



Thai-Lao Road, km3  
 Watnak village  
 Vientiane  
 Lao PDR

## **Extracting Jatropha Oil in Lao villages** **Assess equipment that allows SMEs in Lao villages to buy** **Jatropha seed from growers in the village, extract the oil** **and profitably sell it as motor fuel.**

**A technical and operational experiment submitted by Sunlabob to  
 the Lao Institute for Renewable Energy, 10.Oct 06**

### ***1. Background, Situation***

- Jatropha curcas grows wild around Lao villages. Recent efforts are under way to increase the production of seeds.
- Sunlabob is developing the Jatropha chain from production in the villages through to use in motors for generating electricity, operating irrigation pumps and operating mills.
- Research so far has shown that oil can be extracted in the villages. This oil must be either refined further for use as fuel in combustion motors, or the extraction must be specifically done for specially adapted motors. Other LIRE experiments are dealing with these issues.
- Sunlabob has entered into partnerships with various agencies involved in research and development of plant oils as fuel for combustion motors. These competencies are available for conducting this experiment
- Sunlabob intends to rent out suitable pressing equipment to SMEs in rural areas, that will buy seeds from villagers, extract and filter the oil, sell this oil as fuel and sell the press cakes as brick fuel or feed.
- This experiment is part of the Jatropha program of LIRE. Sunlabob contracts LIRE to conduct it.

### ***2. Outline of experimental procedures***

Suitable presses will be distributed to interested village entrepreneurs in the existing network of Sunlabob and its partners. Suitable means:

- a. cold pressing for oil extraction (to avoid phosphorous in the oil).
- b. can be operated under village conditions
- c. if possible mobile.

The interested village entrepreneurs will conduct the commercial operations of buying seed, extracting it and selling the oil. The monitoring will collect the data that will allow to assess the commercial viability of pressing, and the most useful equipment for use in the villages. This will be in close collaboration and involvement of the pilot village entrepreneurs themselves.

The oil will be bought from the entrepreneurs for test runs of adapted motors, and/or for test-running of small scale refineries (see other *Jatropha* experiments of LIRE).

### ***3. Hypotheses to be assessed***

#### **Oil extraction**

Oil that is suitable for use in adapted motors and/or for further refinement can be extracted by SMEs from seeds grown in the villages.

#### **Profitable pressing equipment for SMEs.**

Pressing equipment is available that can be profitably operated by SMEs at the village and/or cluster or district level. Profitable means the price paid to farmers is sufficient to keep them interested to produce, and the price of the oil sold as fuel is either directly competitive with diesel, or is competitive after refinement.

### ***4. Expected results of the experiment***

At least 2 types of presses yield sufficient oil to conduct the motor and refinement experiments.

A report which validates or rejects the above hypotheses and suggests further experiments. It shall also provide

- building plans and installation details of working presses
- a full description of the whole process of pressing
- a list of key points to check for ensuring the required quality of the extracted oil, suitable as direct fuel or for refining.
- a list of skills that press operators need to be trained in
- data that allows to assess the commercial viability of the presses.
- data that allows to build business plans for presses operated by SMEs.
- a description of security issues and means to ensure security and reduce risks, both in operations as well as with regard to the environment

This report will be used to

- Make business plans for presses at district and/or village levels, and based on those to make proposals for investing in rural SMEs which operate these presses.
- Design training courses for SMEs who intend to operate such presses.
- Design the required support services to such SMEs.

## **5. Operational details**

### **Institutional setting**

Sunlabob will take the lead on this experiment and involve its partners. A team will be launched with

- Sunlabob personnel
- Experts from PPM
- Staff from TRI and/or NUOL
- Students from abroad and Lao students

This experiment is part of the Jatropha program of LIRE (see [www.lao-ire.org](http://www.lao-ire.org)). Sunlabob contracts LIRE to conduct it. Operational coordination and logistics will be managed by Sunlabob.

### **Methodology**

This is a test-run of available presses under Lao village conditions. Participatory Technology Development will be applied in interacting with the participating rural entrepreneurs.

### **Locations:**

Presses will be installed and operated in the areas around the places where the refineries will operate, ie:

- around Vientiane
- in a northern province
- in a southern province

## **6. Timeframe**

1 year

## **7. Budget**

Budget headings will include:

1. Project preparations, conceptual work and programming with PPM, fund raising
2. Teambuilding in Laos
3. Trainings and meetings for the team
4. Equipment and its import and installations
5. Jatropha seed from farmers and farmer groups
6. Operational costs of the pressing itself
7. Monitoring and data-collection (incl. travel costs)
8. Communication through internet (data-links, etc...)
9. Costs for students
10. Consulting on hypotheses generation and verification, PTD methodology, etc.
11. Reporting
12. PR and presentations (in Lao media, international energy scene....)
13. Project management
14. Administrative overheads for LIRE

**8. Status as per 10. October 2006**

- Background, Situation, Hypotheses, Operational Outline and budget-headings set up for negotiations with PPM Magdeburg, and with potential funders.
- Submitted to LIRE board for endorsement as a LIRE experiment.