

AGRICULTURE IN CONTEXT OF

CLIMATE CHANGE

Agriculture is going to be a very critical sector in the context of the climate change phenomenon that is being felt in every part of our country and manifested through events such as cloud bursts, heat spells, higher temperature, less water storage in areas of high rainfall, vanishing wet lands, advancement of shore lands, salinity ingress, rising phenomenon of alkalinity. In the context of these important but veritable things which have been happening what is very important in the days to come is to have a three-fold strategy (1) Maximization of carbon sequestration to make utilisation of the local resources which is conservation; (2) Maximization of integration of knowledge, technology and line agencies all at the field level for making the applications of R&D and technology possible; and (3) In this present day world, what is very important is not working for only CDM benefits but for convergence of resources, integration of strategies and bending science to the advantage of beneficiaries. In short, it is not the supply of science which is important for us but it is the demand for science that is important for us.

In the same way, it is always the anticipatory approach for meeting with the needs and coping with the problems that is very important than adopting a reactive approach to a particular situation for solutions. In the whole process, we have not only to perceive a problem but add value to agriculture so that the farmers do not lose their identity or income and livelihood.

I can suggest few good practices that can be made possible for replication in the context of climate change phenomenon that is being talked of like adoption of Bio-char where the remnants of the produce are not burnt but they are kept inside the fields and they are put to fire so that fire in this organic matter would enhance the carbon availability for

soil. In the similar manner, the spent wash that is generated out of the sugar cane crushing in mills along with their solid waste can be used as liquid fertilizer here for the purpose of providing local fertilizers and bio-compost as an alternative to chemical fertilizers so that this bio-fertiliser can be applied to protect the cycle of soil and land from alkalinity. Every village ought to have energy plantation and food plantation both consumptive needs of the people as well as for livestock needs. This would be able to save our forests, protect our ecology, conserve our resources and at the same time our needs would be met while livelihood would be maintained. Taking up tree as a crop through plantation is a resource for generation of money on the same lines as rice and sugarcane, etc but this would further enhance the water conservation levels and add to increasing prospects of the bio-fertilizers that would help in soil and moisture conservation. It would also help to make the soil fertile and those uncultivable peripheries which remain unused would become fully used giving an incremental income to the farmers and in this way through plantation as a crop for five years gestation period can add to the income generation capacity. This will also withstand the stress and heat phenomenon and at the same time work as a sub-reservoir of water for providing adequate moisture and nutrition to the soil and crops which are to be grown.

The agriculturists and the farmers in general have to now gang up in a consortium and have a networking style to see that they market their products in common, transport their goods or raw materials together and bargain together for a price line along with common storage facilities so as to disallow any scope of leakages and thus save the costs and increase their power of bargaining. In terms of irrigation, a new shift is taking place both in Rice and Sugarcane where sugarcane is being now grown in rows with a distance between the two rows so that other agricultural crops can come in between and they could be given three to four irrigation at the times of need and their harvesting would also done scientifically according to the rows and this would all mean saving of water, prevention of methane and giving alternative opportunities of taking up inter-cropping. The same would

be true of Rice where the Rice fields become a major source of methane generation and this probably may be replaced by those fields which would need intermediate irrigation from time to time and that would in the same manner reduce the methane issue, act as a cost saving technique and also conserve water time and address other problems. Generally, it can be said that all the wet lands which are usually taken care by community particularly the farmers have to be jealously cared not because they are wet lands but these wet lands themselves would be able to reduce the stress and heat generated by extreme climate conditions which would be in any case not less than 2°C more in years to come during the summer and such wet lands can become a great antidote not only to the heat and stress but also the soil fertility and conservation of water for farmers lands nearby. In addition exercises which are being done through Universities for developing new germ-plasma for dry and heat resistant crops can also be like an icing on a cake. In any case, we have also to ensure that microbes which lie at the foundation of the soil and contribute to the process of transformation of a seed to a fruit have to be maintained through all measures and therefore bio-diversity conservation has to be the hallmark in which the role of mangroves has to be quite critical. In mangroves sector, Gujarat has added significantly to its total area and this has helped conservation of shores, agricultural lands, water sources for drinking and fishing for livelihood. The off shore plantation of mangroves in the inter-tidal lines and on shore plantation of those species which protect the salinity and also stop winds that carry sands would also help agriculture sector to grow up rather scale up its success level.

Every farmer has to think in terms of out of box solutions. We are normally accustomed to the thinking process that we would be taking 2 to 3 crops in a particular farm land but we should also get ready to work out a strategy in which we can take 7 crops out of the same land through the use of bio-fertilizers, right conservation of water, use of micro irrigation modules and also deploying all kinds of carbon sequestration measures so that that 3 horticulture crops can be taken in 3 seasons on same land and underground crops like

tubers and roots can be taken while tree as a crop also can be taken up for Timber and one cereal crop other than grass can be raised that would lead to the local sustenance of family. This also can be attempted through inter-cropping and farmers should be able to derive optimum utilisation of land through such practices provided they get into an act of readiness and start a process of physical preparedness in terms of logistics, resources and technology. This is where the Universities and R&D agencies have to work together to benefit them instead of just passing on technology of a GM crop in a “Top to Bottom approach”. This may give instant success but would not carry the remedy for the future. This is how the climatic conditions can be secured to ensure food security because both climate security and food security are integral to each other and they are symbiotic in relations and both have to keep pace with each other depending on the conditions and such adaptations have to take place continuously with a good dose of technology, knowledge, alertness and community participation.