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# Adoption Behaviour of ELS cotton growers in Vellore district of Tamil Nadu

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***ABSTRACT***

*The present study was taken up to analyse the adoption behaviour of ELS cotton growers in Vellore district of Tamil Nadu. The study was taken up in two blocks of Vellore district namely, Tirupattur and Kandhili blocks. The data were collected from 132 cotton growers using a well structured interview schedule and analysed.The study revealed that less than two- thirds of the respondents had medium level of adoption followed by high and low levels.*

***Keywords*** **:** *Cotton technologies; Cotton growers; Adoption; Tamil Nadu*

Cotton is considered as “white gold” among the cultivated crops on account of its importance in agricultural and industrial sectors. Cotton occupies a prominent position in Indian economy. It is the primary raw material for the huge domestic textile industry and makes substantial contribution to the country’s foreign exchange earnings.

The term 'Extra Long Staple' (ELS) cotton typically denotes a cotton fibre of extraordinary fibre length. The recognized industry standard for the minimum fibre length of an ELS fibre is 34.925 mm. This minimum length is significantly longer than traditional varieties of cotton, known as upland cottons, where the average staple length is 26-27 mm. Along with its fibre length, ELS cottons are also recognized for their superior strength and better uniformity.

However, even with all the benefits of the ELS fibre characteristics and its apparent desirability, it is grown only in limited area. ELS and LS (Long Staple) cottons represent only about 3.00 per cent of the entire world's cotton production. The ELS cotton varieties are specific in their needs to produce a successful crop. A proper crop management is required for ELS cottons, above that of Upland cottons. ELS cottons are vigorous growing plants and if not managed properly may grow to be large plants with minimal fibre production. Also, the relative yield of ELS cottons was less when compared to Upland cotton. Environmental conditions for ELS cottons are specific, and can be grown only in the areas having hot days and cool nights. All of these factors rest in increased production costs, with increased risks compared to upland cotton. This in turn is a major limiting factor for the production of ELS cotton.

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With this background, the present study was taken up to assess the adoption behaviour of cotton growers.

## METHODOLOGY

The study was conducted in two blocks of Vellore district *i.e.*, Tirupattur and Kandhili blocks. Four villages from the two blocks were selected namely- Madapalli, Poongulam, Udayamputhur and Sevvathur with the selected sample size of 132 farmers. The data were collected using a well structured interview schedule and analysed using appropriate statistical analysis.

## FINDINGS AND DISCUSSION

### Adoption level of ELS cotton cultivation technologies

Adoption of innovation is perceived to be the success of extension workers. Rogers and Shoemaker (1971) defined adoption as a decision to make full use of new ideas as best course of action available. Those who had modified the recommendation and adopted were not considered for interpretation of results. The information regarding adoption of cultivation practices on cotton cultivation are presented in Table 1.

**Table 1.**
**Distribution of Respondents based on the Adoption behaviour of Cotton**

(n=132)

| Sl. No | Critical Technologies | Adopted (%) | Not adopted(%) |
|---|---|---|---|
| I | **Land preparation** | | |
| 1 | Removing and burning debris of previous crop | 5.30 | 76.50 |
| 2 | Summer ploughings twice | 77.30 | 0.00 |
| 3 | Repeated harrowing | 18.20 | 39.40 |
| II | **Suitable ELS Bt Cotton Hybrids** | | |
| 4 | *Kesinath* | 10.60 | 89.40 |
| 5 | *KisanJothi* | 7.60 | 92.40 |
| 6 | MAHYCO 6918 | 40.20 | 40.20 |
| 7 | Ankur 2110 | 18.90 | 81.10 |
| III | **Application of Manures and Fertilizers** | | |
| 8 | Application of organic manure (12.5 tonnes/ ha of FYM) | 5.30 | 0.00 |
| 9 | 1$^{st}$ top dressing of NPK(33% of N on 45 DAS) | 0.00 | 22.00 |
| 10 | 2$^{nd}$ top dressing of NPK (33% of N on 60 DAS) | 4.54 | 22.72 |
| 11 | Application of micronutrients (Mixing of 12.5 kg of micronutrient) | 23.50 | 3.80 |
| 12 | Foliar spray of 3% DAP | 37.10 | 21.20 |

| Sl. No | Critical Technologies | Adopted (%) | Not adopted(%) |
|---|---|---|---|
| 13 | Foliar spray of growth regulators (40 ppm NAA at 60 and 90 DAS ) | 4.50 | 84.10 |
| 14 | Arresting terminal growth<br>Varieties ( for less than 160 days duration nip the terminal portion of the main stem beyond 15th node on 75 to 80 DAS)<br>Hybrids (for more than 160 days duration beyond the 20th node on 80-85 DAS) | 95.50 | 0.80 |
| IV | **Spacing** | | |
| 15 | Recommended spacing ( 120 *60cm) | 48.50 | 1.50 |
| V | **Planting methods** | | |
| 16 | Seed rate and Planting one seed/hill (2.5 kg/ha with fuzz) | 94.70 | 4.50 |
| 17 | Planting under ridges and furrows system | 86.40 | 12.10 |
| 18 | Planting five rows per acre of non-Bt cotton seeds as refugee crop surrounding the Bt cotton plot | 13.60 | 86.40 |
| 19 | Planting seeds @4-5 cm deep & covering with soil | 81.10 | 17.40 |
| 20 | Gap filling in the Bt and non – Bt areas a week after germination | 6.80 | 93.20 |
| VI | **Inter cultivation and weed management** | | |
| 21 | Pre-emergence application of weedicide<br>(Pendimethalin @ 3.3 l/ha 3DAS) | 15.20 | 84.80 |
| 22 | Hand weeding (45 DAS) | 95.50 | 1.50 |
| VII | **Irrigation management** | | |
| 23 | During germination | 94.70 | 0.80 |
| 24 | During seedling growth | 80.30 | 0.80 |
| 25 | During flowering | 75.00 | 0.80 |
| VIII | **Disease management** | | |
| 26 | Field sanitation | 90.90 | 3.80 |
| 27 | Soil drenching | 6.80 | 84.80 |
| 28 | Application of fungicides | 21.20 | 5.30 |

| Sl. No | Critical Technologies | Adopted (%) | Not adopted(%) |
|---|---|---|---|
| IX | **Pest management** | | |
| 29 | Crop Rotation | 62.90 | 9.10 |
| 30 | Summer ploughing and field sanitation | 24.20 | 7.60 |
| 31 | Intercropping | 86.40 | 9.10 |
| 32 | Trap cropping | 2.30 | 97.00 |
| 33 | Use of bio- control agents | 9.80 | 84.10 |
| 34 | Pheromone spray | 17.40 | 80.30 |
| 35 | Botanical insecticides | 34.10 | 37.10 |
| 36 | Mechanical control | 29.50 | 26.50 |
| 37 | Chemical control | 36.40 | 23.50 |
| X | **Harvesting** | | |
| 38 | Harvesting at frequent intervals (less than 7 days of interval) | 62.90 | 1.50 |
| 39 | Harvesting in the morning hours upto 10-11 AM | 30.30 | 43.90 |
| 40 | Picking kapas from well burst bolls | 96.92 | 0.00 |
| 41 | Removing only the kapas not the bracts | 98.50 | 0.00 |
| 42 | Separating the stained , discoloured and insect damaged kapas from good *kapas* | 95.50 | 0.00 |
| XI | **Post harvest techniques** | | |
| 43 | Shade drying the *kapas* | 93.90 | 86.40 |
| 44 | Grading the *kapas* | 93.20 | 0.00 |
| 45 | Drying over dry sand | 0.80 | 0.00 |

Table 1 reveals that with respect to adoption of technologies in cotton more than three-fourths (77.30%) of the respondents adopted summer ploughing for land preparation followed by repeated harrowing (18.20%) and removing and burning debris of previous crops (5.30%).

The cotton growers before sowing the cotton seeds, ploughed the field across the slope during hot summer so that the hard crusted upper layer of the soil broken and it improved the soil structure. Deep ploughing and over turning uprooted the weeds as a result, the weed control and less application of weedicide is one of the major advantages of summer ploughing.

It could be seen from Table 1 that about two-fifths (40.20%) of the respondents were adopting MAHYCO 6918 hybrid seed technology followed by Ankur 2110 (18.90%), Kesinath (10.60%) and KisanJothi (7.60%).

The possible reason might be that MAHYCO 6918 is suited to the dry land and it had long duration potential of 108 to 200 days. This sturdy plant with high boll retention capacity grows as a tall spreading plant type. The extra long staple 35.0 to 35.5mm bears fluffy boll opening and remains green up to harvest. Due to the absence of dealership of hybrids like KisanJothi, Kesinath, the farmers resort to use these hybrids.

Regarding the planting methods, majority of the farmers had adopted the technologies as recommended for the following sub items- seed rate, planting under ridges and furrow, planting seeds at 4-5 cm deep with 94.70 per cent, 86.40 per cent, and 81.10 per cent respectively. Most (86.40%) of the respondents had not adopted the technology of sowing non Bt seeds as refuge crop and 93.20 per cent of the respondents had not adopted the technology of gap filling.

With respect to inter cultivation and weed management, majority (84.80%) of the respondents had not adopted the technology of application of herbicide and 95.50 per cent of the respondents adopted hand weeding as they found hand weeding more suitable for this operation.

Regarding irrigation management, majority of the respondents followed the recommended irrigation management practices like irrigating during germination, seedling growth and flowering with 94.70 per cent, 80.30 per cent and 75.00 per cent respectively.

Regarding pest management, it could be inferred that nearly two-thirds (62.90%) of the respondents had adopted crop rotation and 86.40 per cent of the respondents were practicing intercropping as red gram for their additional income. Majority of the farmers had not adopted the recommended technologies like trap cropping, application of bio control agents, application of pheromone spray and botanical insecticide with 97.00 per cent, 84.10 per cent, 80.30 per cent and 37.10 per cent respectively.

Majority of the farmers did not adopt the practice of conservation of predators, parasitic wasps and introduction of bio control agents in the field. The farmers lacked technical skill in handling and using them in conservation of natural enemies. Moreover, the farmers might not have been convinced about this practice due to slow impact on the control of pests. The farmers might have felt that the adoption of above technologies might affect their net income and this could be the possible reason for the non adoption of the technologies.

From Table 1, it could be seen that majority of the farmers adopted the following technologies like harvesting at frequent interval, picking kapas, removing only the kapas not the bracts, separating the stained kapas from good kapas with 62.90 per cent, 96.92 per cent, 98.50 per cent and 95.50 per cent respectively. More than two-fifths (43.90%) of the respondents had not adopted the technology of harvesting as recommended due to the labour demand and unsuitable time.

With respect to post harvest techniques, majority of the respondents

had adopted the shade drying and grading techniques as recommended with 93.90 per cent and 93.20 per cent respectively.

It may be concluded from the study that since the respondents had medium level of adoption of recommended technologies there is an imperative need to raise the level of adoption. The extension officials could go for location specific reinvention of specific cotton technologies which improve the farmers' understand ability on complex technologies.

The study also indicated that fertilizers and pests management technologies must be popularised more through more number of meetings, demonstrations, field visits so that farmers can gain more knowledge on those and adopt the technologies accordingly.

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