COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF KENTUCKY COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT, LEXINGTON, KY 40546

UNIVERSITY OF KENTUCKY
College of Agriculture, Food and Environment
Research & Education Center
Princeton, KY 42445

Wheat Science News

March 18, 2015 Volume 19, Issue 1

In This Issue:

NITROGEN MANAGEMENT FOR WHEAT IN 2015

Edwin Ritchey—Lloyd Murdock—John Grove
Department of Plant & Soil Science

Mother Nature has thrown another curveball at wheat producers this year. Last year there was potential for a significant amount of nitrogen (N) to be lost when applied to frozen soil and followed by large rainfall events. The soil was frozen and saturated, and the applied N had nowhere to go other than with the runoff. This year, most of the wheat has survived the late winter. Heavy snowfalls and substantial rain has resulted in saturated soils. The ability to traffic wet soils may be limited and could delay needed N application. Present soil wetness, the amount of rainfall over the next few weeks, the time when the crop starts to greenup, and the amount of N already applied will all influence N management decisions for the 2015 wheat crop.

Most wheat producers use either liquid UAN (urea-ammonium nitrate) solution or solid urea as their N source. The urea quickly converts to ammonium-N (NH_4^+-N). The UAN is a mixture of about 50% urea and 50% ammonium nitrate, so 25% of this N source is as nitrate-N (NO_3^--N). Ammonium-N is not prone to leaching or denitrification losses. If the NH_4^+-N finds its way into the soil, the majority of this N should still be present. The NO_3^--N is subject to leaching (downward movement in the soil profile-below rooting depth) and denitrification (conversion of NO_3^--N to N_2 and N_2O gases) losses. Temperatures have not been very favorable for nitrification (conversion of NH_4^+-N to NO_3^--N), so the majority of applied N should still be in the NH_4^+-N form. Therefore the majority of the N applied as UAN or urea should still be present.

For those producers that have already made their first N application, it is unlikely that a large amount of this N has been lost, to this point. For example, if 50 lb N/A was applied as UAN in the first application, and complete loss of the NO_3^--N is assumed, this loss would be about 12 lb N/A. However there is no reason to believe this occurred.

Although soils were frozen at times, no significant rainfall events occurred and the majority of the N likely moved into the soil as the snow melted. As soil temperatures warm, nitrification rates will increase and there will be greater denitrification potential. However, warm temperatures also cause wheat to break dormancy (greenup), and commence N uptake by the crop as it begins to grow, reducing N loss potential. Ideally, wheat growth will coincide with nitrification and the crop will utilize the soil N that is present, and as soils dry enough to permit the next N application.

Producers that did not make an earlier N application need to decide if they are going to apply N in one application or will still try to make a split application. To answer this question wheat growth stage, soil conditions, and "economics" need to be evaluated. Wheat in fields that will reach Feekes 4 (pseudostem erection) or later before an N application can be made would probably not benefit from split N applications. There will be little time to utilize the added N before a second application would be needed (Feekes 5-6), causing another field operation that would merely increase the possibility of rutting. Fields with a yield potential greater than 70 bu/A should receive 90-100 lb N/A and fields with lower yield potential should receive less (60-90 lb N/A) when making a single application. A single application would ideally be applied at Feekes 4-5, if possible.

Producers that are able to make a split application (Feekes 2-3, then Feekes 5-6) should base the first application rate (30-50 lb N/A) on tiller counts. When tiller counts are less than 70 tillers/ft^2, apply the higher rate to encourage further tillering. With tiller counts greater than 70 tillers/ft^2, the lower rate recommendation should be used. Fields with good yield potential should target a total spring N rate of 100-120 lb N/A. The total spring N rate for fields that were tilled prior to wheat planting can be reduced by 10-20 lb N/A.

As mentioned previously, little N loss is expected where wheat producers made the first N application prior to the snow events. However, if wet weather and slow growth persist, denitrification and leaching losses will increase and adjustments may need to be considered. Be cautious and don't over-apply N, as this can increase the likelihood of disease and lodging issues. Ideally, all N should be applied by the end of Feekes 6 (jointing) to reduce the potential for N deficiency in the wheat crop.

There are limited "tools" that might help determine how much N has been lost from individual fields. Soil nitrate tests are of very limited use since only the NO_3^--N form is being measured and this provides no indication of the amount of NH_4^+-N that is still present. Proximal canopy sensors like the Greenseeker, or a handheld chlorophyll meter, or a similar instrument (either hand held or sprayer mounted) that measure the growth and/or "greenness" of the wheat crop canopy can provide an indication of the N status of the crop in that field, especially if an N enriched (about 150 lb N/A) strip is available for comparison. However readings made prior to Feekes 5 and 6 are not real helpful. Caution must be used when comparing Greenseeker results from an N-enriched strip in one field to the wheat growing in other fields. Knowledge of field history, yield potential, tiller counts, and visual crop evaluation will provide meaningful information for N management decisions in 2015. For more information please consult AGR-1: Lime and Fertilizer Recommendations, ID-125: A Comprehensive Guide to Wheat Management in Kentucky, or your local county agricultural extension agent.

TO RECEIVE THE WHEAT SCIENCE NEWS ELECTRONICALLY
Email: Colette.laurent@uky.edu
Subject: Wheat Science news

AND SUBSCRIBE TO THE GRAIN CROPS BLOG AT:
http://graincrops.blogspot.com/

CHALLENGES IN WEED MANAGEMENT DUE TO WET CONDITIONS

James R. Martin, Extension Professor of Weed Science

Figure 1. Weeds in Wheat (photo 3-15-2015)

The large amount of snow cover combined with recent rainfall has made it a challenge to treat for weeds as we transition into spring. The following are some suggestions to consider as we progress through the next few days:

• Harmony and Harmony Extra are examples of ALS-inhibitor herbicides that can injure wheat in cool, wet soil conditions. Injury may also occur if wide fluctuations of day and nighttime temperatures occur prior to, or soon after, application. It is not clear to what extent, if any, the injury observed with Harmony and Harmony Extra impacts wheat yield. The labels of these products recommend adding 2,4-D as a tank mix partner to limit the risk of injuring wheat from the ALS-inhibitor herbicides. It is important to recognize that the safest time to use 2,4-D in wheat is when plants are fully tillered and prior to jointing.

• Any significant delay in applications due to wet conditions may allow time for wheat to grow beyond the labeled growth stage. Dicamba is especially a concern when applied to wheat that is jointing or is later in growth.

• The delay in applying wheat herbicides this spring increases the demand to use the same sprayer for applying early preplant treatments for corn. Clean sprayers thoroughly before switching to the other crops. If changing from corn to wheat, be aware that small amounts of glyphosate, Valor, or atrazine left in the tank may lead to crop injury when subsequent treatments are applied to wheat. Do not leave spray mixes in the tank or lines overnight.

- Controlling ALS-resistant common chickweed that overwintered may be a challenge. Growers will not have the option of using Harmony Extra for managing populations resistant to this chemistry. Starane Ulta, Huskie, and metribuzin have some activity on common chickweed. One concern with metribuzin is the risk of crop injury due to susceptibility of wheat varieties. This may be particularly true when using high rates of metribuzin.

- The delay in applications may force growers to topdress nitrogen fertilizer and spray herbicides near the same time with one another. Such herbicides as Osprey and PowerFlex have potential to injure wheat when applied near the time of topdressing nitrogen. The PowerFlex label cautions against making applications within seven days of topdressing ammonium nitrogen fertilizer, while the Osprey label suggests waiting 14 days between application and topdressing. Axial is an alternative to Osprey or PowerFlex in managing Italian ryegrass and avoiding wheat injury when applied near the time of topdressing nitrogen.

WHEAT OUTLOOK, PROFITABILITY POTENTIAL, AND RISK MANAGEMENT UPDATE

Todd D. Davis—Crop Economics Marketing & Management

The winter months are void of information when it comes to domestic grain markets. There is little market information produced by USDA between January's final production estimates released in the January WASDE and the Prospective Plantings report that will be released March 31. USDA still provides monthly WASDE reports and weekly export updates during the winter months. However, those reports do not carry the same fireworks as reports during the growing season.

This lack of fresh information doesn't necessarily mean that everything is copacetic in the wheat market. The wheat market is building stocks despite the smaller crop in 2014. This is mostly due to the sharp drop-off in exports from last year (Table 1). USDA is projecting wheat exports to be 900 million bushels for the 2014-15 marketing-year which ends May 31. That projection may be optimistic as exports, as of the first week of March, are running about 7% behind 2013 and 3% behind the 2009-13 average export pace. The very strong U.S. dollar, coupled with strong export competition from the Black Sea region, the European Union, Canada and Australia, is curbing demand for U.S. wheat.

The March WASDE projects ending stocks to increase by 101 million bushels in 2014-15 because demand is decreasing faster than supply is decreasing (Table 1). The wheat market will need stronger exports in the 2015-16 marketing-year to provide price support. The March WASDE projects an average farm price of $6.00 per bushel which is $0.87 per bushel lower than that in 2013-14.

Table 1. U.S. Wheat Supply and Use

	2012-13	2013-14 Estimated	2014-15 Projected	Change from 2013-14
Planted Acres (million)	55.3	56.2	56.8	+0.6
Harvested Acres (million)	48.8	45.3	46.4	+1.1
Yield (bushels/acre)	46.2	47.1	43.7	-3.4
	---------- Million Bushels ----------			
Beginning Stocks	743	718	590	-128
Production	2,252	2,135	2,026	-109
Imports	123	169	160	-9
Total Supply	3,118	3,021	2,776	-245
Food	945	952	960	+8
Seed	73	77	75	-2
Feed and Residual	370	226	150	-76
Exports	1,012	1,176	900	-276
Total Use	2,400	2,431	2,085	-346
Ending Stocks	718	590	691	+101
Supply/Use	29.9%	24.3%	33.1%	+8.9%
Days of Stocks	109	89	121	+32
U.S. Marketing-Year Average Price ($/bu)	$7.77	$6.87	$6.00	-$0.87

Source: March 2015 WASDE - USDA: WAOB.

Projected Profitability for Wheat

Wheat's profitability potential was limited when the crop was seeded last fall. The profitability potential, based on 2015 Crop Enterprise Budgets and current market prices, hasn't improved during the winter. The break-even price to cover all variable costs excluding cash rent is $3.89 per bushels assuming a yield of 75 bushels/acre (Table 2). The break-even price needed to cover total variable cost plus cash rent is $6.23/bushel assuming a yield of 75 bushels/acre (Table 2). The July wheat contract closed at $5.03 on March 13 so reasonable expectations are for a loss over total variable costs plus cash rent of -$70 to -$100 per acre (Table 2) which assumes zero yield loss. Table 2 shows projected profitability for a pessimistic yield of 55 bushels/acre. The pessimistic yield scenario coupled with $4.80/bushel wheat or lower would trigger significant losses over total variable costs plus cash rent exceeding -$200 per acre (Table 2). Revenue Protection (RP) insurance at the 75% coverage level would trigger indemnities under the pessimistic yield scenario that would limit the loss to -$140/acre (Table 2).

Table 2. 2015 Projected Returns for Western Kentucky Wheat Production ($/Acre)

APH Yield	75					
RP Projected Price	$5.82					
RP Coverage Level	75%					
	Most Likely Yields			Pessimistic Yields		
Harvest Price [1/]	$5.30	$4.80	$4.30	$5.30	$4.80	$4.30
Yield	75	75	75	55	55	55
Revenue	$398	$360	$323	$292	$264	$237
Total Variable Costs	$292	$292	$292	$292	$292	$292
Return over Total Variable Costs	$106	$68	$31	-$1	-$28	-$56
Cash Rent	$175	$175	$175	$175	$175	$175
Return over TVC+Rent	-$70	-$107	-$145	-$176	-$203	-$231
RP Indemnity (75% Coverage)	$0	$0	$5	$36	$63	$91
Return + Insurance Indemnity	-$70	-$107	-$140	-$140	-$140	-$140

[1/] Harvest Price is assumed to be the Harvest Price for RP Crop Insurance for simplicity in this example.

Source: 2015 University of Kentucky Crop Enterprise Budgets

Current Price Risk Management Alternatives for Wheat

The price risk management alternatives for wheat are not very attractive for those who have to cover total variable costs plus cash rent. Cash-Forward Contract (CFC) bids listed on DTN for March 13 ranged from $4.83/bushel to $5.18/bushel for June delivery. Figure 1 illustrates the ability of a CFC at $4.95, a put with a $5.10 strike price costing $0.31/bushel and cash sales at harvest to cover total variable costs excluding rent (red dash line) and total variable costs plus cash rent (black dash line) targets.

Figure 1 illustrates why farmers must know their costs and what price they need from the market to meet their pricing objectives (paying inputs, cash rent, family living, debt servicing, building equity, etc.). The 2015 wheat crop is going to provide a challenge for those who planted wheat on rented land that requires $6.23/bushel to break-even. Farmers that planted wheat on owned land and who are only worried about covering cash costs may be able to use CFC or put options to protect revenue and meet cash cost obligations. Managers need to monitor pricing opportunities to protect their downside risk as best as possible. (See Figure 1 on next page)

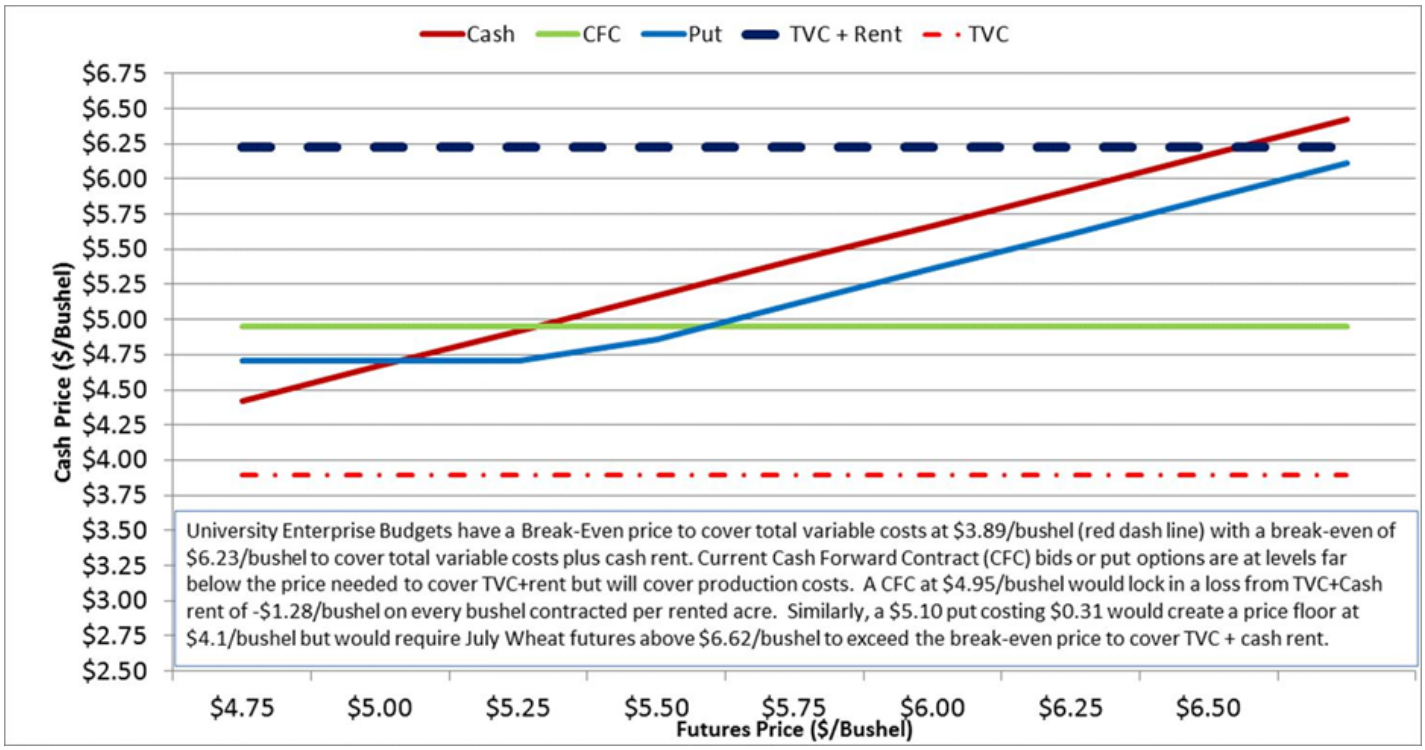


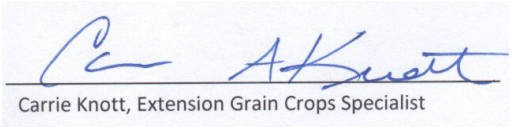
Figure 1. Price Risk Management Alternatives for Wheat to Cover Total Variable Costs and Cash Rent.

We would like to introduce Dr. Erin Haramoto. Erin is an assistant professor in Weed Science located in Lexington. The main objective of Erin's program is to develop integrated weed management programs for Kentucky's grain crop producers that combine physical, biological, and chemical management tactics. More integrated methods will help to lessen reliance on chemical weed management while also managing herbicide-resistant weeds and slowing the evolution of new resistant weeds. Her research currently addresses how weeds and weed seeds in the soil respond to practices like cover cropping and reduced tillage. Erin Earned her PhD from Michigan State University.

University of KY
2015 Wheat Field Day
May 12

UKREC—Princeton, KY

(more details coming soon)



Carrie Knott, Extension Grain Crops Specialist

COOPERATIVE EXTENSION SERVICE

UNIVERSITY OF KENTUCKY
College of Agriculture, Food and Environment

Research and Education Center
PO Box 469
Princeton, KY 42445-0469

Official Business