Commercial Cultivation of Biodiesel Yielding Jatropha: Prospects in Assam

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Jatropha is one of the species with medicinal and bio-diesel potential. It is found in abundance in Assam, as it grows on roadsides, wasteland and village boundaries. If properly exploited, it can make a significant impact on the Indian economy. Its seeds yield 30% to 40% oil which can be blended with diesel. The dependence of diesel can thus be reduced. A bio-diesel mission is being created on the recommendation of the Planning Commission to plant Jatropha in 4 lakh hectares of land during 2006-07, the author points out.

Jatropha, a bushy plant found almost everywhere in Assam growing on roadsides and wastelands including village boundaries is going to create a significant impact on the Indian economy. The plant has been useful in rural areas and is used as a medicinal plant in curing skin-diseases, toothache, etc., as a fencing-material and as a soil-binding plant in erosion-affected areas. In Assam it is commonly known as ‘Bhoot Era’. The jatropha seeds yield 30% to 40% oil which can be blended with diesel and hence the attention. 70% of petroleum used in India is imported at the cost of more than Rs. 1.00 lakh crore. As the demand and prices are bound to increase every year, it is natural that we will be looking for different supplementary sources. Thus the concept of bio-diesel has appeared. Species with bio-diesel potential include pongamia, jatropha, neem, mahua, rubber and sal. The Planning Commission evaluated these and identified pongamia and jatropha as the most promising. Finally, jatropha was recommended as its commercial seed-yield commences from third year while pongamia takes seven years. It can also be grown in poor soils. Therefore, the wastelands and degraded forest lands can be easily brought under jatropha cultivation associating the people living in and around such areas.

On the recommendation of the Planning Commission, a biodiesel mission is being created to coordinate the initiative and enterprise of individuals, communities, entrepreneurs, oil companies, business, financial institutions as well as government. The mission envisages to plant jatropha in 4 lakh hectares of land during 2006-07 under a pilot project costing Rs 1,430 crore. The Union Ministry of Rural Development was to be the nodal body for the biodiesel programme. The projected production in 2007 is 2.62 million tonnes which will enable 5% blending of biodiesel with the assumed demand of 52 million tonnes of diesel in 2007.

Some of the states are showing keen interest for large-scale cultivation of jatropha. The Chattisgarh Biofuel Development Authority (CBDA) has been created with an ambitious plan to plant jatropha in 3 lakh Ha in 2007 and to bring the total coverage of 10 lakh Ha by 2010.
The plant: Jatropha (Jatropha curcas L under Euphorbiaceae family) is an evergreen, soft wooded thick & soft skinned bushy plant and grows up to 6 m. The leaves are wide and thick. It flowers during April and May. The fruits are slightly smaller than arecanut, and turn black on ripening. The seed inside resembles two pieces of thick peanuts and contains 30 to 40% of oil.

Cultivation: Jatropha generally grows on uplands in almost any kind of soil. The leaves are not eaten by cattle which is also an important factor in places where cattle graze freely. Pests and diseases are also not common except pod borer. Cultural operations and inputs needed are hardly one-fourth of other cash-crops like rubber, coffee, tea, etc.

Jatropha is propagated both from seeds and branches. Seeds are to be kept in water for one night before sowing. Seeds can be sown in polythene bags also. Seeds need about 7 days to germinate and become ready for planting after 45 days. About 5-6 kg seeds are needed for 1 Ha plantation. Planting is generally done in 2.0m X 1.5m spacing. In fertile soil seedlings can be planted 2 m apart. As per fertility status of land, the plant needs 3 to 5 kg of compost per year. To ensure higher production chemical fertilizers should be applied after proper soil testing.

The plant remains productive for 35 to 40 years and needs moderate pruning of high branches during February-March.

Coconut, Betelnut can be grown with Jatropha as mix-cropping. Vegetables, aromatic and medicinal plants can also be grown along with jatropha during the initial years.

Commercial viability: Second year seed production is about 1 tonne/ha and with annual increase in production, yield reaches about 10 tonnes/ha. As per present market rate of Rs. 5/kg, which is bound to increase significantly, the income will be Rs. 5,000/- to Rs. 50,000/ha.

Prospect of jatropha cultivation in Assam: Tea being the most remunerative plantation crop in Assam, young entrepreneurs of the state are much attracted towards tea cultivation. Of late rubber has also become popular along with some other commercial crops. However, the degraded forest lands where agricultural activities are restricted and the abandoned jhum lands in the two hill districts can very well be utilized for large-scale jatropha cultivation. While joint forest management committees can take up jatropha cultivation in forest areas, the abandoned jhum land may be taken up under jhumiya rehabilitation programme. In fact, a few years back, Karbi Anglong Autonomous Council had initiated jatropha cultivation in Karbi Anglong district under Integrated Wasteland Development Programme for Rainfed Areas (IWDPRA). The Assam Plantation Crops Development Corporation (APCDC Ltd.) was established during 1973-74 with the main objective of providing the jhumiyas a better landuse alternative in the form of coffee and rubber. Like other public enterprises, APCDC Ltd. is now reeling under malfunctioning and financial constraints. APCDC Ltd. now can take a revival programme with jatropha cultivation.

Following facts favour large-scale jatropha cultivation in Assam.

1. There is sufficient available land.
2. The input, compared to tea, coffee and rubber is much less.
3. Disease and pest problem is minimum.
4. Gestation period is just one year. Coffee needs three years while rubber needs six years.
5. Easier to cultivate, not much technicality needed.
6. Income is supposed to be continuously remunerative for more than 30 years.
7. An assured market without any harvesting and marketing problem.
8. Possibility of Central support and also from various financial institutions.

As such there is good prospect of jatropha cultivation in Assam both in the degraded forest land, abandoned jhum lands, as well as in other degraded wastelands unfit for tea, coffee, rubber, etc.
Two Important Laws of Spiritual Life

We learn two important and essential laws of spiritual life from the words of Sri Krishna. First, don’t give in to weakness of any kind. Weakness is a great obstacle to the attainment of the goal. Secondly, we should harmonize our thoughts with our words. If we are able to practise these two teachings in our lives, the doors of success will open wide. To whatever extent we follow these two laws, to that extent will we—wherever we may be, either in worldly life or out of it—achieve something tangible in life.

The Essence of the Gita
by Swami Saradananda (pp. 21)