Relevance of cotton in Attapady agriculture system: An enquiry in the context of Bt cotton cultivation

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Preface

Attappady in Palakkad district of Kerala is endowed with rich agro biodiversity, community wisdom and values associated with them. Villages in Attappady were once self sufficient in food requirements. Now farmers have been switching over to cotton and other cash crops and food sovereignty is in grave danger. It was in this context that the news about cultivation of Bt cotton in Attappady kicked off a controversy in 2009. Even though the government of Kerala has a declared policy of keeping the state free of Genetically Modified Crops, and farmers have a lot of apprehension about Bt cotton, ironically farmers continued cultivating Bt cotton. Why did it happen? Why cotton in Attappady? Why was Bt cotton introduced? Why not food crops? This case study is an attempt to answer several of these questions.

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Introduction

Attapady is a tribal and predominantly agrarian area in Palakkad district of Kerala. 41% of farmers in Attapady are tribals.\(^1\) Bt cotton has been cultivated here since 2006. Since cultivating genetically engineered(GE) crops is illegal in Kerala, the Kerala State Biodiversity Board (KSBB) intervened and made an attempt to replace Bt cotton with conventional cotton based on the policy of ‘GM Free State’ in 2009. This report is an attempt to understand the situation in Attapady regarding agriculture in general and cotton in particular.

Agriculture scenario in Attappady

Unlike in other parts of Kerala, farmers in Attapady used to grow a variety of food crops like millets, little millets, maize, pulses, and ground nut. In the recent past they have started cultivating vegetables and oil seeds as well. Their traditional agriculture practice is simple and sustainable. Farming usually begins in April when farmers start to prepare the soil. They plough the soil up to six times and either broadcast seeds of different crops together or plant different seeds in separately maintained plots just after the arrival of south west monsoon.

Traditionally farmers broadcast seeds of different varieties of millet, little millet, maize, amaranths and pigeon pea together after the first showers of south west monsoon. In September, three month duration millet, little millet, maize and amaranth would be ready for harvest. Farmers harvest the crop and allow the plant to decompose in the same soil. In December, six month duration millet, little millets and maize will be ready for harvest. By the time the second round of harvest is over, only pigeon pea plants remain in the plots. In February farmers harvest the pigeon pea.

Vegetables and cash crops like pulses, ground nuts, oil seeds and cotton are also grown in separate plots as mono crops. Upland paddy is grown up the hill. A combination of cotton and ground nuts or cotton and pigeon pea are also grown as mixed crops. Millets and other grains are used for domestic consumption. Cotton, oil seeds, ground nuts and surplus vegetables and pulses are sold in the market. By the time complete harvest is over, the farmers would have a surplus income. Usually March and the first half of April is farm holidays in Attapady and marriages and other celebrations in the community are celebrated. During this time festivals are held in temples.

\(^1\) http://www.ahads.org/sub_attapady_people.html
The advent of cotton and Bt cotton

Cotton is widely cultivated in Attapady unlike rest of Kerala where no cotton is cultivated. Due to this one can’t find cotton either in the package of practices of Kerala Agriculture University or in the farming programme of the state. Farmers here have been cultivating cotton since the last 40 years. The soil was highly fertile in the initial years of cotton cultivation. Cotton was grown by tribal and non tribal farmers for their cash income needs. Some farmers got yields of 15 quintals and above per acre. But that glory did not last forever. By the end of the 1990s the productivity decreased due to various reasons such as infertility of soil and otherwise also production decreased due to low market price, unavailability of labour and unaffordable cost of production. By then most of the farmers had given up cotton.

But farmers resorted to cotton again when, after an interval, its prices started to move up in 2006. That was the same year in which the Bt cotton marketed by Rasi (RCBH 708) was introduced in Attappady by the seed and agro chemical distributors from Kottathara and Anakkatty. This release of Bt cotton seeds in Attappady was done without the knowledge of the Kerala State Government. Farmers were unaware that they were using Bt cotton seeds. The farmers were told that the cotton seed is a high yielding variety and can resist all pests. Farmers here are comfortable with high yielding varieties (HYV) as they have been cultivating many HYVs like LRA, MCU 5, MCU 9, TCH B 32 and DCH 213. In addition conventional cotton seeds were not available in Attappady in 2008 therefore the Bt variety got more takers in villages like Pudur, Dodagatti, Kolapadika, Manjangatti, Paloor, Vellampadika, Kadambada, Chavadiyoor, Narasimukku, Thekkuppana, Kottathara, Bommiyampady, Kavundikkal, and Danyam.

Challenges in Bt cotton cultivation

Farmers’ preference for crops which require less care was one of the major reasons for the wide acceptance of Bt cotton in Attappady. “It was widely advertised as American bollworm resistant and high yielding” said R Krishnaswami, a farmer from Kavundikkal. Pest problem was low and bollworm attack was zero when farmers used Bt cotton first time. “In first attempt the yield from Bt cotton was higher compared with that from conventional cotton because of less loss due to its resistance to bollworm. But attacks of secondary pests like mealy bug and white fly were severe in the following years. I was gradually realizing that the pest resistance claim of Bt cotton was untrue” said Maruthan, a farmer from Chavadiyoor. “In 2009 bollworm could be found in Bt cotton”, he continued.

After the initial years farmers started using chemicals to save the crop. Endosulfan was indiscriminately used in the Bt cotton fields. As endosulfan is banned in Kerala farmers got it from Tamil Nadu. Use of chemicals such as monocrotophos, quinalphos, triazophose, propenofos, cypermetrin, acephate (all insecticides) and flupropanate and glyphosate (herbicides) became widespread after the arrival of Bt cotton. It was after the arrival of Bt cotton that farmers started to use herbicides. Before that only endosulfan and monocrotophos were used widely in cotton in Attappady. In effect Bt cotton failed to resist its targeted pest bollworm after the initial years and has experienced an increase in secondary pests as well.

Migrant farmers from Tamil Nadu and Kerala were the early takers of Bt cotton in Attappady. These farmers cultivated in the valleys and had better irrigation facilities. Many of these farmers got yields of 13 or 14 quintals of cotton from one acre in the first attempt. Some other farmers, who were inspired by the early takers, cultivated Bt cotton. Only later did they realize that only in irrigated land, and only the first time, Bt cotton can

A hybrid cotton genetically engineered with BT genes sold by Rasi Seeds
perform like this. “The highest yield I got from Bt cotton on dry land was 4 quintals per acre. Generally yield from Bt cotton on dry land was much lower whereas the productivity of conventional cotton in dry land was consistently at a medium level. Bt cotton also showed a diminishing trend in yield in consecutive years on the same land whereas conventional cotton ensured a consistent yield between 5-8 quintals per acre every year” said Balan Nair, a farmer from Pudur. “When I grew Bt cotton continuously for three years the yield has came down from 12 quintals to 3 quintals per acre. Many farmers here have the same experience” he continued.

Yield and quality of fiber are equally important in cotton business. “The quality of Bt cotton -colour and strength of the thread- is poorer when compared with conventional cotton varieties like DCH 32, TCH-B 213, MCU 5 or MCU 9. Conventional cotton, which is good in quality, has better demand in the market. I got Rs. 3150 for one quintal DCH-32 cotton whereas the price of Bt cotton in the market was Rs. 2500 during the same season”, said Bagyam, a farmer from Kalppatty.

Farmers reported that the cost of production of Bt cotton was less when they used the seeds the first time. But in the following years it was higher than the cost of production of conventional cotton. Farmers who have cultivated Bt cotton for two to three consecutive years said that in the second and third year Bt cotton required more fertilizer inputs, particularly organic inputs. Apart from this the consumption of chemical pesticides and herbicides were also increasing in the consecutive years. “The cost of pesticides was almost 2/3 of total production cost. The cost of Bt cotton seeds were also increasing. It was Rs.450 for a half kg packet in 2006. But it was Rs.800 in 2010”said Rankaswami, a farmer from Kalppatty. “Bt cotton requires more care. This water thirsty cotton needs to be watered regularly” said Durairaj, a farmer from Sholayoor. (Agriculture in Attappady is mostly rain fed).

The KSBB intervention

In 2009 Kerala State Biodiversity board distributed seeds of conventional cotton variety DCH 32 to 331 farmers. Ten farmers were taken to Coimbatore for training in organic cotton cultivation. The plant growth was luxuriant and farmers were hopeful. There were 150-200 bolls in every plant. But it was a bitter harvest for farmers except a few due to an epidemic of mealy bug attack. Crop failure due to mealy bug was widespread all over India in 2009.

Why farmers still continue cultivating cotton

Exploitation is part of the agrarian landscape of Attappady. The exploitation of marginal and small scale farmers in Attappady by big farmers, agrochemical distributors and local money lenders is more promiscuous than other places in Kerala. Even though the state has Krishi Bhavans and other offices in Attappady they have failed to provide farmers technical assistance and quality seeds, and procure their produce. On the other hand majority of the farmers have given up traditional agriculture practices and thereby do not share experiences and seeds as before. Farmers’ source for seeds, fertilizers, pesticides, advice and the all important credit facility is the private seed/agro-chemical dealer. As a result the private dealers can easily direct framers what to produce and how to produce and for whom to produce. They
give farmers seeds, agrochemicals on loan and procure produce from them. They also give farmers cash loans and post harvest farmers are paid after deducting the loan and interest and the cost for seeds and agrochemicals. Generally farmers are becoming increasingly indebted year after year. In order to pay back the debt farmers again buy seeds and chemicals on credit from the private dealers. These private dealers encourage farmers to cultivate cash crops like cotton, ground nuts, oil seeds and pulses based on the demand in the market. Marginal and small scale farmers here have little choice about what to grow. They cultivate what they are given and they don’t seem to care whether it is cash crops or food grains, Bt or non Bt, organically or with chemicals.

**Kind of governmental intervention needed in Attappady**

The socio economic conditions in Attappady need to be considered when the government plans programmes for the region. Strict governmental intervention is needed for eliminating exploitation by private dealers. No developmental project can work in a society where exploitation of the poor exists.

Unfortunately cash crops like rubber, coconut, plantain and cashew have been pushed into Attappady. More and more land is coming under such crops every year. This is affecting the biodiversity and food security of the area. On the other hand biodiversity based agriculture can ensure food security and more green cover for the barren land in the area.

A governmental agency to promote, procure and market food crops like millets, other grains, pulses, oil seeds and vegetables would be of great help to farmers. It can ensure farmers better income. At the same time a part of the state’s demand for millets, pulses and vegetables can be met from here, making the state more self reliant in its food needs, an important goal for Kerala state which produces only 15% of its food.

GM crops including Bt cotton should not be allowed in Attappady since the area is a part of the Western Ghats one of the mega-biodiversity hot spots and is located very close to fragile zones like the Silent Valley.

High labour charge comprises a large part of the cost of cultivation in Attappady. Labour charge increased from Rs. 30 to Rs.120 after the beginning of Attappady Hills Area Development Project. Farmers reported that they have to spend Rs.700 for a day’s work of ploughing the land and Rs. 400-500 for spraying pesticides. They employ ten workers for weeding one acre of cotton. Farmers also told that providing labour through NREGS would be a help for them.

Cow dung is very expensive in Attappady due to the decrease in cattle population. Lack of grazing land and fodder are the reasons for the decrease in cattle population. In order to reduce the cost of production government needs to provide support for increasing the cattle population. Other organic inputs can be ensured through increasing the vegetation in the area through mixed cropping.

Wild animals, particularly wild pigs, have become a major threat for the farmers. Farmers in Attappady live in villages and their agricultural lands are quite a distance from their homes. It is difficult for farmers especially those from nuclear families to guard their crops in the night. Man-animal conflict make farmers think that it is better to produce some cash crops in plots near their home for money and they can buy food from the market with this money.

Environment health of Attappady is in danger due to pesticide pollution. Different kinds of pesticides and herbicides are indiscriminately used. Farmers in Attappady totally depend on agro chemical dealers for technical assistance. Endosulfan which is banned in Kerala is obtained illegally from Tamilnadu and widely used here.
Monocrotophos is indiscriminately used in vegetables, pulses and all other crops except millets and other grains. This chemical is not recommended for vegetables in India. Agriculture extension is needed to control this and make people aware of the dangers.

Conclusion

Attappady is gifted with agro biodiversity, traditional knowledge, and hard working people. Despite problems like poverty, malnutrition, unemployment, poor health and lack of income Attapady can become prosperous with sufficient government support. Farmers here should be encouraged to do mixed farming and grow food grains rather than depending on a monocrop of Bt cotton to earn cash income. GM crops should not be introduced in the area. Checking the exploitation of farmers by private dealers; promotion, procurement and marketing of food crops and restoration of agro-biodiversity and encouragement of traditional knowledge systems are three very important steps for keeping Attappady GM Free. These steps would also ensure food and nutritional security and economic stability of farmers.

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About Thanal

Thanal was founded as a voluntary charitable society in 1986 in Kannur to take up environmental education programme in Kerala. Later it expanded its focus from environmental education to environmental health and justice. It got registered as a charitable trust in 2003.

Thanal is a Public Interest Research, Advocacy, Education, and Action group with a mission “Gather for all the beings”. It is engaged in activities related to environmental health and environmental justice.

The major programme areas are Sustaining Agriculture, Food Sovereignty, Zero Waste, Chemical Safety, Environmental Education and Natural History studies. Thanal takes leadership in campaign such as Save Our Rice, Ban Endosulfan, Zero Waste for Zero Warming and GM Free India.

Thanal works with people at grass root level and share the experience with decision makers and policy makers in Government. It also extends its support for building capacity in community, and Government and updates them on recent development in the field.

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