

Lancaster Farming

OPINION

Cheese Whey In The Gas Tank

Worried by rising gas prices? Top off the tank with paper pulp. Fill 'er up with maple chips. Drive down the freeway using cheese whey. As average U.S. gasoline prices soar beyond \$1.80 a gallon, proponents of using bio-based fuels and chemicals are gaining momentum. Gasoline-replacement research in the past has focused on ethanol derived from corn, but no agricultural engines are beginning to understand how biomass waste also can be used as a substitute for petroleum.

Larry Walker, Cornell professor of agricultural and biological engineering, and his students are using enzymes to break down solid biomass waste into a renewable energy form. In a talk at the American Chemical Society national meeting last month at the Moscone Convention Center, San Francisco, Walker said there is sufficient biomass waste available to supply all of the organic chemicals that are consumed annually in the United States and still have enough waste left over to convert to auto fuel.

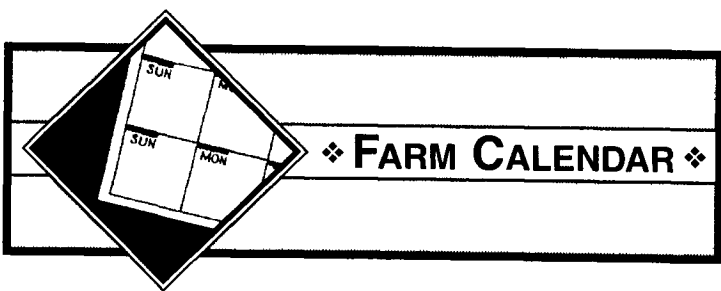
"We need renewable resources, and energy flow. How do we develop alternatives to petroleum-based products? We do this through plant materials," said Walker. "Bio-based fuels are recyclable. Fossil-based fuels are not."

Although waste biomass is a cheaper raw material than oil, there is a catch. The cost of converting this raw material to energy is the major constraint to commercialization. The plant biomass is chemically diverse, and must be separated then converted into desired products. The challenge is to develop industries proficient in using this raw material and to develop more cost-effective enzymatic and microbial processes that convert these materials into industrial chemicals and energy.

The principles behind biomass fuel: Carbon dioxide is taken in by the plant through metabolism, and carbon enters plant cells where it is converted into cell walls. About 279 million metric tons of plant waste is generated in the United States annually from industrial, commercial and agricultural production. The key to using this resource lies in employing enzymes to break down the woody, fibrous part of the material into fermentable sugars.

Not only do plants represent a renewable source of organic compounds, but there also is considerable organic waste produced that could be a carbon source for bioindustries. For example, corn stover (much of it used as fodder) accounts for 100 million metric tons of biomass waste produced annually in the United States, and newsprint biomass waste accounts for 112 million metric tons. Urban tree residue - leaves, Christmas trees and broken branches - accounts for 38 million metric tons.

We know we have a long row to hoe before we can become independent of foreign oil. So we need to start helping now.



Saturday, April 8
 30th Annual Maryland State Holstein Show, Timonium Fairgrounds, 9:30 a.m.
 Farm Safety Day Camp, Heidel Hollow Farm, Germansville, 8:30 a.m.-2 p.m.
 East Central Pa. Two-Cylinder Club Inc., Ron Boyer Farm, Hereford, 9 a.m., raindate April 15.
 A Morning In The Vineyard, Naylor Wine Cellars, Stewartstown, 10 a.m.-noon.
 Antique Tractor Pull and Show To Benefit Cecil County Farm Museum, Carson/Jackson Farm, Rising Sun, Md., 9 a.m. (Rain date April 15.)
 Little International Livestock Show, Penn State Ag Arena, University Park.

Sunday, April 9
 National Garden Week, thru April 15.

Monday, April 10
 Keystone Farm Credit Annual Meeting, Yoder's Restaurant, New Holland, and April 11, Holiday Inn and Conference

Center, Fogelsville, 6:15 p.m.
Tuesday, April 11
 Beef Management Short Course, South Branch Farm, Seven Valleys, 7 p.m.
Wednesday, April 12
 National Agri-Marketing Association Marketing Conference and Trade Show, Kansas City Marriott Downtown, Kansas City, Mo., thru April 14.
 Financial Planning For Retirement, Farm and Home Center, Lancaster, 7 p.m.-9 p.m., also April 19.
Thursday, April 13
 Manor FFA Banquet, Penn Manor High School, 6:30 p.m.
 Cumberland Valley FFA Banquet, Cumberland Valley High School, 7 p.m.
 Chester-Delaware County Farm Bureau Annual Spring Banquet, West Fallowfield Christian School, Atglen, 6:45 p.m.
 Direct and Cooperative Marketing - Beginning Farmer Marketing Series, Cambria County Extension Office, Ebensburg, 7 p.m.-9:30 p.m.



Now Is The Time
 By John Schwartz
 Lancaster County Agricultural Agent

To Learn About GPS

The global positioning system or GPS is a tool used for locating one's position on the surface of the earth, according to Leon Ressler, Lancaster County Extension Agricultural Environment Agent. This system is very important in navigation, surveying and in precision agriculture.

The GPS system works off a grid of 24 satellites that are in orbit 11,000 miles above the earth. The system was originally developed by the defense department but is now used heavily for civilian navigation. The satellites send out signals, which can be detected by anyone with a GPS receiver. Signals from at least four satellites are needed to calculate one's position.

The receiver calculates how long it took the signal to travel from the satellite and from that it calculates the distance from the satellite which is a known location. When signals can be received from four or satellites the receiver can calculate the position on the earth where it is located very accurately.

To Understand GPS Accuracy

Several factors determine the accuracy of the location determined with global positioning system or GPS, according to Leon Ressler, Lancaster County Extension Agricultural Environment Agent.

First the accuracy of the receiver varies greatly. The top quality receiver's on the market

today are accurate within 36 inches or less. The atmosphere can cause errors by deflecting the path of the signals. Signals can also be deflected off of mountains or buildings creating multi-path errors. The major error in the calculation is intentionally created by the defense department to prevent enemies from using the systems to cause trouble.

This is known as selective availability and can cause the calculated location to be off as much as 100 feet or more. This error may be overcome by using differential correction, which determines the built in error and then corrects the signals. This can allow very accurate determination of one's location.

To Handle Anhydrous Ammonia Safely

Anhydrous ammonia is an important source of nitrogen fertilizer for crops. But improper handling can have catastrophic results which include severe burns

to eyes, skin and the respiratory tract.

Some safety tips to follow are: Personal protective equipment (PPE) should always be worn. Keep anhydrous ammonia tanks out of direct sunlight so the pressure relief value does not have to vent. Be sure to bleed hose coupling before disconnecting. Use emergency water supply for at least 15 minutes if exposed to anhydrous ammonia and then seek emergency medical attention.

Conduct inspections to answer the following questions: Hoses in good condition? Fittings clean from rust? Low pressure tubes have no leaks? Knives not plugged? Pressure relief value operating properly? Tank has five gallons of fresh water? PPE available and worn?

Feather Prof.'s Footnote: "Unless you try to do something beyond what you have already mastered, you will never grow."

Background Scripture
1 Corinthians 10:23 through 11:1
 Devotional Reading:
Corinthians 8

When I was a seminary student 40-plus years ago, one day I got into an argument with another seminarian. In those days, dancing was a big issue in my denomination, which had a historic position of opposing "social" or "round" dancing.

The argument arose when I said that I saw nothing wrong with dancing and that my wife and I enjoyed it. The other seminarian was horrified, for he regarded dancing as a practice that leads to sexual immorality. "It may be for you," I said, "but it isn't for me." But, knowing how I feel about it," he replied, "would you want me to dance with your wife?" I thought about that question for a few moments before I answered, "Probably not, but the problem is not in dancing, but in your mind and heart."

He wasn't finished, going on to cite 1 Corinthians 8:9-13, "Therefore, if food is a cause of my brother's falling, I will never eat meat, lest I cause my brother to fall." "Couldn't that apply to dancing, too?" he asked. In other words, if I knew what dancing meant to him, would I not abstain so that would not cause him to "fall"? I felt a sense of frustration because, on the one hand I believed that my conscience was free in dancing, yet Paul seemed to suggest that I ought to abstain because of my colleague's "warped perception," as I thought of it.

Free & Responsible

Years later, upon re-reading this passage and 1 Corinthians 10:23 through 11:1, I came to the conclusion that we had both missed the mark in interpreting Paul's approach. Paul, I came to see, is attempting to protect both the freedom and their responsibility of the Christian disciple. Being sensitive to the religious convictions of others should always be our concern. But Paul was not laying down a law for us, because these conflicts cannot be solved with a legalistic approach. Shall my religious life be structured by the light which I believe God has given to me, or by the opposing views of my

neighbor? There is no hard and fast answer.

If I slavishly decide that I will do nothing that gives my neighbor spiritual offense, I may help to perpetuate his ignorance or prejudice. Let us say that my neighbor believes that God created people of other races as inferior - does that mean that, in the interests of not offending him, I should not invite a black, brown or yellow friend to my house and table? No, I don't think so, for Paul himself criticized Peter because he gave in to the prejudice of the Christian Judaizers and separated himself from Gentiles. Paul also refused to abstain from his ministry to the Gentiles, even though it offended some of his Christian brethren who, in their weakness, were unwilling to change their hearts and minds.

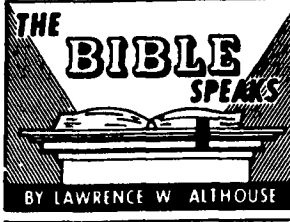
Love As The Yardstick

The key to Paul's teaching in these passages is not the question of whether our neighbor will be offended, but whether we are practicing a loving concern for him. A loving concern may mean abstaining from some things if he or she is easily wounded, or it may mean doing some of the very things that offend him because I am unwilling to permit that person to continue in his or her darkness of spirit. I might not dance before my neighbor's disapproving eyes, but neither would I stop or pretend that I didn't. In a Moslem society or among the Jews of Jerusalem's Mea Shearim, I will not dress or behave in a manner that offends their beliefs concerning dress and conduct. But neither will I be bound by those sensibilities in my own milieu. Paul's advice was not meant to give my neighbor control over my life.

So it is not a matter of responsibility or freedom, love or right, but of balancing these, keeping in mind what, as God reveals it to us, is best for the other person as well as myself. Paul's good advice is not a law, but a spirit of which we have far too little in our world and even, perhaps, in our churches. As Paul puts it, "So, whether you eat or drink, or whatever you do, do all to the glory of God..." (10:31)

Friday, April 14
 Berks County Pomona Grange Banquet, Fleetwood Grange Hall, 7 p.m.
 Capitol Region 4-H Pre-Teen Retreat, Refreshing Mountain Camp, Stevens, thru April 16.
 PASA New Zealand Livestock Waste Management Systems Overview At Cove Mt. Farm, Mercersburg, 10 a.m.-2 p.m.
 Western Pennsylvania Holstein Spring Spectacular Sale, Mercer County 4-H Park, Mercer, 7:30 p.m.
 Franklin County Graziers Pasture, Cove Mountain Farm, Mercersburg, 10 a.m.

Saturday, April 15
 Maryland Jersey Cattle Club All-Breed Calf and Heifer Sale, Frederick Fairgrounds.
 Penn State 75th Anniversary Dairy Expo.
 Delaware Valley College Annual Livestock Judging Contest, Feldman Ag Building, 8 a.m.
 Adams County Beef Producers Association Inc. Beef Sale and Parade of Bulls, Bonneauville Fire Company, 4:30 p.m.
 Pond Management For Irriga-



FREEDOM AND RESPONSIBILITY
 April 9, 2000

Lancaster Farming
 Established 1955
 Published Every Saturday
 Ephrata Review Building
 1 E. Main St.
 Ephrata, PA 17522
 -by-
Lancaster Farming, Inc.
 A Steinman Enterprise
 William J. Burgess General Manager
 Everett R. Newsawager Editor
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