Study on Cultivation of Biofuel Crop Jatropha Curcas Linn

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Abstract: Jatropha curcas Linn. is highly promoted biofuel crop which contains high amount of oil in its seeds which can be converted to biodiesel. Present paper confers details about survey carried out of farmers cultivating Jatropha. The objective was to study problems related to Jatropha cultivation, to identify and describe the socio-economic characteristics of farmers growing Jatropha plant. A total of 200 farmers across four districts were interviewed using a set of structured and unstructured questions (questionnaire). Major problem about Jatropha cultivation was availability of market for selling seeds. Among farmers less accept-ability of Jatropha as biofuel crop was due to the delay in notifying, publicizing and ex-plaining the government bio-diesel policy.

Keywords: Biofuel, Cultivation, Jatropha, Policy, Problems.

Introduction

Biofuel has attracted considerable attention during the past decade as a renewable, biodegradable and non-toxic fuel alternative to fossil fuels [1]. Economic, environmental and energy security concerns resulting from excessive reliance on petroleum are forcing the world over to shift to alternatives like biofuel [2]. Using biofuel reduces the problem of global warming. It provides new market for farmers. If farmers of under developed cun-tries start to produce feedstock for biofuel then there income will change considerably. There are several benefits of biofuel such as, reduced emission of harmful pollutants, in-creased employment, energy security, improved social well being etc [3][4].

Many biofuel plants are promoted by government of India for cultivation. Jatropha curcas Linn. a multipurpose plant, contains high amount of oil in its seeds which can be converted to biodiesel. Jatropha is the also known as Physic nut belongs to family euphor-biaceae [5]. Jatropha production has very high potential to ensure environment-friendly agriculture [6]. Jatropha lies grow without water; drought has no impact on it. Further-more, it requires little maintenance that in turn reduces cost of production [7]. Jatropha can be useful for other crops as well because it has capacity to repel other animals and insects [8] [9].

Since Jatropha production doesn't require pesticide, insecticide, fertilizer and irrigation, its production will not have ad-verse impact on soil, water and air [10]. Like other agriculture activity, Jatropha production is not dependent on agriculture; it will have no negative impact on forest and biodiversity [11]. Rather its production will improve the soil quality of saline and wasteland and stop desertification. Conversion of waste-land to farm-land with some biodiesel crop like Jatropha can be viewed as positive impact [12].

In the economy market Konkan is well known for its pad-
Age of farmers

All farmers were classified in three groups on the basis of age (Fig.1). The age groups were 18-40 yrs., 40-60 yrs. and above 60 yrs. Out of total farmers maximum farmers were in the age group of 40-60 yrs. Followed by 18-40 and minimum in above 60 yrs. age group.

Educational qualification

On the basis of educational qualification Jatropha cultivating farmers were classified in five groups as Uneducated, Primary educated, Higher Secondary educated, Agriculture diploma/degree, graduate, post graduate (Fig.2). Maximum farmers were with Primary education followed by Higher secondary education, graduate, uneducated, post graduate and agriculture diploma respectively.

Fig.1 Age distribution of farmers (%)  

Fig.2 Educational qualification of farmers (%)  

Economic Status

On the basis of economic status farmers were mainly grouped into two categories as above poverty line and below poverty line (Fig.3). About 82% farmers growing Jatropha were above poverty level while 18% were below poverty level.

Fig.3 Economic status of farmers (%)  

Gender wise bifurcation of farmers

In view of understand gender based ratio in the agriculture, information was collected (Fig.4). The information analysis showed that out of total farmers interviewed women farmers were 14% and male farmers were 86%. It indicates that gender balance in Jatropha agriculture is low and dominated by male.

Fig.4 Gender wise bifurcation of farmers  

Caste wise bifurcation of farmers

For caste wise involvement in developmental process especially in agriculture field caste wise involvement of farmers was assessed (Fig.5). Based on data analysis it was found that 56% farmers were from OBC category, 19% farmers from SC category, 4% from ST category and 21% from other category farmers were engaged in Jatropha cultivation, so the OBC communities are more engaged in Jathropha cultivation.

Fig.5 Caste wise bifurcation of farmers
Land holdings pattern of the farmers:
Land is the basic asset for farmers for their livelihood therefore to assess the land holding and ratio of land analysis was carried out for farmers cultivating Jathopha (Fig.6). It was found that 46% farmers holding less than 10 acres land whereas only 7% farmers holding more than 20 acres land, 29 percent farmers having 10 -15 acres & 18 percent farmers holding 15-20 acres land. Thus the analysis is in Konkan region small farmers are more engaged in Jathropha cultivation. Jatropha is being promoted as the ideal plant for small farmers [13].

But Jatropha cultivation is carried on waste land mainly and not on agricultural land [14]. As Jatropha is grown in marginal and problem soils, it should have better adaptability to salinity

Analysis was carried out to recognize that how much amount of money was earned by the farmers before cultivation of Jatropha (Fig.7). From total 64 % farmers were not earning because their land was waste land, whereas 29 % farmers said that they were earning less than Rs.10,000. 6% farmers were earning Rs.11,000 to Rs.20,000 & only 1% farmers told that they were earning Rs.21,000 to Rs.30,000 from their 1 hectare land.

Jatropha plant is currently receiving a lot of attention as an energy plant [16]. The major problems regarding Jatropha cultivation which were appeared by the case study are:

1. Lack of confidence in farmers due to the delay in notifying, publicizing and explaining the government bio-diesel policy
2. No minimum support price
3. In the absence of long-term purchase contracts, there are no buy-back arrangements or purchase centers for Jatropha plantations
4. Lack of availability certified seeds of higher yield containing higher oil content
5. Limited announcement of incentives/subsidy and other benefits proposed to be provided to farmers
6. Non-availability of cultures of Jatropha
7. Lack of technical guidance & scientific information about Jatropha cultivation.

Major problem about Jatropha cultivation is availability of market for selling seeds. Farmers have to spend much money for transportation of seeds and so it is increasing the input cost of crop. Farmers said that proper guidance and help from government regarding the market and other issues is not given. 77 % farmers said government can’t come for support
Jatropha is a multipurpose species with many attributes and considerable potential as bio-fuel plant. Despite considerable national and policy emphasis on Jatropha cultivation, small proportion of Jatropha production was found in Konkan region. The reason behind this situation is improper implementation of government schemes and not the potential of Jatropha. The other reasons are less acceptability of Jatropha crop, lack of confidence in Konkani farmer, due to the delay in notifying, publicizing and explaining the government bio-diesel policy, No minimum support price given by government, unavailability of nearby market. Negligence of government officials regarding promotion on Jatropha pro-duction declines the impact. In Konkan only some NGOs are working for promotion of Jatropha. The authors strongly recommend the need to promote and strengthen Jatropha policies and strategies in not only Konkan region but also other regions of Maharashtra and India. It will recognize the potential of Jatropha to contribute towards socio-economic development, sustain rural income and improve livelihood.

### References


