

## SIGNIFICANCE OF ROLLING STEM APPLICATOR ON COTTON CROP TO BOOST FARMERS INCOME

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### ABSTRACT:

Cotton is a major commercial crop in Bharat, contributing for over 23% of world production. It is Telangana State's most significant commercial crop, covering an area of 1.41 million acres. Because of the lower prevalence of bollworms following the introduction of Bt cotton, minimum pesticide spraying was eliminated. The second most serious problem in cotton is sucking pests including thrips, white flies, aphids, and mealy bugs. These sucking pests devour plant sap from sowing until harvesting. To manage the problem of sucking pests, The rolling stem applicator (a new trending technology for treating sucking pests) is both cost-effective and ecologically friendly. By employing systemic insecticides, such as monocrotophos in a 1:4 ratio at 20 DAS (Prohibition) and imidacloprid 16.8% SL in a 1:20. with a water ratio, applied at 40 and 60 DAS. Rolling stem applicator Front Line Demonstrations (FLDs) at Bidekanna Village, Jharasangam Mandal, Sangareddy District, Telangana. When compared to farmer methods, rolling stem applicators provided 19.76 percent more precise outcomes. The study's findings revealed that farmers earned an additional Rs.17,260 in net income as a result of a 19.76% increase in cotton kapas production and a Rs.3,400/ha decrease in cultivation costs.

**Key Words:** Rolling stem applicator, Imidacloprid, Front Line Demonstrations, Bidekanna

### INTRODUCTION:

Bharat is the only country that cultivates all four cotton species: *G. Arboreum* and *G. Herbaceum* (Asian cotton), *G. Barbadense* (Egyptian cotton), and *G. Hirsutum* (American upland cotton). *G. Hirsutum* accounts for 90% of Bharat's hybrid cotton production. The present Bt cotton hybrids are all *G. Hirsutum*. Cotton

production in Bharat is primarily produced in nine major cotton-growing states divided into three agro-ecological zones:

1. Northern Zone (Punjab, Haryana, and Rajasthan).
2. Central Zone (Gujarat, Maharashtra, and Madhya Pradesh).
3. Southern Zone (Telangana, Andhra Pradesh, and Karnataka).

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(5.84 million metric tonnes). During the 2022-23 cotton season, 23.83% of the world's 1441 lakh bales (24.51 million metric tonnes) were produced. Bharat consumes 311 lakh bales (5.29 million metric tonnes) of cotton, accounting for 22.24% of the world's total consumption of 1399 lakh bales (23.79 million tonnes). Telangana is Bharat's major cotton growing state, ranking third in area and production after Maharashtra and Gujarat. In Cotton is the most important commercial crop in Telangana, covering 1.41 million ha and accounting for 13.01 percent of total cotton area in the country. It produces 3.44 million bales, accounting for 10.6 percent of overall production. In Bharat, there are around 162 insect pest species in the cotton ecosystem, with a monetary value based on predicted production. Insect pests cause estimated losses of Rs 3,39,660 million yearly. The primary bollworms include Pink bollworm (*Pectinophora gossypiella*), American bollworm (*Helicoverpa armigera*), and Spotted bollworm (*Earis spp.*). Boll guard technology (Bt) introduced in 2002 boosted cotton yield, reduced insect pest losses, and reduced the need for insecticides. Although transgenic Bt cotton can efficiently manage particular Lepidopterous species, it lacks resistance to sucking insect pests results highly damaged the crop. Farmers Spraying insecticides and mixtures (e.g., acephate,

monocrotophos (Prohibition), imidacloprid, thiamethoxam, acetamiprid) 6-8 times. Spraying crops as early as 20-25 days will significantly reduce beneficial insects, leading to a rise in sucking pests and the need for more applications and burden cost of cultivation increase to farmers.

### **FRONT LINE DEMONSTRATIONS (FLDS) ON ROLLING STEM APPLICATOR IN BIDEKANNNA VILLAGE:**

During my RAWEP (Rural Agricultural Work Experience Program), ELNINO circumstances occurred during the monsoon season, causing inconsistent rainfall and droughts. These conditions impact on cotton farmers is investing more to combat sucking pest infestations. To helping farmers Doing front line demo on Rolling Stem Application is an alternative method for controlling sucking pests in cotton. Imidacloprid (1:20) diluted with water and applied with rolling stem applicator on aerial stem portion (green area) of cotton plant in 40 and 60 days after sowing. Cotton aphids, thrips, Jassids, white fly, mealy bugs and other cotton sucking pests can, effectively managed.

### **EQUIPMENT AND TECHNIQUES**

1. 4-Inch Medium-Density Foam Paint Roller along with handle.
2. 1-meter wooden stick or plastic stick.  
(Based on comfortable to farmer)



Field level Demo



Mixing of Imidacloprid 1:20

**Note:** Using of gloves while applying and mixing of chemicals.

3. Standard gloves.
4. Plastic tub/Gamela.

5. Monocrotophos, Imidacloprid (16.8% SL).

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Sl. No	Specification	Rolling Stem Applicator	Hand Spraying
1.	Insecticide quantity per hectare.	Monocrotophos - 375 ml - 500 ml, Imidacloprid - 62.5 -75 ml.	625- 1250 ml, 100-125 ml.
2.	No. of labour required/ ha	2-3	4-5
3.	Area covered/day (6 hr)	1.6-2.4 ha	1.2-1.6 ha
4.	Money spent on insecticide/ha	Rs.300/-	Rs.977/-
5.	Drift losses	No	YES
6.	Amount of pesticide solution needed / hectare.	750-1250 ml	450-500 lt
7.	Required time/ha.	2.5-3.75 hr	3.75-5.0 hr.
8.	Toxicity to natural enemies	Negligible	More
9.	Environmental pollution	Nil	More
10.	Inhalation of pesticide while application.	Negligible	More
11.	No. of plants covered/hour	3200	2400
12.	Ease of application.	Very easy and comfortable	Highly laborious and require more energy



**Instructing farmers on the usage of rolling stem applicator & Expo**

## **BENEFITS OF USING ROLLING STEM APPLICATOR IN COTTON**

- Decreases of sucking pest population and increases of beneficial insects.
- The method is useful in areas with severe water shortages since very little water is used. And 2 or 3 labour is required.
- Neither specialized knowledge nor pricey equipment are needed.
- Natural enemies are unaffected by the chemical since it is not exposed to the winds.



- The applicator is light and does not require slinging over one's shoulder, so there is no drudgery.
- Saving insecticide: While hand spraying loses chemical because of spread and higher water needs, the chemical will be absorbed into the sponge and given to the plant straight.
- There is no environmental pollution since the chemical is not exposed to the environment.
- Very little money is spent since not much chemical is utilized.

- A larger yield on kapas and boost farmers income.

## CONCLUSION:

The expense of agriculture will grow day by day and become more burdensome for small and marginal cotton farmers. Rolling stem applicator since it is very simple to use and apply, poses little risk to people, Eco friendly and No harmful to beneficial insects. And overall reduces the cost of cultivation to the farmers which benefits the poor small and marginal farmers.

## REFERENCES:

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