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OPTIONS FOR FREEZE DAMAGED WHEAT: WHICH WILL BE MOST PROFITABLE?

A severe freeze in mid-March has likely damaged much of the wheat crop in Kentucky. The extent and severity of the damage will be better known one to two weeks after the freeze when baseline estimates can be made. Normally, producers would have three options to deal with wheat stands that have been damaged at this stage:

- 1) Stay the course, harvest the wheat and then double-crop soybeans.
- 2) Terminate the wheat stand and plant corn.
- 3) Terminate the wheat stand and plant full-season soybeans.

However, given the current profitability advantage of full-season soybeans over corn for the 2017 crop, the decision this year would mainly be keeping the wheat or terminating the crop and planting full-season soybeans (keeping the rotation). The best option will depend on the extent of the damage to the wheat crop and the relative productivity potential and price levels for wheat and soybeans.

Note that if you have forward-contracted a portion of your wheat crop your options will be limited by your forward contract obligations. Producers who have forward-contracted should contact the elevator to understand their options.

Analysis

Soybeans are assumed to sell for \$9.75/bu. and wheat at \$4.45/bu. in this analysis. Table 1 shows the soil productivity levels used. Note that there are three primary productivity levels (one each for corn and full-season soybeans) and two wheat yield levels for each corn and soybean productivity level. This gives six productivity scenarios. Note that the corn yield levels are shown for illustrative purposes only as many farmers think of general soil productivity relative to corn yields. They are not used in the analysis as the comparison is between wheat + double-crop soybeans and full-season soybeans.

Soil Productivity Level	Corn	Full-Season Soybeans	Wheat
1	200	60	80
	200	60	90
2	175	55	70
	175	55	80
3	150	48	60
	150	48	70

The estimated wheat yield loss will have the greatest impact on the analysis, and wheat yield losses from 20-50% are used. Obviously, the higher the wheat yield loss, the more likely full-season soybeans would be the more profitable option. This estimate is the most critical portion of the analysis. Consult with your County Extension ANR Agent to help with this estimate.

Soybeans double-cropped after wheat harvest will generally experience a yield decline over full-season soybeans due to the shorter growing season. Typically, the yield penalty for soybeans averages around 20% but there is concern that the wheat harvest could be delayed this year due to the damage, resulting in a shortened growing season for the double-cropped soybeans. Overall yield losses for double-crop soybeans from 17.5 to 25% are used in this analysis, allowing the reader to pick the estimate most representative for their situation.

Only those costs for wheat/double-crop soybeans that would be in addition to full-season soybeans should be included. Seeding costs for the wheat, previous applications of nitrogen, and previous applications of pesticides are not relevant at this point in time. The additional costs for the wheat crop would likely be herbicides/fungicide sprayings, harvesting, and trucking costs. Total additional costs of \$75 for the wheat crop are used in this analysis. If your estimated costs are different, the results can be easily adjusted, as will be explained later.

The results are summarized in Tables 2 through 7 based on soil productivity levels. Tables 2 and 3 show 200-bushel corn and 60-bushel soybean (full-season) ground with two different wheat yields, 80 and 90 bushels. These wheat yields are what would normally be expected, and not the final yield after the freeze. The tables show expected wheat losses from the freeze from 20 to 50% compared to the base yield. The tables also show the double-crop soybean yields relative to what you would expect for full-season soybeans ranging from 17.5 to 25%. The results for 200 bu. corn ground and 80 bu. wheat ground are shown in Table 2. For example, if you expected a 30% wheat loss and a 20% yield drop in double-crop soybeans, the table shows \$54. The \$54 means that you would expect your net return to be \$54 higher by keeping the wheat crop compared to terminating the crop and planting full-season soybeans. *Positive values indicate an advantage to keeping the wheat crop; negative values indicate an advantage to terminating the wheat crop and planting full-season soybeans.* Thus in this scenario, at a 40% wheat yield loss, double-crop soybeans would have to yield 25% less than full-season soybeans before it would make sense to terminate the wheat crop. With a 50% wheat yield loss, all the scenarios favored terminating the wheat crop.

Table 2: 200 bu. corn 60 bu. soybeans and 80 bu. wheat \$9.75/bu. Soybeans \$4.45/bu. Wheat				
Wheat Yield Loss	Yield Loss Double-Crop Soybeans			
	17.5%	20%	22.5%	25%
20%	\$103	\$89	\$74	\$60
30%	\$69	\$54	\$40	\$26
40%	\$35	\$20	\$6	(\$8)
50%	\$0	(\$14)	(\$28)	(\$43)

Note: Positive \$'s favor Wheat/Soybeans; Negative \$'s favor full season soybeans.

Table 3: 200 bu. corn 60 bu. soybeans and 90 bu. wheat \$9.75/bu. Soybeans \$4.45/bu. Wheat				
Wheat Yield Loss	Yield Loss Double-Crop Soybeans			
	17.5%	20%	22.5%	25%
20%	\$137	\$123	\$109	\$94
30%	\$99	\$84	\$70	\$56
40%	\$60	\$46	\$32	\$17
50%	\$22	\$7	(\$7)	(\$21)

Note: Positive \$'s favor Wheat/Soybeans; Negative \$'s favor full season soybeans.

Table 3 shows the results for the same scenario except that normal wheat yields are expected to be 90 bu rather than 80 bu. This will reduce the situations where terminating the wheat crop would be warranted. There are only two scenarios at 50% wheat yield loss where this would make sense with the higher wheat productivity.

Table 4: 175 bu. corn 55 bu. soybeans and 70 bu. wheat \$9.75/bu. Soybeans \$4.45/bu. Wheat				
Wheat Yield Loss	Yield Loss Double-Crop Soybeans			
	17.5%	20%	22.5%	25%
20%	\$77	\$64	\$51	\$38
30%	\$47	\$34	\$21	\$8
40%	\$17	\$4	(\$9)	(\$22)
50%	(\$13)	(\$26)	(\$39)	(\$52)

Note: Positive \$'s favor Wheat/Soybeans; Negative \$'s favor full season soybeans.

Table 5: 175 bu. corn 55 bu. soybeans and 80 bu. wheat \$9.75/bu. Soybeans \$4.45/bu. Wheat				
Wheat Yield Loss	Yield Loss Double-Crop Soybeans			
	17.5%	20%	22.5%	25%
20%	\$111	\$98	\$85	\$72
30%	\$77	\$64	\$51	\$38
40%	\$43	\$30	\$17	\$4
50%	\$9	(\$4)	(\$18)	(\$31)

Note: Positive \$'s favor Wheat/Soybeans; Negative \$'s favor full season soybeans.

Tables 4 and 5 show the next tier of soil productivity levels: 175 bu. corn, 55 bu. full-season soybeans, and either 70 or 80 bu. wheat. The results pretty much follow those for the previous two tables. There are just a few more scenarios where it would make sense to terminate the wheat crop.

Table 6: 150 bu. corn 48 bu. soybeans and 60 bu. wheat \$9.75/bu. Soybeans \$4.45/bu. Wheat				
Wheat Yield Loss	Yield Loss Double-Crop Soybeans			
	17.5%	20%	22.5%	25%
20%	\$55	\$43	\$32	\$20
30%	\$29	\$18	\$6	(\$5)
40%	\$3	(\$8)	(\$20)	(\$31)
50%	(\$22)	(\$34)	(\$45)	(\$57)

Note: Positive \$'s favor Wheat/Soybeans; Negative \$'s favor full season soybeans.

Table 7: 150 bu. corn 48 bu. soybeans and 70 bu. wheat \$9.75/bu. Soybeans \$4.45/bu. Wheat				
Wheat Yield Loss	Yield Loss Double-Crop Soybeans			
	17.5%	20%	22.5%	25%
20%	\$89	\$77	\$66	\$54
30%	\$59	\$48	\$36	\$25
40%	\$29	\$18	\$6	(\$5)
50%	(\$1)	(\$12)	(\$24)	(\$35)

Note: Positive \$'s favor Wheat/Soybeans; Negative \$'s favor full season soybeans.

Tables 6 and 7 show the lower tier soil productivity level: 150 bu. corn, 48 bu. full-season soybeans, and either 60 or 70 bu. wheat. More scenarios are now starting to favor terminating the wheat crop and planting full-season soybeans. With the 60 bu. normal wheat yield, a 40% wheat yield loss favors full-season soybeans in most situations. With the 70 bu. normal wheat yield, it still takes close to a 50% wheat loss to favor full-season soybeans.

How to Modify the Analysis

This analysis used \$75 in additional costs for the combined wheat and double-crop soybeans compared to terminating the crop and planting full-season soybeans. If your expected costs are different from this, the analysis can be easily modified. For example, if your estimates were \$25 lower costs, then you would add the \$25 to each cell in the summary tables. If your estimates were \$25 higher costs, then you would subtract the \$25 from each cell in the summary tables.

Producers may have the option of harvesting the damaged wheat for silage before planting full-season soybeans. If this silage has a positive net value (value of the silage minus the costs), you would subtract the net value of this silage (on a per acre basis) from the cells in the appropriate table. Aside from the obvious costs to making the silage, be sure to account for additional fertilizer value you would be removing from the silage crop (particularly K). Producers should make certain that any pesticides used in production of the wheat are labeled for feed use. Testing is also highly recommended to make certain that nitrate levels are safe for feed.

Crop Insurance

Producers need to factor in potential crop insurance payments. It is important to understand that insurance payments that affect all options equally should not be included in the analysis. If payments are received regardless of what the producer does, then they will not change the analysis to favor one option over the other. Only payment differences between terminating the wheat or keeping it full-term should be used.

First and foremost, producers with wheat that has been potentially damaged should contact their crop insurance agent. Preliminary discussion with some of these agents indicate they may not be as lenient in releasing wheat-damaged crops for other purposes as they were after the wheat freeze of 2007. Find out what your crop insurance options are likely to be taking the wheat to full term as well as terminating the wheat and planting full-season soybeans.

Summary

Without accounting for crop insurance differences or potential wheat silage value, it appears that wheat stand yields would have to be reduced by at least 30% and more likely 40 to 50% before it would be more profitable to terminate the wheat stand and plant full-season soybeans. Given these results, producers should be careful before spraying-down wheat stands before they get an accurate assessment of the damage. Wheat stands harvested after the 2007 freeze generally did better than initial predicted. Make sure you contact your crop insurance agent to find out what your options are this year.



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SUMMER STOCKER OUTLOOK FOR 2017

With the warmer temperatures and the start of spring grass growth, stocker operators are contemplating placement of calves into summer grazing programs. Calf prices typically rise in the spring, but have done so more than usual this year as the entire cattle complex has been supported by stronger fed cattle prices. For example, the October CME® feeder cattle future's contract has increased by about \$8 per cwt over the last two weeks. This, combined with the onset of spring pasture growth, have fueled calf prices. In early March, we submitted this article for inclusion in the April edition of Cow Country News and have modified our pricing assumptions at the time of this writing (March 23, 2017) due to these changes in the market. Some operations likely placed calves during the winter, with the intention of purchasing stockers before the typical spring price peak. However, many more will place calves as pastures green up in the coming weeks. It is imperative that stocker operators pay careful attention to the market, their costs, and what can be paid for stocker calves this spring.

The year 2016 was another tough year for stocker operators that did not utilize some form of price protection on the calves they placed in the spring. The overall calf market declined significantly enough from spring to fall so that most stocker operators would have lost money in 2016 if they were not hedged. Hedging offered some opportunities to place calves at a profit at the time of placement, but profits were generally only modest last year given the high price of most calves. Weather also factored into profitability last year. Even though spring and early summer were wet, the rains stopped coming in the late summer through fall. It is very likely that stocker operators who were stocked heavily were forced to sell feeder cattle earlier than they had originally planned, thus reducing profits.

The purpose of this article is to assess the likely profitability of summer stocker programs for 2017 and establish target purchase prices for calves based on a range of return levels. While it is impossible to predict where feeder cattle markets will end up this fall, producers need to estimate this and not rely on the current price (March or April) for 750 to 850 lb. feeder calves. The fall CME® feeder cattle futures (adjusted for basis) is the best way to estimate likely feeder cattle prices for fall. Grazing costs including pasture costs, veterinary and health expenses, hauling, commission, etc. are estimated and subtracted from the expected value of the fall feeders. Once this has been done, a better assessment can be made of what can be paid for stocker cattle this spring in order to build in an acceptable return to management, capital, and risk. One should also remember that the CME® feeder cattle futures contract has shifted upward by 50 lbs. last fall. So, CME® feeder cattle futures are most representative of an 800 lb. steer out west.

Key assumptions for the stocker analysis are as follows: 1) Graze steers April 1 to October 1 (183 days), 1.5 lb/day gain (no grain feeding), 2% death loss, and 4% interest on calf. Given these assumptions, sale weights would be 775 lbs. and 875 lbs. for 500 lb. and 600 lb. purchased calves, respectively. Using a \$134 CME® futures contract for October 2017 to estimate sales price, a 775 lb. steer is estimated to sell for \$129.50/cwt and an 875 lb. steer is estimated to sell for \$124.50/cwt. This amounts to a \$5 per cwt price slide for heavyweight steers. We have reduced price slide expectation again from last year as the feeder cattle market has continued to drop year over year. These sale prices are also based on the assumption that cattle are sold in lots of 40 or more head. Stocker operators who typically sell in smaller lots should adjust their expected sale prices downward accordingly.

Estimated costs for carrying the 500 and 600 lb. steers are shown in Table 1. Stocking rates of 1.0 acre per 500 lb. steer and 1.2 acres per 600 lb. steer were assumed in arriving at these charges. Most of these are self-explanatory except the pasture charge, which accounts for variable costs such as bush-hogging, fertilizer, and re-seeding. The last of these pasture costs are on a pro-rated basis and are considered a bare-bones scenario. Sale expenses (commission) are based on the assumption that cattle will be sold in larger groups and producers will pay the lower corresponding commission rate. However, producers who sell feeders in smaller groups will pay the higher commission rate which will likely be around \$30 per head based on the revenue assumptions of this analysis. Any of these costs could be much higher in certain situations, so producers should adjust accordingly.

	500 lb. Steer	600 lb. Steer
Pasture Charge	\$25	\$30
Vet	\$20	\$20
Interest	\$16	\$18
Death Loss	\$17	\$18
Sale	\$16	\$16
Haul	\$15	\$18
Mineral	\$10	\$12
Other (water, etc.)	<u>\$10</u>	<u>\$12</u>
<i>Total Variable Costs</i>	<i>\$129</i>	<i>\$144</i>
<i>Note: Interest and death loss varies slightly by purchase price.</i>		

Target purchase prices were estimated for both sizes of steers and adjusted so that gross returns over variable costs ranged from \$25 to 125 per head. This gives a reasonable range of possible purchase prices for each sized calf this spring. Results are shown in Table 2. For 500 lb. steers, target purchase prices ranged from \$1.50 to \$1.69 per lb. For 600 lb. steers, target purchase prices ranged from \$1.37 to \$1.53 per lb. When targeting a \$75 per head gross profit, breakeven purchase prices were \$1.60/lb. for 500 lb. steers and \$1.45/lb. for 600 lb. steers.

As an example of exactly how this works for a 500 lb. steer targeting a \$75 gross profit:

775 lbs. steer x \$1.295 (expected sale price)	\$1004
Total Variable Costs	- \$129
Profit Target	- \$75
Target Purchase Cost	\$800
Target Purchase Price = \$800 / 500 lbs. =	\$1.60 / lb.

Table 2: Target Purchase Prices For Various Gross Profits 2017

Gross Profit	500 lb. Steer	600 lb. Steer
\$25	\$1.69	\$1.53
\$50	\$1.65	\$1.49
\$75	\$1.60	\$1.45
\$100	\$1.55	\$1.41
\$125	\$1.50	\$1.37

Notes: Based on costs in Table 1 and sales price of \$1.295/lb. and \$1.245/lb. for 775 lb. and 875 lb. sales weight respectively for 500 lb. and 600 lb. purchased steers.

For heifers, sale price for heavy feeders will be lower than comparably sized steers and they will not generally gain as well. In this analysis, we assumed the price discount for 800 lb. heifers is \$8 per cwt lower than 800 lb. steers and we assumed heifers would gain 10% slower than steers. With these assumptions, purchase prices would have to be \$.17/lb. lower for 500 lb. heifers and \$.15 lower for 600 lb. heifers compared to the steer prices found in Table 2. Thus when targeting a \$75 per head gross profit, breakeven purchase prices were \$1.43/lb. for 500 lb. heifers and \$1.30/lb. for 600 lb. heifers.

Of course, it is highly likely that your cost structure will be different from that presented in Table 1. If this is the case, simply shift the targeted gross profit up or down to account for this. If your costs are \$25 higher per calf, then you would shift each targeted profit down by one row: For example, you would use the \$125 gross profit to estimate a \$100 gross profit. Another way to evaluate this is that a \$1 increase in costs would decrease the targeted purchase price by \$.20 per cwt for 500 lb. steers and \$.17 per cwt for 600 lb. steers.

It is important to note that the gross profits in Table 2 do not account for labor or investments in land, equipment, fencing, and other facilities (fixed costs). Thus, in the long-run, these target profits need to be high enough to justify labor and investment. In many locations, calf markets are already at levels that would place expected returns on the lower end of the range analyzed. This is all the more reason that stocker operators should carefully think through their budgets and make rational purchasing decisions.

There is a tendency for calf prices to reach their season price peak when grass really starts growing in early spring. If calf prices do increase further, this would result in even tighter expected margins for stocker cattle placed in the upcoming weeks. Further, the last couple of years have taught us how volatile feeder cattle markets can be and how much impact that can have on profitability. Thus, price risk management will be critical for calves placed this spring.

Hedging, through the sale of futures contracts, provides solid downside risk protection, but will subject the producer to margin calls if cattle prices increase. Entering a cash forward contract with a feedlot or order buyer, or offering cattle through internet sales with delayed delivery, will reduce or eliminate price uncertainty, but will also limit marketing flexibility should weather conditions necessitate sale at a different time. Finally, strategies such as put options and Livestock Risk Protection (LRP) Insurance offer a less aggressive strategy that provides downside price protection (at a price), but more ability to capitalize on rising prices.

Regardless of what makes the most sense for the individual producer, time spent considering price risk management is likely time well spent in these volatile markets. Links to two publications on using futures markets to manage price risk in feeder cattle and a publication on the use of Livestock Risk Protection (LRP) Insurance, can be found on the livestock page of the UK Agricultural Economics website: <http://www.uky.edu/Ag/AgEcon/extcrops-livestock.php>. The best way to ensure profitability is to budget carefully and to manage downside price risk.



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WHOLE-FARM REVENUE PROTECTION

Crop insurance is a critical risk management tool and many farmers utilize some form of revenue protection insurance. However, diverse farm operations have had limited access to revenue protection that covers crops that fall outside of typical grains/small grain crops and tobacco. Crop insurance is a complex topic that is rife with detail, limitations, and restrictions. Our goal here is give you an overview of the lesser-known Whole-Farm Revenue Protection (WFRP) policy that may be beneficial for diversified farm operations. While WFRP is available to most farmers, it is designed for diverse farm operations, producing multiple products, and selling directly to local or wholesale markets. It also covers organic and specialty crops.

Unlike crop insurance, WFRP provides a safety net for all commodities under one policy. All revenue from commodities, animal and animal products, and commodities purchased for resale (up to 50%) are included. Timber, forest products, and animals for show, sport, or pets are excluded. Replant coverage is also included in the policy and the policy is available in every county in every state of the country. WFRP also includes a 35% growth cap. If a producer can prove that their operation has been growing in size or revenue over the previous years, then the current year's insured level can be up to 35% above the previous year's revenues.

Under WFRP, claims will be paid when revenue-to-count for the insured year falls below the WFRP insured revenue. Revenue-to-count includes revenue from the tax form approved according to the policy; adjusted by removing inventories from commodities produced in previous years; and adjusted for current year inventories. Other crop insurance policies can be purchased so long as they are higher than the catastrophic coverage level. If any indemnities are paid from those coverages, they will be included as revenue for the WFRP.

Keeping good records will assist in making the process of determining eligibility easier and ultimately aide in determining your crop insurance claim amount if a loss is incurred. Whole-Farm Revenue Protection requires farmers to provide five consecutive years of Schedule F's or other approved tax forms, unless the farmer is considered a beginning farmer and then three years are required. Other items required are a farm plan for the current year that shows what commodities are going to be produced and how much will be produced; farm marketing records; summaries of any individual insurance policies purchased; and inventory information for commodities and accounts receivables and payables.

Protection coverage ranges from 50 to 85%. The higher the coverage the more diversified the farming operation has to be. For instance, at the 80 and 85% coverage, three commodities are required on the farming operation. The more diverse the operation the higher the subsidy available. WFRP is not eligible for farms with insured revenue greater than \$8.5 million; have more than \$1 million expected revenue from animals and animal products; or have more than \$1 million from greenhouses and nursery production. This policy may even allow for a growth factor of 35% if a farm operation has been expanding in the previous years.

Famers who are diversified or have enterprise mixes that include products not covered by traditional revenue protection insurance should consider this risk management tool. We encourage you to reach out to your crop insurance provider to discuss how this tool could be beneficial in your overall risk management strategies.



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POULTRY LITTER APPLICATION: SPRING VALUE AND LESSONS LEARNED FROM THE DELMARVA AND OHIO VALLEY

For grain producers around the state utilizing poultry litter, the value has not changed much compared to this time last year. Commercial fertilizer prices play a significant role in the value of poultry litter. As fertilizer prices fluctuate, the value of poultry litter follows. Current fertilizer prices of \$560/ton for anhydrous (\$0.34/lb. N), \$437/ton for MAP (\$0.35/lb. P₂O₅) and \$328/ton for potash (\$0.28/lb. K₂O) are similar to those in March of 2016. From last year to this year, there was a drop in fertilizer prices beginning in May of last year and bottoming out in December. Since then, commercial fertilizer prices have been on the rise and are back to prices seen in March of 2016. As a result, the value of poultry litter has increased compared to the value observed in December.

In addition to commercial fertilizer prices, management practices also influence the value of poultry litter. While spring application maximizes the value of poultry litter, timing is key. Since most of Kentucky is under a no-till production system, applying poultry litter close to a future rain event is critical to moving macronutrients, specifically nitrogen, through the soil. Rainfall of ½ inch can reduce loss by moving nitrogen through the soil, but too much rainfall can cause runoff or leaching. If poultry litter with nutrient content of 50-56-47 (average nutrient content of poultry litter in Kentucky) is applied and within two days of a rain event, the current value is \$39/ton. This value decreases as the number of days from application to incorporation increases. If a rain event does not occur for more than seven days after application, the current value of poultry litter decreases to \$36/ton. Since the value also changes based on the nutrient content of the litter and individual soil test data, it is key to send litter and soil samples out for testing. The local Cooperative Extension Service can send litter samples to the lab for a \$25 fee (some counties offer free litter testing). Since the value of poultry litter is dynamic, the “Economic Value of Poultry Litter Tool-Grain Crops” is currently available to assist users in determining the value of poultry litter for use in grain production systems. This tool is on the website: http://www.uky.edu/Ag/AgEcon/shockley_jordan.php. *Note: There is also a tool for determining the value of poultry litter applied to pasture, hay, and silage.*

Also available on the website above is the forum held in January regarding poultry litter lessons from the Delmarva (Delaware, Maryland, Virginia) and the Ohio Valley. Sponsored by the Kentucky Soybean Board and the Kentucky Corn Growers Association, this forum brought producer perspectives, insights, and knowledge of managing poultry litter across different regions and constraints. Producers from the Delmarva highlighted management constraints, burdensome paperwork, audits, and storage techniques while Ohio Valley producers highlighted their management strategies for poultry litter, hauling distance, and the need to pencil out poultry litter use versus commercial fertilizers. All producers highlighted the importance of measuring poultry litter for nutrient content. The Kentucky Soybean Association provided an overview of the forum in the most recent Kentucky Soybean Sentinel publication and provide access to video of the forum on their website www.kysoy.org under the Events tab.



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