



# How small-scale biofuel producers boost food production

Peter Moers  
Coordinator Gota Verde project  
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Biofuels have experienced the ups and downs of fame. After having been presented for several years by the media as the ultimate solution for many energy and environmental problems, suddenly, its star has fallen to being the main culprit of food shortages, high food prices, cutting of the rainforest and even pollution. The well-informed reader will understand that there are no single solutions, nor single culprits. But in the meanwhile, these kind of generalisations negatively affect the image of many initiatives that DO contribute to positive changes.

This article tries to highlight the relation food-fuel in the specific context of rural development project in Honduras, Gota Verde ([www.gotaverde.org](http://www.gotaverde.org)). The project uses small-scale biofuel production for local consumption as a strategy to create employment, stabilise income sources for small farmers, reduce their dependence on loan sharks, avoid soil erosion, protect water sources and increase food production.

## Causes of food imports in Honduras

Honduras is a net importer of its main food crops: corn, beans and rice. Imports have increased during the past 15 years. Importing grains does not mean that there is a food crisis. However, in a world in which grain reserves are slinking, net food importing countries become of course vulnerable.

Without pretending to give a full analysis of the complex and multi-faceted rural development problems in Honduras, it is important to mention that the country has become a net importer long before most people had even heard about biofuels. Main reasons are:

- Cheap food (grain) imports from abroad, which has caused many larger producers to shift to other, more profitable (and often export) crops. Grain production has become mainly a “business” for subsistence farmers, for whom food security is more important than profitability. As a result, technical development in basic grains has come to a halt<sup>1</sup>.
- Tendency of governments to keep food prices low, rather than stimulate production.

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<sup>1</sup> as an illustration: the average Central American farmer produces less than 2 MT of corn per ha, while his US colleague produces more than 9 MT.



- Focus on export promotion, which makes sense in economic sense, but not necessarily contributes to food security.
- Migration from rural areas to the cities and abroad (mainly the US), resulting in reduced availability of (cheap) labour.

### **Who is to blame?**

In principle, any economic activity that is more profitable than cultivating corn and beans can be blamed for increased food imports. But should we blame the US for converting corn into ethanol, thus reducing cheap (subsidised) corn imports in Central America? Or should we blame Europe for importing Honduran bananas and pineapples that grow on fertile lands that could have been used for national food production? Do we have to blame the over 100 000 Honduran emigrants (1,5% of the national population!) that leave every the country in search for a better life abroad, because they could have been employed as cheap labourers in agricultural activities? Or maybe we should we blame Taiwanese investors for employing thousands of persons that could have worked in agriculture? Can we blame Honduran cattle farmers for producing meat and cultivating fodder for animals in stead of food for people? Should we condemn the thousands of coffee farmers for cultivating a luxury product for overseas' markets, rather than food for domestic consumption? And - in the same logic - should we stop promoting the development of a biofuel based agriculture, even if this is probably more profitable than basic grains?

These are perverse and unrealistic questions: eliminating (potential) pillars of a (poor) national economy is in nobody's interest. We cannot ask poor farmers to dedicate themselves to unprofitable activities for the moral ease-of-mind of rest of humanity. The question is not how we can stimulate one crop at the expense of another, but how can we secure a stable food supply without affecting these (potential) economic pillars.

*Improving production methods* (training, access to inputs, credit etc.) with the aim to increase productivity is certainly part of the solution. *Land distribution* may be a necessary measure in some contexts. Strong *investments in infrastructure* are also necessary in most regions. Both cash crops and food crops can benefit from these measures.

### **How can small-scale biofuel and food production reinforce each other?**

Small farmers do not need any government or NGO campaigns to make them aware of the importance of food security. Centuries of neglect (or even exploitation) by the collective sector have done their work. A strong indicator for the importance adhered to basic grains is loan deviation: if one gives a loan for a cash crop to a small farmer, chances are high he/she will deviate part of the funding for corn or beans, while loans for basic grains will only very rarely be deviated. The strong preference for short-cycle crops is product of the same reality. Immediate problems ask for immediate solutions.

### *Intercropping biofuel and food crops*

The Gota Verde uses this reality in its advantage. One problem found in the early (pure) Jatropha plantations, is the neglect of the areas between the plants. Since the Jatropha plant does not produce a significant amount of fruits during the first two years, farmers prefer to



dedicate their time to short-cycle crops, especially corn and beans. As a result, weeds take over the Jatropha plantations, growth is delayed and yields drop. As a solution, the Gota Verde project has introduced a mixed cropping scheme leaving 4 to 5 m space in between the Jatropha rows. Farmers generally grow beans and corn in these spaces. The maintenance and fertilization of the grains also benefits the jatropha. The other way around, the jatropha hedges reduces the plagues and diseases and functions as a wind breaker.

*Integrated financing model for biofuel and food crops*

Many farmers only cultivate part of the arable land they possess. In fact, according to estimates, Honduras only cultivates 30% of the 2.8 million hectares apt for agriculture. When one asks a small farmer why he does not plant all of his/her lands, the main problem mentioned is generally the lack of **access to credit**. Main reason is that financial institutions are very reluctant to finance basic grain production, especially to small farmers who tend to consume (and not sell) a large part of their production. As a result, many farmers sow with a minimal of inputs<sup>2</sup> or are forced into deals with middleman (“coyotes”) that rake in a large proportion of the farmer’s margin.

Jatropha can provide a stable financial basis to make small farmers independent from (unwilling) financial institution or (exploiting) loan sharks, although initially external support remains necessary. Centre of the strategy is the (farmers’ owned) biofuel processing enterprise BYSA<sup>3</sup>. External funding may come from or private investors or bank loans contracted by BYSA, who in turn administrates the loans to small farmers. The strategy involves:

Year	BYSA	Farmers
1-3	BYSA gives in kind support for the establishment and maintenance of Jatropha plantations (land preparation, seeds, fertilizer, ...).	Farmers are stimulated to grow food crops in between the jatropha rows <sup>4</sup> .
4 -50	BYSA gives loans in kind for maintenance of jatropha plantation and for food production <sup>5</sup> .	Farmers repay the loan in the form of jatropha seeds and (if the farmers wishes so) corn.

The model has various advantages:

1. Administration by BYSA in stead of a financial institution reduces financial risks in several ways:
  - the risk of self-consumption of grains (and thus lack of cash at the moment of paying their debt) is eliminated. Farmers can consume (or sell to third parties) as

<sup>2</sup> In fact, this explains large part of the low land productivity in Central America.

<sup>3</sup> Biocombustibles Yoro Sociedad Anónima.

<sup>4</sup> Unfortunately the project does not have funds to issue loans for the cultivation of grain crops.

<sup>5</sup> The value of the food production loan is condition on the expected value of the jatropha harvest for the same year.



much corn as they want because the value of the jatropha harvest is sufficient to cover the entire value of the loan.

- The risk of loan deviation or robbery is reduced because all transactions take place in kind (or locally circulating vouchers).
- The risk of farmers selling jatropha to third parties is small because – at least for the moment – they do not exist.

Less risks can be translated into lower financial costs for the farmers.

2. The model gives loan access to farmers that normally are not considered by financial institutions. BYSA offers a collective guarantee (production capacity, buildings, well-founded business plan, assured markets) that individual farmers cannot offer.
3. BYSA can obtain discounts for buying inputs at wholesale prices. The costs of BYSA for administering the loans to farmers can be covered largely by this discount.
4. BYSA will also produce animal fodder, in which corn is an important ingredient (as well as oil press cake of other crops promoted by BYSA). The added value that derives from this transformation, poses BYSA in a position to offer higher prices for corn than most middlemen.

In order to facilitate these transactions, BYSA administers a voucher system with which farmers can go to predetermined distribution points to withdraw their agricultural inputs. The vouchers may also be used to finance part of the operational expenses of BYSA. This reduces its need for (cash) working capital and thus its financial costs.

#### *Ensure fuel supply for food production*

Fuel is an essential input for most food production. In many developing countries and especially in rural areas, fuel supply is irregular and unreliable. Local biofuel production can stabilise fuel supply, thus contributing to food security.

In May 2008, diesel was in short supply in large parts of Honduras due to a combination of deficient planning of importers and distributors speculating on price increases. May is a critical time for agriculture because of the start of the rain season. Thanks to its access to self-produced biodiesel Gota Verde was able to implement its ploughing plan, while many other farmers had to postpone this activity.

#### **Biofuel Sustainability Criteria**

The solution to damaging agricultural practices is not boycotting the product, but certifying the production process. Certification, both socially and environmentally, takes place for many products, like wood and coffee. Sustainability criteria for biofuel have been defined by several important players<sup>6</sup> and a harmonisation of criteria is likely to occur during the coming years. Projects like *Gota Verde* help to test development models that respond to these criteria and also test the feasibility of these criteria in an open market.

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<sup>6</sup> See e.g. [http://infoscience.epfl.ch/record/121497/files/Biofuels\\_sustainability\\_initiatives\\_Review.pdf](http://infoscience.epfl.ch/record/121497/files/Biofuels_sustainability_initiatives_Review.pdf)