



Swiss Aid Study: „Jatropha! – A socio-economic pitfall for Mozambique“

Review by the Jatropha Alliance

21 August 2009

The study “Jatropha! – A socio-economic pitfall for Mozambique” prepared by Justiça Ambiental (JA) et União Nacional de Camponeses (UNAC) for Swiss Aid (referred in the following to as Swiss Aid Study) provides a very one-sided and negative picture of the Jatropha sector in Mozambique.

The Jatropha Alliance therefore felt obliged to review the arguments put forward by the authors, and in short, the results are as follows:

- The study lacks scientific scrutiny
- The study criticizes claims that are not made by serious Jatropha growers and experts, i.e. it constructs “silhouette targets” that do not exist in reality
- The study presents imprecise arguments and depicts only the negative aspects and ignores well-established advantages of Jatropha cultivation

The details of our analysis are given below. The Jatropha Alliance strongly believes that **the results of the study cannot be substantiated**, and **its conclusions are false to a very large extent**. We strongly urge the authors to revisit their arguments and we call on the public and the media not to distribute these false claims to a wider audience.

The members of the Jatropha Alliance – some of which also operate in Mozambique – all commit to the principles of the Roundtable on Sustainable Biofuels, which has already set a comprehensive framework for sustainable production of biofuels after a year-long global stakeholder process (see <http://cgse.epfl.ch/page65660-en.html>). We therefore see the picture drawn in this study as detrimental to our continued striving for the ecologically, socially and economically responsible cultivation of Jatropha.

In the following, we present more detailed arguments in order to demonstrate the **significant flaws** of the Swiss Aid study in detail.

1. Lack of scientific scrutiny

Before commenting on each of the four main arguments put forward by the study, the method of the study was reviewed.

Phase 1 of the study which consisted in “Bibliographical research” was not comprehensive, as state of the art Jatropha research papers like the GEXSI Global Market Study on Jatropha that had been contracted by WWF or the Fact Foundation Jatropha Handbook, although used as a reference, obviously have not been read in detail. The main arguments put forward in the Swiss Aid Study can be contested by reading just those two documents.

Phase 2 “Field work” consisted of questionnaires and interviews with local Jatropha practitioners. The situations of the subsistence farmers seem to be covered, whereas only 4



Jatropha projects were analyzed. Annex 2 “list of institutions contacted” reveals that information on only 4 projects was used. This is a very poor basis if we take into account that other studies like the GEXSI Global Market Study on Jatropha interviewed more than 8 experts and analyzed 12 Jatropha projects in Mozambique. On page 23, the authors acknowledge the lack of available information and the restricted access to information. The Jatropha Alliance therefore claims that the empirical data for the thesis is not sufficient and the authors should not draw general conclusions on the basis of very weak empirical data.

2. Criticizing false claims

The Swiss Aid study puts forward claims regarding Jatropha supposedly made by Jatropha promoters. These claims do not represent the view of serious Jatropha growers. Therefore there is no point in criticizing them. For example:

Claim 1: Jatropha grows well on marginal land and can produce high yields on poor soils?

Every agronomist knows that the productivity of a plant depends largely on its nutrient inputs. Under marginal conditions, it will be more difficult to reach sufficient yields to make a project economically viable. There is no such thing as a „wonder crop”, and no serious expert or practitioner in Jatropha believes Jatropha to be one.

The GEXSI Global Market Study on Jatropha, which has been downloaded more than 2000 times, clearly states that Jatropha will not produce good yields in poor conditions (GEXSI: Global Market Study on Jatropha 2008, p.13). No Jatropha practitioner with in-depth knowledge on Jatropha will deny this fact. It is a bold and false statement by the authors of the Swiss Aid Study to portray the Jatropha industry as if it would raise false expectations.

Claim 3: Jatropha is resistant to disease and pests?

It is also general knowledge to any agronomist that there are no crops which stay free from any pests or diseases when planted in a systematic way. For example, the GEXSI study states that pests and diseases are a problem for Jatropha as they are for any other crop, especially when planted as monoculture (GEXSI 2008, Case Study Lao-LIRE p.171).

The Fact Foundation Jatropha handbook states that “when Jatropha curcas grows as solitary plant in the landscape or in small stands it rarely shows signs of pests and diseases. However, when cultivated in higher densities in plantations or hedges this situation changes. Reports of pests and diseases come from all parts of the world in increasing numbers. In most cases these pests and diseases are not detrimental and so far few are of economic importance. (...) Pests and diseases that have been reported to affect jatropha are listed in the appendix. Most of the pests are of minor importance. (...)”

Again it is a false statement by the authors of the Swiss Aid Study to claim that the Jatropha industry would claim Jatropha to be free of diseases.



3. Imprecise arguments and ignoring positive aspects of Jatropha cultivation

The Swiss Aid study ignores the benefits and advantages Jatropha cultivation has and presents a one-sided view:

A) Risk to food sovereignty and development opportunities for subsistence farmer

The problem of food sovereignty is severe and has to be discussed in a differentiated way. According to the Swiss Aid Study subsistence farmers in Mozambique plant Jatropha as a direct replacement for food crops, due to limited time which determines the maximum area that a farmer and the family can manage (Swiss Aid Study, p.25). This claim is very implausible to us and the argument appears to be manufactured. In the experience of our members with outgrowers, due to the fact that Jatropha does not yield anything in the first year, no farmers typically switch completely to Jatropha cultivation. No farmer can typically afford to "invest" for a year in a perennial crop without any return.

Furthermore, the amount of work needed to maintain and take care of Jatropha trees diminishes significantly after the planting year. Jatropha does not need to be "replanted" every year as other crops. Jatropha is meant to provide additional income to farmers, this it is clear that it will require additional work by the farmer which pays off in the long run.

Since no detailed explanation of the exact statements of the farmers are given in the studies, nor it is said how many farmers have expressed this opinion, we don't accept the very serious conclusion that Jatropha may negatively affect food production.

It has to be maintained that Jatropha can and should be planted in addition to food crops; it could even help to protect the food crops. Professor Reinhard Henning, a pioneer in Jatropha research, puts it like this:

"Since Jatropha trees (*Jatropha curcas* L.) not only bear oil-rich seeds, but can also be planted in the form of hedges to protect gardens and fields from foraging animals while warding off soil erosion, it is possible to speak of a positive feedback between oil/energy production and agricultural production: The more oil is produced by the hedgerows of Jatropha plants, the more food production is strengthened. Of particular importance here is the recycling of the oil cake as organic fertiliser." (Henning Reinhard K.: Fighting Desertification by Integrated Utilisation of the Jatropha Plant, p.1)

If Jatropha is planted as a hedge around the farmers food crops, the farmer profits in a twofold manner. First his food crop plantation is protected and second he has an additional source of income, when selling the Jatropha seeds. This practice is heavily supported by the farming practices put forward by members of the Jatropha Alliance.

Another development opportunity for subsistence farmers is integrated livestock production. Grazing animals between Jatropha rows are a natural means for cleaning the soil and support the growth of the planted crop by eating unwanted weed and placing natural fertilizer. Even omnivorous animals do not eat Jatropha. By far the most important aspect of integrated animal husbandry is the production of meat. Industrial farmers in Mozambique like Elaion already have grazing coats on their plantation.

Intercropping with vegetables is the third option for subsistence farmers to gain further income. ADPP-FACT reported that one woman chief gained \$3500 the first year by selling vegetables intercropped with Jatropha to a Mozambican supermarket chain. (ADPP-FACT Narrative Progress report No. 4, 2008, p. 3)



This is a success story which shows that the negative Swiss Study is not providing a comprehensive picture of the Jatropha situation in Mozambique.

B) Potential of Jatropha on marginal land

The claim that Jatropha will not produce high yields on marginal land is correct, but a one-sided one as the positive aspects of growing Jatropha on marginal land are not even mentioned. Jatropha is a perfect means to prevent soil erosion and has even the ability to rehabilitate marginal land. Professor Reinhard Henning, a pioneer in Jatropha, recently concluded that Jatropha grown on marginal land will lead to an improvement of the soil fertility and in a long term view to the rehabilitation of the land (Henning Reinhard K.: The Jatropha Book The Jatropha System An integrated approach of rural development June 2009, p. 34).

It also has to be mentioned that with proper care, Jatropha can produce economic yield even under marginal conditions. “Marginal land” indicates areas with unsuitable conditions for crop production due to soil and climate constraints (Jongschaap, R.E.E./ Corré, W.J. et al.: Claims and Facts on Jatropha curcas L., 2007, p.6). The authors from Wageningen University furthermore mention that Jatropha grows on marginal land and can reach reasonable production, “if proper care is given to boost plant growth in the initial growth phases and maintain production by additional inputs.”

C) Water requirements

Jatropha will survive with 200 mm (ICRISAT: Pro-poor Biodiesel initiative for Rehabilitating Degraded Drylands, IFAD Conference Rome, 2008) and grow wells with more than 600mm per year (Fact Foundation: Jatropha Handbook, 2006, p.6).

It is true that irrigation in the nursery phase (around 3months) is useful in order to gain productive seedlings. However, widespread irrigation of Jatropha at a later stage is not meaningful, neither in socio-ecological nor in financial aspects. Once Jatropha gets used to irrigation its biological characteristics change, as the typical deep roots develop to a lesser extent and the crop becomes addicted to irrigation.

Also, the expected but not guaranteed surplus in yields bears no proportion to the cost for the installation and maintenance of irrigation systems. Therefore, most serious Jatropha practitioners refrain from any irrigation after the first months of plant development.

Within the four projects analyzed in the Swiss Aid Study three are only irrigating the plants in the nursery and only Energem Renewable Energy Lda conducts widespread irrigation on their plantation in the early development phase. With regard to industrial farming of Jatropha in Mozambique **the authors thus fail to substantiate their conclusion that “constant irrigation was often required.”**

D) Resistance to diseases and pests

Jatropha is planted as hedges around fields by farmers around the world for many years specifically for the purpose of keeping bugs and other animals out. Due to their toxic contents, Jatropha plants are not eaten by most animals, and for the same reason are more resistant to pests than other crops.

The authors of the Swiss Aid study also argue that Jatropha pests could contaminate other crops. An argument which seems to be confirmed by Fact Foundation: “One issue raised in



Mozambique, for example, was that it could possibly contain viruses harmful to cashew nut trees, which occur in large quantities all over the country.”(Fact Foundation: Jatropha Handbook, 2006, p.11). In their conclusion the authors of the Swiss Aid Study turned this “could” into a fact that has not been confirmed within the study itself.

In the same report Fact Foundation warned to intercrop Jatropha with Cassava as they are of the same Euphorbia family and Jatropha can be a host for noxious insects and diseases of Cassava.”(Fact Foundation: Jatropha Handbook, 2006, p.31). Recent research by Fact Foundation in their Mozambican project however revealed that “no cases have been reported in which severe pest like mosaic viruses have been transferred from Jatropha to cassava.” (ADPP-FACT Narrative Progress report No. 4, 2008, p. 4)

This is another example for a positive aspect of a Jatropha project in Mozambique which is not mentioned in the study, although the information is well available online.