

**NATIONAL OILSEEDS & VEGETABLE OILS DEVELOPMENT BOARD**  
 (Min. of Agriculture, Govt. of India)

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**BIO-FUEL**

**Bio-ethanol & Bio-diesel**

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**Prospects of Bio-fuel**

- Consumption of petroleum products increasing
- Domestic production declining
- Renewable fuels
  - Bio-diesel
  - Bio-ethanol
- Efficient
- Environment friendly
- 100% natural energy replacement for petroleum fuel



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**BIO-DIESEL**


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**BIO-DIESEL**

- All vegetable oils, both edible & non-edible, on simple chemical treatment called **transesterification**, produce **BIODIESEL**.
- Biodiesel resembles Petro diesel in combustion properties
- Can be used in any engine which runs on diesel

**ADVANTAGES OF BIODIESEL**

- Environment friendly
- Low emission of PM,HC,CM,CO
- Higher flash point
- Clean burning
- Renewable fuel
- No engine modification
- Increase engine life
- Biodegradable and non-toxic
- Easy to handle and store



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**Advantage of bio-ethanol**

- Reduction in Carbon Monoxide and Hydrocarbons by 35-50%
- Blended fuels gives same mileage
- Smoother and cooler engine operation
- No change in engine and carburetor upto 20% blending.
- CO<sub>2</sub> emissions 57% lower than petrol
- No SO<sub>2</sub> emissions
- Indigenously produced fuel

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### TARGET OF BIO-DIESEL PRODUCTION

YEAR	Diesel Demand @ 20% MMT	Bio-Diesel @ 5% MMT	Area for 5% Mha	Bio-Diesel @ 10% MMT	Area for 10% MMT	Bio-Diesel @ 20% MMT	Area for @ Mha
2006-07	52.33	2.62	2.19	5.23	4.38	10.47	8.76
2011-12	66.90	3.35	2.79	6.69	5.58	13.38	11.19



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### RAW MATERIAL FOR BIODIESEL

- Rapeseed oil
- Linseed oil
- Sunflower oil
- Olive oils
- Soybean oil
- Beef tallow
- Palm oil
- Jatropha oil
- Cottonseed oil
- Frying oil

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### Constraints in bio-fuel crop production

- Unorganized plantation, collection and processing of raw material.
- Collection of raw material coincide with monsoon.
- Absence of reasonable price valid for 3-4 years.
- Variable tax and duty structure from state to state.
- Complicated procurement system affecting regular supply to the oil depots.
- *Interference by State Governments in* – putting procedural restrictions on production, sale and distribution.

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### WASTELAND FOR JATROPHA CULTIVATION

S. N.	States	Potential Area for Jatropha cultivation (Lakh ha.)	S. N.	States	Potential Area for Jatropha cultivation (Lakh ha.)
1.	Andhra Pradesh	43.96	11.	Maharashtra	48.55
2.	Arunachal Pradesh	9.97	12.	Manipur	12.62
3.	Assam	14.56	13.	Meghalaya	9.37
4.	Bihar/Jharkhand	18.60	14.	Mizoram	4.07
5.	Goa	0.40	15.	Nagaland	8.40
6.	Gujarat	28.71	16.	Orissa	18.88
7.	Haryana	2.62	17.	Punjab	1.06
8.	Karnataka	17.89	18.	Rajasthan	56.88
9.	Kerala	1.00	19.	Sikkim	2.13
10.	Madhya Pradesh/Chhattisgarh	66.20	20.	Tamil Nadu	17.95
			21.	Tripura	1.28
			22.	Uttar Pradesh/Uttranchal	12.14
			23.	West Bengal	2.58
			<b>Grand Total</b>		<b>400.37</b>

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### DEVELOPMENT OF BIO-FUEL THROUGH JATROPHA PLANTATION IN WASTE LANDS

#### OBJECTIVES

- To provide cheap and locally available energy
- To provide substitute/supplemental energy for agriculture at the door step of farmers
- To provide green coverage to wasteland
- To reduce import burden
- To provide eco-friendly system
- To generate rural employment on sustainable basis

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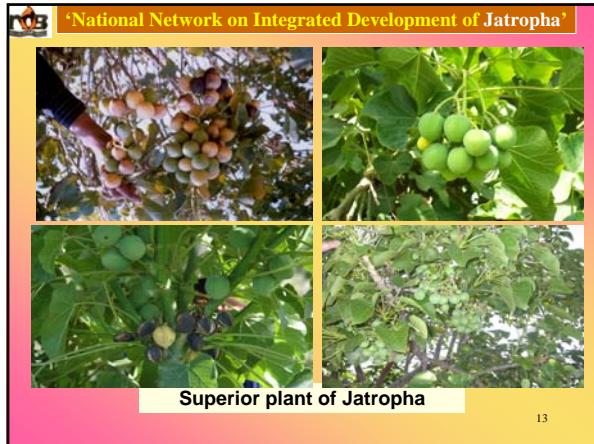


**Jatropha nursery**



**Jatropha plantation**

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## Plant protection

Major pests :- Bark eater, Capsule borer, Mites & Thrips, Leaf eating Caterpillar

Control :- Various Herbal pesticides e.g mixtures of vitex, neem, aloe, *Calatropis* and Chemicals/pesticides viz Rogor, Opmit, Wettable sulphur, Chloropyriphos are being tested

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Weedicial control



## Diseases

Collar rot  
Root Rot

## Control

Copper Oxy Chloride (0.2-0.3 %)  
Emmison (2 %)  
Baurdoux mixture (1 %)

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## Mite Infested Leaf



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## Effect of Weaver caterpillar



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Paper Mulching

