Jatropha FAQ's

1. **Potential of Jatropha as an energy crop?** Jatropha has great potential to grow on lands that are not productive for food crop. If inter-cropped with Castor, income and oil production starts from first year itself. Jatropha yields oil in smallest time frame as compared all other trees.
2. **What are the advantages of Jatropha cultivation?** It can be done on fallow lands, requires less amount of water and yields oil in 3 years.
3. **What are sustainable models of Jatropha cultivation?** It can be planted in fields of size ranging from 1 to 10 acres for one farmer to 1,000 acres for large plantation companies. Income will be proportionate to size of field.
4. **Jatropha nurseries, Clonal propagation?** Jatropha Saplings are generally prepared from Seeds. These can also be produced from branches. Hybrid and Clonal varieties are also available.
5. **Seedlings and cuttings of plantation?** Tree grown from seeds have a tap root, which helps in droughts and cyclones. It can collect water from deep soil and anchors the tree. Cuttings do not have tap root, but seeds are obtained much earlier.
6. **Commercial nurseries: plans and costs?** These are done in Green / Net Houses. The production cost of sapling is higher. Individual farmer produces saplings in field, which is much cheaper.
7. **Controlled environmental chambers?** It helps as initial growth of saplings. It is good and more saplings survive well in fields.

8. **Organic interventions for disease control and and rapid growth?** Organic farming is better as it is natural and requires lesser amounts of fertilizers and pesticides.

- **Disease Management in Nurseries** - Disease Control is much easier in nurseries as young saplings are attacked by pests in first 3 months. Also plants are stacked in smaller area in closed chambers, so individual attention can be provided to all saplings.
- **Why India is leading country in Jatropha Cultivation?** - Jatropha is good for employment for rural poor people. In India, it is used for lighting the lamps and in Soap manufacture, as other edible oils, like palm, used so far are very expensive (prices have doubled). Jatropha has bright future in India, as our country is densely populated and soil is good due to largely organic farming techniques used for last hundreds of years. In countries in Africa where it is not populated, the expenses for roads and townships that need to be set up are prohibitive. This makes Africa less attractive. In south east Asia, labour costs are double that of India.
- **What is the share of India in the world production?** - India's share will always be more than 50% as the land is organic and labour is quite inexpensive. There is a lot of manual work in plantation, pruning and harvesting. Machines for planting, pruning and harvesting are not yet developed.
- **In how many years you think India could export Jatropha oil?** - It will not be possible to satisfy local demand and export to other countries is unlikely
- **What are the production cost to produce one ton of Jatropha oil?** - 1 liter of oil is produced from 3 to 4 kgs of seeds. The seed cost is currently around Rs. 12 to 14 per kg and cost of extraction is Rs. 2 per liter of oil.
- **Which big companies produce oil or who have project in Jatropha oil?** - In India, nobody can hold more than 50 acres of land, hence most plantations are scattered on small lands. These are owned by the people who work on their own land. These are close to their villages. These are taken care manually, and yield best results.

- **What is the Process of oil extraction?** - There are two methods. Oil expeller is for small activity (1 to 10 tons per day) and Solvent extraction for capacities more than 100 tons per day. You can get 25% oil in first case while 30% in second case.
- **What is the configuration of Plantation?** - Jatropha is planted in 3 X 3 meters square configuration. This allows us to plant 400 plants per acre or 1,100 plants per hectare. Castor is planted as intercrop for first two years
- **Can contract farming be done in Jatropha Plantation?** - Contract farming works well where the supply is much more than demand and the processing machinery is expensive and processing is difficult. It is not the case in Jatropha. Farmers may sell it to someone offering higher price than the contract price.
- **Which are the oil seeds best suited for BioDiesel manufacture?** - These are Jatropha Curcas, Pongamia Pinnata, Mahua, Castor, Simarouba, Kokam etc. Jatropha Curcas, Pongamia Pinnata and Mahua are plantations which give non edible oil. Castor is a 6 month crop which gives non edible oil and is grown as intercrop within Plantations. Simarouba, Kokam is a plantation which gives edible oil.
- **What is the yield from 1 hectare of Jatropha / Castor Plantation?** - You can get 2.5 tons of Castor seeds in first and second year and 2.5 tons of Jatropha seed from third to fifth year. You can get higher yields after 5 years. Jatropha will yield seeds for 40 to 50 years.
- **Can the oil be used as it is in Power Generating Station?** - In Power Generating sets, oil is burnt at high temperature (100° C or higher), at which viscocity reduces considerably. Any unit generating 1 megawatt or higher can burn the oil directly.
- **What is the Cost of Expeller unit?** - An expeller plant is required to extract oil from seeds. The size of expeller unit can be 1 MT / day (Capital Cost Rs. 70,000) or 1 MT / hour (Capital Cost Rs. 3,00,000) or 2 MT / hour (Capital Cost Capital Cost Rs. 5,00,000). These values are indicative and you should get fresh quotes from expeller manufacturers. Depending on the capacity of the plant the cost of expelling oil will be between Re. 0.19 per liter to Re 0.90 per liter of oil.
- **Intercropping models** - Castor and Corn are the best inter crops. These are energy crops and yield income in 5 months.

- **Intercropping of Jatropha Curcas with palm and rubber** - This is not a good idea as when Palm / Rubber tree grows it covers entire area, and less sunlight is available for Jatropha.
- **Intercropping of traditional food crops with Jatropha Curcas** - It is not recommended as Jatropha is non edible, and mixing it with edible crops is dangerous.

What are the advantages of Jatropha as a plantation crop?

Easy to establish, grows quickly, hardy and require little care.
• It can grow in poor soils, in wastelands except flood prone and waterlogged areas. Reclamation of wasteland and degraded land is possible through its plantation. In fertile land it gives higher yields
• Plantation of Jatropha, oil extraction and nursery raising, can be rural based, hence promoter of rural economy besides ensuring energy security.
• It is suitable for preventing soil erosion including *Jhum fallows*.
• Jatropha is not a competitor of any crop rather it increases the yield.
• Due to *mycorrhizal* value in Jatropha roots it helps in getting phosphate from soil boon for acid soil.
• Improves the soil fertility throughout their life cycle.
• Possesses medicinal as well as other multiple uses.
• Generate net income for 30-35 years @ approx. Rs. 10,000 / ac/year from 4th year.
• Providing local jobs, lessening the need for local villagers to migrate to cities to find Employment.

Bio Diesel FAQ's

- **What is Bio-diesel?**

  Bio-diesel is the name of a clean burning alternative fuel, produced from domestic, renewable resources such as soybeans, sunflowers, canola, waste cooking oil, or animal fats. Bio-diesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a Bio-diesel blend. It can be used in compression-ignition (diesel) engines or oil-fired boilers or furnaces with little or no modifications. Bio-diesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics.

- **How is Bio-diesel made?**

  Bio-diesel is made through a chemical process called transesterification in which the glycerin is separated from the fat or vegetable oil. The process leaves behind two products-alkyl esters (the generic chemical name for Bio-diesel) and glycerin (a valuable byproduct usually sold to be used in soaps and other products)?

- **Why should I use Bio-diesel?**

  Bio-diesel is better for the environment because it is made from renewable resources and has lower emissions compared to petroleum diesel. It is less toxic than table salt and biodegrades as fast as sugar. Since it is made in the USA from renewable resources, its use decreases our dependence on foreign oil, creates jobs, and contributes to our own economy.

- **How do Bio-diesel emissions compare to petroleum diesel?**

  Bio-diesel is the only alternative fuel to have fully completed the health effects testing requirements of the Clean Air Act. The use of Bio-diesel in a conventional diesel engine or oil-fired furnace or boiler results in substantial reduction of unburned hydrocarbons, carbon monoxide, and particulate matter compared to emissions from diesel fuel. In addition, the exhaust emissions of sulfur oxides and sulfates (major components of acid rain) from Bio-diesel are essentially eliminated compared to diesel.

- **Can Bio-diesel help mitigate "global warming"?**

  A 1998 Bio-diesel lifecycle study, jointly sponsored by the US Department of Energy and the US Department of Agriculture, concluded Bio-diesel reduces net CO2 emissions by 78 percent compared to petroleum diesel. This is due to Bio-diesel's closed carbon cycle. Most of the CO2 released into the atmosphere when Bio-diesel is burned is recycled by growing plants, which are later processed into.

- **Is Bio-diesel used as a pure fuel or is it blended with petroleum diesel?**

  Bio-diesel can be used as a pure fuel or blended with petroleum in any percentage. B20 (a blend of 20 percent by volume Bio-diesel with 80 percent by volume petroleum diesel) has demonstrated significant environmental benefits with a minimum increase in cost for fleet operations and other consumers.

What is B100?

Full strength (100 percent) Bio-diesel is often referred to as B100 or "neat" Bio-diesel. A blend of Bio-diesel containing 20 percent Bio-diesel and 80 percent petroleum diesel is referred to as B20. The most popular blend of Bio-diesel in the United Sates is B20, which offers significant reductions in harmful emissions at an affordable price.

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