



Arkansas Rice Update

Dr. Jarrod Hardke, Dr. Trent Roberts, Dr. Tom Barber, Dr. Tommy Butts, & Scott Stiles
 May 29, 2020 No. 2020-11

www.uaex.edu/rice



Let's Flood Some Rice

"Forget the curveball, Ricky. Give him the heater!" Raise your hand if you're ready for some hot weather.

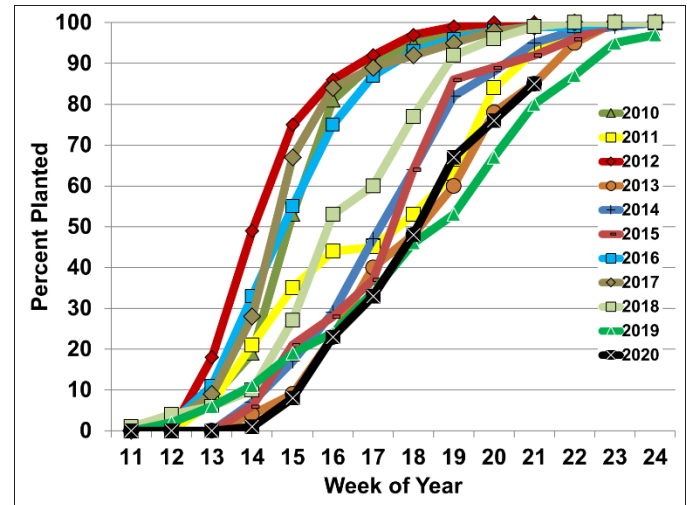
As of Tuesday, we reportedly hit 85% planting progress (**Fig. 1**). Scattered rains continued around the state this week keeping things interesting. As one consultant put it, "I waited out one rain in my truck and as soon as I got the middle of the field the next one caught me out there."

South of I-40 we can say we're planted up. The remaining ground to be planted is in the northeast, primarily along a line to the north of Jonesboro. Over the past week, rice seed has been slung every which way including drill, plane, and buggy. Some of it isn't pretty, but it's planted (sort of). In some instances where rice was flown on mud with no way to manage water, seed will not germinate and survive and it's not worked in and given a drink. Planting will, and should, continue into the first week of June. After that point the risk outweighs the reward, especially in the northern part of the state.

The next 10 days call for lots of sun and temperatures in the low 80s climbing in to the low 90s. It's about time and this rice is ready to see it. Be prepared for fields to really take off now. We've been doing a lot of waiting, now we need to run with the rice and not get behind on spraying, fertilizing and going to flood.

Things are going to move very fast now, whether you're still planting, or trying to get to flood. Be sure to take a minute to think before you act! We're already seeing some preventable mistakes happen. We can't move forward by going backwards. Give us a call if you think we can help.

Fig. 1. AR Rice Planting Progress 2010-2020.



Time to Get to Flood!

Based on DD50 Program enrollment, a third of rice acres planted should be attempting to go to flood this week (**Table 1**). Another third should be ready to go the next week. Remember we need to flood rice based on growth stage and not by height. These fields are beyond the 4-5 leaf stage and ready for nitrogen and water as soon as you can let them have. Flood'em if you got'em! Visit <http://www.RiceAdvisor.com> to access the nitrogen rate calculator.

Table 1. Percent of acres reaching the end of the optimum pre-flood nitrogen window by week (based on fields enrolled in DD50 Program).

Week	Percent of Acres
May 11 to May 17	0.5%
May 18 to May 24	4.0%
May 25 to May 31	34.1%
June 1 to June 7	36.4%
June 8 to June 14	23.5%
June 15 to June 21	1.3%

Visit our website at <http://www.uaex.edu>



Arkansas Rice Update

Dr. Jarrod Hardke, Dr. Trent Roberts, Dr. Tom Barber, Dr. Tommy Butts, & Scott Stiles
May 29, 2020 No. 2020-11

www.uaex.edu/rice



DIVISION OF AGRICULTURE
RESEARCH & EXTENSION

University of Arkansas System

Urease Inhibitors in Rice

This is the time of year we start applying urea fertilizer to the majority of our crops and also a time when the weather doesn't seem to cooperate nearly as much as we would hope. Urea is a great nitrogen (N) fertilizer source, especially for rice, due to its high N analysis and granular form that aids in both ground and aerial application.

Unfortunately, there is no PERFECT N fertilizer source and for all the great qualities urea possesses it has one fatal flaw – ammonia volatilization loss potential. Urea is technically an “organic” compound as it contains carbon, oxygen, nitrogen, and hydrogen (that's organic in the chemistry sense – not the farming classification sense). Urea must be dissolved and then hydrolyzed or converted to ammonium before the plant can take it up. The process of urea hydrolysis (conversion from urea to ammonium) is catalyzed by an enzyme known as urease – which is basically everywhere.

A few key things to understand about ammonia volatilization loss from urea: 1) volatilization is a **surface loss mechanism** – urea that has been incorporated with tillage, rainfall, or irrigation is not prone to N losses via volatilization; 2) the higher the soil pH the more ammonia loss potential; 3) soils with lower CEC contents (sands and silt loams) are more likely to experience significant ammonia loss via surface applied urea than heavier textured soils such as clay loams and clays; 4) urea hydrolysis and ammonia volatilization losses do take time to occur – the loss is not immediate. For most soils and environmental conditions, it requires 2-3 days before we see appreciable or measurable N loss via ammonia volatilization.

A quality urease inhibitor that contains NBPT is worth its weight in gold when it comes to mitigating

ammonia volatilization losses from urea applied pre-flood. If you are on clay soils or require 3 days or less to flood then you probably will see no benefit from a urease inhibitor. If you are on a silt loam soil and conditions are right you can lose as much as 50% of your applied urea-N in as little as 7 days.

Notes to remember when using ammonium sulfate (AMS) – ammonia volatilization losses are seldom an issue when using AMS and there is no need for a urease inhibitor; **urease inhibitors are only for urea.** If you are blending urea and AMS have the Co-op treat the urea with a urease inhibitor separately before blending. Do not let them blend the products and then charge you for the cost of treating both the AMS and the urea.

Another question that has been asked concerns using a urease inhibitor in standing water. **DO NOT USE A UREASE INHIBITOR IF YOU ARE APPLYING UREA INTO STANDING WATER!** You will get no benefit from a urease inhibitor for either early N or midseason N applied if the permanent flood has already been established. If the field is muddy and there are puddles here and there AND you intend to let the field dry before you establish the permanent flood then yes you do need to use a urease inhibitor.

The University of Arkansas System Division of Agriculture does a significant amount of laboratory and field testing to validate the quality of urease inhibitors and the two things that should be considered are active ingredient and concentration – similar to how you would select and use herbicides. The most consistent and reliable urease inhibitor is NBPT (N-(n-butyl) thiophosphoric triamide), but more recently NPPT has shown to have similar benefits in reducing ammonia volatilization losses from urea.

Visit our website at <http://www.uaex.edu>

University of Arkansas, United States Department of Agriculture, and County Governments Cooperating

The University of Arkansas Division of Agriculture offers its programs to all eligible persons regardless of race, color, sex, gender identity, sexual orientation, national origin, religion, age, disability, marital or veteran status, genetic information, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.



Arkansas Rice Update

Dr. Jarrod Hardke, Dr. Trent Roberts, Dr. Tom Barber, Dr. Tommy Butts, & Scott Stiles
 May 29, 2020 No. 2020-11

www.uaex.edu/rice

For more information on Nitrogen Fertilizer Additives such as urease inhibitors please see fact sheet [FSA-2169](#). **Table 2** provides information on the products tested and found to be effective at reducing ammonia volatilization losses from urea.

Table 2. List of tested and recommended NBPT-containing urease inhibitors and suggested application rates for urea in rice.

Product Name	Recommended Volume qt per ton urea	NBPT Concentration %
Agrotain Advanced	2.0	30.0
Agrotain Ultra	3.0	26.7
ANVOL [¶]	1.5	16
Arborite AG-NT	3.0	24.0
ContaiN	4.0	unknown [‡]
Factor	3.25	24.5
Limus	3.0	16.88 [#]
N-Fixx PF	3.0 - 4.0	unknown [‡]
Nitrain	3.0	26.7
Nitrain Express	3.0	24.8
N-Veil	3.0 - 4.0	26.7
PinnitMax	1.5	50.0

[‡] Unknown, product label does not specify concentration of NBPT.

[¶] ANVOL contains 16% NBPT and 27% duromide which has also been shown to reduce ammonia volatilization loss.

[#] Limus contains 16.88% NBPT and 5.63% NPPT, which is a proprietary inhibitor owned by BASF.

Currently, there are many urease inhibitors on the market and oftentimes there are too many for us to test. Just because a product is not in our current list does not mean that it cannot be used effectively. There are some rules of thumb to keep in mind. First off, the product should contain NBPT or another published urease inhibitor. Secondly, the concentration of NBPT will help determine the application rate per ton of urea. For products that contain <20% NBPT you need to use 4 qt/ton urea.

For products that contain ~26-30% NBPT you need 3 qt/ton urea. There are some concentrated formulations that you can apply a lower rates such as 2 qt/ton urea. It's always best to read and follow labels to ensure that you are getting what you pay for.

There has been some chatter and speculation recently that urease inhibitors “tie up” the N in a way that might delay uptake and slow plant growth because the N cannot be taken up. There are no grounds for this. The only way that the N can be taken up by the plant is after it has been incorporated into the rootzone which is typically done using rainfall or irrigation.

Typically, as urea is incorporated with water there is a dilution and separation from the urease inhibitor which allows the urea to hydrolyze to ammonium and become plant available. Once the urea is incorporated below the soil surface we do not need to worry about ammonia volatilization losses. There have been countless field trials with numerous urease inhibitors which have shown the rice total N uptake and yield when using an effective urease inhibitor are equal to or greater than untreated urea. Also, common sense always comes in handy.

An effective urease inhibitor is a great investment if the conditions are present for significant volatilization loss from surface applied urea. Costs for effective urease inhibitors can run from \$5-15/acre depending on the urease inhibitor selected and the rate of N being applied. Rarely do we find a product that works as consistently as an effective urease inhibitor and more often than not if conditions are prone to volatilization losses it will more than pay for itself. Familiarize yourself with when and where urease inhibitors should be used effectively and if all else fails give us a call and let us help!

Visit our website at <http://www.uaex.edu>

University of Arkansas, United States Department of Agriculture, and County Governments Cooperating



Arkansas Rice Update

Dr. Jarrod Hardke, Dr. Trent Roberts, Dr. Tom Barber, Dr. Tommy Butts, & Scott Stiles
May 29, 2020 No. 2020-11

www.uaex.edu/rice



DIVISION OF AGRICULTURE
RESEARCH & EXTENSION

University of Arkansas System

Applying Herbicides to Dry Soil

As rains are supposed to subside in the coming week and more rice nears flood, residual herbicides will be starting to break. If you are preparing to make postemergence herbicide applications and conditions are becoming dry, it's important to remember that control can be less than optimal so maximizing coverage is critical.

Herbicides such as Ricestar HT, Facet, Newpath, and Clincher generally require good to excellent soil moisture to have actively growing weeds that will rapidly take up the herbicides. If conditions begin to get too dry, we need to strongly consider being prepared to immediately flush (if younger rice) or get the crop to flood.

While not an ideal answer, at times it may be more appropriate to target postemergence applications for grasses after a shallow flood has been established. The downside here is that weed size will have increased and coverage potential decreased depending on the depth of the water. There is no perfect answer, but environmental conditions and field management capability will dictate the best approach.

Many questions have arisen about spraying grass that is bleached from Command applications. In some cases, Command has the potential to "reach-back" and control grasses that were emerging during application or already up at the time of application, especially early in the season. With current temperatures forecasted, these grasses may be stunted today, but will most likely recover and will need to be re-treated timely. And yes, the herbicide will still work even though the grass has a white color.

Herbicides on Cut Soil

Herbicide options are slim on soils that have been recently leveled. There have been a few mistakes this year as we have moved rapidly to get fields planted and residual herbicides out.

Command should not be applied to cut ground, especially where deep cuts have occurred. There is the potential for reduced plant vigor and even stand loss if Command is used in these fields.

Facet can also cause issues on cut soils and should not be used pre-emergence or early postemergence. If rice is growing well and healthy, then it could be considered for use as a late postemergence application.

Regiment and Grasp should not be used on cut soils, particularly with deeper cuts.

Use of Clearfield, FullPage, or Provisia cultivars are generally advised due to tolerance to their respective herbicides. Newpath/Preface plus Beyond/Postscript or Provisia herbicides can be used successfully on cut soils and will help manage weeds successfully in the absence of Command and Facet.

Prowl and Bolero are good options for residual herbicides in cut soil situations. But remember these can only be applied delayed preemergence (after rice has germinated) or later.

Overall, we will need to rely on Prowl and Bolero as preemergence herbicides, and propanil, Ricestar, and Clincher as postemergence herbicides. As previously stated, Newpath/Preface, Beyond/Postscript, and Provisia may be used in their respective production systems and these technologies are strongly recommended for use on a recently cut field.

Visit our website at <http://www.uaex.edu>

University of Arkansas, United States Department of Agriculture, and County Governments Cooperating

The University of Arkansas Division of Agriculture offers its programs to all eligible persons regardless of race, color, sex, gender identity, sexual orientation, national origin, religion, age, disability, marital or veteran status, genetic information, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.



Arkansas Rice Update

Dr. Jarrod Hardke, Dr. Trent Roberts, Dr. Tom Barber, Dr. Tommy Butts, & Scott Stiles
 May 29, 2020 No. 2020-11

www.uaex.edu/rice



DIVISION OF AGRICULTURE
 RESEARCH & EXTENSION
 University of Arkansas System

Spray Applications and Water Volume

There have been some recent comments made about needing aerial application volumes greater than 10 gallons per acre (GPA). This isn't particularly true whether in regard to herbicide or fungicide applications.

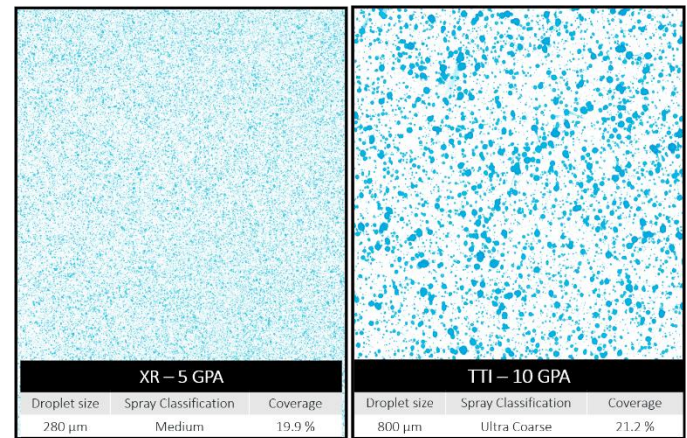
In recent work focusing on fungicide applications using a ground rig, fungicides applied using 10 GPA were better at managing sheath blight than fungicides applied using 3 GPA. Applications made at 20 GPA were not better than those at 10 GPA. Keep in mind this is from a ground rig.

Applications made via ground versus aerial differ especially in respect to droplet sizes used. When discussing spray coverage, there is a highly significant interaction between droplet size and spray volume, and discussing one without the other does not paint the whole picture.

Droplet size impacts spray coverage to a larger extent than spray volume due to the exponential relationship between droplet diameter and the actual volume within that droplet. If we cut our droplet size in half with a fixed volume, we actually have 8x the number of droplets available for coverage. In contrast, if we double our spray volume with a fixed droplet size, we increase the number of droplets available for coverage 2x. Coverage card data show that deposition from a plane at 5 GPA provides similar coverage to deposition by ground at 10 GPA when considering commonly used droplet sizes from each application method (Fig. 2).






The biggest jump is likely to be getting the remaining aerial applications to stop going out at 2-3 GPA. If we can get 5 GPA we're in good shape, and if we can get 7-8 GPA we're in great shape. **Some herbicide labels require 10 GPA.

Fig. 2. Droplet coverage card data for 5 GPA versus 10 GPA with appropriate nozzles.



Recent aerial applicator surveys indicate that systemic herbicide applications average 5 GPA and contact herbicide applications average 7 GPA. Yes, some applicators use less, some use more. Increases in application rate will certainly help with coverage and subsequently with weed or disease control. Going from 3 GPA to 5 GPA is a good thing and going from 5 GPA to 7 GPA is a good thing because we have more droplets with the potential to remain on a leaf surface. But increasing much beyond that is not likely to cause substantial improvement and can be very difficult to achieve via aerial application considering payload capacity of current agricultural aircraft (Fig. 3).

Fig. 3. Payload capacity of different aircraft.

					
	Boeing 737	C-130 Hercules	Boeing C-17	Cessna 172	AT-802A
Maximum Take-off Weight (lbs.)	175,000	155,000	585,000	2,500	16,000
Payload (lbs.)	45,000	45,000	171,000	800	9,500
% max weight dedicated to payload	26%	29%	29%	32%	59%

Visit our website at <http://www.uaex.edu>

University of Arkansas, United States Department of Agriculture, and County Governments Cooperating

The University of Arkansas Division of Agriculture offers its programs to all eligible persons regardless of race, color, sex, gender identity, sexual orientation, national origin, religion, age, disability, marital or veteran status, genetic information, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.



Arkansas Rice Update

Dr. Jarrod Hardke, Dr. Trent Roberts, Dr. Tom Barber, Dr. Tommy Butts, & Scott Stiles
May 29, 2020 No. 2020-11

www.uaex.edu/rice



DIVISION OF AGRICULTURE
RESEARCH & EXTENSION

University of Arkansas System

Rice Market Update

Coronavirus Food Assistance Program (CFAP). Although rice was not included as an eligible commodity, we remind growers that the application process for CFAP is open. Corn, soybeans, grain sorghum, oats and cotton are some of the eligible “Non-Specialty Crops” covered under CFAP. Note that soft red winter wheat is not eligible for a CFAP payment.

Applications can be made with your county Farm Service Agency (FSA) office between May 26 and August 28. At the present time you may not be able to have an in-person meeting with FSA county staff. Call your local FSA office first if you have questions about the application process.

Applications for CFAP are available in the “CFAP Application” section of this link: <https://www.farmers.gov/cfap>.

There are two application options available at the link above. The first is a *CFAP Payment Calculator*, a Microsoft Excel spreadsheet that can be used to complete the form AD-3114. For this spreadsheet to work, Microsoft Excel must be on your computer. The spreadsheet makes use of macros, so Microsoft Excel security settings must be set so that macros can function. The worksheet will not work on iPads or other handheld devices that do not support macros.

The second form available is a pdf of AD-3114. This form can be completed using fillable pdf software. Also, handwritten values could be placed on the form. Getting signatures and submitting this form to FSA will constitute an application.

To complete an application, only the following information will be needed for each crop:

1. 2019 Total Production, and
2. 2019 Production Not Sold as of Jan. 15, 2020.

The producer will “self-certify” these amounts, and documentation is not needed at the time of application. If a producer is selected for a spot check/audit, documentation will be needed at that time.

Rice Market:

A truly impressive week for rice futures. The September contract is trading at the highest level since September 2017. Frequent rains in this final week of May were likely a key driver behind the move to new contract highs. For those willing to take a chance, the upcoming week is expected to be dry and hot. A few more rice acres may get planted as November soybeans hang around \$8.50. Use this week’s rally in rice futures as an opportunity to hedge more ’20 production.

September 2020 Rice Futures.



Visit our website at <http://www.uaex.edu>

University of Arkansas, United States Department of Agriculture, and County Governments Cooperating

The University of Arkansas Division of Agriculture offers its programs to all eligible persons regardless of race, color, sex, gender identity, sexual orientation, national origin, religion, age, disability, marital or veteran status, genetic information, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.



Arkansas Rice Update

Dr. Jarrod Hardke, Dr. Trent Roberts, Dr. Tom Barber, Dr. Tommy Butts, & Scott Stiles
May 29, 2020 No. 2020-11

www.uaex.edu/rice



DD50 Program is Live

While planting progress has only just begun, we do have rice emerged. With that in mind, the DD50 Rice Management Program is live and ready for fields to be enrolled for the 2020 season. All log-in and producer information has been retained from the 2019 season, so if you used the program last year you can log-in just as you did last year. Only field data from 2019 has been removed. Log-in and enroll fields here: <https://dd50.uaex.edu/>.

Here's a recent article on the DD50 program: [Use the DD50 Rice Management Program to Say Ahead in 2020.](#)

Additional Information

Arkansas Rice Updates are published periodically to provide timely information and recommendations for rice production in Arkansas. If you would like to be added to this email list, please send your request to rice@uaex.edu.

This information will also be posted to the Arkansas Row Crops blog (<http://www.arkansas-crops.com/>) where additional information from Extension specialists can be found.

More information on rice production, including access to all publications and reports, can be found at <http://www.uaex.edu/rice>.

Acknowledgements

We sincerely appreciate the support for this publication provided by the rice farmers of Arkansas and administered by the Arkansas Rice Research and Promotion Board.

The authors greatly appreciate the feedback and contributions of all growers, county agents, consultants, and rice industry stakeholders.



Specialist	Area	Phone Number	Email
Jarrod Hardke	Rice Extension Agronomist	501-772-1714	jhardke@uaex.edu
Tom Barber	Extension Weed Scientist	501-944-0549	tbarber@uaex.edu
Nick Bateman	Extension Entomologist	870-456-8486	nbateman@uaex.edu
Tommy Butts	Extension Weed Scientist	501-804-7314	tbutts@uaex.edu
Gus Lorenz	Extension Entomologist	501-944-0942	glorenz@uaex.edu
Ralph Mazzanti	Rice Verification Coordinator	870-659-5507	rmazzanti@uaex.edu
Trent Roberts	Extension Soil Fertility	479-935-6546	tlobert@uark.edu
Scott Stiles	Extension Economist	870-219-8608	sstiles@uaex.edu
Yeshe Wamishe	Extension Rice Pathologist	870-659-6864	ywamishe@uaex.edu

Visit our website at <http://www.uaex.edu>

University of Arkansas, United States Department of Agriculture, and County Governments Cooperating

The University of Arkansas Division of Agriculture offers its programs to all eligible persons regardless of race, color, sex, gender identity, sexual orientation, national origin, religion, age, disability, marital or veteran status, genetic information, or any other legally protected status, and is an Affirmative Action/Equal Opportunity Employer.