

Drip Fertigation Is The Best of Solution to Improve Cotton Yields.



B. D. Jade

Cotton is very important cash crop grown in Maharashtra. It is also known as WHITE GOLD. It is cultivated in 112 lakh ha area and its productivity is very low 524 Kg Lint/ha. Every year area under this crop is increasing consistently due to wonderful results of drip in BT Cotton. Farmers has started adoption of Bt varieties from year 2002. Almost more than 95 % cotton cultivated is Bt. Due to introduction of Bt technology in Cotton the major problem of boll worms get controlled. Expenses over pesticide use get minimized.

Cotton crop is grown under both rainfed and irrigated conditions. In Maharashtra 95 % Cotton is cultivated under rainfed conditions and only 5 % Cotton is cultivated under irrigated conditions. However in flood irrigated Cotton yields are not satisfactory because of fluctuation in moisture through crop period, in drip irrigated Cotton yields are getting bumper due to premonsoon planting and maintain field capacity in soil, optimum moisture in rootzone which improves uptake of nutrients resulted in to wonderful crop growth, boll development. All rainfed, irrigated Cotton farmers are using Bt Cotton Hybrid Seeds, Though farmers are using Bt Cotton Hybrid seeds in rainfed conditions their yields are low due to unavailability of optimum moisture in entire crop period. Cotton yields under rainfed condition is just 7 – 10 quintals / ha, in flood irrigation Cotton yields are 20 – 25 Quintals per ha and under drip irrigation farmers are harvesting bumper Cotton yields from 40 – 50 Quintals / ha. Due to wonderful results drip irrigation technology I sfast adopting in Gujarath, Madhya Pradesh, Andhra Pradesh, Karnataka, Rajasthan, Punjab, and Haryana on large scale, Drip irrigation is playing important role to explore more potential of Bt Cotton in India.

Cotton is very important cash crop grown in Maharashtra. It is also known as WHITE GOLD. It is cultivated in 112 lakh ha area and its productivity is very low 524 Kg Lint / ha. Every year area under this crop is increasing consistently due to wonderful results of drip in BT Cotton. Farmers has started adoption of Bt varieties from year 2002. Almost more than 95 % cotton cultivated is Bt. Due to introduction



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of Bt technology in Cotton the major problem of boll worms get controlled. Expenses over pesticide use get minimized. Though Area under Cotton in Maharashtra is highest however productivity is low. Constraints of low productivity is mainly lack of irrigation facilities, irregular monsoon, no moisture available in a soil at boll development stages in Cotton grown areas. Most of the cotton crop cultivated as rainfed crop. Almost 95 % Cotton area is under rainfed and Only 5 % area is under irrigated Cotton. In rainfed conditions BT cotton yields are observed low.

BT Cotton in India

The decision of the Genetic Engineering Approval committee (GEAC) of Government of India clearing the release of Bt cotton for commercial cultivation during 2002-2003 crop season, The bollworms are most important tissue feeders and highly damaging. Three types of bollworms viz. American bollworm (*Helicoverpa armigera*), Pink bollworm (*Pectinophora gossypiella*) and Spotted bollworm (*Earias vitella*), normally referred as bollworm complex are by far the most damaging and loss inducing pests of cotton. Amongst them, *Helicoverpa* emerged as a key pest all over the country causing as high as 80% losses in cotton.



Cotton yields scenario

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development. All rainfed, irrigated Cotton farmers are using Bt Cotton Hybrid Seeds, Though farmers are using Bt Cotton Hybrid seeds in rainfed conditions their yields are low due to unavailability of optimum moisture in entire crop period. Cotton yields under rainfed condition is just 8 – 10 quintals / ha, in flood irrigated Cotton yields are 20 – 25 Quintals per ha and under drip irrigation farmers are harvesting bumper Cotton yields from 40 – 50 Quintals / ha. Due to wonderful results drip irrigation technology is fast adopting in Gujarat, Madhya Pradesh, Andhra Pradesh, Karnataka, Rajasthan, Punjab, and Haryana. Drip irrigation is playing important role to explore more potential of Bt Cotton in India. In Maharashtra only 17 % is irrigated area under cultivation. Maharashtra is a pioneer state in adoption of drip irrigation technology in a country. Farmers have started adoption of this technology from 1987/88. Though there are limited irrigation facilities available but adoption of Micro irrigation is highest. Around 21.5 lakh ha area is brought under this technology in Maharashtra. Farmers are using drip irrigation in Fruits, Vegetables, Flowers, and now started adoption in cash crops like Sugarcane, Cotton, Pigeon pea, Wheat. In Maharashtra farmers are facing problems of scarcity of water, electricity, fertilizers and labours also. Drip irrigation is now catalyst for overcoming these problems.

More than two decades farmers are taking benefits of this technology, this technology has brought revolution in Socio economic changes in Maharashtra. We conducted trials on Cotton under drip irrigation in 1995 / 96 prior introduction of Bt technology. We harvested 20 Qnt Seed Cotton Yield per acre. Cotton farmers have started adoption of drip irrigation from year 2005. Around 3.78 lakh ha Cotton area is brought under drip irrigation in Maharashtra up to year

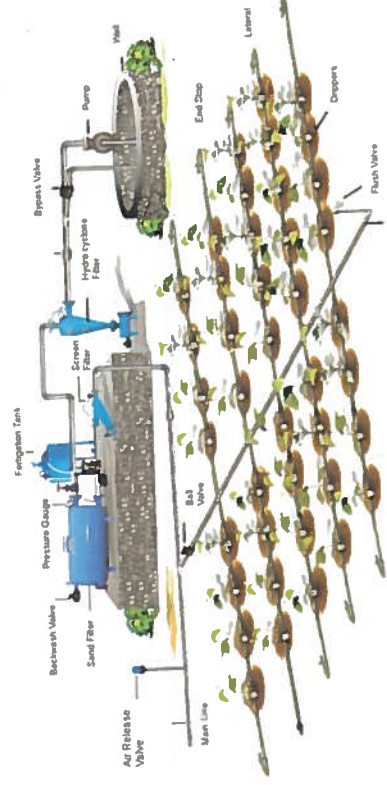


2014/15. This model is now replicated in Gujarat, Madhya Pradesh, Andhra Pradesh. Yields of Cotton is increased by 200 – 300 % by adoption of this technology. Yields are increased due to Premonsoon sowing, Hybrid Bt varieties, Drip irrigation and Fertigation technologies. Due to drip irrigation in very low volume of water premonsoon sowing is possible. Soil – water – plant relationships get maintained, crop never get water stress at

any stages, improves efficiency of fertilizers which minimises dropping of squares, flowers and bolls. Due to better irrigation and nutrition management Cotton yields level increased.

What is Micro / Drip Irrigation ?

Micro / Drip Irrigation is described as regulated and show application of irrigation water through emitters or orifices at frequent intervals near the root zone of plant, over a longer period of time.



Advantages of Drip Irrigation in Cotton

- Drip Irrigation saves 50-60% water in cotton. Better utilization of every drop of water.
- Drip Irrigation increase yield minimum by 50%. Farmers experienced more than 200% Saving of fertilizer by 25 to 30 %, water soluble fertilizers can be use with drip system.
- Drip Irrigation maintains field capacity all the time, drip irrigation prevents dropping of square, flower & bolls.
- Better Boll development.
- Drip Irrigation save time, labour, electricity
- Drip Irrigation is the best solution in the problem of load shading.
- Drip Irrigation minimises the weed problem.
- Crop do not get water stress at any growth stages.

Critical Stages in cotton

1. Seeding emergence (Germination)
2. Square formation
3. Flowering
4. Boll development

Drip Irrigation maintains always field capacity. crop do not get any moisture stress. Water &

fertilizer is applied in effective rootzone only Drip Irrigation & fertigation improves yield & quality of cotton.

Irrigation Scheduling for Drip Irrigated Cotton crop

Month	Water Requirement (Lit./day/Plant)
May (Planting)	1.132
June	1.6
July	2.21
August	3.605
September	5.5
October	7.1
November	4.75
December	3.26
January	3.31
February	3.61



Note : Above irrigation scheduling is just for guidelines only. It will vary from area to area soil type, climatic conditions, crop growth stage etc.

Nutrition for Cotton

- In weight of Cotton Boll -
 - Cotton seeds – 65 % n Lint – 35 % hence for improvement in weight of boll balanced nutrition is needed.
 - Basal dose 10 : 26 : 26 – 50 Kg / acre
 - Magnesium Sulphate 15 Kg
 - Zinc Sulphate 5 Kg
 - Ferrous Sulphate 5 Kg
 - Borax 2 Kg
- Mix it well in 150 Kg neem cake.

Fertigation Schedule for Cotton

Period of Application (Days)	Grade to be used	Qty. required Kg /acre/day
7 - 22	12:61:0 + Urea	0.555 0.666
23 - 60	Urea+	1.100
61-100	12:61:0 + MOP	0.708 0.3
101-125	Urea+ 12:61:0 MOP MOP+ Urea	1.125 0.208 0.334 0.668 0.800

Note : Above fertigation schedule is for guidelines, it may change according to soil analysis, soil type, crop growth stages, local conditions etc.



Foliar Feeding

- In Initial 30 days
 - In reproductive phase
 - For Boll development stage
 - In Boll Maturity stage
- 19:19:19 – 45 gm in 15 Lit water
13:40:13 – 60 gm
0:52:34 – 60 gm
13:0:45 – 75 gm

Our Cotton Highest yield takers

1	AnantG. Chandravanshi	Umarkhed	44.54
2	DevanandVarade	Nandura	42.30
3	Anil Patil	Pachora	35.20
4	Kiran Chopade	Bhusawal	32.30
5	SukdeoPatil	Parola	31.20
6	Vijay Ingale	Telhara (Akola)	28.40

Views of farmers

1. Increase in yield minimum 2-3 times. Minimum drop of squares and flowers.
2. Uniform application of water to all plants. Saving in water – 45 – 50 %
3. Water soluble fertilizers applied through drip.
4. Saving in time, labour and electricity.
5. Better development of bolls observed.
6. Premonsoon Cotton under drip irrigation and fertigation gives bumper yields. And once adoption of drip irrigation and Fertigation is the best solution to improve Cotton yields.

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Khandesh Association's China Visit



Global Launching of "MAHACOT" on 5th Nov. 2012 felicitation by Textile Secretary on 1st deal with Deepak Poldiya (Arihant Cotton), Laxman Patil, (Parshwanath Ginning)



Global Launching of "MAHACOT" at Jalgaon on 5th Nov. 2012



Felicitation & Shri Arvind Jain (mahavir Ginning & Pressing Factory-bodwad By Shri Ashok Jain (jain Irrigation)

Khandesh Associations Delhi Visit With Hon. Rashtrapati Smt. Pratibha Patil & Agricultural Minister Hon. Sharadraoji Pawar On 28th Feb. 2011



All India Meet Cotton Trade - 2013



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