Kisaan Raja

Plasticulture – Path Ahead

Irrigation is the most important element in agriculture process. And judicious use of available water is the need of hour. As per official data around 46.34 percent of India's net sown area of around 140.80 million hectares was under irrigation till 2011-12. To achieve the target of total irrigation massive fund of Rs. 50,000 + crore is needed as per the experts. In the Union Budget of 2015-16 Rs.5300 crore has been allocated. NABARD has set a target of providing Rs.30,000 crore as credit to farmers for next three years.

"Irrigation efficiency can be improved by adoption of modern methods of irrigation to achieve the goal more crop per drop."

Plasticulture activities are targeted towards increased use of plastics in agriculture thereby enhancing availability of water and improve productivity from the farms, better packaging for storage and transportation to reduce post harvest losses. This is a quick summarization of activities which has huge potential in terms of consumption of plastics in millions of tons with great challenges.

Agriculture needs continuous infusion of innovation and technology in ensuring global food security, poverty reduction and environmental sustainability. Socio-Economic and Caste Census (SECC) 2011 released in 2015 indicates that out of 24.39 crore households in the country, 17.91 crore lived in the villages and among them 10.69 crore were considered as deprived households. As per SECC, 31.26 percent of total rural households are still broadly identified as poor where the main earner has an insecure and uncertain source of income. Agriculture is critical for those who live below the poverty line.

Activities Carried out so far and Path Ahead

We started with promotion of drip irrigation among small and marginal farmers who are living quietly in remote corners where finance for buying drip sets is available to them from money lenders. While visiting these remote villages any urbanite would get amazed that civilization exists in these remote corners in India. There are dedicated teachers who are running ZP schools and boys & girls from these villages still walk many kilometers for attending schools. Most farmers who were part of JLG were able to sign on their bank passbooks. This was satisfying experience. These villages are clean, and barring few cases, there are toilets in the villages. However rain fed agriculture does not create enough income for the families and our intervention boosted the yield by 300 % and sustaining such yield would change the livelihood of these villages.
The model which we adopted was as below…

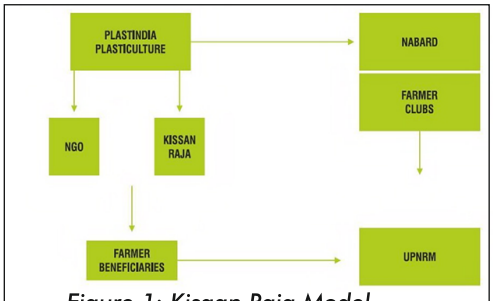

Figure 1: Kisaan Raja Model

We need to keep improving our model to help farmers and help ourselves which is measurable in terms of productivity from farm land for farmers and increased consumption of plastics for us. The story is covered in detail in the form of book, Kisaan Raja.

We all know that plastics can enhance productivity which was well demonstrated in Israel, China, USA, Europe, Japan, Taiwan, Korea and many other countries. But every country is different in terms of economic, socio political, climatic and land holding pattern. We need to create development models which would suit our conditions. We also need to improve upon our models so that it covers maximum farmer families
Plastindia Plasticulture with support from OPPI would escalate plasticulture activities to all India level by holding Demonstration cum Exhibition named as Kisaan Raja. These exhibitions are different from traditional exhibitions. These exhibitions will be held at the district and taluka levels in villages at the doorsteps of farmers. One of the slogans adopted by us was "Drip at Your Doorsteps"

Pictorial walk through of the Plasticulture Model

The villages selected were on an average 25 kilometers away from state highways where the civilization exists with ZP schools, post offices but no banks or hospitals with occasional electricity.

Picture Cluster 1
It was a satisfying experience that we could make the barren land green with very little quantity of water that was available. It brought smiles in the villages.


1. a. Barren Land- Any urbanite will be amazed that civilization exists in such barren areas, where farmers look at the sky for Rain God


1. b. Barren Land with Drip Laterals laid


1. c Cotton Crop on Drip Irrigation


1. d Flowering of Cotton ready for harvesting

Planning and Execution

Lot of efforts have to be put in by conducting meetings at the farms or temples in the villages. Following is a pictorial walk through of planning and execution of Demonstration and Execution.

Picture Cluster 2

2. 1 Meeting Villagers

2.2 Kisaan Raja Opening by District Collector

2.3 Addressing Farmers during the Exhibition

2.4 Demo Plot getting ready for Drip

2.5 Visit to Demo plot

2.6 Growth of Cotton Plants

2.7 Bumper Yield of Cotton

2.8 Bumper Yield of Cotton

New Models

Plasticulture activities will continue with drip irrigation however farmers are positively inclined to use more of plastic products. Though still skeptical due to fear of quality of plastic that gets supplied to them. Inadequate rainfall this year has changed perception of progressive farmers who are normally opinion makers in the villages.

They are now asking for pond liners to create small ponds without waiting for the subsidy. These ponds will be a reliable source of water for the drip systems.

Pond Liners

At Kotagiri project of Plastindia Foundation we have planned three small ponds in the hilly terrain. Our NGO from Aurangabad has been working with farmers to create huge reservoirs to accumulate rain water which would eventually bring up water table.

3.a Small Pond at Kotagiri Taluka Nilgiri District of Tamilnadu.

Picture 3.b Shirpur Pttern Dam at Morhira, Aurangabad

Picture 3.c Larger Pond

Farmers now do not want to wait for subsidy to come to their steps and create ponds. Plastindia Plasticulture would encourage group of farmers to create more ponds

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Polyethylene Films

Horticulture has become a key driver for economic development in many states in the country. It contributes to 30.4 percent to GDP of agriculture from nearly 13 percent of total cropped area and support nearly 20 percent of agriculture labor force. During 2013-14 horticulture production was 277.4 million metric tons in comparison to food grain production of 265 million metric tons. Protected cultivation of horticulture can give 5 to 12 times of production but in India protected cultivation is approximately on 25,000 hectares whereas in the world protected cultivation is spread over 623,302 hectares. There would be huge requirement for polyethylene films in India starting from Greenhouse films, Low and High Tunnel films, Mulch films etc.

Mulch films and shade nets should be able to tolerate modern pesticides. Then comes the low tunnel and medium tunnels. The film has to be pesticide resistant. Many farmers are going away from

greenhouses which they find expensive and they also have marketing issue with the products that they cultivate in the greenhouses. They are now preferring shade net houses.

Picture 4.1 Mulch Films

Picture 4.2 Low Tunnel Films

Picture 4.3 Medium Tunnel Films

Picture 4.4 Green House Films

Shade Nets

Farmers prefer to grow vegetables in shade net houses considering Indian climatic conditions. At Kotagiri we have planned a small shade net house for nursery.

Picture 5.1 Shade Net at Kotagirifor Nursery at Kotagiri, Project funded by Plastindia Foundation.

Picture 5.2 Typical Shade Net House

Crop Protection Films

Farmers are under too much pressure due to unseasonal rains and hail storms. They feel increasing need for Crop Protection films. These are basically wide width films which has varied thickness across.

Picture Cluster 6:Crop Protection Films

All above are few examples of our future targeted activities would be.There would be huge consumption of polyethylene in various agri film areas as present consumption is negligible.

If we take example of polyethylene consumption for mulch film considering area under irrigation of 70 million hectares, at 10% market penetration the quantity of mulch film requirement comes to 13 lakh tons.

Indian Plastic industry needs to get geared up for this demand. There are few companies making and selling mulch and other agri films but the demand would be much more.

At present lot of these films get imported in the country which are expensive and can not reach all the farmers. Plastindia Plasticulture would create different models of development so that films made in India are sold to farmers in the remotest areas.

Use of modern pesticides have made these films quite sophisticated

which should be considered very seriously by industry players who would participate in promotion of their films in agriculture. World over agriculture is a serious business for the plastics industry.The key drivers behind the development and use of agricultural films have been: extending the growing season for crops; and raising the yield. With the growth in world population, issues of food security and scarcity are becoming increasingly important.

Polyethylene films have made a substantial contribution to the increase in agricultural production over the past 50 years through the development of products used for mulch, silage and greenhouse applications. AMI estimates of 2010, worldwide demand for PE films in agricultural applications at 3.6 million tons. Asia holds by far the largest share of the market at 60%, with China the world's largest single market at around 1.5 million tons. However, Europe also makes significant use of agricultural films, accounting for 19% of world demand.

Plastindia Plasticulture committee is now planning the promotion of plastic products by way of

a. Exhibition cum Demonstration – Kisaan Raja Exhibition done in past is one model. However this model will keep changing as we move from one geographical location to another within India. This is mainly due to the change in crop pattern with change in geographical location.

b. Mobilization of Plastic Products manufacturers – Most farmers complain about quality of plastic products used by them. We need to address this situation.

c. Creation of Demo installations and Pilot projects. Use of plastic films has become a necessity due to insufficient rains this year. Farmers have realized this and are eager to adopt use of mulch films, shade net house, tunnel films, silage films, pond liners.

d. Pilot projects for Subsoil drainage and reduction in soil salinity. This type of pilot projects will cover large land parcels. These farmers will be targeted for further promotion of drip, sprinkler irrigations and for use of plastic films.

e. Village Adoption – Clusters of villages would be identified for funding from NABARD and other funding organizations which would be done through NGOs. Role of Plasticulture Committee would be of a facilitator.

f. Technology adoption – we realized that apart from new technologies in plastics we need to work with other agencies who are also making efforts to improve agricultural productivity with new and or advance technologies. In Kotagiri project of Plasticulture Committee we have adopted solar power for pumping water from the well, power fence on solar energy to keep animals away from the field. This is one example however there are many organizations who are working in this broader space of agriculture where we need to networking.

Use of PVC pipes for water transportation and use of drip and sprinkler irrigation has been known to farmers in India. In our previous interaction with farmers of Jalna we realized that small and marginal farmers do not have money to buy drip set even for their one acre land. We had NABARD with us who helped the farmers with small loans through NGO. Therefore promotion of drip and sprinkler irrigation does remain as priority and all other plastic products follow thereafter. This makes our Kisaan Raja model more relevant.

Plastic industry has come together in past for creating BIS standards for Plastic Woven Sacks (PWS). Two standards, one for food grain and other was for sugar. Jute lobby did not want this to happen fast and there was lot of resistance. However we did succeed. Existence of standard brought discipline to the trade as technical specs were available for tenders to quote.

Similarly lot of new standards need to be created for use of plastic products such as mulch films, tunnel films greenhouse films etc.which are for Indian climatic conditions. The existing standards need to be modified to accommodate new materials like metallocene polyethylene and others. This is going to be team work and all players need to come together and make this happen.

Plastindindia Plasticulture Committee together with OPPI is committed to interact with industry members, NABARD, Central and various State Governments particularly Ministries of Agriculture and Irrigation, Research organizations under Central and State Governments, CASR laboratories and National Research Centers, Bureau of Indian Standards NGOs and farmers of India.

This mammoth task needs contribution from everybody and I would request everybody who is reading this article to make positive contribution to this noble cause.

"Next Kisaan Raja during Kharif season at Marathwada, Maharashtra"

Jai Hind.

Author
Dr Yatish B. Vasudeo,
Chairman Plasticulture Committee,
Plastindia Foundation.