

# Introducing biofuel plants: It isn't all good

## Kia'i Moku

By Chuck Chimera



A visit to the Mainland reminded me of how lucky I am to be able to



These pictures of jatropha fruit and seeds were provided by Forest and Kim Starr

come home to the islands. I confess I still get some guilty pleasure from people's envious reactions when I tell them I'm returning to Maui.

We're incredibly fortunate to live in such a beautiful place, but living on an island also comes with some costs. One of those hits me as soon as I leave the plane and see gas prices at the pump. That's one reason why the idea of producing our own energy and becoming more self-sufficient is so appealing.

Biofuels could play a part in reducing our need for imported fuel. Biofuels are plant-derived sources of energy, and include biomass burned directly for power or sugars or oils converted into liquid or gaseous fuels.

One biofuel Maui residents know well is ethanol - produced from the starch, sugars or cellulose of plants like corn, and added as a gasoline supplement. Another biofuel on Maui comes from used cooking oil converted into biodiesel.

Although these fuels provide a great way to recycle, the supply is fairly small, and other sources are needed to help meet our energy needs. To do this, several crops that could provide plant oil for biodiesel production are being evaluated both in Hawaii and elsewhere. These plants commonly have

seeds rich in the oil needed for conversion to biodiesel.

In addition to providing renewable, alternative sources to imported oil, biofuel crops also could support agriculture and a diversified economy. Yet just like living on a beautiful island, growing biofuels comes with some costs.

Certain biofuel crops, like corn, also are consumed as food and, therefore, can drive up food prices when used for energy production. Recent studies also have shown that biofuels don't always provide the promised reduction in greenhouse gases, and that their cultivation overseas has resulted in rain-forest clearing and biodiversity losses.

One concern that hasn't received as much attention, but could be more important to our islands, is that several biofuel crops are or could become invasive weeds.

The Hawaii Invasive Species Council looked into this recently and found that traits desirable in biofuel crops - such as hardiness, low water requirements, disease resistance or ability to compete with other plants - are some of the same traits found in many invasive weeds.

When a list of 40 potential biofuel plants was compared to a random list of introduced

plants, it was found that biofuel species were more likely to spread on their own in the wild and were three times as likely to become invasive. Growing biofuel crops in large-scale agricultural production could further increase the risk of certain plants escaping and becoming weeds.

Some plants, like Chinese tallow, are notorious invaders on the Mainland and should never be cultivated in Hawaii. Others could become weedy if planted in the wrong location or without the proper precautions to prevent their spread.

Jatropha is a good example of a plant that has escaped and is invading along rivers in Australia but has a long history in Hawaii without spreading much beyond planting sites. Its fairly large seeds, about the size of a coffee bean, are not spread readily, and jatropha probably could be safely grown if planted away from waterways. If an efficient way of harvesting seeds were developed, this crop could be grown in some of Hawaii's drier, more marginal agricultural lands.

Yet jatropha, or any other potentially invasive biofuel crop, should never be planted on a large scale until the

technology has been developed to use the plant.

Ideally, we would grow only crops that pose little risk of becoming invasive, but if the most promising crops have a reputation as invasive weeds, responsible growers could minimize risks of escape by taking precautions to prevent their accidental spread. Growers also could be required to take responsibility for the costs of controlling escaped plants and destroy any crops no longer in use.

Given the right biofuel crop, everyone in Hawaii could benefit, but let's be cautious about what we choose and not trade potential savings at the pump for the cost of another invasive weed in our environment.

- *Chuck Chimera is a weed-risk assessment specialist with the Hawaii Invasive Species Council, writing on behalf of the Maui Invasive Species Committee. "Kia'i Moku" (Guarding the Island) is prepared by the Maui Invasive Species Committee to provide information on protecting the island from invasive plants and animals that can threaten the island's environment, economy and quality of life.*