Field Notes
April 1, 2010
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Last year by this time I had already published two issues of Field Notes and we had two verification fields planted. As of today we have one field planted and this is the first edition of Field Notes.

Tuesday was the first day my phone really started ringing. Almost every call was about rice that had been planted for ten days to two weeks and had not emerged. It is just too cold. Today and the next few days promise to be much warmer so we should see a rapid change. A lot of acres are planted, but very few are up and growing. In my limited traveling I have seen no green fields yet. A few are showing stands, just not looking green.

If you visit the AgCenter's web site, www.lsuagcenter.com you can access weather data that offers some explanation. On the left side of the home page is a block with the title Services. Weather is within that block. I looked at growing degree days. A growing degree day (GDD) for rice is calculated by adding the daily high and daily low then dividing by 2 (this provides a type of average temperature for the day) then subtracting 50 from that number. For example if the high was 71 and the low was 46 there would be 8.5 GDD accumulated that day. [(71 + 46)/2 = 58.5. 58.5 – 50 = 8.5.]

. I took a look at weather data from March 2009 and 2010. In 2009 there were 5 days in March where no heat units were accumulated, 9 days when 15 to 19 heat units were accumulated, and 5 days when more than 20 GDD units were accumulated. In contrast, this year there have been 5 days of no heat units, 1 day between 15 and 19 units, and 0 days with more than 20 heat units. I repeat, it's just too cold.

On the next page is a photograph I took in one of our verification fields last year. I'm using it here because it typifies one of the questions I have had this spring on several occasions. Note the seed furrow on the right. It is not closed properly and this was made by one of the best drills on the market. The problem is in certain soil conditions we are asking too much of the machinery. When the soil moisture is at a certain level the soil will not crumble so the press wheels cannot close the furrow properly. Believe me, we tried lots of adjustments. There are also seeds not covered properly for much the same reason. Maybe if we had planted the seed 2 inches deep it would have worked better, but I do not like planting rice that deep. In this case last year we applied fertilizer and flushed and got a good stand. Flushing melted the soil and covered seeds in the furrows. The problem with seeds on the surface was not solved by flushing.

I have also had several calls about flushing. I am a strong believer in using water to get a stand when appropriate. If there is adequate moisture and seedlings are moving then it is not necessary to flush. In silt loam soils one flush often leads to another because of crusting at the surface. When the field is drained and the surface dries the soil particles become cemented together which is commonly called crusting. Seedlings caught below this crust may have a hard time emerging so another flush is necessary to melt this crust. This is one of those tough decisions we have to make each year.

This year some farmers were afraid it would not stop raining soon enough to prepare seedbeds so they decided to flood some fields and work them in the water. Then they either water seeded or drained with the intention of drilling if the weather permitted. The photograph on the next page shows what often happens when silt loam soils are prepared in a flooded state. They crack or "potato chip" as some refer to it.

This is typical. If you dig down about a half inch or so you will find a very thin layer consisting of very fine sand. When the field is flooded then agitated in the process of water leveling or preparing the seedbed a mixture of soil particles is suspended in the water. As soon as agitation ceases and the water movement ceases the soil fractions – sand, silt and clay – begin to settle out. Sand will settle out within 30 seconds to a few minutes. Silt takes at least 2 to 3 hours. The largest clay particles (smaller than silt) will settle out in about 48 hours, but the very fine colloidal clay particles may never settle out. So from surface to an inch or so is clay then silt then sand.

The very fine sand will not prevent the movement of water downward due to the pull of gravity, but it can prevent moisture movement UPWARD due to capillarity. Additionally, water is held against the pull of gravity by the very fine silt and clay fractions. As the upper half inch of so of soil dries by evaporation from the surface the barrier of sand prevents upward movement of water. Soil below the sand can only dry by gravity while the upper layer dries by both gravity

and evaporation. That causes the upper layer to contract more than the layer below and cracks develop. If it continues to shrink the edges curl upward causing “potato chipping”.

The only remedy once the crop is planted is either rain or flushing. As long as there is enough moisture in the top layer it is best left alone. When moisture is depleted flushing is necessary. In extreme cases I have seen the surface layer shrink enough to actually uproot or break the roots of seedlings because the shoot is in the upper layer and the roots are in the lower.

We seldom see this in fields that are prepared dry because there is thorough mixing of the soil fractions, but no subsequent separation of the soil fractions. Yes, there is always some surface cracking because the surface dries faster than the lower layers, but it is not as extreme.

This process is actually used in soil testing labs when a textural analysis is requested. It is referred to as mechanical analysis and it is used to measure the amounts of sand, silt and clay in a soil. The textural classes are those terms you have seen such as silt loam or clay loam or silty clay. Each is defined by the amount of sand, silt or clay found in the sample.

The following photograph was sent in by Stuart Gauthier, county agent in Vermilion parish. It shows a field worked in water and drained. I’ll try to get a photograph of the sand layer I described above.