



## ■ biofuel production

# A way to beat high fuel prices

Biofuel has become the new buzzword in agriculture and many farmers say on-farm biodiesel production is the most effective way to deal with the financial pressure of rising crude oil and fuel prices.

Like many other farmers **Louis Claassen**, a grain producer who farms near Sasolburg in the Free State, produces biodiesel from his sunflower crop.

**Wilma den Hartigh** reports.

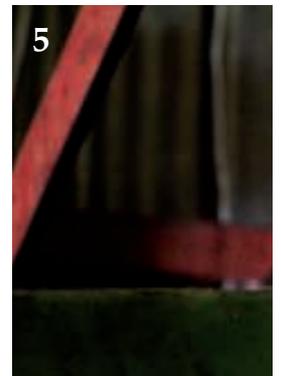
**L**OUIS CLAASSEN HAS BEEN PRODUCING biodiesel with a newly acquired plant for nearly two months. Alan Groves, the Claassen's financial manager, says although the initial purchase of the plant is expensive, it's a good financial investment. He believes on-farm biodiesel production has economic benefits for cereal crop farmers who are exposed to unstable market prices. "I really believe this is the answer for farmers. The ideal situation is to make a saving on diesel and to hedge our sunflower against the diesel price. We are looking at a saving of R1/litre depending on use. It is a significant saving," says Groves.

He predicts it will become more viable to produce biodiesel as future oil and diesel prices increase.

"Our aim with buying the plant is to try and have a whole economic circle on the farm. It makes sense for the farmer to do this," he says. The Claassens run all their farm vehicles on a 50/50 diesel and biodiesel blend. "We work on a production of 2 000 litres/day and we have use for all of it. It has no adverse effect on our engines. Initially it cleans out the engine and if you open it, it looks like it's had an acid wash. Lubricity is also better," he says.

Brett MacDonald, marketing manager for Shaval Biodiesel, suppliers of the plant, says purchasing a plant is more economically viable for larger operations where the farmer grows his own sunflower and uses both the biodiesel and oilcake. "The common denominator is farmers who have feedlots, piggeries and dairies. If a dairy farmer has steam he or she won't have to use the heating elements in the plant and this will reduce the electricity bill," he says.

• For further information contact Brett MacDonald on 083 555 8543. |fw



1. Louis Claassen at the oil pressing plant.  
2. Labourers Joseph (left) and Siphon (right) feed sunflower into the oil press. The plant is not very labour intensive and doesn't require much direct employment. MacDonald says when farmers produce their own biodiesel their input costs decrease significantly. This enable farmers to utilise marginal land for production, which in turn necessitate increased labour.  
3. Unclean oil still to pass through the filter press.



4. Oilcake pressed from the oil press. The Claassens grow sunflower on the farm and use the oilcake in their feedlot.  
5. Pure oil. The plant complies with health standards and can convert to produce cooking oil.



6. The reactor converts chemicals into biodiesel.  
7. Pure biodiesel.  
8. Gum extracted during the process.  
9. The oilcake is used in feed mixtures for the feedlot.



## What it all costs

- "The financing of a plant all depends on the cash flow of the individual farmer. Payment options will be specific to each farmer and will depend on the volume of biodiesel needed," says financial manager Alan Groves.
- A sunflower cultivar with an oil content of 38% can produce 350 litres of biodiesel from a ton of sunflower. Some 5,7 tons of sunflower are needed to produce 2 000 litres.
- Agricol AGSUN 8251 is the best cultivar to plant in terms of oil and yield per hectare. This cultivar has 42% to 46% oil content.
- A Shaval Biodiesel plant with a 2 000-litre per day capacity costs approximately R700 000, a plant with a 4 000-litre per day capacity costs approximately R860 000. A 1 000-litre per day capacity plant costs approximately R600 000.
- These prices include the oil press, filtration plant and training in the operation of the plant. Storage items and chemicals are not included. Shaval provides its clients with a list of well-priced suppliers of the chemicals needed.
- After-sale service is provided for a year after purchase.

## Testing and fuel specifications

Dr Irene Finnegan from BioServices, a company that conducts biodiesel testing, says there's a local specification set by Standards South Africa which is very similar to international standards. A series of tests will ensure that the product made by the farmer will not cause engine damage. "If you are making fuel for your own use you are not obliged to test your product, but if you are going to sell biodiesel you should test," Finnegan says.

She says a full panel of tests will cost between R5 000 and R8 000 depending on the laboratory.

The panel of tests includes the following:

- Flash point density (to test for unreacted methanol)
- Viscosity
- Acid value
- Water content
- Free and total glycerol
- Sulphur content
- Carbon residue
- Copper strip corrosion
- Oxidation stability

If a vehicle's engine fails during the warranty period as a result of using biodiesel that doesn't meet the standard for B100 (100% biodiesel), the vehicle owner will not be compensated. "Most people settle for a limited panel of tests. Many people don't appreciate the value of testing and quality control," she says.

Dr Harrow von Blottnitz, a biofuels researcher at the Department of Chemical Engineering at the University of Cape Town, says it's important to obtain references from companies selling biodiesel plants. However, he says the equipment provider cannot guarantee the quality of the fuel as the company doesn't manufacture it. "He can only give instructions that the farmer must follow. It is a good idea for a farmer to run an old farm vehicle on biodiesel for a month or two first. Don't use a half a million rand tractor first," Von Blottnitz advises.

Finnegan warns that although biodiesel is an ecofriendly product, small manufacturers don't always produce biodiesel in an ecofriendly manner.

- Contact Dr Finnegan on (011) 794 1509.