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Crop Production Costs and Cash Rent

The most basic farm management tool is a crop budget. I use budgets almost daily to help advise owners and operators for a variety of business decisions. The best budgets depict actual costs for a specific cropping situation. In the absence of actual costs, estimates from MU Extension budgets can be useful.

Current cost estimates per acre and per bushel are shown in the table. In summary, overall operating costs are projected slightly lower for 2016 due to the outlook for fertilizer and fuel prices, but are still at historically high levels. In particular costs of pest control continue to increase.

An important use of a crop budget is to estimate the expected return after expenses. The numbers show tight margins and point out the pinch farmers are feeling.

Compare expected market prices on line A with costs per bushel on lines B and C. The current outlook shows that the market is expected to offer prices that cover operating (or variable) costs, but fall short of the total costs of production. On owned land there is an economic incentive to plant and target high yields in an attempt to recover at least a portion of the machinery and land ownership costs.

However, on rented ground where land is effectively a cash operating cost the incentive for the farmer is different. See line D where the real estate charge ($140 for dryland corn and soybeans) is including in operating costs rather than ownership costs. For the cash rent tenant the market price falls short of even the operating costs. The implication is that based on current knowledge many farmers will likely experience a net negative return in 2016. The only economic incentive to farm rented ground is to retain rights in hopes this year or future years will generate more net income than currently projected.

Table 1. Estimated Costs of Production for 2016 Crops in West Central Missouri.

	Dryland Corn	Irrigated Corn	Grain Sorghum	Soybeans	Wheat
Budgeted yield, bushels	135 bu	185 bu	85 bu	45 bu	55 bu
A. Budgeted price, $ per bu	$3.70	$3.70	$3.50	$9.15	$5.05
Seed	99	106	14	62	34
Fertilizer	109	139	81	51	66
Crop protection chemicals	60	60	32	60	20
Crop insurance	22	22	14	12	13
Custom hire and rental	6	6	6	6	12
Energy: Machinery, drying, irrig.	34	80	13	11	9
Machinery repairs and maint.	16	49	12	12	10
Operator and hired labor	16	23	15	13	12
Operating interest	11	15	6	7	5
Operating costs per acre	**$372**	**$499**	**$192**	**$235**	**$182**
Farm business overhead	5	5	3	5	4
Machinery overhead	26	48	22	18	14
Machinery depreciation	29	51	24	23	18
Real estate charge	140	175	123	140	123
Ownership costs per acre	**$200**	**$279**	**$172**	**$187**	**$159**
Total costs per acre	**$573**	**$779**	**$365**	**$423**	**$342**
B. Operating costs per bushel	2.76	2.70	2.27	5.24	3.33
C. Total costs per bushel	4.24	4.21	4.30	9.39	6.22
D. Operating costs per bushel if real estate charge above is cash rent payment	3.79	3.64	3.70	8.33	5.54

It seems to be human nature to let history unduly color our view of what will happen in the future. However, both owners and operators negotiating cash rental rates are best served by looking forward to the most likely returns. It is a mistake to set rental rates based on the boom years that are getting farther behind us or unrealistic expectations. Contact your Ag Business Specialist for assistance with leasing arrangements or estimating costs of production for your farm.

Source: *Brent Carpenter, Ag Business Specialist*

Manure Application Considerations

The use of livestock manures in cropping systems has many advantages. Animal manures can reduce the cost of fertilizer inputs. Manure can help build or maintain soil fertility, increase water holding capacity, and improve soil tilth. In addition to major plant nutrients of nitrogen, phosphorus, and potassium, manure also contains many micronutrients such as calcium, sulfur, zinc, boron, copper, magnesium, and manganese. However, application of manure in excess of needs can reduce the following crop yield, create surface and groundwater pollution and reduce the economic returns that are desired.

Land application of manure should always be applied at proper rates and soil conditions to eliminate or reduce erosion and runoff possibilities. The longer that manure is on the soil prior to crop uptake, the more possibilities exist for nutrient losses through mineralization, volatilization, denitrification, leaching, and erosion. Uniform application or spread should take into consideration timing so plants can efficiently uptake nutrients and reduce any negative environmental impact.

Fall manure applications are often necessary. This management practice allows for increased storage capacity for manure accumulations during the cold wet winter months. The least desirable application is during the winter when the soil is frozen and nutrients are not able to bind with the soil. Manure lying on the surface of frozen ground therefore is more apt to be lost from the system. While recent warmer winters have stretched the application window, producers should consider potential negative environmental impacts of winter applications. It is always recommended that a manure sample be submitted for analysis prior to application so that the producer is applying adequate quantities for crop need but not in excess for environmental interferences. This should be matched with an appropriate soil testing program. Both soil and manure testing is available through the MU Soil Testing and Plant Diagnostic Service. Samples can be submitted through your local MU Extension center.

The nutrient needs of the crop to be grown should be also taken into consideration so that proper manure application rates are utilized. Table 1 lists a few of the values for above ground portion of the plants when only grain is removed. A complete listing is in the Midwest Plan Service Livestock Waste Facilities Handbook.

Table 1. Crop Nutrient Needs (note: Soybean and alfalfa are legumes and get most of their N from the nitrogen fixing association utilizing air)

Crop	Yield Unit	N	P_2O_5	K_2O
Corn grain	100 bushel	160	60	215
Soybean grain	40 bushel	180	45	80
Wheat grain	60 bushel	125	50	110
Fescue	3.5 ton	135	65	185
Alfalfa	4 ton	180	40	180

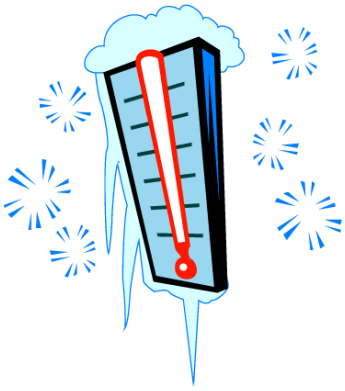
It should be noted that waste handling systems can affect the nutrient composition. Moisture content and bedding type can result in less available nutrients per pound of product. Ammonia nitrogen can be lost to the air and open lot or stockpiles can lose nitrogen to leaching.

As good stewards of this land, it is imperative that producers develop a good manure management plan from the feeding of livestock to application of manure on the land. Anything less helps the public create negative stereotypes of production agriculture which affects all producers and generally leads to harsher regulations.

Source: *Todd Lorenz, Agronomy Specialist*

What Is Cold to a Cow?

This is the time of year when people start wondering how cold and wet the winter will be. We do know there will be at least a few days or weeks of cold, wet weather. The impact of this on cattle producers is that weather is a major factor for designing winter feeding programs and impacts feed expenses for the cow herd. This could be a very critical issue for beef producers this winter, especially in light of marginal quality hay supplies. A review of environmental impacts on cattle nutrient requirements is in order.



Tables exist for lower critical temperatures (the temperature when cattle feel cold stress) based on thickness and wetness of the hair coat. There are also charts which show how wind speed and air temperature create an effective temperature.

A cow with a dry winter hair coat feels cold stress at about 32 degrees Fahrenheit (F). A cow with a wet winter hair coat feels cold stress at 59 degrees. For each degree of cold stress, the cows' energy requirements increase by 1 percent. A cow on a rainy 40 degree day will have the same cold stress, and thus the same increased energy requirement, as a cow on a dry, sunny 13 degree day.

If the cow has a dry winter coat and is exposed to an effective temperature of 10 degrees F, her energy requirements increase by 20%. An effective temperature of 10 degrees is achieved by 30 degree air temperature and 20 mile per hour (mph) wind speed, 25 degree air temperature and 15 mph wind speed, or 20 degree air temperature and 10 mph wind speed.

To deal with the cold stress, the cows' metabolic rate increases which increases the need for dietary energy, so the cow tries to eat more feed. The cow exposed to an effective temperature of 10 degrees F will need to consume about 4 pounds more hay or 2.5 pounds more grain in order to meet this increased energy demand. She may or may not be able to increase intake that much, especially if the hay is of poor quality.

In order to help cattle deal with the cold stress that is certainly ahead, keep a few concepts in mind. First, reduce exposure to the wind. Second, keep the cattle as dry as possible. This includes having dry feeding and loafing areas. Third, keep plenty of water available at all times. Restrictions in water consumption reduce feed intake. Fourth, consider feeding in the evening. Incremental heat production from digestion is greatest 4 to 6 hours after feed is consumed, so heat from fermentation would be greatest at night when temperatures are generally the lowest.

One last point is that the problem of feeding low energy hay is corrected by increasing the energy density of the diet. Feeding, or trying to feed, more pounds of poor quality, low energy hay will not improve energy balance for the cow. In fact, it will probably make things worse due to the reduced rate of passage of feed through the digestive tract. The only way to increase energy density of the diet is to add more calories. This is done with supplemental grain, grain by-products, higher quality hay or haylage, or silage.

Cattle are hardy animals that can adapt to a wide variety of environmental conditions. However, a few management changes can help reduce the impact of these environmental stressors and help keep cattle producing at an acceptable level.

Source: *Gene Schmitz, MU Extension Livestock Specialist*

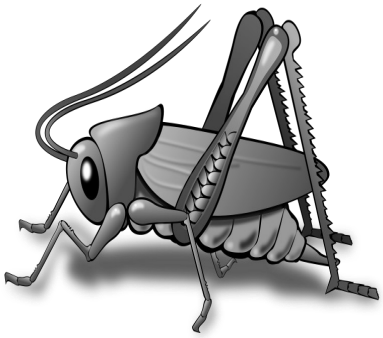
The West Central Region
MU Extension Agriculture Specialist
wish you and yours a Safe and Happy
New Year!

Thank you for
your support
for
MU Extension

Pesticide Applicator Training Scheduled

Farmers and ranchers who use restricted use pesticides in their operations need to have a license to purchase those products. For producers whose license are expiring in 2016 or for those needing a license for the first time, Private Pesticide Applicator Training (PPAT) sessions have been scheduled.

Classes will be held January through March, depending on county. Contact your local Regional Agronomy Specialist to find out dates and locations for a nearby PPAT.



- Terry Halleran (Dallas, Hickory, Laclede, Polk) Phone: 417-745-6767
- Joni Harper (Camden, Cole, Moniteau, Morgan) Phone: 573-378-5358
- Travis Harper (Benton, Cass, Henry, Johnson) Phone: 660-885-5556
- Todd Lorenz (Boone, Cooper, Howard, Pettis) Phone: 660-882-5661
- Pat Miller (Bates, Cedar, St. Clair, Vernon) Phone: 417-448-2560

If you wish not to attend a class, you may watch a 2 ½ hour video to gain a new or renew PPAT license. This video has to be watched at the Extension office and you will need to call the office to reserve a time and day to do so.