Glycerin, also known as glycerine or glycerol, is commonly used as a component of soaps, lotions, and pharmaceuticals. However, with glycerin as a 10 percent byproduct of biodiesel, researchers are seeking new areas for its use.

Biodiesel is an alternative source of energy for diesel engines, an area of energy production that is growing. Biodiesel is created mainly from vegetable oils; such as soybean oil, recycled cooking oils or animal fats. With each 100 pounds of biodiesel that is produced, approximately 10 pounds of glycerin is also created. In the past, glycerin was disposed of with a cost to the biodiesel producers. Today, there are new options for this processing byproduct that can provide revenue for the biodiesel manufacturers.

Glycerin is odorless, colorless, water soluble, and has a sweet taste. Data indicates that glycerin’s feed value in terms of energy could be equal to corn, and could possibly be used as a starch replacement in livestock diets. Several studies are underway testing feeds with different percents of glycerin, the quality of glycerin used, the types of livestock used, and the age of the livestock.

Iowa State University and the U.S. Department of Agriculture’s Agricultural Research Services conducted a trial on metabolisms in nursery and finishing pigs. In these studies, the pigs were fed 5, 10, or 20 percent glycerin. In either case, the studies illustrate that the energy value of the glycerin were comparable to corn, that glycerin is readily used by pigs, and that pigs showed equal growth with a diet including glycerin to that of a corn soymeal diet.

Iowa State University and Agricultural Research Services also conducted a glycerin metabolism study on laying hens to determine energy value. Typical feed rations were used along with levels of glycerin at 0, 5, 10, or 15 percent. This study also demonstrated a high efficiency for glycerin use with no apparent reductions in egg production or weight.

Currently, a cattle study is being conducted at the University of Missouri – Columbia comparing the energy value in glycerin to that of corn. The purpose of the research is to show calf growth and what this could mean for meat quality. Calves are being separated into groups of three and are consuming glycerin in differing amounts as part of their daily feeding regimen. The feeding trials are extending for 160 to 180 days. Amounts of glycerin used in this study are 0, 5, 10, and 20 percent. The focus of the study is to compare the energy value in glycerin in relation to that of corn. This study is to continue through November 2007.

There are considerations in the use of glycerin as feed. How much glycerin is healthy for livestock to consume and process through digestion? What is an acceptable level of purity, as purity and quality of the glycerin will vary among biodiesel facilities in levels.
of water, methanol, and mineral salts such as potassium and sodium? Currently, the Food and Drug Administration considers glycerin as food grade, safe for use as feed.

Increases in corn use for ethanol production create increases in livestock feeding costs. The use of glycerin as an alternate food source could be an opportunity to use a normally disposed of byproduct of energy production.

To assist glycerol producers and users, Midwest has implemented a number of glycerol analyses which can provide important information. Following is a list of parameters Midwest currently offers to clients:

**Basic Glycerin Test - $190.00**
Glycerin assay by HPLC-RI
Ash
Specific Gravity by Hydrometer
Residual methanol by Headspace
Sodium, Potassium, Magnesium, Calcium by ICP
Total Calories by Bomb Calorimetry
Moisture by Karl Fisher
MONG – (Material Organic, Non-Glycerol)

The above list would provide information and the energy (Calorie) levels of glycerin and also gives an assay showing the purity of the product. The methanol level is important to know for flammability reasons. Excessive levels of methanol can also have adverse health effects for animals consuming the product.

Midwest Laboratories, Inc. can provide additional tests, if needed, and customized packages. For more information, please contact Client Services (Heather at 402-829-9891, Sue Ann at 402-829-9892 or Rob 402-829-9871).

**Information Used**


*Science Daily*, “Could Glycerin – A biodiesel Byproduct – Be Used As Cattle Feed?” [HYPERLINK](http://www.sciencedaily.com/releases/2007/05/070525090245.htm) *www.sciencedail*