Field Notes
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I know it is difficult to see in this photograph because the camera just cannot capture what the eye can see especially when there is little control of light or angle. I feel certain an aerial view of this field would be very enlightening. This is a photograph of part of an area of a project conducted by Drs. Eric Webster and Ronnie Levy. This field had developed a serious problem with Newpath and Beyond resistant rice plants. A portion of the field was divided into 4 blocks (2 in 2009) and different cropping sequences and herbicide programs were applied. The area outlined in the photo is of part of blocks 2 and 3. The table below provides the treatments and the resulting reduction in number of resistant plants found in each block in 2012.

BASF Clearfield Rice Preservation Study				
Year	Block 1	Block 2	Block 3	Block 4
2009	Soybeans	Soybeans	Fallow	Fallow
2010	CL Rice	Soybeans	Fallow	CL Rice
2011	Soybeans	Soybeans	Soybeans	Soybeans
2012	CL Rice	CL Rice	CL Rice	CL Rice
Escaped Rice Plants by Block				
2012	860	37	73	1840

The study proves the problem of Clearfield resistant rice can be managed and the field recovered. Where growers have difficulty with soybean production block 3 with one more year of fallow certainly provides an option. In the fallow years a combination of tillage and glyphosate was used to reduce the weed population. Where land is rented it might be a difficult sell, but in the long run it can restore land from being essentially worthless for rice production to good rice land thereby improving land value.

I continue to get calls from farmers or farm advisers about blast. In most cases the question asks what could have been done differently to reduce the severity of the disease this year. This is one of those situations where hindsight is much better than the present view. If the rice stubble left in the field last fall had been destroyed that might have helped. If the winter had been colder that might have helped. Once the crop was in the field and the disease had been discovered the only option was fungicide application.

All of the fungicide labels recommend **two** applications to control blast. Very few actually followed the label in that regard and I understand the reasoning; PRICE. As it turned out very susceptible, but high yield potential varieties like CL 151 might have responded to two applications economically. When a farmer calls and tells me his field might average 37 barrels per acre (6994 lbs/A or 155 bu/A) and that the range on his yield monitor drops to as low as 10 bbls (1620 lbs/A or 36 bu/A) the problem is serious.

Several calls were from folks who did not see any leaf blast early on and decided to skip fungicide application because they thought blast would not be a problem. We have tried to emphasize the error of that several times. The presence of leaf blast is a good indicator that rotten neck and panicle blast are likely to occur too. However, the absence of leaf blast **does not** mean blast will not show up later. In a year when blast is being reported on a regular basis the question is not whether fungicide should be used, but when, what and how much fungicide should be applied.

Another question that came up this week concerned the estimation of rice in a storage bin. The combination of barrels, bushels, hundred weights and their conversion from cubic feet makes this a somewhat awkward exercise, but not really that difficult.

First we have to understand a little terminology. Yield is expressed as barrels (162 pounds), bushels (45 pounds for rice), and hundredweights (cwt, 100 pounds). The most misunderstood term in the bunch is bushels. A bushel is actually a measure of volume **not** weight. One bushel equals 32 dry quarts and a dry quart is not the same as a liquid quart. That is important when converting cubic feet in a bin to any of the aforementioned measures because we have to convert from volume to weight.

That seems easy at first because we just said a bushel weighs 45 pounds. And we said we know the volume of a bushel. This is the part that is the most misunderstood in relation to a bushel. Yes, 45 pounds is a standard bushel of rice. In reality a bushel of rice can easily weigh as little as 40 pounds or as much as 50 pounds depending on several factors such as grain type, moisture level, degree of compaction and others. This is what is determined when **test weight** is taken. The test weight of any commodity is the weight of that commodity per bushel. The cup used to measure this represents 1 quart dry. The balance used with the cup is matched to that cup only and is calibrated to read pounds per bushel. We will need the test weight (often referred to as cup weight) to make the conversion.

Stuart Gauthier, County Agent in Vermilion parish, obtained the forms used by USDA to measure rice in bins. Using them as a guide I will try to give a simple explanation of the method. Three measurements are necessary to begin: bin diameter, height of grain in the bin, and test weight. There are other measurements such as moisture and some adjustments the USDA personnel use that I am omitting here for simplicity.

In this example the bin is 36 feet in diameter. The rice is 15 feet deep and level. Grain moisture is 12%. We will use three test weights to see how that influences the outcome.

The formula for determining the volume of grain in the bin is the diameter squared X .7854 X the height of the grain. In this example: 36 X 36 X .7854 X 15 = 15268 cubic feet. The cubic feet are multiplied by a factor (.36) to convert from cubic feet to hundredweights. Thus 15268 X .36 = 5496 hundredweights. There are different conversion factors for different commodities.

To adjust for differences in the density of the grain the test weight and bin diameter are used to read charts prepared by USDA. Density is weight per unit of volume. It could be expressed as pounds per cubic foot or pounds per bushel or even pounds per gallon depending on what is being measured. In this example we need to convert to hundredweights (100 pounds = 1 hundred weight). One side of the chart has test weight values and the other bin diameters.

Earlier I said test weight is expressed as pounds per bushel. If we have a test weight of 49 pounds per bushel (the density of the grain) and a bin diameter of 36 feet, the chart indicates an adjustment factor of 1.210. This factor takes into account the test weight and the bin diameter to estimate compaction of the grain in the bin.

5496 hundredweights X 1.210 = 6650.2 hundredweights.

If the test weight is 45 lbs/bu the adjustment factor becomes 1.128.

5496 X 1.128 = 6199.5 hundredweights.

If the test weight is 42 lbs/bu the adjustment factor becomes 1.064.

5496 X 1.064 = 5847.7 hundredweights.

In summary we determine volume of grain in cubic feet. We convert from cubic feet to hundredweight. Then we adjust the hundredweight to account for compaction. Moisture was not used here because I used 12% the standard storage moisture. This should get you pretty close.

I am not sure how the USDA adjusts for moisture, but the way we do it in the field is as follows:

<u>((100 – measured moisture)</u> divided by (100 – desired moisture)) X green weight = dry weight

12% is the desired moisture for rice.

Using our figure of 6650.2 hundredweights from above, if the moisture had been 14% then it would have been adjusted as follows:

(100-14) divided by (100-12) = 86 divided by 88 = .98

.98 X 6650.2 = 6517.2 hundredweights