



Top: Rosie Cohane-Mann '08 adds lye to the methanol chamber in preparation for breaking the vegetable oil triglyceride chain that yields biodiesel.

Below: Wilder Fichter '08, Rosie and Ian Straus '09 spent fall 2005 Project Week learning how to mass produce biodiesel using this closed, vapor-return refinery.

Bottom right: Miles Chapin '06 made a small quantity of biodiesel in the chemistry lab during spring 2004's Project Week.

GOING BIODIESEL

Project Week, with more than a little help from Putney students, faculty and staff, has yielded a renewable energy source for the farm that will also save money. Miles Chapin '06 began dabbling with biodiesel extraction two years ago during spring Project Week. Now we have a manufacturing plant. Fall Project Week projectees cleared a space for it in the recycling shed, set it up and cranked out our first big batch. For spring Project Week, a group will figure out how to make large amounts of biodiesel efficiently and, by next fall, biodiesel production should be either an afternoon work activity or six-day workjob.

Here's how it works: Vegetable oil no longer suitable for cooking is pumped into the big vat. Methanol is cranked through powdered lye into the smaller tank via a closed, vapor-return system similar to the one you use at the gas pump (eliminating the need to conduct the mixing under a chem lab exhaust system hood). The mixture is then cranked into the big vat where the lye and methanol break the triglyceride chain of the vegetable oil and liberate glycerin from the resulting biodiesel. The biodiesel is then washed with a water mist to dissolve any remaining methanol (quite the opposite of adding dry gas to your car to remove the water, but it really works). An added bonus is the glycerin byproduct which could be used as liquid hand soap in our bathrooms.

The biodiesel is destined for two of our three tractors no longer on warranties that prohibit use of homemade fuel. Noah Hoskins-Forsythe, our farm assistant, and Hans Estrin '85, the science teacher sponsoring the project, say the biodiesel will actually burn more efficiently than the dinosaur variety. About a thousand gallons from now, the refinery will have paid for itself. That's about three months of tractor use. A local restaurant has agreed to let us cart their spent cooking oil away, saving them the cost of having it removed. So there you have chemistry, agriculture, community service and sustainability in one tidy little package. Congratulations to our farm and all our clever farmers. 🍷

