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Editorial

Innovations in Agriculture

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Technological advancements help provide farmers with tools and resources to make farming more sustainable. Technology permits innovations like conservation tillage, a farming process which helps prevent land loss to erosion, reduces water pollution, and enhances carbon sequestration.

Are there alternative approaches?

In the past natural pesticides from neem, annona squamosa (Custard Apple seed oil), Tobacco, Tinospora Card folia were in use which are environment friendly but chemical pesticides replaced them. There is the need to revive them as it provides employment at local level.

Calotropis as Green Manure

Of late Organic Farming, zero budget Farming etc. have become buzzwords. In Zero Budget Farming main component is animal dung and Urine. These have had been in use since ages, nothing new except in name. In the olden days people living in towns used to have cattle for milk. With packed milk readily available at your doorstep there is dwindling number of cattle. I have an alternative. Calotropis procera is a wild plant occurring on the roadside and near the railway track. In the olden days it was used as green manure. The plant has latex which is antibiotic. To control Red Hairy, cater pillar in Groundnut in Chittoor District (Andhra Pradesh, India) Farmers put Calotropis in the fields. The Red Hairy Caterpillar after eating the leaves, further reproduction is stopped. I have a Biogas plant which is 30 years old. I am combining the Biogas slurry with calotropis and after drying it using as natural green manure in our fields. I have a plan. Since it is wild growth, calotropis can be regularly grown in vast waste lands and can be combined with Animal Dung and fertile soil from water tanks and canal dried and made into powder and packed in 25 kg, 50 kg bags just like chemical fertilizers. This will provide massive employment and helps clean environment.

CAM Plants Opuntia and Sisal Agave for Multiple Uses and to act as Carbon Sink

The rise in temperatures has become a routine feature even in the month of October. Temperature rise has direct connection with accumulation of CO_2 and Atmospheric Vapour which has consequences like Floods and Drought. Nature provides simple solution for this. In olden days people use to tie CAM plants cactus and agave at the entrance giving religious tinge to counter DRISHTI (Evil Eye). But there is lot of Science behind this. Crassulacean acid metabolism, also known as CAM photosynthesis, is a carbon fixation pathway that evolved in some plants as an adaptation to arid conditions. In a plant using full CAM, the stomata in the leaves remain shut during the day to reduce evapotranspiration, but open at night to collect carbon dioxide (CO_2). Opuntia (Cactus) and Sisal Agave are CAM Plants with multiple uses which are of care free growth regenerative and can act as Carbon Sink. 30 bi products can be obtained from Opuntia,10 from Sisal agave besides these are input for Biofuel/biogaspower/biochar. In the debate Food Vs Fuel, Biofuel from Agave is a winner. In the Developing countries in the vast waste lands these CAM Plants can be grown on a massive scale which will provide huge employment.

Water Hyacinth – Wealth from Waste

Being an Agrarian Economy and as advocated by Mahatma Gandhiji India needs to promote Agro Industries utilizing local resources and resourcefulness. Here is an action plan for India in general and State of Andhra Pradesh in particular.

Turning pest into profit: bioenergy from water Hyacinth – Multiple Uses.

Andhra Pradesh has rivers, lakes and many other water bodies including ponds, canals and irrigation ways. Much area of these water bodies is infested by Water Hyacinth. If these plants can be

put to good use, a lot of profitable products can be obtained from these so called weeds. Kolleru Lake is one of the largest freshwater lakes in India located in state of Andhra Pradesh 20 kilometers away from the city of Eluru. Kolleru is located between Krishna and Godavari delta. Kolleru spans into two districts - Krishna and West Godavari. In Kolleru lake for most part of the year Water Hyacinth is available.

Water Hyacinth (Eichhornia Crassipes)

Water hyacinth which is generally regarded as a menace can find many uses:

- In food production
- As leaf protein concentrate, which is rich in protein and vitamin A
- As a substrate for mushroom cultivation
- By making soils more fertile which yield better crops
- By purifying water, in which fish can then thrive
- Through the production of silage, for fattening animals
- Through vermiculture, producing feed for poultry or fish
- In regenerating degraded soils
- As compost
- As fertiliser, produced by mixing with other organic materials and phosphate rock.
- In biogas production. 1 hectare of weed can produce 100 tons of dry water hyacinth/year which could produce 30,000cu.m of gas sufficient to supply cooking for 40 families. The residual slurry must be used as mulch.
- As briquettes, which can be used for cooking in kitchens for schools and restaurants.
- In providing employment and income, through the production and sale of: A range of art papers and cards, crafts and furniture, (on industrial level), chemicals and liquid fuels.

Nutritious Protein from Water Hyacinth

Leaf fractionation produces up to 10 times as much protein per hectare as when the land is used to grow food for animals. It does not require artificially fixed nitrogen, which is made using a large amount of energy. It is already being used on Lucerne, or alfalfa in France, Hungary and the US to make supplementary feed for pigs and poultry. As Lucerne is a legume, it adds nitrogen to the soil. The process can be applied to almost any fresh green leaves, including weeds such as water hyacinth and nettles. The leaf protein it produces contains no animal fats, and the fibrous residue is an excellent ruminant food. Feeding trials in 14 countries have shown that regular leaf concentrate consumption promotes good health and weight gain, increases hemoglobin and vitamin A status, and reduces the frequency and severity of illnesses. One series of trials in which leaf protein was used to supplement the diet of badly nourished children for six months showed that the weight increase was nearly three times as great as that of those whose diet was unaltered (New Scientist,5th April,2000).

Biogas can be obtained from Water Hyacinth along with animal dung. Fine Furniture is made from water hyacinth roots in Indonesia, Thailand and Vietnam and exported.

PVC Pipes for small irrigation to save water from evaporation and seepage

In many parts of India open canal system in fields is in vogue. This results in water evaporation and seepage. Water is precious. Why not Government draw a scheme to provide PVC Pipes for small and medium farmers by giving soft loan. This will save water besides power.

Hand Gloves, Gumboot and Cap for Rice trans planters

It is a shame that even after 71 years of independence still rice transplanting women have no hand gloves, gumboot and cap. Because of constant stay in mud and water fungus formation between fingers of hand s and feet. Unable to purchase medicine they apply phenol or kerosene to cure the wounds. It is high time that these rice transplanters are provided Hand gloves, Gumboot and Cap for protection.

Land and People are great assets to any Nation. We have plenty.

As one Economist put it," Agriculture in spite of the glorious opportunities offered to it is sick because it is subjected to colonial economics which no one cares to study and supersede. It is not the lack of resources but resourcefulness that explains why people perish in the midst of plenty".

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