:</b>									
Co-operatives	20154	14	11	66667	47	12	43410	31	11.5
Nationalized banks	34805	25	14	30833	22	14	32819	23	14
Self Help Groups	18167	13	24	0	0	0	9083	6	24
RRBs	23688	17	12	23261	16	11	23474	17	11.5
	<b>96813</b>	<b>69</b>		<b>120761</b>	<b>84</b>		<b>108787</b>	<b>77</b>	
Friends & relatives	24944	18	24	15083	11	24	20014	14	24
Moneylenders	17722	13	18	7500	5	20	12611	9	19
	<b>42667</b>	<b>31</b>		<b>22583</b>	<b>16</b>		<b>32625</b>	<b>23</b>	
	<b>139480</b>	<b>100</b>		<b>143344</b>	<b>100</b>		<b>141412</b>	<b>100</b>	
<b>B. LENDING:</b>									
Friends/relatives	11167	87		26667	100		18917	96	
Others	1600	13		0	0		800	4	
	<b>12767</b>	<b>100</b>		<b>26667</b>	<b>100</b>		<b>19717</b>	<b>100</b>	
<b>C. SAVINGS:</b>									
Banks	18633	39	6	0	0	0	9317	32	6
LIC/PLI policies	11000	23	7.5	9278	92	8	10139	35	7.75
Share market	3333	7		0	0		1667	6	
Co-operatives	0	0		0	0		0	0	
Chit funds	0	0		0	0		0	0	
Self Help Groups	8889	19	21	833	8	24	4861	17	22.50
Mahila mandal	2400	5	24	0	0	0	1200	4	24
Post office	0	0		0	0		0	0	
Others	3110	7		0	0		1555	5	
	<b>47365</b>	<b>100</b>		<b>10111</b>	<b>100</b>		<b>28738</b>	<b>100</b>	

**Table-7:- Major sources of household net income per year (Rs/Household/Year)**

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19	Government welfare/development Programs	4800	4000	4400
20	Others 1	5000	0	2500
21	Others 2	4500	0	2250
	<b>TOTAL</b>	<b>247144</b>	<b>221705</b>	<b>234424</b>

**Table-8: Cropping pattern**

Season	Crop	Sole/ Inter crop	Variety	Rainfed/ Irrigated	Raichur district											
					Adopted				Control				Overall			
					CA (acres)	MP (Kg/ac)	BP (q/ac)	GR (Rs/ac)	CA (acres)	MP (Kg/ac)	BP (q/ac)	GR (Rs/ac)	CA (acres)	MP (Kg/ac)	BP (q/ac)	GR (Rs/ac)
<b>Kharif</b>	G.nut	Sole	TMV-2	Irrigated	71	451	9	9027	28.75	420	9.5	8619	50	436	9	8823
		Inter	TMV-2	Irrigated	16.5	388	8	7835	6.5	571	6	9667	12	480	7	8751
		Sole	TMV-2	Rainfed	12	277	9.75	5947	4.5	333	8	5522	8	305	9	5735
		Inter	TMV-2	Rainfed	9	333	6.4	6703	5	225	6	4320	7	279	6	5512
<b>Rabi</b>	G.nut	Sole	TMV-2	Irrigated	277.13	534	9	12114	124.25	455	6.4	10259	201	495	8	11187
		Inter	TMV-2	Irrigated	2	450	4	11300	8	409	5	9314	5	430	5	10307
		Sole	TMV-2	Rainfed	2	450	7.5	11100	0	0	0	0	1	225	4	5550
		Inter	TMV-2	Rainfed	0	0	0	0	0	0	0	0	0	0	0	0
<b>Summer</b>																
<b>Overall</b>	G.nut	Sole	TMV-2	Irrigated	<b>348</b>	<b>985</b>	<b>18</b>	<b>21141</b>	<b>153</b>	<b>875</b>	<b>16</b>	<b>18878</b>	<b>251</b>	<b>930</b>	<b>17</b>	<b>20010</b>
		Inter	TMV-2	Irrigated	<b>19</b>	<b>838</b>	<b>12</b>	<b>19135</b>	<b>15</b>	<b>980</b>	<b>11</b>	<b>18981</b>	<b>17</b>	<b>909</b>	<b>12</b>	<b>19058</b>
		Sole	TMV-2	Rainfed	<b>14</b>	<b>727</b>	<b>17</b>	<b>17047</b>	<b>5</b>	<b>333</b>	<b>8</b>	<b>5522</b>	<b>9</b>	<b>530</b>	<b>13</b>	<b>11285</b>
		Inter	TMV-2	Rainfed	<b>9</b>	<b>333</b>	<b>6</b>	<b>6703</b>	<b>5</b>	<b>225</b>	<b>6</b>	<b>4320</b>	<b>7</b>	<b>279</b>	<b>6</b>	<b>5512</b>

Note: Similarly, do for District-2 and Pooled for districts, if applicable.

CA - Cropped Area  
MP - Main Product  
BP - By Product  
GR - Gross Returns



All spices	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Processed food items & hotel expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other food items	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			<b>42787</b>	<b>100</b>				<b>34159</b>	<b>100</b>				<b>38473</b>	<b>100</b>
<b>2. Non-food expenditure:</b>														
Health expenditure			4133	17				6308	24				5221	21
Entertainment/ travel/ vehicle			1036	4				1273	5				1154	5
Education/stationery			4272	18				5373	20				4822	19
Clothing/shoes			5078	21				4989	19				5033	20
Ceremonies			3649	15				4554	17				4101	16
Toddy & alcohol			1483	6				1174	4				1328	5
Cosmetics (hair oil, soaps etc)			1235	5				836	3				1036	4
Taxes/ maintenance/ phone bill			1186	5				1153	4				1170	5
Pan, beedi, cigarettes			1425	6				827	3				1126	5
Others			217	1				33	0				125	1
<b>TOTAL</b>			<b>23714</b>	<b>100</b>				<b>26520</b>	<b>100</b>				<b>25117</b>	<b>100</b>

Note: Similarly, do for District-2 and Pooled for districts, if applicable.