Field Notes
April 13, 2007
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This past week set records and caused lots of concern, but the most appropriate phrase to describe it was what Steve Rye said, “We just dodged a bullet.” The record low temperatures experienced through last weekend and the first part of this week added stress to both the crop and the grower. Fortunately, most of the rice crop fared well.

I quizzed some of the agents, fieldmen and consultants out checking fields about any obvious differences between flooded and drained fields. The results were mixed. In some reports flooded fields sustained less injury than those left dry while others reported no observable differences. I still feel like adding a little water to a field ahead of the onset of cold temperatures provides some protection, just can’t prove it based on what happened. It would have been interesting to have had time to set up a replicated experiment to test it.

The key to the lack of injury in northeast Louisiana is the predicted low temperatures did not come near the actual low temperatures. When we left there last week we expected low’s in the mid to upper 20’s. Instead the low most growers reported was 35.

The photograph below and left is of rice showing very mild cold temperature injury while the one on the right is of the worst injury we saw. The differences are too great to explain just by the differences in cold effects. An explanation follows on the next page.

The flooded rice is CL171 drilled no-till. We advised the farmer to put a shallow flood on the field which might have helped. The field represented on the right had several contributing factors. Note the extremely long leaves due to gibberellic acid seed treatment. Some of the whitening is from Command and some is a consequence of cold and wind. It is CL161 drilled, but I neglected to find out if it was a stale seedbed or a prepared one. It was not flooded during the cold weather.

My assessment of the damage was that the gibberellic acid (GA) for some reason caused excessive leaf elongation. These long tender leaves were much more susceptible to wind damage because they really whipped around in the wind. The herbicide added some stress too. Of course cold added a third element. In all likelihood if a single one of these factors had been removed the damage would have been much less, but all three produced an additive effect.

In the photograph below the extreme length of the leaves is much more apparent. The violent whipping action produced by the extremely dry north wind caused the waxy cuticle on the leaves to crack. Once this protective layer was broken its ability to seal the cells and keep them from losing moisture was compromised resulting in desiccation; the leaves simply dried out. This could have happened at higher temperatures though the low temperatures very likely increased the damage.

The growing points are below the soil line and new leaves are already coming out. The field will look ragged for a few days then it will be fine.

 

The photographs above reveal much more typical cold temperature damage. Whitened tips and white bands in the middle of the leaf blade are what I expected to see this week. The slightly brown spots in the middle of the first leaf are also from cold temperatures.

Last week David Lanclos sent out an explanation of cold temperature damage on corn with similar photographs. I have had heard several explanations of the cause of the white bands in the middle of the leaf none of which seem to completely explain this phenomenon. One is that this is the area of the leaf that was probably just above the rolled up leaf sheaths at the time the cold arrived. This tissue was very tender thus more susceptible to injury. By the time the rest of the leaf emerged temperatures had risen and wind died down so the lower portion of the leaf was not damaged. The tips of these leaves do not show symptoms because they were sufficiently hardened prior to the onset of cold temperatures.

The white tip in the first photograph is easier to explain. It was either blown around and/or was just emerging from the rolled up leaf sheaths so it sustained damage. The affected areas of these leaves will not recover, however the new leaves (assuming we don't have another round of cold wind) will be green. In a couple of weeks the damaged leaves will be replaced by healthy leaves. The field will take on a more typical appearance in contrast to its present burnt appearance. It is very reminiscent of the temporary herbicide burn we used to experience with hot doses of Arrosolo or propanil in hot weather. We use so little of these old herbicides we have forgotten how the fields used to look pretty tough for a few days then come back to normal in a short time.

The seed shown in the photograph above and to the left exhibits a couple of things I want to point out. First the seed was drilled into dry clay soil last Saturday, the day we experienced the lowest temperatures. Because the soil was very dry it sat there without suffering any deleterious effects.

It also demonstrates the need to flush these soils unless sufficient rain occurs following planting. It did rain after it was planted, but it was only .45 inches, not enough to cause the soil particles to melt together. The soil was as finely granulated and the seedbed prepared very well, but there are obvious air spaces and poor seed to soil contact. Until those air spaces are closed providing good seed to soil contact the seed will not germinate. A 2 inch rain or flushing will accomplish this and the seed will sprout as expected. I expect to see rice plants coming up when we visit this field next week.

In the other photograph rice was already emerged so we thought it would be good to put a water blanket over it for protection. An undesired consequence was melting of soil away from the shallowly drilled seed and some floated up. Some of these will survive; most of them will probably not survive. The two photographs on the preceding page were taken in the same field a few feet away. The majorities of seedlings were well rooted and are going to recover. By next week the field should be in good shape. By mid season it will be difficult to find the spots where seedlings were uprooted or affected by cold weather.

Most of the green in the photograph below is rice. It was drilled into a stale seedbed where portions of the field had a pretty good population of dock. The variety is CL171. The first application of Newpath had been made a few days before the cold front; about a week had elapsed by the time the picture was taken.

We found out there were at least two distinct species of dock in the field. The obviously reddish plants are of curly dock (*Rumex crispus*). The clumps of green color are of another species, probably *R. obtusifolia*, broadleaf dock. I'm guessing about this one because we did not take samples and key them out, but those are the two most common specie in south Louisiana.

Our second application of herbicide will be a mixture of Newpath, Permit and Londax. The Permit is to control nutsedge and the Londax will provide a little broader spectrum. I expect this combination to finish off the dock and clean up the majority of weeds in the field.

Weed pressure at planting was so light in the rest of the field we decided to skip the burndown treatment completely. Had we used glyphosate the difference in response of the dock might not have been so noticeable.

Mother Nature tends to average things out, so I hope the rough start means the remainder of the season will be less challenging. We'll see.