



Dr. Chuck Wilson, Dr. Rick Cartwright, Dr. Gus Lorenz, and Scott Stiles

September 8, 2010

No. 2010 – 16R

INTRODUCTION – The Arkansas Rice Newsletter is published periodically to provide updates, alerts, and recommendations for rice production in Arkansas. If you know of someone who would like to be added to the e-mail list, please send an e-mail to: cwilson@uaex.edu.

I have set up a blog to distribute information in addition to the newsletter. If you are interested, you can visit the blog at <http://arkansasrice.blogspot.com>.

MY RICE FIELD IS NOT YIELDING WELL, WHAT HAPPENED?
(Rick Cartwright and Chuck Wilson)

After the earliest rice fields were harvested during the first three weeks of August, we started hearing this question more and more and recently (last week of August to September 8), more and more fields have been affected.

The following is some of what we have observed in trying to figure out why particular fields are yielding lower than expected.

HEAT – This year has had the highest average temperatures of any summer on record, surpassing 1980. While the day temperatures have been hot, the night temperatures have been the reason for setting a new record. Any year where we have day and night time temperatures as hot as we experienced in June and July, yields and milling quality suffer. The earliest planted rice fields are the least affected and this is true this year and all varieties and hybrids seem susceptible. This does not explain why one field yields well and others around it yield

poorly, though, especially when the fields are planted and managed the same.

WATER MANAGEMENT – When we have day time temperatures of near 100 degrees and night temperatures in the 80's day after day, and no rain for weeks, establishing and maintaining a flood is extremely difficult. I know guys don't want to hear that they may have water management problems, but... It was evident in several fields this year that "hot spots" were developing because the well could not keep up with the demand for water by the rice plant. Also, don't forget that several fields never saw the first flood until close to midseason. With this heat, we have also observed fields where the flood was simply drained too early and the result was that grain fill was interrupted and yield was off. High spots or later maturing areas of these fields were most affected, as well as the bottom part of panicles on secondary tillers. There also seems to have been some cooling effects observed by well water compared to surface water, which has resulted in higher yields in some cases.

BACTERIAL PANICLE BLIGHT (or panicle blight)- In years where night temperatures are high, like this year, or 1993, 1995, 1998, 2001 etc – we see a lot of problems with this disease. Typically we called this "Bengal" disease because it mostly affected the medium grain variety Bengal over the years. However, in really hot years, the disease developed in long grain fields as well, and heavily damaged Cypress (for example) in 1995 and we have seen it hurt Francis, Cocodrie, Cheniere, Wells and other varieties at times. For whatever reason, it does not appear to affect hybrids and Jupiter (released as partially resistant) does not seem to be susceptible under our conditions.

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

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

The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or disability, and is an Affirmative Action/Equal Opportunity Employer.



Dr. Chuck Wilson, Dr. Rick Cartwright, Dr. Gus Lorenz, and Scott Stiles

This year, we have observed bacterial panicle blight in CL 151, CL 111, CL 131, Wells, Francis, Neptune, CL 142AR, CL 261 and Cheniere. Factors associated with the worst fields have been:

- rice after rice rotation;
- not enough potassium fertilizer;
- too much nitrogen fertilizer;
- heavy stinkbug pressure;
- excessively high seeding rates.



CL 151 field with heavy bacterial panicle blight.



Close-up of affected panicles.

Yield losses up to 50% have been estimated for some fields and this disease appears to be widespread in the state during 2010.



Close-up of bacterial panicle blight at a more advanced stage on Bengal rice.

NARROW BROWN LEAF SPOT AND BROWN SPOT DISEASE

– For whatever reason, we are seeing more damage from these two diseases than in previous years, mainly to the panicles and flag leaves in affected fields. Both can cause lesions within the panicle, blanking out spikelets and individual kernels, and on some fields doing heavy damage to the flag leaves. Damage has been observed on several varieties including CL 151, CL 111, CL 131, CL 261, Cheniere (and probably others) as well as the hybrids. Factors associated with fields having the most disease include not enough potassium fertilizer; rice after rice rotation; and later planting dates.

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

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

The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or disability, and is an Affirmative Action/Equal Opportunity Employer.



Dr. Chuck Wilson, Dr. Rick Cartwright, Dr. Gus Lorenz, and Scott Stiles



Close-up of narrow brown leaf spot infecting panicle of rice (resembles blast sometimes) and brown spot can cause this too

STRAIGHTHEAD – We have observed and had more reports of true straighthead than normal. This is an old disease of rice in the state, associated with certain fields. Dark green, normal sized leaves and stems, with blanked and distorted kernels only in the flooded paddies (not on levees) would be typical symptoms. However, some long grain rice varieties including Cocodrie, do not display a lot of parrot-beaking in the kernels but usually you can find some if you look hard enough. Medium grain varieties are more likely to show a lot of parrot-beaking, in our experience. Straighthead occurs each year in susceptible fields when rice is planted and the flood is not drained at the proper time to prevent the disease. Some fields this year that have reported straighthead symptoms have no history of the disease, so in these cases, we would be suspicious that you may be dealing with something else. We have had a lot of calls on Cheniere this year, and have observed some fields with symptoms, and we are not sure what

is going on because in the past Cheniere has been pretty resistant to true straighthead in Arkansas. In the fields where we have seen what appears to be true straighthead on Cheniere, the variety does not look exactly like the Cheniere we have evaluated in the past. And these fields have had neck blast scattered across the same fields, another disease that Cheniere has not had a problem with in the past under our conditions.



Straighthead on Cocodrie, note little parrot-beaking



Severe parrot-beaking on a different rice variety, note full size leaf

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

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

The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or disability, and is an Affirmative Action/Equal Opportunity Employer.



Dr. Chuck Wilson, Dr. Rick Cartwright, Dr. Gus Lorenz, and Scott Stiles

STINKBUGS – It seems to have been a record stinkbug year, and many fields we have been in have the “odor” of heavy stinkbug pressure. In many cases, 2 or 3 applications of insecticides were made to try to control this insect. However, in some fields, there was still damage including blanking and pecky rice. We suspect an association with this insect, and possibly other arthropods on rice, and bacterial panicle blight but have no conclusive proof of this. It just seems the disease is worse in fields with high populations of stinkbugs. Regardless, we should not underestimate the direct and indirect effect of this insect on yield and quality in rice this year.



Severe glyphosate injury to rice (symptom severity varies a lot in affected fields)

GLYPHOSATE DAMAGE – We planted most of our rice early this year, but planted most glyphosate resistant soybeans later than normal. This lined up drift problems to rice in certain areas of the state again, and we have walked a number of fields thought to have straighthead that actually were damaged by late glyphosate drift when the rice was at a sensitive stage. Glyphosate causes parrot-beaking and other distortions and blanking of the kernels, and

depending on the growth stage when drift occurred may cause shortening and distortion of the flag leaf, or at least distortion and a leathery feel to the base of the upper leaves. Yield loss can be heavy and affected plants can be found in flooded paddies or on levees, unlike straighthead, and usually there is an association with the source of the drift – a nearby glyphosate resistant soybean or cotton field, etc.

STEM AND SHEATH DISEASES – We have been in a number of fields damaged by stem rot this year, a disease that seems to like hot summers. It also likes low potassium and rice after rice, so fields that have not been fertilized or rotated properly have the most damage. Symptoms include lodging and stem lesions, as well as blanking of the base of panicles on affected tillers. Other stem diseases can cause some of this as well, and we have observed several fields of hybrid rice where black sheath rot (crown sheath rot) and possibly other sheath diseases have weakened the lower stems – causing lodging - and blanked out some kernels.



Lower potassium field with lodging caused by stem and sheath diseases

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

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

The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or disability, and is an Affirmative Action/Equal Opportunity Employer.

ARKANSAS RICE



Dr. Chuck Wilson, Dr. Rick Cartwright, Dr. Gus Lorenz, and Scott Stiles

IN MANY PROBLEM FIELDS WHERE YIELDS ARE LOW THIS YEAR, WE HAVE OBSERVED TWO MANAGEMENT ISSUES CONSISTENTLY – NOT ENOUGH POTASSIUM FERTILIZER AND RICE PLANTED AFTER RICE. BOTH ARE DECISIONS THAT RESULT IN LOWER YIELDS AND MORE DISEASE PROBLEMS.

ACKNOWLEDGMENTS

We sincerely appreciate the support provided by the **Arkansas Rice Research and Promotion Board** for this publication. The recommendations presented in this publication are the result of research funded in part by rice check-off funds.



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

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

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

The Arkansas Cooperative Extension Service offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or disability, and is an Affirmative Action/Equal Opportunity Employer.