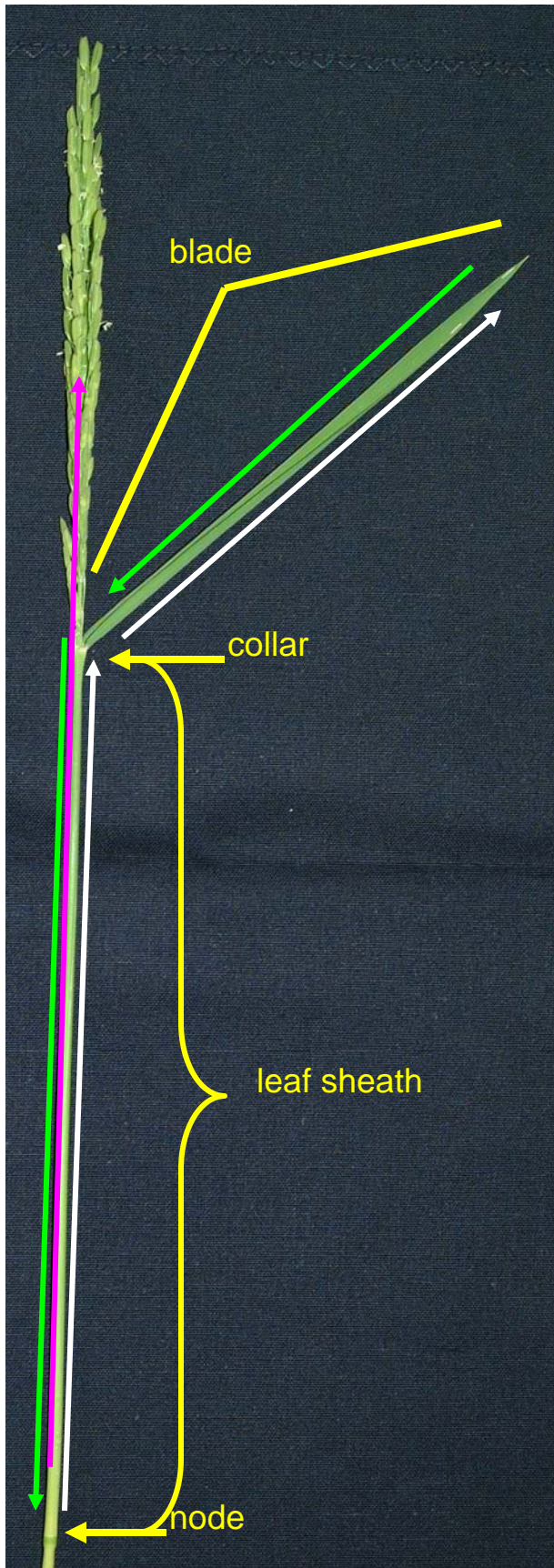




The two photographs above illustrate the symptoms of blast on three different areas of the plant. At left is collar blast. This is an infection of the collar of the leaf where the leaf blade joins the leaf sheath. At right is the same plant with more of it included in the photograph. It shows collar blast, rotten neck blast and panicle blast. All three of these are the same disease being manifested on different plant parts. Of the three sites of infection, rotten neck (blast infection at the node just below the panicle) is probably the most harmful because not only does it disrupt nutrient transfer, but it also weakens the stalk to the point that even a partially filled panicle may break off before harvest. Panicle blast is probably second in harm it can cause because it does essentially the same thing, but to individual panicle branches. This prevents grain fill and to some degree weakens the panicle branches too. Collar blast does not weaken the panicle or the stem; it interrupts water and nutrient transfer thereby reducing grain fill.

It is easy to see how infection of the panicle or peduncle (the stalk that supports the panicle). On the next page I have tried to diagram and explain why protecting the leaf sheath from either blast or sheath blight can be as critical too.



At left is a photograph of the upper stem of a rice plant in flower with the parts of the flag leaf and nutrient pathways labeled.

The flag leaf is the uppermost leaf of the rice plant. It is considered the leaf most critical to grain fill. Like all of the other true leaves it has three basic parts; blade, sheath and collar.

The leaf is attached to the plant at only one point, at the node or joint. The sheath wraps around the stem and serves to support the leaf blade. While all green plant parts are capable of photosynthesis, the blade of the leaf accounts for the majority of this process. Photosynthesis is the fundamental process where water and carbon dioxide in the presence of light and chlorophyll are converted to sugar (glucose) and oxygen.

Water and nutrients follow the pathway indicated by the white arrows. They are taken up through the roots and travel through conducting tissues to the leaf blade. These are used in the process of photosynthesis. The products of photosynthesis (sugars and carbohydrates) travel the pathway outlined by the green arrows from the leaf blade, down the leaf sheath, into the stem. In the stem they follow the pink pathway where they are used by all parts of the plants to keep it going. The excess is accumulated in the seeds as starch.

Any break in this pathway stops seed formation. If the node, sheath or collar is damaged, conduction of water and nutrients is restricted. If the blade is damaged then photosynthesis is reduced. It is important that all of these parts be protected from disease.



Last week we observed several areas of yellow to orange plants in one of our verification fields. Up close they looked like the leaf shown at right. The farmer said these were areas that had been “pulled hard” in the process of laser leveling. According to a soil test we should have applied enough nutrients. Without follow up testing in these specific areas or taking plant samples we can only assume that the pulled area probably has soil properties slightly different from the rest of the field whether they be chemical (such as pH) or physical (higher sand content). We judged this to be potassium deficiency. If we have time this week we will pull tissue samples for analysis to get to the real answer. The rice was nearing physiological maturity so no nutrient application would be justified at this time. We might consider it in the second crop – just in these spots.



Dr. Chuck Rush, sent the following message to me a few minutes ago. I thought it would be wise to include it here.

“If this hot weather continues with temperatures in the high 80's and 90's at the 10:00 pm news, we can expect epidemic conditions for bacterial panicle blight. Kocide is labeled as a foliar spray for this disease. In our tests many years ago it was not very effective. I understand that they are using it in Panama. Copper hydroxide is not very soluble. I think that late applications, like heading do not give the compound enough time to produce ionized copper to control the disease.”

I remember when a lot of Kocide was applied several years ago and I remember serious problems with phytotoxicity to the point of having an effect on yield. I would not use it. The best control at this point is resistant varieties. Check out table 5 in Rice Varieties and Management Tips. Dr. Rush did have comparison photos of Trenasse (susceptible) and Jupiter (moderately resistant) and the difference was striking.

At the field day last Wednesday we handed out a little over 300 copies of our revised Rice Production Handbook (publication 2321). I could not announce its availability in the last issue of field notes because we were not sure it would be ready in time. Then we forgot to announce it at the field day so only those who happened to come by my area got one. Your county agent should have some in his/her office soon. I have quite a few at my office. If you are in the area come by and I'll be happy to give one to you.

Stuart Gauthier will have some available at the Vermilion Rice Field Tour tomorrow afternoon.

The publication is not yet on the web. It should be shortly in both low resolution and high resolution forms. The high resolution form will be a monster to download. The major advantage of the downloaded forms is the ability to view the images larger than in the print version.