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Corn Cobs – Burning Them With Coal

Recently the University of Missouri Power Plant has begun burning corn cobs along with coal for power generation. This practice may be an opportunity for added income for some farmers in central Missouri.

There are several reasons for adding corn cobs to coal:

- Abundant in the corn belt
- Good heating value
- Not utilized by most farmers
- Minimal preparation is needed for combustion
- Low in sulfur and ash content
- Easy to store, however; they may absorb moisture when stored outside

Coal has the following characteristics that power plant managers are interested in:

HHV (Higher Heating Value)	10,900
Sulfur	2-3%
Ash	7-10%
Density	55-65 lb/cu. ft.

Cobs have the following comparable values:

HHV	8,000 Btu/lb
Sulfur	<0.05%
Ash	1-3%
Density	15-20 lb/cu. ft.

HHV (higher heating value) is a new term to some of us, and is also known as the gross caloric value or gross energy of a fuel. HHV is calculated from the amount of heat released by a specified quantity (initially at 25° C) once it is combusted and the products have returned to a temperature of 25° C.

The MU Power Plant has tested a 5% blend of corn cobs with coal and plan to test a 10% blend. The combustion in the boiler was good. Material handling was the most challenging part of using the cobs as they can settle out and not be blended well. Once they were on the

conveyor belt they were mixed fairly well with the coal.

What could this mean for area corn farmers? You can expect a yield of cobs of about 1200 pounds per acre. You would need to modify your combine to collect the cobs. Devices have been developed to do this. They cost around \$12,000. Farmers can expect to profit an additional \$10 to \$15 per acre selling the cobs to a power plant. Since cobs are bulky, it would be most cost effective to transport from farms near power plants.

Some of the benefits from burning corn cobs include:

- Reduced emissions from the power plant
- Reduced greenhouse gas formation
- Possible fuel cost reduction
- Local agricultural business development

Author: [Don Day](#), Natural Resource Engineer. Source: Presentation by Greg Coffin, Superintendent, MU Power Plant

CARES – They Really Do

There is a web site that really cares for you. CARES is the Center for Agricultural, Resource and Environmental Systems and its web site provides access to information helpful in the management of your farm and community. CARES uses geographic information systems (GIS), remote sensing, environmental modeling, and internet mapping to help better address resource, environmental and socio-economic issues. The web site for CARES is:



<http://cares.missouri.edu/>

Some possible uses of the CARES web site are to develop detailed maps of your farm and community including:

- Soil maps
- Topographical maps
- Ground cover
- Land Usage
- Etc.

These maps are especially useful if you are developing a resource management plan for your property.

When you arrive at the web site you can spend some time reading about CARES and all the projects on which they work. You can even request CARES staff to work on a project for you. This might be especially important if you have a community project and need information about your community.

You can also jump right in and start developing some maps. You should allow some time to play around with the site as it is complex and may require some practice to obtain exactly what you need. You can click on “Enter the Map

Room” to start developing maps. When you enter the map room you have an option of selecting Missouri, United States or More Mapping Projects.

If you select Missouri, then you can select whatever county you wish. The next step is to select data layers. These include such things as aerial photos, soils maps, soil, topography, geology, floodplain, drinking water, cultural and many other things.

If you are developing a nutrient management plan, you can tailor a map to include the information needed for the plan. By entering the latitude and longitude of your farm the software takes you to the map for your area. There is a link to resources for developing nutrient management plans at: <http://nmplanner.missouri.edu/> Although this is not the CARES site, it will link you to resources on the CARES site to assist in developing your plan.

Other valuable maps can include maps of school districts, congressional districts, zip codes, watershed and other items of interest in your community, which can be useful as you look at different issues within your community.

Author: [Don Day](#), Natural Resources Engineer

Taxation Tidbit: Private Annuities – The End is in Sight

Over the years, we have referred to private annuities in this newsletter. An annuity is a promise to pay a specific amount of money over a specified period of time. For example, a private annuity could be used to transfer the farm to the succeeding heirs in exchange for their promise to pay a specified amount of money over a stated period of time (frequently for the life of the parents).

If the parents die earlier than expected, the obligor/heirs receive the farm for only a fraction of its value. If the parents live longer than expected, the cost of the farm to the heirs becomes greater, but the parents have a source of lifetime income.

A primary advantage of a private annuity agreement between the generations is that the transfer of the property may substantially reduce future estate taxes, and income taxes may also be reduced. A potential disadvantage of private or “family” annuities is that the lifetime income of the annuitants (i.e. the parents) is essentially unsecured.

Admittedly, private annuities will not fit well into the business succession plan for many people. However, where it does fit – it can be very beneficial.

The reason for discussing private annuities at this time is the IRS is about to shut the door on one of the primary benefits of private annuities – spreading the recognition of gain over the length of the annuity contract. The current tax treatment of spreading the recognition of gain over time will remain intact for annuities entered into prior to April 17, 2007.

So if you have been contemplating the use of a private annuity – get with your estate and business planning team

ASAP. Unless there is a change in the proposed regulations (and I hold very little hope for that to happen) very few private annuities will be utilized in farm business succession planning after April 17, 2007.

Author: [Parman R. Green](#), Agriculture Business Management Specialist

Highlights of the 2005 Energy Policy Act

During 2006, individuals can make energy-conscious purchases that will provide tax benefits when filling out their tax returns next year. The new law provides tax credits for making your principal residence, which must be in the United States, more energy efficient and for buying certain energy efficient items. At the same time the law provides credits for various types of alternative motor vehicles, including hybrids. You should check out details on these credits before making purchases to be sure they qualify.

Credits for Individuals Who Make Their Homes More Energy Efficient

A recent tax law change provides a ten percent tax credit to improve the energy efficiency of existing homes. To qualify, a component must meet or exceed the criteria established by the 2000 International Energy Conservation Code (including supplements) and must be installed in the taxpayer's main home in the United States.

The following items are eligible:

- Insulation systems that reduce heat loss/gain
- Exterior windows (including skylights)
- Exterior doors
- Metal roofs (meeting applicable Energy Star requirements)

In addition, the law provides a credit for costs relating to residential energy property expenses. To qualify as residential energy property, the property must meet certification requirements prescribed by the Secretary of the Treasury and must be installed in the taxpayer's main home in the United States.

The following items are eligible:

- \$50 for each advanced main air circulating fan
- \$150 for each qualified natural gas, propane, or oil furnace or hot water boiler
- \$300 for each item of qualified energy efficient property.

The maximum credit for all taxable years is \$500 – no more than \$200 of the credit can be attributable to expenses for windows.

Additionally, the new law makes a credit available to those who add qualified solar panels, solar water heating equipment or a fuel cell power plant to their homes in the United States. In general, a qualified fuel cell power plant converts a fuel into electricity using electrochemical means, has an electricity generation efficiency of more than 30 percent and generates at least 0.5 kilowatts of electricity. Taxpayers are allowed one credit equal to 30 percent of the qualified investment in a solar panel up to a maximum credit of \$2,000, and another equivalent credit for investing in a solar water heating system. No part of either system can be used to heat a pool or hot tub.

Taxpayers are also allowed a 30 percent tax credit for the purchase of qualified fuel cell power plants. The credit may not exceed \$500 for each 0.5 kilowatt of capacity. These items must be placed in service after December 31, 2005 and before January 1, 2008.

Credit for Taxpayers Who Purchase or Lease Hybrid Vehicles or Other Alternative Motor Vehicles

The tax credit for hybrid vehicles, which was enacted by the Energy Policy Act of 2005, may be as much as \$3,400 for those who purchase the most fuel-efficient passenger automobiles and light trucks.

Hybrid vehicles have drive trains powered by both an internal combustion engine and a rechargeable battery. Many currently available hybrid vehicles may qualify for the tax credit.

Since taxpayers may claim the full amount of the allowable credit only up to the end of the first calendar quarter after the quarter in which the manufacturer records its sale of the 60,000th hybrid and/or advanced lean-burn technology motor vehicle, consumers seeking the credit may want to buy early in the year.

The phase-out period for a manufacturer begins with the second calendar quarter after the calendar quarter in which the manufacturer records its 60,000th sale. For the second and third calendar quarters after the quarter in which the 60,000th vehicle is sold, taxpayers may claim 50 percent of the credit. For the fourth and fifth calendar quarters, taxpayers may claim 25 percent of the credit. For quarters after that fifth quarter, taxpayers may not claim the credit. Tax credits are available for purchasing certain other vehicles.

Fuel cell vehicles are propelled by power derived from one or more cells which convert chemical energy directly into electricity by combining oxygen with hydrogen fuel. For passenger automobiles or light trucks, the maximum allowable credit is \$12,000 but greater credits are available for heavier vehicles.

Alternative fuel vehicles include those fueled by compressed natural gas, liquefied natural gas, liquefied petroleum gas, hydrogen, and any liquid that is at least 85 percent methanol. The maximum allowable credit for vehicles weighing 8,500 pounds or less is \$4,000.

Hybrid heavy trucks: For qualifying hybrid motor vehicles weighing more than 8,500 pounds but not more than 14,000 pounds, the maximum allowable credit is \$3,000. For qualifying hybrid motor vehicles weighing more than 14,000 pounds but not more than 26,000 pounds, the maximum allowable credit is \$6,000. For qualifying hybrid motor vehicles weighing more than 26,000, the maximum allowable credit is \$12,000.

More information can be found at the following Internal Revenue web sites:

- <http://www.irs.gov/newsroom/article/0,,id=154657,00.html>
- <http://www.irs.gov/newsroom/article/0,,id=153397,00.html>

Author: [Don Day](#), Natural Resource Engineer



Energy Incentives

The Database of State Incentives for Renewable Energy (DESIRE) has information on state, local, utility, and selected federal incentives promoting renewable energy. On the main page, federal or specific state links can be chosen. It tracks federal financial incentives promoting renewable energy and energy efficiency. These incentive programs are designed primarily for residents, businesses, and other end-users rather than funding opportunities for research and development, outreach, or inter-governmental programs. New federal programs and incentives for renewable energy are added as they become available.

Sources for renewable energy incentives are at the DESIRE web site: <http://www.dsireusa.org>

The Missouri Department of Natural Resources has information on their web site relating to energy conservation and some incentives at: <http://www.dnr.mo.gov/energy>



Author: [Jim Jarman](#), Agronomy Specialist



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Editorial Board: [Don Day, Managing Editor](#); Parman Green, Mark Stewart, Jim Jarman, Todd Lorenz, Wendy Flatt, Mary Sobba, Gene Schmitz, Wayne Crook, Randa Brunkhorst and Jim Quinn.

Please send your comments and suggestions to the editor at:

University of Missouri Extension
1012 North Highway UU
Columbia, MO 65203
E-Mail: daydr@missouri.edu
Phone: 573-445-9792

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