Extent of Adoption of ANGRAU Technologies in Cotton Crop in Andhra Pradesh

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The present investigation was carried out in Kurnool and Guntur districts of Andhra Pradesh. Ex-post facto research design was followed for selecting 240 respondents by following simple random sampling procedure. The findings of the study revealed that cent per cent of the farmers had adopted seed rate followed by spacing (92.08%), pest management (87.08%), disease management (70.41%), weed management (53.33%), harvesting and water management practices (52.50%), nutrient management (32.50%), 15.83 per cent had adopted fertilizer management (15.83%) and minuscule (3.33%) had adopted recommended cotton varieties of ANGRAU. In overall level of extent of adoption of recommended practices in cotton cultivation more than half (60.00%) of the cotton farmers had medium adoption of recommended practices in cotton cultivation followed by high adoption (20.00%) and rest (20.00%) had low adoption of recommended practices in cotton cultivation.

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1. INTRODUCTION

Cotton is the backbone of Indian textile industry, which produces 59% of the country's total fiber production. It accounts for 34% of the country's export and fetches about Rs.50, 000 crores annually to the exchequer. Along with the industry, which it sustains, it touches the country's economy at several points including employment and export earnings. India. India ranks first in the world in cotton cultivation with 12.66 million hectares of area constituting about 38% to 41% of the world area under cotton cultivation and ranked first in production yielding 28.71 million bales production with productivity of 466 Kgs per ha (Source: Directorate of Economics & Statistics, 2019). It provides livelihood to 6 million farmers and 40 to 50 million people are employed in cotton trade and processing. (Source: www.agrifarming.in). Majority of the respondents (70%) had medium level of extent of adoption of Bt. Cotton practices in Telangana state, followed by low (18.00%), high (12%) level of extent of adoption [1]. Venkateshwar Rao et al ., [2] revealed that nearly half (45.0%) of the KVK adopted cotton farmers had high level of extent of adoption of production technologies followed by medium (31.67%) and low (23.33%). Mayee [3] found 90% small holder farmers were in favour of Bt technology in irrigated and rainfed farming system. Some farmers reported yearly fluctuations in yield and timely unavailability of preferred Bt cotton hybrid seeds as constraints for further adoption.

Around 6 to 6.5 million farmers grow the crop in about 10 States (Punjab, Haryana, Rajasthan, Gujarat, Madhya Pradesh, Maharashtra, Andhra Pradesh, Telangana, Karnataka and Tamil Nadu). Around 60 million people are estimated to depend on it one way or the other to make out their living (cotcorp.gov.in). Government of India implemented many programs and policies to overcome the problems of the farmers in general and cotton crop in specific. In view of the significance and importance of cotton in world trade WTO hosted on 7 October 2019 the launch of World Cotton Day in collaboration with the secretariats of the United Nations Food and Agriculture Organization (FAO), the United Nations Conference on Trade and Development (UNCTAD), the International Trade Centre (ITC) and the International Cotton Advisory Committee (ICAC). In the state of Andhra Pradesh cotton is cultivated in area of 10 lakh ha with production of 50 lakh bales with productivity 880 kg/ha. In

Andhra Pradesh Kurnool district alone accounts for more than fifty per cent of cultivated area with being cultivated in an area of 5.84 lakh acres followed by Guntur district with cotton being cultivated in an area of 4.27 lakh acres (Source:www.karshak.ap.gov.in). Cotton is one of the most important fiber and cash crop of India and plays a dominant role in the industrial and agricultural economy of the country. So it is imperative to study and critically analyse the extent of adoption of ANGRAU technologies followed by farmers in cotton cultivation. In the present study, an attempt was made to find out the extent of adoption of ANGRAU technologies in Kurnool and Guntur districts of Andhra Pradesh.

2. RESEARCH METHODOLOGY

Ex-post facto research design was selected as an appropriate research design to investigate the variables influencing extent of ANGRAU technologies in cotton cultivation. Andhra Pradesh state was purposively selected for the study, since the researcher belongs to the state and was familiar with local language and culture. Two districts were selected purposively from Andhra Pradesh based on the highest area under cotton cultivation. The names of the selected districts were Kurnool and Guntur. Three mandals from each district were purposively selected based on the highest area of cotton cultivation thus constituting six mandals. Four villages from each mandal were selected by following simple random sampling procedure. The sample constituted to a total of twenty four villages. From each of the selected village, ten farmers were selected by following lottery method of simple random sampling procedure. The sample constituted to a total of 240 respondents. The structured interview schedule was developed and was pre-tested on non-sampled respondents. The interview was conducted personally by the investigator with the farmers individually. The data thus collected were processed, tabulated and analyzed by using frequency, percentage and mean weight score. The main objectives of this study were to study the extent of adoption of ANGRAU technologies in cotton crop.

2.1 Extent of Adoption of Technology

The extent of adoption was measured for the recommended cultivation and post harvest practices for cotton. The extent of adoption was

measured as per cent of adoption of recommended practices as given below:

$$\text{Extent of adoption} = \frac{\text{Actual practice}}{\text{Recommended practices}} \times 100$$

Based on mean and standard deviation adopters are further classified into low, medium/moderate and high.

3. RESULTS AND DISCUSSION

Study showed that cent per cent of the farmers had adopted seed rate followed by overwhelmingly (92.08%) of the members had adopted spacing, 70.41 per cent had adopted disease management practices, 53.33 per cent had adopted weed management, more than half (52.50%) had adopted harvesting and water management practices, 32.5 per cent had adopted nutrient management, 15.83 per cent had adopted fertilizer management and minute (3.33%) had adopted recommended varieties of SAU.

From the above Table 1 it could be inferred that cent per cent of the cotton farmers adopted recommended seed rate followed by an over whelming (92.08%) of the farmers had adopted recommended practice of spacing followed by majority (87.08%) adopted pest management practices, more than three-fourths (70.41%) adopted disease management practices, more than half (53.33%) adopted weed management, 52.5 per cent adopted water management and harvesting practices, nearly one-third (32.50%) adopted nutrient management, 15.83 per cent

adopted fertilizer management and very few (3.33%) adopted recommended varieties.

From the above Table 1 it could be inferred that cent per cent of the farmers adopted recommended seed rate, the probable reason might be that awareness of farmers on seed rate due to training programmes and demonstrations conducted by extension staff of KVK and DAATTC. The other reason might be due to provision of seeds in 450 g packet by Bt cotton seed companies adequate for planting in cotton in acre. Very few farmers has adopted recommended varieties in cotton the reason might be due to lack of awareness and lack of interest among farmers about indigenous cotton varieties due to low yields and susceptibility to pink boll worm infestation. The other reason might be due to inadequate seed production indigenous cotton varieties for sale and supply to farmers.

3.1 Overall Level of Extent of Adoption of Recommended Practices by the Farmers in Cotton Cultivation

From the Table 2 it could be revealed that more than half (60.00%) of the cotton farmers had moderately adopted recommended practices in cotton cultivation followed by one-fifth (20.00%) of the farmers had highly adopted recommended practices and rest (20.00%) had less adoption of recommended practices in cotton cultivation. These results were in conformity with bhagwat [4] and pavan kumar [1].

Table1. Distribution of cotton farmers according to their extent of adoption of recommended practices in cotton cultivation n=240

S.No	Items	Recommended Practice	Frequency	Percentage
1.	Variety	Yaganti, Sreerama, Raghavendra, LK-861, L-389, LH-4, 5, 6	8	3.33
2.	Seed rate	Bt: 1.5 kg/acre Non-Bt: 3-4 kg/acre	240	100
3.	Spacing	90-150cm x 45-60cm	221	92.08
4.	Fertilizer Management	Organic manure: 10 t/acre Chemical fertilizers Bt: 48+ 24+24 (NPK) Kg/acre Non-Bt: 36+ 18+ 18 (NPK) Kg/acre	38	15.83
5.	Weed management	Pre-emergence: Pendmethalin (1.3 lit/acre) Post-emergence: Quizyl fop ethyl (400 ml/acre) Pyrithioback sodium (250 ml/acre)	128	53.33

S.No	Items	Recommended Practice	Frequency	Percentage
6.	Water management	Flowering, Boll formation	126	52.50
7.	Nutrient Management	Magnesium Sulphate (10gm/lit) 45, 75 DAS. Boron (1-1.5 gm/lit) 60, 90 DAS Foliar spray: Zinc Sulphate (2gm/lit water) Basal: $ZnSo_4$ 20 Kgs/acre	78	32.50
8.	Pest Management	Sucking pests: Neem oil (1 litre/acre) Imidacloprid (80 ml/acre) Acetamiprid (40 gm/acre) Monochrotophos (320 ml/acre) Acephate (350 gm/acre Pink boll worm Management: Deep summer ploughing Border crop: 3-4 rows of Maize/Bajra Intercrop: Cowpea/Black gram/Green gram/Fox tail millet Erection of pheromone traps: 6 per acre 15-20 Bird perches/acre Chemical control: Quinalphos (2.5 ml/lit) Chloripyriphos (2.5 ml/lit) Acephate (1.5gm/lit water) Thiodecarb (1.5 gm/lit water)	209	87.08
9.	Disease Management	Root rot: Copper oxy chloride 3 gm/lit water Black arm: Copper oxy chloride 3 gm/lit water + Streptocyclin 1gm/10 lit water Grey mildew: Wettable Sulphur 3gm/lit water Boll rot: Copper oxy chloride 3 gm/lit water + Streptocyclin 1gm/10 lit water Alternaria Leaf spot: Mancozeb 2.5 gm/lit water Carbendazim: 1gm/lit water	169	70.41
10.	Harvesting	Morning: 8AM-1PM & 3PM-6PM. Up to February	126	52.50

(Source: ANGRAU Vyavasaya Panchamgam, 2019-20)

Table 2. Overall Level of Extent of Adoption of Recommended Practices by the Farmers in Cotton Cultivation n= 240

S.No	Category	Frequency	Percentage
1.	Low Adoption	48	20
2.	Medium Adoption	144	60
3.	High Adoption	48	20
	Total	240	100
	Mean	55.95	
	S. D	32.28	

From the above table 2 it concluded that more than half (60.00%) of the farmers had moderate adoption of recommended practices in cotton, the probable reason might be multiplicity of the transfer of technologies through conducting training programmes, demonstrations on best showing the value or skill involved in these technologies by conducting well planned method and result demonstrations in coordination with department of agriculture, reception of voice and text based agro-advisories in cotton over mobile phones through mKisan and AKPS and resolving farmers queries through whatsapp groups.

4. CONCLUSION

More than half of the cotton farmers had medium adoption of ANGRAU recommended practices in cotton cultivation. This could be due to the multiplicity of the transfer of technology mechanisms followed by the KVK and DAATTC scientists. Before adoption of these technologies in cotton cultivation by the farmers, the KVK and DAATTC scientists were disseminating these technologies by scrupulous assessment careful refinement and showing the value or skill involved in the adoption of technologies by conducting well planned demonstrations in farmers field. Increased access to modern scientific ideas, ICT tools (i.e., portals, cotton expert systems, apps) for farmers to get maximum benefits of scientific ideas, to adopt all the innovative practices as a package or bundle to mitigate.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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