



## **Way to economic prosperity and analysis of organic cotton crop: A study at Gudipadu Cheruvu village**

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**ABSTRACT** : Cotton was a priority crop mostly produced by smallholder farmers in the Gudipaducheruvu village, in Andhra Pradesh. Farmers are affected by a vulnerability to drought and depletion of ground water resources in the context of climate change and climate variability. Initially fourty- three farmers planned to do cotton farming in 2019 on hundred ac of land due to limited access to water. The group conducted weekly meetings to plan how to reduce all the initial costs and make agriculture profitable. The group enhanced the participants' knowledge of the application of Good Agricultural Practices (GAP), Comparative Study of Previous Years, Good Harvesting Practices (GHP), proper post harvest care, processing, as well as the identification of potential markets. This tool is highly used for providing the best price of a product that can fetch maximum profit without increasing the initial cost. The Break Even Analysis revealed that the total cost of production indicated a direct relationship with the farm size. The labour utilization showed an inverse relationship with the farm size. Altogether, the results suggest that switching to organic farming can improve the livelihoods of small and marginal farmers at Gudupatichervu village. The variety of cotton is Akira, Sadananda, Bahubali, Tulasi, Chandamama, and NO 9.

**Key words** : Break even analysis, cotton economic benefits, Gudipaducheruvu, Guntur, organic farmers group

Cotton plays a significant role in Indian agriculture as the country's textile industry is predominantly cotton based. Cotton contributes around 5 per cent to Gross Domestic Product (GDP). It's the second largest industry in India after agriculture which employing over 51 million people directly and 68 million people indirectly, including unskilled women Andhra Pradesh occupies third position in terms of area and production of cotton and around 11 per cent of total production in India. Guntur is one of the prominent districts of Andhra Pradesh, growing

cotton. . The contribution from cotton is about Rs. 275 crores of annual income and spread over 40 mandals. Around 2 lakh farmers, 4.63 lakh agricultural labourers, 25,000 industrial labourers in 258 ginning mills and 34 pressing mills are depended upon cotton cultivation every year. (Data added). Even though the district is showing a positive trend, but the cost of the seeds, saplings, pesticides, fertilizers, and labor is consistently increasing and the net return from the crop is relatively low.

Gudipaduchervu village is in Guntur

district of Andhra Pradesh where Amrita SeRve is currently working, formed farmers group, and commences organic farming on a share of their collective land. More than 40 members came together in a meeting to discuss their new co-operative which they named the '**Amrita Gudipaducheruvu Organic Farmers Group**' formed in June 2018. The villages having 149 families with an average population of 650 belongs to Chinchu, Reddy, Nayak, and Yadav castes.

The group expressed, they are keen to learn new ideas and ways of natural farming from the Amrita SeRve team and other supporters of organic agriculture. They agreed that of the total 100 ac between them – which currently produce they would initially cultivate using organic methods. At this first meeting each member committed 200 Rs to start a joint bank account to manage the income and expenses, and they also appointed a President, Secretary, and Treasurer. The study is about how group farming help farmers to come together, collectively purchased saplings, preparing fertilizers and pesticides, and sell their products and make a reasonable profit by cutting down all initial costs.

**Sampling design and size** ( Mentioned sampling technique) : The sampling frame of the study was smallholder irrigated cotton farmers in Gudupaticervu village. The study attempts to develop an understanding of farmers attitude in shifting to organic cotton. Multistage purposive cum random sampling were used in the study. Data were obtained from 43 cotton farmers for assessing the seasonal cost of land preparation, seeds and sowing, manures and manuring, weeding after cultivation and

irrigation, plant protection and harvesting cost under small holder condition. . The reference period of the study was 2019-2020. The data collected were subjected to simple tabulation and data were statically analyzed using Break-Even Analysis.

Samples were taken from the cultivated soil layer(upper 15 cm), using a single gouge auger (ekal goj barama) and combining 7 samples evenly distributed over the field to one composite sample. The samples were air dried, crushed, and gravel and other particles of more than 2 mm were removed. The samples were analysed in the soil laboratory of Indian Institute of Rice Research (IIRR), Hyderabad. The soil parameter contains silt (0.002–0.07 mm) and clay (0.004 mm) with pH range 6.5-7.5.

**Data type and collection methods** : The required primary data were collected from the farmers by personal investigation and with the help of village coordinator a specially designed set of Amrita SeRve Questionnaire and face to face interviews. Detailed information on all the variable cost including land preparation, seeds and sowing, manures and manuring , weeding , irrigation, plant protection and harvesting. Efforts were made to value purchased and non purchased inputs. To calculate labour cost we interviewed each family head because such because at Gudupaticervu village, all members of family are involved in farming. Expenses from preparation of land to harvesting as well as yield obtained were collected in calendar year 2018-2019. All costs and benefits were standardized to acre level and sub divided into cent (one acre =100 cent). Market prices for inputs and yield were also collected. These data were used in the

calculation of Break Even Point in units by analyzing Fixed Costs, Sales Price/unit and Variable Costs/unit.

### Steps taken between sowing and harvesting

Sowing period September - October

Seeds/ac Three kg/ac

Variety: Akira, Sadananda, Bahubali, Tulasi, Chandamama and NO 9.

**Land preparation :** The land has to be ploughed 2 to 3 times and work with harrow to bring the soil to good tilt. Seeds can be dibbled at the intersecting points of lines made with markers. For irrigated crop ridges and furrows are to be formed at recommended spacing after deep ploughing.

**Method of sowing :** Hands dibbling of seeds were practised by spacing at Gudupaticervu. It helps plant to stand, uniform geometry and also saves seeds. This is now main system of sowing of *Bt* hybrids in all part of

village..

**Irrigation scheduling :** Usually the village comes under rain fed area so farmers gives 700-1,200 mm of water to meet its maximum water requirement using drips. The water requirement is low during first 60-70 days after sowing and highest during flowering and boll development.

**Panchagavya :** Panchagavya, an organic liquid product has the potential to play the role of promoting growth and providing immunity in plant system. Panchagavya consists of nine products *viz.* cow dung, cow urine, milk, curd, jaggery, ghee, banana, tender coconut and water.

**Farm yard manuring (FYM) :** Goats and cows are there in each houses. So farmers use FYM added before preparatory tillage and mixed thoroughly. FYM should be well decomposed and should be preferably treated with composting organisms such as *Trichoderma viride*. The rate may gradually be brought down 4000 Rs/ac.

Cost of cultivation

Particular	Unit	Variable price (Rs)
Land preparation	One Ac	4500
Seeded and sowing	One Ac	4500
Manures at manuring	One Ac	2000
Weeding after cultivation and Irrigation	One Ac	3000
Plant protection	One Ac	2500
Harvest and other expenses (Rs.)	One Ac	3000
<b>Total</b>	<b>:</b>	<b>19500</b>
Yield	Kg/Ac	1000
Selling price	Rs/Kg	40
Average production/ac	Kg	1000
Gross income	One Ac	40000
Net Profit	One Ac	20500

= Fixed Price = Gross income / No of unit  
=40000/100

**Break Even Analysis**

Unit	Fixed price/ unit = (Selling price/unit )	Actual expense or variable cost/unit	Total Profit or revenue cost/unit)	(Revenue/unit- variable cost/unit)
1	400	195	205	10
2	800	390	410	20
3	1200	585	615	30
4	1600	780	820	40
5	2000	975	1025	50
6	2400	1170	1230	60
7	2800	1365	1435	70
8	3200	1560	1640	80
9	3600	1755	1845	90
10	4000	1950	2050	100
11	4400	2145	2255	110
12	4800	2340	2460	120
13	5200	2535	2665	130
14	5600	2730	2870	140
15	6000	2925	3075	150
16	6400	3120	3280	160
17	6800	3315	3485	170
18	7200	3510	3690	180
19	7600	3705	3895	190
20	8000	3900	4100	200
21	8400	4095	4305	210
22	8800	4290	4510	220
23	9200	4485	4715	230
24	9600	4680	4920	240
25	10000	4875	5125	250
26	10400	5070	5330	260
27	10800	5265	5535	270
28	11200	5460	5740	280
29	11600	5655	5945	290
30	12000	5850	6150	300
31	12400	6045	6355	310
32	12800	6240	6560	320
33	13200	6435	6765	330
34	13600	6630	6970	340
35	14000	6825	7175	350
36	14400	7020	7380	360
37	14800	7215	7585	370
38	15200	7410	7790	380
39	15600	7605	7995	390
40	16000	7800	8200	400
41	16400	7995	8405	410

*Contd...*

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42	16800	8190	8610	420
43	17200	8385	8815	430
44	17600	8580	9020	440
45	18000	8775	9225	450
46	18400	8970	9430	460
47	18800	9165	9635	470
48	19200	9360	9840	480
49	19600	9555	10045	490
50	20000	9750	10250	500
51	20400	9945	10455	510
52	20800	10140	10660	520
53	21200	10335	10865	530
54	21600	10530	11070	540
55	22000	10725	11275	550
56	22400	10920	11480	560
57	22800	11115	11685	570
58	23200	11310	11890	580
59	23600	11505	12095	590
60	24000	11700	12300	600
61	24400	11895	12505	610
62	24800	12090	12710	620
63	25200	12285	12915	630
64	25600	12480	13120	640
65	26000	12675	13325	650
66	26400	12870	13530	660
67	26800	13065	13735	670
68	27200	13260	13940	680
69	27600	13455	14145	690
70	28000	13650	14350	700
71	28400	13845	14555	710
72	28800	14040	14760	720
73	29200	14235	14965	730
74	29600	14430	15170	740
75	30000	14625	15375	750
76	30400	14820	15580	760
77	30800	15015	15785	770
78	31200	15210	15990	780
79	31600	15405	16195	790
80	32000	15600	16400	800
81	32400	15795	16605	810
82	32800	15990	16810	820
83	33200	16185	17015	830
84	33600	16380	17220	840
85	34000	16575	17425	850
86	34400	16770	17630	860

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*Contd...*

Contd...

87	34800	16965	17835	870
88	35200	17160	18040	880
89	35600	17355	18245	890
90	36000	17550	18450	900
91	36400	17745	18655	910
92	36800	17940	18860	920
93	37200	18135	19065	930
94	37600	18330	19270	940
95	38000	18525	19475	950
96	38400	18720	19680	960
97	38800	18915	19885	970
98	39200	19110	20090	980
99	39600	19305	20295	990
100	40000	19500	20500	1000

**Weed management :** Fields not infested with perennial weeds such as *Cyperus* sp. (Motha), *Cyanodon dactylon* (Doob) and *Sachharum* sp. (Kans) are preferred for organic farming as these are difficult to control. However, if such weeds occur in patches, their underground propagatory structures (stolons, rhizomes etc.) must be exposed by summer cultivation and manually removed. M Composting can recycle the weeds removed. Farmers usually growing a crop of cowpea between 2 rows of cotton will also suppress the early emerging weeds.

**Crop management :** To stop jassid damage between 20-25 days of crop growth farmers use *Chrysoperla* sp and *neem* oil. To control bollworm larvae and other caterpillars which damage leaves and flowers farmers release of *habrobracon hebator*. Seed kernel extract is used at to deter pest activity in the crop.

**Picking :** Picking should be done at the right stage of maturity. The crop is ready for

picking in about six months . For one ac they got around 8 to 10 kg and prices of 40000 Rs/ac. Each farmer got the average price /ac is Rs is 4000 Rs. After reducing all his expenditure farmer got the benifts of Rs 20500 Rs/ac.

**Data analysis :** The data collected is subjected to total cost of production indicates a direct relationship with the farm size. The descriptive statistics like variable cost /unit, revenue cost /unit and fixed cost /unit shows the relationship between three variable to find Break even point . It is based on categorizing production costs between those which are “variable” (Actual Expense or Variable Cost /unit, Total Profit or Revenue Cost /Unit ) and those that are “fixed” (costs not directly related to the volume of production). Total variable and fixed costs are compared with sales revenue in order to determine the level of sales volume, sales value or production at which the business makes neither a profit nor a loss (the “Break Even point”).

**Benefits of break even analysis**

- This will help to show the maximum profit on cotton that can be generated.
- Once the break even analysis is complete, get the knowledge of how many unit need to sell to be profitable. This will help farmers to analysis the cost of variables to set sales goals.
- Finding the break-even point will help in pricing the products better. This tool is highly used for providing the best price of a product that can fetch maximum profit without increasing the initial cost .

**Calculation of break even point/ Unit**

Fixed Price/Unit =(Selling Price/Unit )

The fixed costs are those that price for which each unit is sold.

Actual expense or variable price/unit= (Cost Price /Unit)

The variable Price are those of land Preparation, seeds and sowing, manures and manuring , weeding , irrigation, plant protection and picking.

Total profit or revenue cost/unit= (Actual Profit /Unit)

The difference between fixed price/unit and Variable Price /Unit

Break-even point (Units) = Fixed costs ÷ (Revenue per Unit – Variable Cost per Unit)

Break-Even Point (Units)= 40000/1000= 40<sup>th</sup> unit

With the help of break even analysis Farmers came to know from what unit onwards farmer starts getting benefits and on which materials he can reduce the prices. So, farmer can

determine whether the cotton will be worth the investment and grow in next seasons.

**CONCLUSION**

The following are the main findings emerged from the study: The result of study provides information on cost of expense and net return on organic cotton at Gudupachervu village, Guntur District. Here farmers make decision on preparation of organic fertilizer and pesticide and shifting towards organic cotton farming. The study attempt to develop an understanding the importance of group farming and behaviour change of farmers in group, Farmers opens up in group, new ideas evolves and greater bargaining power. The labour utilization showed an inverse relationship with the farm size because it's household farming. Plant protection were done using fertilizer and pesticide prepared in the village by farmer. Farmers are able to contribute major share of the total human labour and able to cut down all initial costs. The proportion of paid out costs is indirectly relationship with farm size because farmers use family members as working force in the fields. The study further revealed that there was a direct relationship between farm size and productivity. The gross returns also indicated a direct relationship with the farm size. However, net returns is Rs 20500 (Rs 40000-19500) showed an direct relationship with the farm size. The Break-Even Analysis shows revealed profitable nature of cotton cultivation since the break even output was in the 40<sup>th</sup> unit. After the 40<sup>th</sup> unit farmers starts gaining profit. The result strongly indicates that farmers gained

in group farming and continue organic cotton farming in next season by reducing all the initial costs.

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