

From Sunflower Seeds to Biofuel

County gets grant for seed crusher, silo as part of Eco-Complex

By Dee Henry

To make biofuel, you have to crush some seeds.

The county continues to develop the Eco-Complex and approved a \$150,000 grant from the Biofuel Center of North Carolina, earmarked for the purchase of seed-crushing equipment and a silo for seed storage.

“We’re in the process of identifying the best equipment for what we’re doing,” said Barry Edwards, director of Catawba County Utilities and Engineering Department.

Edwards said the county is hoping to purchase the new equipment in the fall.

The equipment is headed for the county’s Eco-Complex, a joint project between the county’s Utilities and Engineering Department and Appalachian State University, where biodiesel fuel will be created from sunflower and canola seeds. The project will be housed in a building at the Blackburn Landfill off Rocky Ford Road.

Currently, the operation, done mostly on the campus of Appalachian State University, a partner in the complex with the county, consists of a portable seed crusher Edwards describes as ‘very labor intensive’ and stores the seeds bagged in piles.

The grant will help buy a silo for storage and an automated crusher that extracts oil from sunflower and canola seeds.

Edwards said that the county planned to spend approximately \$300,000 on the equipment. The grant is cutting the county’s cost in half. “The new equipment will allow us to store seed in a more efficient way and to crush seeds in more efficient way,” Edwards said. The old crusher, brought to the EcoComplex site from ASU, is described in a county document as “small, inefficient and will not be able to meet demands when the Biodiesel Research Facility is ready for production.”

Edwards describes the process done by the crusher, a hydraulic press, as extracting the oil necessary for production of biodiesel from seeds. The oil is processed in several stages-clarification, or the removal of contaminants, and degumming, separating the part of the oil for the fuel from fatty components.

Edwards said county officials are hoping construction of the EcoComplex facility will began in the next 60 days.

STEPS IN PROCESSING OIL SEEDS

- 1. Seed cleaning:** Removing husks or seed coats from seeds, separating seed from chaff.
- 2. Seed preparation and conditioning (pressing):** Seeds must be clean (dust may clog press; chaff will absorb some of the oil; sand will absorb some of the oil; sand will wear out the press; stones damage press), dry (moist seed results in low yield and may get moldy), warm (increases yield if seeds are heated to 100 to 160 degrees Fahrenheit)

- 3. Clarification: Removal of contaminants such as fine pulp, water and resins.** Can be done by skimming top layer after allowing to sit for a few days or by running through a fine filter cloth.
- 4. Debugging:** Removing phospholipids from oil.

INFORMATION from www.attar.ncat.org