Field Notes
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Below are two images I have used before and have included them here as a reminder that a lot of rice either is or has passed internode elongation (green ring) the stage shown in the photograph at left. It signals the change from vegetative to reproductive growth cycles in the plant and is the marker used to determine limits on many herbicide applications as well as the time for topdressing with nitrogen fertilizer.

The image to the right is of panicle differentiation (PD). By slicing the stem carefully then unrolling the last of the leaves the tiny panicle can be seen. A hand lens really aids in the process because often the distinction between an immature growing point and the developing panicle is slight. In the past we have used PD to time fungicide applications when sheath blight hit early. Dr. Groth has stated many times that PD + 5 to 10 days is about as early as we want to use fungicides for sheath blight control. This is because an earlier application will result in the efficacy of the fungicide fading too soon to provide the protection we need through grain fill.

Last year Narrow Brown Leaf Spot caused by the fungus *Cercospora janseanna* hit the southern part of the state really hard reducing first crop yields and completely ruining the second crop. A lot of folks are thinking about automatic applications of fungicide this year as insurance against a repetition. This has caused a revision in fungicide application timing.

According to Drs. Groth and Hollier the strobilurin containing fungicides will not provide sufficient control of this disease and we must apply the fungicide earlier than in past years to get the efficacy desired. Following the disaster in the field last year Dr. Groth imposed various fungicide treatments on his ratoon crop plots because this disease has long been a problem in second crop, but seldom in the first crop.   From these studies he concluded two things: first the fungicide must contain propiconazole, the active ingredient in Tilt and other fungicides at the equivalent rate of 6 ounces of Tilt per acre. (Yes, I know there are numerous propiconazole containing fungicides, but Tilt was the first one and it is easier to express rates on the basis of equivalent amounts of Tilt.)

The second thing he determined was fungicide application timing. Because we have not yet developed good scouting methods for Narrow Brown Leaf Spot and because the onset of symptoms is about 30 days following infection, it is necessary to apply an appropriate fungicide when **4 inch** long panicles can be found in the majority of plants.

Below are two tables providing fungicide combinations that will provide the 6 ounce rate of Tilt plus varying amounts of one of the strobilurins (Gem and Quadris). If you perform the calculations yourself you will find some slight disagreement in the amounts because I rounded them off to the nearest practical unit.

To Get				*Use*		
Tilt	**+**	**Gem**		**Stratego**	**+**	**Tilt**
6oz	+	8oz		15oz	+	1.72oz
6oz	+	9oz		17oz	+	1.15oz
6oz	+	10oz		19oz	+	.57oz

To Get				*Use*		
Tilt	**+**	**Quadris**		**Quilt**	**+**	**Quadris**
6oz	+	9oz		21oz	+	2.74oz
6oz	+	10oz		21oz	+	3.74oz
6oz	+	11oz		21oz	+	4.74oz
6 oz	+	12 oz		21oz	+	5.74oz

On the following pages are photographs of the various forms of Narrow Brown Leaf Spot as reminders of what we could see again this year. Of course, a different season means different environmental conditions and the disease may not materialize this year. The future is always uncertain when Mother Nature is involved.

On the preceding page starting in the upper left hand corner and going clockwise are: leaf lesions of Narrow Brown Leaf Spot, a close-up of the same, lesions on the leaf sheath and a close-up of the net blotch phase of the disease. Lesions that form on the leaves can reduce photosynthesis if they are extremely heavy. This seldom happens and is not nearly as damaging as the lesions depicted on the last two images on the previous page and the two immediately above. These lesions on the leaf sheath greatly reduce the movement of water and nutrients up to the leaves and the movement of sugars and carbohydrates from the leaves back to the grain.

In a very generalized way, water and nutrients (fertilizer and so on) are taken up by the roots. They flow upward through the stem then into the leaf sheath then into the leaf blade. In the leaf blade (and any other green tissue, but the majority in the leaf blade) through the process of photosynthesis water and nutrients are converted to sugars. These sugars then flow down the leaf blade, down the leaf sheath, into the stem and up to the panicles where they are converted to starches and stored in the grain. This explanation would probably give a plant physiologist fits, but it explains why damage to the leaf sheath can be critical. Anything that stops the movement of water upward or sugars downward translates into reduced yields.

On the following page are three photographs of the adult form of the rice leaf miner. Now you should see why we don’t try to identify it by the adult. Chuck Green put a few leaves containing pupae in a bottle and one adult emerged. He brought it to me so I could photograph it.