International Journal of Farm Sciences **8(2):** 62-69, 2018; doi: 10.5958/2250-0499.2018.00045.9

Land use pattern and changes in cropping pattern in Coimbatore district, Tamil Nadu

S KALAIVANI and S LAKSHMANAMOORTHI*

Agricultural College and Research Institute (TNAU)
Eachangkottai, Thanjavur 614902 Tamil Nadu, India
***Department of Agricultural Extension and Rural Sociology**
Centre for Agricultural and Rural Development Studies
Tamil Nadu Agricultural University, Coimbatore 641003 Tamil Nadu, India
Email for correspondence: velavani@hotmail.com

 Received: 17.8.2017/Accepted: 8.11.2017

ABSTRACT

A study was conducted to know about the land use pattern and changes in cropping pattern in Coimbatore district, Tamil Nadu over a period of ten years from 2002-03 to 2011-12. The results provided information about the distribution of land under different categories of land use classification and the actual land put to use for agricultural purpose, the change in cropping pattern and the reasons for changes. It was found that the net area sown had declined from 2005-06 to 2011-12 gradually in the district. The cropping pattern had changed due to changes in rainfall pattern over the years, depletion of groundwater, scarcity of labour and hike in wages, farmers facing very low profit in agriculture due to no fixed minimum support price, uncertainty in weather and climate, fragmentation of land etc.

Keywords: Land use pattern; cropping pattern; timeline analysis

INTRODUCTION

Land use pattern is a process wherein each strip of land in an area has been assigned to its proper class in a system of classes. The exploration of land utilization pattern would be able to provide information about the distribution of land under different categories of land use classification and the actual land put to use for agricultural purpose. The season-wise changes in the cropping pattern may help to know the stability and growth of agriculture, shift in cropping pattern, the area under different crops (remunerative or non remunerative crops respectively) etc. Hence this study was undertaken to explore the agricultural land use pattern, investigate the changes in cropping pattern and discover the reasons for changes in cropping pattern in Coimbatore district of Tamil Naud over a period of ten years.

Padmanaban and Chinnadurai (1994) studied the land use pattern in Tamil Nadu for the period 1960-61 to 1988-89. They found that the total cropped area and the area sown more than once declined from 7.32 to 6.44 Mha and 1.32 to 0.90 Mha respectively. Also the total cropped area had been consistently declining and same was the case with the area under current fallow, other fallow and land under non-agricultural use.

Rajesh and Ramasamy (1998) studied the trends in underutilization of land in the state and identified the determinants for the same. The results indicated that there was a great scope for further extension of area of land under cultivation as there existed vast area of land under current fallow, other fallow and cultivable wastes which could be brought under cultivation. The resource crunch faced by the farmers seemed to have aggravated after the advent of new technology due to the capital-intensive nature of modern inputs. This also led to the neglect of other lands.

Kanwar (1972) stated that cropping pattern meant both time and space sequence of crops. It included the identification of the most efficient crops

of a region with homogenous soil and climatic conditions and rotations in which the crops were fit. Thus the best suited cropping scheme and cropping intensity were the cropping pattern in an optimal sense.

Singh (1972) described cropping pattern as the cropping scheme with a regular rotation of different crops in which the crops follow a definite order and are of definite appearance on the land. This may consist of one crop grown year after year or a number of crops grown in the same area.

Krishnakumari and Swaminathan (1992) examined the changes in cropping pattern, crop combination, crop area and diversification of crop enterprises in Tamil Nadu. The results revealed that the changes were mainly due to changes in agricultural input use, high yielding varieties, fertilizers, pesticides, irrigation intensity and tractor use.

Vaidyanathan (1992) noted that a change in cropping pattern implies a change in the proportion of area under different crops. The cropping pattern in an area depends mostly on agro-climatic, technical and institutional factors.

Subhashini (2001) assessed the shift in cropping pattern in Tamil Nadu state and south Arcot district with special reference to oilseed crops. An analysis of three year average of area under major crops in four categories viz paddy, oilseeds, other food crops and non-food crops before and after removing open general license was carried out. The results indicated that in Tamil Nadu except paddy the other three categories experienced a reduction in area by 16.69, 10.85 and 2.76 per cent respectively. In the south Arcot district there was a huge fall in the share of groundnut area ie by 36.2 per cent. Other non-food crops also experienced a fall in area by 7.21 per cent.

Meenakshi and Gayathri (2006) confirmed that change in the interaction between change in mean area and yield variance was an important contributor to the cereals production instability in Tamil Nadu. It also suggested that efforts should be made to stabilize cereals production in the state.

Subramanian and Selvaraj (2016) found that a little above two-third of the respondents (69.17%) were found at medium level shift in cropping pattern followed by 25.83 and 5.00 per cent at low and high levels respectively.

METHODOLOGY

Based on the percentage share of net cultivated area to the total geographical area and discussion with officials of state department of agriculture of Coimbatore district, Tamil Nadu three Taluks viz Annur, Mettupalayam and Pollachi and villages Kanjapalli, Kemmarampalayam and Puravipalayam from Annur, Mettupalayam and Pollachi Taluks respectively were selected.

A total of 30 farmers were taken from each selected village by employing simple random sampling method and thus 90 respondents were selected.

The secondary data on land use pattern and cropping pattern for a period of ten years from 2002-03 to 2011-12 were collected from records available with district statistical office and Taluk office.

The primary data were collected by using timeline, one of the participatory rural appraisal (PRA) tools.

Averages and percentages were calculated for making simple comparison and to examine the general characteristics on land use pattern, cropping pattern, changes in land use pattern and changes in cropping pattern over a period of ten years.

The growth in the area of different land use categories and cropping pattern was estimated using the exponential growth function of the form as under:

$$Yt = ab^{t}u_t \quad \ldots\ldots (1)$$

where Yt= Dependent variable for which growth rate was estimated (area), a= Intercept, b= Regression coefficient, t= Years which take values 1, 2 .....n, ut= Disturbance term for the year t

The equation can be transformed into log linear form as follows:

$$\ln y = \ln a + t \ln b + \ln u_t \ldots t$$

This equation was estimated using ordinary least square (OLS) technique. The compound growth rate (CGR) in percentage was then computed from the relationship:

$$CGR = (\text{Antilog of } \ln b - 1) \times 100$$

The pattern of growth rate over the years was identified using the 'b' coefficient. If the coefficient is positive then the growth of the estimated parameters over the years is accelerating. If it is negative it implies that the growth is decelerating over the years.

RESULTS and DISCUSSION

Land use pattern in Coimbatore district

The percentage share of land utilization pattern to total geographical area from 2002-03 to 2011-12 was estimated and has been furnished in Table 1. It can be inferred that the per cent share of net area sown took major share and showed declining trend from 2005-06 to 2011-12. The per cent share of the area under forest (from 21.23 to 23.69%), land put to non-agricultural uses (from 12.92 to 15.89%) and fallow land other than current fallow land (from 3.38 to 13.64%) was increased.

Changes in cropping pattern in Coimbatore district over a period of ten years

The data presented in Table 2 show that in Kanjapalli village of Annur Taluk the per cent share of net area sown had declined from 64.20 to 41.29 per cent, in Kemmarapalayam village of Mettupalayam Taluk increased from 38.12 to 40.13 per cent and in Puravipalayam village of Pollachi Taluk increased from 72.25 to 83.43 per cent in 2002-03 to 2011-12.

Cropping pattern

Data given in Table 3 show that in Kanjapalli village of Annur Taluk the per cent area under maize, coconut, turmeric, cotton and banana; in Kemmarapalayam village of Mettupalayam Taluk under sorghum, coconut, banana, mango, curry leaf and mullai (Jasmine) and in Puravipalayam village of Pollachi north Taluk under maize, cowpea, coconut, cotton and mango had increased from 2002-03 to 2011-12.

Reasons for changes in cropping pattern in Coimbatore district over a period of ten years

To find out the changes in cropping pattern from 2002-03 to 2011-12 timeline analysis was conducted in the selected villages and the results are furnished in Table 4. The results revealed that the main reasons for changes in cropping pattern in the district were changes in rainfall pattern over the years, depletion of ground water, scarcity of labour, hike in wages, farmers getting very low profit in agriculture, uncertainty in weather, fragmentation of land etc.

CONCLUSION

It could be concluded from the present study that there was a moderate decrease in the net area sown in Coimbatore district from 2002-03 to 2011-12 and land put to non-agricultural purpose had increased. The cropping pattern had changed in the district due to the changes in the land use pattern. The reasons were insufficient irrigation water, insufficient rainfall, labour scarcity, drought, animal problems and very low profit in agriculture.

Thus proper agricultural policies should be developed to bring more area under cultivation. Government should give more emphasis to grow more perennial tree crops and precise policies should be formulated to convert the agricultural land for construction of roads, buildings etc. The present study strongly recommends the development of new agricultural extension strategy to congregate the changing needs of farmers.

REFERENCES

Kanwar JS 1972. Cropping pattern: scope and concept. Proceedings, Symposium on Cropping Pattern in India, Indian Council of Agricultural Research, New Delhi, India, pp 11-38.

Krishnakumari A and Swaminathan E 1992. Changing farming scene in Nellore district, India. Indian Geographical Journal **65(2):** 123-129.

Meenakshi R and Gayathri J 2006. Instability in cereals production: an analysis of Tamil Nadu. Agricultural Situation in India **63(7):** 431-434.

Padmanaban NL and Chinnadurai M 1994. The performance of agriculture in Tamil Nadu. Agricultural Situation in India **49(4):** 277-286.

Rajesh R and Ramasamy C 1998. Extent and determinants of underutilized lands in Tamil Nadu. Agricultural Situation in India **55(4):** 215-220.

Singh A 1972. Conceptual and experimental basis of cropping pattern. Proceedings, Symposium on Cropping Pattern in India, Indian council of Agricultural Research, New Delhi, India, pp 271-274.

Subhashini S 2001. Import liberalization and consequent shift in cropping pattern- a case study of groundnut in Tamil Nadu. MSc (Agric) thesis, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India.

Subramanian K and Selvaraj T 2016. Impact of MGNREGA on agriculture: impact of Mahatma Gandhi National

Table 1. Per cent share of land use pattern to total geographical area (ha) in Coimbatore district

Parameter	Area (ha) during different years									
	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
FOR	158606.00 (21.23)	158558.00 (21.22)	158616.00 (21.23)	158801.18 (21.26)	158801.18 (21.26)	158801.18 (21.26)	111871.17 (23.69)	111871.17 (23.69)	111871.17 (23.69)	111871.17 (23.69)
BAUL	10185.00 (1.36)	10155.00 (1.36)	10144.00 (1.36)	7463.54 (1.00)	7475.32 (1.00)	6639.39 (0.89)	4786.77 (1.01)	4786.77 (1.01)	4792.57 (1.01)	4792.80 (1.01)
LNAU	96528.00 (12.92)	102416.00 (13.71)	102851.00 (13.77)	106025.25 (14.19)	108063.71 (14.46)	109863.58 (14.71)	74201.51 (15.71)	74551.45 (15.78)	74794.48 (15.84)	75041.38 (15.89)
CW	3295.00 (0.44)	2883.00 (0.39)	2835.00 (0.38)	13996.88 (1.87)	13464.40 (1.80)	13030.62 (1.74)	9061.71 (1.92)	8775.38 (1.86)	8731.26 (1.85)	8606.30 (1.82)
PP	1137.00 (0.15)	1137.00 (0.15)	1137.00 (0.15)	85.03 (0.01)	85.03 (0.01)	85.03 (0.01)	76.96 (0.02)	76.96 (0.02)	76.96 (0.02)	76.96 (0.02)
MTC	5044.00 (0.68)	4865.00 (0.65)	4650.00 (0.62)	3383.10 (0.45)	3412.55 (0.46)	3436.49 (0.46)	3168.66 (0.67)	3188.08 (0.67)	3182.88 (0.67)	3309.23 (0.70)
CF	145246.00 (19.44)	26902.00 (3.60)	23060.00 (3.09)	84526.14 (11.31)	89325.69 (11.96)	96628.49 (12.93)	56218.72 (11.90)	55791.78 (11.81)	54366.23 (11.51)	28110.59 (5.95)
FOTCF	25286.00 (3.38)	121175.00 (16.22)	119376.00 (15.98)	57840.60 (7.74)	53551.63 (7.17)	51242.92 (6.86)	30630.44 (6.49)	33095.19 (7.01)	41315.52 (8.75)	64436.39 (13.64)
NAS	301752.00 (40.39)	318988.00 (42.70)	324410.00 (43.42)	314957.63 (42.16)	312899.54 (41.88)	307351.34 (41.14)	182306.04 (38.60)	180185.21 (38.15)	173190.92 (36.67)	176077.17 (37.28)
TGA	747079 (100.00)	747079 (100.00)	747079 (100.00)	747079 (100.00)	747079 (100.00)	747079 (100.00)	472321.98 (100.00)	472321.98 (100.00)	472321.98 (100.00)	472321.98 (100.00)

Figures in parentheses indicate percentage to total geographical area (TGA)

FOR= Forest, BAUL= Barren and uncultivable land, LNAU= Land under non-agricultural uses, CW= Cultivable waste, PP= Permanent pastures and other grazing lands, MTC= Miscellaneous tree crops and groves not included in the net area sown, CF= Current fallow, FOTCF= Fallow land other than current fallow, NAS= Net area sown

Source: District Statistical Office, Coimbatore, Tamil Nadu

Table 2. Per cent share of land utilization pattern (LUP) to total geographical area

Parameter	Area (ha) in different years									
	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12
Kanjapalli village of Annur Taluk (Total geographical area: 1462.63 ha)										
LPNAU	188.64	192.54	191.75	199.45	191.75	218.1	201.58	224.22	227.7	229.89
	(12.90)	(13.16)	(13.11)	(13.64)	(13.11)	(14.91)	(13.78)	(15.33)	(15.57)	(15.72)
CF	334.95	370.09	400.33	304.97	400.33	509.32	552.66	444.43	584.4	628.8
	(22.90)	(25.30)	(27.37)	(20.85)	(27.37)	(34.82)	(37.79)	(30.39)	(39.96)	(42.99)
NAS	939.04	900	870.55	958.21	870.55	735.21	708.39	793.98	650.53	603.935
	(64.20)	(61.53)	(59.52)	(65.51)	(59.52)	(50.27)	(48.43)	(54.28)	(44.48)	(41.29)
Kemmarapalayam village of Mettupalayam Taluk (Total geographical area: 2789.95 ha)										
BAUL	388.37	322.37	83.765	83.765	83.765	83.765	83.765	83.765	83.765	83.765
	(13.92)	(11.55)	(3.00)	(3.00)	(3.00)	(3.00)	(3.00)	(3.00)	(3.00)	(3.00)
LPNAU	40.89	62.16	348.45	348.45	348.45	348.45	348.45	400.75	400.75	400.75
	(1.47)	(2.23)	(12.49)	(12.49)	(12.49)	(12.49)	(12.49)	(14.36)	(14.36)	(14.36)
CW	0	44.89	330.805	330.805	330.805	330.805	330.805	330.805	330.805	330.805
	(0.00)	(1.61)	(11.86)	(11.86)	(11.86)	(11.86)	(11.86)	(11.86)	(11.86)	(11.86)
CF	1297.26	1290	806.32	1026.77	831.03	578.57	578.57	606.93	943.67	854.925
	(46.50)	(46.24)	(28.90)	(36.80)	(29.79)	(20.74)	(20.74)	(21.75)	(33.82)	(30.64)
FOTCF	0	0	11.55	0	0	0	0	0	0	0
	(0.00)	(0.00)	(0.41)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
NAS	1063.43	1070.53	1209.06	1000.16	1195.9	1448.36	1448.36	1367.7	1030.96	1119.71
	(38.12)	(38.37)	(43.34)	(35.85)	(42.86)	(51.91)	(51.91)	(49.02)	(36.95)	(40.13)
Puravipalayam village of north Pollachi Taluk (Total geographical area: 2932.99 ha)										
BAUL	22.86	22.86	22.86	22.86	22.86	23.00	0	0	0	0
	(0.78)	(0.78)	(0.78)	(0.78)	(0.78)	(0.78)	(0.00)	(0.00)	(0.00)	(0.00)
LPNAU	205.99	205.99	205.99	210.715	215.44	206.00	332.96	327.37	266.65	268.03
	(7.02)	(7.02)	(7.02)	(7.18)	(7.35)	(7.02)	(11.35)	(11.16)	(9.09)	(9.14)
MTC	0.19	0.19	0.19	0.19	0.19	0.19	0	0	0	0
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)
CF	527.32	302.24	514.85	531.05	547.29	515.00	223.12	169.36	112.62	217.86
	(17.98)	(10.30)	(17.55)	(18.11)	(18.66)	(17.56)	(7.61)	(5.77)	(3.84)	(7.43)
FOTCF	57.64	57.64	58.64	54.54	50.4	57.90	0	0	0	0
	(1.97)	(1.97)	(2.00)	(1.86)	(1.72)	(1.97)	(0.00)	(0.00)	(0.00)	(0.00)
NAS	2118.99	2344.07	2130.46	2113.63	2096.81	2130.90	2376.91	2436.26	2553.72	2447.10
	(72.25)	(79.92)	(72.64)	(72.06)	(71.49)	(72.65)	(81.04)	(83.06)	(87.07)	(83.43)

Figures in parentheses indicate percentage to total geographical area (TGA)

LPNAU= Land put to non-agricultural uses, CF= Current fallow, NAS= Net area sown, BAUL= Barren and uncultivable land, CW= Cultivable waste, FOTCF= Fallow land other than current fallow, MTC= Miscellaneous tree crops and groves not included in the net area sown

Source: Chitta Adangal, O/o Tahsildar, Annur, Mettupalayam and Pollachi Taluks, Coimbatore, Tamil Nadu

Table 3. Area under major crops

Crop	Area (ha) in different years									
	2002-03	2003-04	2004-05	2005-06	2006- 07	2007-08	2008-09	2009-10	2010-11	2011-12
Kanjapalli village of Annur Taluk										
Maize	16.15	8.9	11.2	16	27.45	16	32	9	48	44.8
	(2.14)	(0.65)	(1.08)	(1.64)	(3.82)	(2.19)	(4.46)	(1.32)	(8.54)	(7.15)
Sorghum	489.05	411.92	452	579	458	380	471.3	406	303	370
	(64.68)	(30.08)	(43.76)	(59.17)	(63.77)	(51.99)	(65.73)	(59.59)	(53.90)	(59.05)
Green gram	73.9	51.3	20.55	12.55	6.8	20	33.95	14	13	0
	(9.77)	(3.75)	(1.99)	(1.28)	(0.95)	(2.74)	(4.74)	(2.05)	(2.31)	(0.00)
Coconut	34.64	31.68	47.71	49.91	51.1	53.66	55.4	55.25	54.6	52.4
	(4.58)	(2.31)	(4.62)	(5.10)	(7.11)	(7.34)	(7.73)	(8.11)	(9.71)	(8.36)
Turmeric	13.4	13.75	17.55	17.55	15.3	17.4	11.9	24.1	39.5	31.2
	(1.77)	(1.00)	(1.70)	(1.79)	(2.13)	(2.38)	(1.66)	(3.54)	(7.03)	(4.98)
Sugarcane	51.55	34.65	29.6	29.6	26.6	35.2	38	26.3	24.6	20.4
	(6.82)	(2.53)	(2.87)	(3.03)	(3.70)	(4.82)	(5.30)	(3.86)	(4.38)	(3.26)
Cotton	0	745.6	375.84	175.84	41.5	43	16.2	16.2	0.33	34.8
	(0.00)	(54.45)	(36.39)	(17.97)	(5.78)	(5.88)	(2.26)	(2.38)	(0.06)	(5.55)
Banana	22.75	39.29	42.15	55.15	78.3	97	23.5	81	54.4	55.5
	(3.01)	(2.87)	(4.08)	(5.64)	(10.90)	(13.27)	(3.28)	(11.89)	(9.68)	(8.86)
Kemmarapalayam village of Mettupalayam Taluk										
Sorghum	133.96	341.31	207.a36	331.33	529.5	400.62	193.31	219.5	168.53	150.39
	(13.36)	(29.13)	(18.32)	(29.07)	(44.07)	(34.14)	(23.60)	(23.58)	(14.52)	(15.88)
Horse gram	33.9	55.7	23	20.71	27.27	39.39	17.9	5.92	48.9	7.63
	(3.38)	(4.75)	(2.03)	(1.82)	(2.27)	(3.36)	(2.19)	(0.64)	(4.21)	(0.81)
Lablab	463.97	2.78	164.34	159.85	1.26	1.33	63.37	102.81	198.42	15.83
	(46.28)	(0.24)	(14.52)	(14.02)	(0.10)	(0.11)	(7.74)	(11.04)	(17.09)	(1.67)
Coconut	141.87	159.99	170.75	170.55	178.45	187.56	218.56	234.02	233.65	244.17
	(14.15)	(13.66)	(15.08)	(14.96)	(14.85)	(15.98)	(26.68)	(25.14)	(20.13)	(25.77)
Sugarcane	19.8	6.9	49.76	54.73	56.69	60.69	7	6.015	7.39	5.62
	(1.98)	(0.59)	(4.40)	(4.80)	(4.72)	(5.17)	(0.85)	(0.65)	(0.64)	(0.59)
Banana	104.47	82.28	198.04	224.13	276.32	245.81	155.19	162.11	240.71	319.02
	(10.42)	(7.02)	(17.49)	(19.66)	(23.00)	(20.95)	(18.95)	(17.41)	(20.73)	(33.68)
Curry Leaf	27.37	30.87	33.62	33.12	32.99	33.61	25.95	29.09	31.63	30.61
	(2.73)	(2.64)	(2.97)	(2.91)	(2.75)	(2.86)	(3.17)	(3.12)	(2.72)	(3.23)
Mango	2.31	6.37	6.4	24.8	29.95	30.41	32.75	32.78	33.78	33.61
	(0.23)	(0.54)	(0.57)	(2.18)	(2.49)	(2.59)	(4.00)	(3.52)	(2.91)	(3.55)
Puravipalayam village of Pollachi north Taluk										
Maize	0	15	0	1	0	46.48	77.4	64.32	0	22.02
	(0.00)	(0.69)	(0.00)	(0.06)	(0.00)	(4.81)	(3.37)	(2.96)	(0.00)	(0.9)

Sorghum	294.76	310.09	260.63	357.01	250	232.52	382.67	299.655	216.64	307.8
	(14.3)	(14.2)	(12.2)	(19.7)	(16.8)	(24.1)	(16.6)	(13.8)	(11.9)	(12.6)
Cowpea	0	0	0	0	0	0	0	0	0	3.41
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.14)
Coconut	764.65	758.8	739.55	856.23	758	0	1095.96	1110.08	1124.2	1134
	(37.07)	(34.66)	(34.59)	(47.21)	(50.99)	(0.00)	(47.66)	(51.02)	(61.85)	(46.52)
Groundnut	401.8	494.52	600.49	172.25	432.02	469.42	418.58	339.805	261.03	455.28
	(19.48)	(22.59)	(28.09)	(9.50)	(29.06)	(48.59)	(18.20)	(15.62)	(14.36)	(18.68)
Cotton	16.65	453.44	394.52	297.39	0	31.47	0	28.37	28.37	75.47
	(0.81)	(20.71)	(18.45)	(16.40)	(0.00)	(3.26)	(0.00)	(1.30)	(1.56)	(3.10)
Tomato	276.76	72.29	4	0	0	0	118.75	110.98	103.21	111.67
	(13.42)	(3.30)	(0.19)	(0.00)	(0.00)	(0.00)	(5.16)	(5.10)	(5.68)	(4.58)
Mango	9.31	15.288	13.07	14.78	0	0	73.46	74.25	0	77.1
	(0.45)	(0.70)	(0.61)	(0.81)	(0.00)	(0.00)	(3.19)	(3.41)	(0.00)	(3.16)

Figures in parentheses indicate percentage of area under each crop to the total cropped area

Source: Chitta Adangal, O/o Tahsildar, Annur, Mettupalayam and Pollachi Taluks, Coimbator, Tamil Nadu

Table 4. Year-wise reasons for changes in cropping pattern

Year	Reason		
	Kanjapalli village	Kemmarapalayam village	Puravipalayam village
2002-2003	Reduced banana growth	Increase in number of vegetable farms	Tried to cultivate vegetables
2003-2004	Increase in number of cotton farmers	Increase in number of vegetable farms	Tried to cultivate vegetables
2004-2005	Increase in number of cotton farmers	Increase in number of banana farms	Insufficient irrigation water
2005-2006	Decrease in number of cotton farmers	Animals problem	Very low profit in agriculture
2006-2007	Insufficient irrigation water	Animals problem	Very low profit in agriculture
2007-2008	Insufficient irrigation water	Insufficient irrigation water/ animals problem	Insufficient rainfall
2008-2009	High rainfall	Insufficient irrigation water/ animals problem	Insufficient rainfall
2009-2010	High rainfall	Very low profit in agriculture/animals problem	Labour scarcity/insufficient rainfall
2010-2011	More drought	Animals problem	Labour scarcity/insufficient rainfall
2011-2012	More drought	Reduced banana growth	Labour scarcity/insufficient rainfall

Rural Employment Guarantee Act (MGNREGA) on agriculture. LAP Lambert Academic Publishing, Germany.

Vaidyanathan A 1992. Instability in agriculture: extent, causes and consequences: a review article. Indian Economic Review **27(2):** 211-222.