MSU EXTENSION

Van Buren County
219 Paw Paw Street, Suite 201
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DATED MATERIAL

IN THE ROW
Newsletter-
Upcoming Field Day Information

Upcoming Programs

Soybean Disease and Field Crop Update Program .....Tuesday, August 20—6—8:30 pm
See page 3 for details

MSU Soybean Variety Performance Trial Tour.....Tuesday, September 17—5:45—8 pm
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Soybean Harvest Equipment Field Day.....Wednesday, September 25—12—3:30 pm
See page 10 for details

IN THE ROW

Van Buren | Kalamazoo | Calhoun
Berrien | Cass | St. Joseph | Branch

Volume 1 Issue 5 August, 2013 A Newsletter Serving Corn & Soybean Producers in Southwest Michigan

Dear Agricultural Producer:

In The Row is a new newsletter serving corn and soybean producers in Southwest Michigan. This is a cooperative effort involving the Michigan Soybean Checkoff, the Corn Marketing Program of Michigan and MSU Extension. All printing, postage and handling costs associated with the newsletter are covered by the Michigan Soybean Checkoff and the Corn Marketing Program of Michigan. The Michigan Wheat Program has provided additional funding for this issue so that we could include tables 1 and 2 from the 2013 Michigan State Wheat Performance Trials. The entire publication is available online at: http://msue.anr.msu.edu/uploads/files/Var._Commercial_Report_13.pdf. MSU Extension is responsible for providing timely and relevant crop and pest management information for each issue. Please call Mike Staton at (269) 673-0370 if you prefer to receive the newsletter via e-mail.

Sincerely,

Mike Staton | Bruce MacKellar | Lyndon Kelley | Dale Mutch

Contents

Corn Marketing Program of Michigan
www.micorn.org

MICHIGAN STATE UNIVERSITY | Extension

MICHIGAN SOYBEAN CHECKOFF
Effective, Efficient, Farmer-Driven

MICHIGAN WHEAT PROGRAM
P.O. Box 25065
Lansing, MI 48909
1-888-WHEAT01 (943-2801)
www.miwheat.org

Maximizing Stored Grain Quality

Mike Staton

Maximizing the quality of the grain stored on the farm is essential to your profitability. Your primary goal is to *prevent* insect or mold damage in your stored grain. There are several key steps to successful stored grain management. The most effective and economical practice is sanitation.

Carefully clean all bins and grain handling equipment prior to harvest. Always start with empty bins and thoroughly clean all surfaces that will come in contact with the grain. Pay particular attention to false floors and aeration ducts as these are a source of insect infestations. Consider applying diatomaceous earth to these areas after all debris has been removed and at least two weeks before filling the bin. Treat floors, interior walls (up to six feet high), the foundation and the ground directly around the bin with one of the registered sanitary (bin) sprays listed below. Apply the products four to six weeks before filling the bin.

Corn and Soybeans:

- Tempo 20 WP, Tempo Ultra WP, Tempo SC Ultra
- Diatomaceous earth (Insecto and Dryacide)
- Diacon-D

Corn only:

- Malathion (not labeled for use in soybeans)

Monitor your grain for insects at least every two weeks as long as the grain mass is above 60°F. Contact your local MSU Extension office to get an accurate identification any insects. Internal feeders such as weevils require fumigation while external feeders such as flour beetles and meal moths can be managed with less costly and hazardous measures.

Prevent or reduce molds and mycotoxins in stored grain. Broken and damaged kernels are more susceptible to fungal attack than whole kernels so prevent damage during harvest, handling and drying operations. Dry the grain to the recommended moisture content for the length of time you plan to store it (table 1). Grain dried at high temperatures is more vulnerable to molding than grain dried at lower temperatures.

Table 1. Maximum Moisture Content for Aerated Grain Storage in Michigan.

Grain type	Up to 6 months	6 to 12 months
Shelled Corn	15% moisture	14% moisture
Soybeans	14% moisture	12% moisture

MSU Soybean Variety Performance Trial Tour

A tour of the MSU Soybean performance trial in Hamilton will be conducted on Tuesday, September 17th from 5:45 p.m. to 8:00 p.m. Participants will have the opportunity to walk through a complete observation replication of the MSU soybean variety performance trial at Harvey Jipping's farm. Presenters include: John Boyse, MSU Research Technician; Tim Boring from the Michigan Soybean Promotion Committee and Dan Bailey from Zeeland Farm Services. Local 2013 SMaRT soybean research trials will also be discussed.

The trial is located north of the Hamilton Middle School. Follow M-40 to 136th St. and proceed west for 0.6 of a mile. Turn north into the school entrance just east of the tennis courts and proceed north to the soybean trial.

There is no registration fee for the tour. However, pre-registration is requested as we plan to serve a light meal provided by Hamilton Farm Bureau before the tour. **Please call (269) 657-8213 before noon on Monday, September 16th, 2013 to register.**

Access the Latest MSU Extension News and Information about Upcoming Events

For the latest news articles on agriculture from MSU Extension's vast network of educators and specialists subscribe to News Digests. Digest subscribers can simply go to http://msue.anr.msu.edu/ and then select a topic you are interested in, i.e. Agriculture. Near the bottom of this page, you will see a button that says "Sign up for MSUE News". Follow the link to subscribe the digest that best fits your interest and you will receive e-mail notifications when new digests are posted.

Looking for MSU Extension events in your area? This same website http://msue.anr.msu.edu/ has an events tab allowing you to see all the programs available!

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Nitrogen Losses During the 2013 Growing Season

Bruce MacKellar

There has been a lot of coffee shop discussions about nitrogen this season. We are seeing evidence of nitrogen leaching below the rooting zone on many fields across the region. The sandiest portions of the fields are showing the most significant symptoms. Lower leaves are yellowing up towards the ear leaf in the most significantly impacted areas. Lack of nitrogen can cause smaller kernel size, lower test weights and kernel abortion in the upper portions of the ear. Irrigated fields and fields with the highest populations are showing the most visible symptoms. Many irrigators are equipped to apply 28% through the pivot, and these fields have retained better color.

We side-dress nitrogen to reduce the period of time between nitrogen application and plant uptake to reduce the chance of nitrogen loss. So why did we see so much leaching this year as compared to other growing seasons? Many areas received heavy rainfall from June 24-26th. Totals ranging from 3-6 inches were fairly common. Many irrigators just had started running water the day before the rainfall. It is estimated that nitrate N can move downward by as much 6-12 inches per inch of rainfall once the soil is at field capacity (saturated) on sandy soils. Most of the side-dressed nitrogen was applied during the previous 10-20 days.

The form of the nitrogen applied and the texture of the soil can also make large differences in N leaching losses. If growers applied 28% UAN, 25% of the nitrogen applied is already in the nitrate form and potentially ready to leach. If 28% UAN was applied within 2 days of the rainfall, the non-hydrolyzed portion of the urea can leach directly as urea on sandy soils, further exacerbating potential N loss. Where anhydrous ammonia was applied, it generally takes 10-14 days under warm soil conditions for the Ammonium form to convert to the leachable nitrate form. At 70F soil conditions, it can convert in about 7 days. In general, it is assumed that anhydrous ammonia is at least 10% more efficient than 28% applications. So it would appear that anhydrous ammonia would have been the preferable form of nitrogen to side-dress this season. However, because of the wet soil conditions, some growers reported that it was hard to get the knives to seal this year, which could have caused some N loss at the time of application.

So how late can nitrogen be applied and still impact yields? Purdue Corn Agronomist Dr. Robert Nielsen and Fertility Specialist Jim Cambera to published the results of a research trial conducted in 2010 to investigate the impact of late season nitrogen application to corn fields. In their trial, nitrogen was applied as either only as a starter, at V7 (side dress time) the above ground biomass weights and nitrogen contents were similar at silking, the number of kernels and grain yields were fairly similar for the V7 and V15 treatments by the end of the season (13 bu/acre difference at physiological maturity/6% fewer kernels). Application of nitrogen "over the top" through at least the very late vegetative growth stages preserved most of the grain yield potential. From a plant physiology standpoint, nitrogen that can be taken up through early grain fill should help to improve yields.

What may be the take home lesson from this year's nitrogen losses? It may be that even when you select the best option to reduce the chance for nitrogen loss, losses still can occur. It remains to be seen how costly those losses will be in terms of yield loss. Probably the best strategy to take is to improve your capacity to apply additional nitrogen on post side-dress corn. On irrigated fields, consider adding a fertilizer injection system to add nitrogen to the irrigation water. Another option would be to drizzle 28% on with a "high boy" sprayer with long drops to get the application below the majority of the leaves. This would be expected to work better where irrigation water can move the fertilizer into the soil shortly after application. However, the canopy will help to reduce N volatilization losses. Another potential opportunity is to look at providing some nitrogen during the weed and feed timeframe. While the nitrogen take up by the plant may have been lost, it would have provided a longer opportunity for the developing plants to have access to nitrogen. Traditional starter programs should provide 25 to 30 lbs of Nitrogen to allow for adequate N availability through the time of sidedress application. And finally, consider adding manure applications into your fertilization strategy. The organic fraction of manure breaks down over time, providing more potential for mineralized N for future years.

Mechanisms for measuring soil nitrogen availability and efficiency include soil nitrate sampling, petiole sampling and end of season stalk nitrate tests. The end of season stalk nitrate test is conducted at the time of black layer formation. The MSU Soil and Plant Analysis lab can run these samples to help you to evaluate the efficiency of your nitrogen program for 2013. You can give the MSU Extension Office in Van Buren County a call for more information on how to submit samples for the end of season stalk nitrate test at (269) 657-8213.

Soybean Disease and Field Crop Update Program

MSU Extension and the Michigan Soybean Promotion Committee are hosting a Soybean Disease and Field Crop Update Program on August 20, 2013 at the Soybean Disease Research Field Site located about 1/3 mile east of 49709 C.R. 352, Decatur MI 40945. The program will run from 6:00 pm - 8:30 pm. Discussion will feature varietal selection and seed treatment for SDS Control. A light sandwich supper will be served at the beginning of the program. MSU Field Crops Pathologist Dr. Martin Chilvers and members of the MSU Soybean Breeding Program will be on hand to discuss research results. Dr. James Hilker, MSU Grain and Livestock Marketing Specialist, will also provide an update on factors that may impact grain markets as we head into the harvest season. Please call the MSU Extension office at (269) 657-8213 by Friday, August 16th to reserve your meal.

Photo taken by Bruce MacKellar at the MSU SDS research site located near Decatur, Michigan.

Soybean varieties showing differing levels of susceptibility to Sudden Death Syndrome at the MSU SDS Research Site located near Decatur, MI. This trial site is used to screen breeding lines and commercial varieties for SDS resistance as well as performance of seed treatments for control of this fungal pathogen.

Inspect Soybean Roots for Soybean Cyst Nematodes

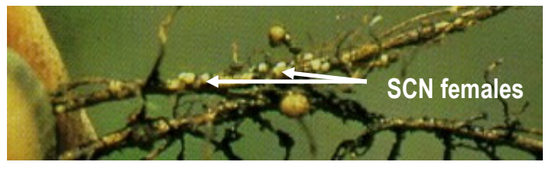
Mike Staton

Yield losses as high as 20% can occur in fields infested with soybean cyst nematodes (SCN) that don't exhibit above ground symptoms. Because of this, producers are urged to carefully dig up soybean plants in every field (including fields planted with SCN resistant varieties) and visually inspect them for the enlarged bodies of SCN females. This can be done up to three to four weeks prior to harvest. The SCN females are very small, white to cream colored and shaped like a lemon. Producers can increase their probability of detecting SCN by checking the following potential problem areas:

- Entry points to fields
- Areas having pH levels above 7.0
- Coarse-textured areas
- Low spots
- Flooded areas
- Areas that have consistently yielded poorly or have stunted and yellow plants in this year's soybean crop.

Producers that have planted SCN resistant varieties should count the number of SCN females present on the roots to determine how well the resistant varieties are reducing SCN reproduction. If a resistant variety is controlling SCN effectively, there should be less than 10 to 20 SCN females per plant. If 20 or more females per plant are found, determine the source of the resistance of the current variety and rotate to another source of SCN resistance the next time that soybeans are planted in the field.

The next step to managing SCN is to collect soil samples from the infested fields and send them to the MSU Nematode Diagnostic lab. The test results provide an SCN severity rating and recommendations for managing SCN in each infested field. The Michigan Soybean Checkoff program will cover the laboratory fees for up to 20 soil samples per farm. Please see the SOYBEAN FACTS factsheet entitled "Sampling for Soybean Cyst Nematodes" for more information about collecting and submitting SCN soil samples. The fact sheet is available online at: www.michigansoybean.org under "Producer Resources".



Reducing Soybean Harvest Losses

Mike Staton

Soybean producers are always looking for new management practices, products or equipment that will help them increase soybean yields and profitability. Reducing harvest losses is a simple and effective way to accomplish these goals. Field measurements conducted in Ohio found that actual harvest losses averaged around 1.6 bushels per acre. However, nearly 20% of the producers exceeded 2 bushels per acre and 6% exceeded 3 bushels per acre. Reducing harvest losses by just one bushel per acre will produce more than $11.00 per acre of additional income in 2013.

Harvest Timing

Properly timing your harvest operations is critical to reducing harvest losses. Harvest operations can begin any time after the beans have initially dried to 14 to 15% moisture. Under good drying conditions, this will occur five to 10 days after 95% of the pods have reached their mature color. Try to harvest as much of your crop as possible before the moisture level falls below 11% to reduce shatter losses, split seed and cracked seed coats. Shatter losses also increase significantly when mature beans undergo multiple wetting and drying cycles.

Equipment Maintenance

Before harvest operations begin, inspect and repair the cutting parts on the head. Make sure that all knife sections are sharp and tight. Check the hold-down clips to ensure that they hold the knife within 1/32 of an inch of the guards. Adjust the wear plates to the point that they lightly touch the back of the knife. Tighten all guards and replace bent or damaged guards.

Equipment Adjustment

Information from the University of Arkansas shows that a skilled combine operator can reduce harvest losses significantly compared to an inexperienced operator or one that is trying to hurry or cut corners. Combine operators should understand how losses happen and how to reduce them.

Nearly 80% of harvest losses occur while cutting and gathering the plants into the combine. Most of these result from shattered pods dropping beans on the ground. The following recommendations will reduce gathering losses:

- Operate the combine at a slight angle (about 20 degrees) to the rows. This is especially beneficial in wide rows or when the stems are tough.
- Maintain ground speed at 3 mph or less. Higher speeds are reported to be possible with Draper heads, when an air system is added to the head, when using 1-1/2 inch knife sections or when the field was rolled. Pods stripped from the stalks and uneven stubble are signs that the travel speed is too fast.
- Set the speed of the reel to run 10 to 25% faster than the groundspeed. For a reel with a diameter of 42 inches (most reels), this is 9 to10 revolutions per minute for each mile per hour of groundspeed.
- If the beans are lodged, gradually increase the reel speed to a maximum of 50% faster than the ground speed (12 rpm/mph).
- Position the reel axle 6 to 12 inches ahead of the cutter bar. In most conditions, the reel should be positioned as close to the auger as possible to promote even feeding. If the beans are lodged, move the reel forward to pick up the plants. Ideally, the reel should leave the beans just as they are being cut.
- Set the height of the reel just low enough to control the beans (generally the top 1/3 of the plants). In lodged conditions, operate the reel as low as necessary to pick up the plants. Raise the reel if cut plants ride over the reel.
- Measure gathering losses after each adjustment to determine your progress. Information on measuring soybean harvest losses is available from Michigan State University Extension at: http://msue.anr.msu.edu/news/measuring_soybean_harvest_losses and from the Michigan Soybean Checkoff at: http://www.michigansoybean.org/MSPCSite/GrowerResources/FactSheets/ReducingSoybeanHarvestLosses.pdf

Soybean Harvest Equipment Field Day

A Soybean Harvest Equipment Field Day will be held at Schipper Farms near Martin on September 25th. The program will run 12:00 p.m. to 3:30p.m. The following topics and equipment will be demonstrated: Draper heads, auger heads, air-assisted reels, field roller effects on harvest, harvest loss measurements, and ground speed effects on harvest losses. There is no charge for the field day. However, **pre-registration is requested by calling (269) 673-0370 ext. 27 before noon on Friday, September 20th** as a complimentary lunch will be provided.

Ending the Irrigation Season

Lyndon Kelley

The question that often comes up at the end of the irrigation season is, "when can I stop irrigating?" The factors that enter into this decision this season include prices for the commodities and fuel costs which are at record high levels. Turning off the irrigation water too soon could lower yields or reduce test weight. Irrigating beyond the crops need wastes time, energy, and money.

Late August - early September conditions in most years alleviate the hard decisions associated with late season irrigation scheduling. The typical crop water use drops at the same time that the average rainfall increases, reducing the need for late season irrigation. A little work using an irrigation scheduling system or through crop monitoring can alleviate the fear of stopping too soon without risking un-needed use of water resources or expenses.

Late season water use, termed evapotranspiration (E.T.) lowers significantly near the end of the growing season. maturity. Soybean plants showing their first yellow pod (R7) will have E.T. of one tenth of an inch per day for a day that reaches into the mid 80 degree temperatures. Corn at dent stage will have an E.T. of 0.14inch per day for a day that reaches into the mid 80 degree temperatures. Daily temperatures that are ten degrees higher or lower than the mid 80's will have E.T. that is .02 higher or lower than the norm, respectively.

The goal of the soybean irrigator should be to maintain at least 50% of his available soil water holding capacity for soybeans till most pods yellow. Corn producers trying to maintain test weight in dry late summer conditions should maintain at least 50% of the available soil water holding capacity until the crop reaches black layer. In most situations, minimal amounts of water are needed to achieve these goals. In the last few weeks of the season soybeans will use less than .04" per day and corn less than .06" per day, allowing a half inch of rain or irrigation to last a week or more.

One simple irrigation scheduling method used to aid in late season decisions is to monitor soil moisture. A soil auger probe sample taken from 12 inches below the surface in the root zone should still have moisture present as indicated by creating a loose ball formed from a sandy loam soil. Soils that form a tight ball show an even higher soil moisture level that could carry a crop for a few more days. Factsheets and bulletins on estimating soil moisture by feel and irrigation scheduling are available from the following website: http://msue.msu.edu/stjoseph follow the irrigation link in the left column. If more information is needed contact Lyndon Kelley at (269) 467-5511.

Soybeans Can Be Aerial Seeded With Cereal Rye to Protect Your Soils!

By Dale R. Mutch

Cover crops can help dry the soil during these wet springs. They will help you get your soybeans planted on time.

The benefits of including cover crops in crop rotations have been widely documented and include recycling nutrients, reducing erosion, improving soil structure, increasing soil organic matter, supporting soil organisms, and suppressing weeds, nematodes and pathogens. Farmer interest has increased recently in cover crop choices and application in cropping systems. In corn and soybean production, farmers have voiced concerns about reliably establishing cover crops after harvest due to harvest demands and uncertain harvest dates. Aerial seeding of cover crops into standing soybeans prior to harvest is a viable alternative that can address these issues by incorporating cover crops prior to harvest. Aerial seeding of cover crops by farmers and aerial applicators has been limited in Michigan, while dramatically increasing in Ohio and Indiana.

In 2012 a study was initiated to evaluate the influence of aerial seeding date and cover crop species on the establishment and performance of cover crops and mixes in soybean systems.

Cereal rye was aerial applied to two soybean fields in Clinton County. Soybeans were aerial seeded with rye on August 8, 18 and September 13, 2012 at a rate of 108 lbs/a.

Last fall we sampled the soybean fields and found very little cover. However, in the spring of 2013 there was excellent cover crop growth. The cereal rye established extremely well even though it appeared nothing was growing last fall a very nice stand grew in the spring.

This project demonstrates that soybean farmers can successfully aerial seed cereal rye into soybeans.

Soybean Scouting Sweetspot

Bruce MacKellar

Soybean fields have had a much easier time during the 2013 growing season than they had in 2012. Gone is the virtual plague of spider mites, and moisture levels have been much more favorable. As we move into the month of August, we have an excellent chance to watch fields during the two to three weeks before the plants begin to senesce to help identify two of the more serious challenges to soybean production during normal seasons: soybean cyst nematodes and sudden death syndrome.

Symptoms of sudden death syndrome

Sudden death syndrome (SDS) is caused by the fungal pathogen, *Fusarium virguliforme*. Symptoms on the leaf canopy appear as bright, yellow inter-venial tissue that can start off as relatively small spots on the leaves, coalescing into most of the area between the veins. As the disease advances, the chlorosis gives way to necrosis, creating the distinctive browning of the inter-venial tissue. A second disease, brown stem rot, can cause similar leaf symptoms. If you can split the lower plant stems, brown stem rot discolors the pith a dark-brown color in the stem going towards the root, where with SDS, the lower stem tissue is generally a dull, whitish color.

Figure 1. SDS Foliar symptoms (photo by Bruce Mackellar)

If you begin examining the roots of plants that have the foliar SDS symptoms, you can quite often find blue-colored spore masses on the root mass later in the season. If we happen to turn dry later in the season, you can pick out the brighter colored SDS symptoms from the duller yellowing from drought and potential spider mite damage.

Why do we want to scout for even minor incidences of SDS in soybean fields? The most important reason is to put managing for the disease on your radar screen for that field in future years. Fields that exhibit late-season SDS symptoms can slowly build infection levels across the field. As incidence builds, fields can start to suffer earlier onset of leaf symptoms. Michigan State University's research on a heavily SDS-infected field near Decatur, Mich., has shown that there are major differences between commercially available varieties ability to resist early disease development. These differences can lead to substantial yield improvements (30 bu-plus in the worst cases) for the more resistant varieties. Since many of the companies are testing their most resistant varieties at this site (as well as others across the Midwest), you should be able to select varieties that have demonstrated some resistance to SDS as you rotate back to soybeans in the future.

If you investigate brighter yellow spots that appear in fields before the fields begin to turn, it should be possible to detect SDS in your soybean fields. Often, severely infected leaves develop a "crispy," yellowish-brown appearance. The good news is that you can scout from your pickup initially. You probably will want to get out and walk the field if you think you are seeing SDS.

Soybean cyst nematode damage

Heavy infestations of soybean cyst nematodes often cause pockets of early leaf drop in fields. Look for areas in fields that "turn" about one to two weeks early and then drop their leaves before the rest of the field. Be aware that spider mites cabn cause this type of damage, but areas of the fields that are changing at this point in the season are without mite infestations are usually caused by SCN. Examine roots from plants in these areas for signs of cysts. The best way to determine if there is a problem is to collect soil samples through the root mass for submission to MSU Diagnostic Services. Many producers are already planting soybean cyst nematode-resistant varieties. You should be particularly interested in fields that were planted to resistant soybean varieties that show damage from soybean cyst nematodes. This may indicate a soybean cyst nematode bio-type that is resistant to the more common source of soybean cyst nematode resistance, PI88788, has moved into the field. If your test results come back soybean cyst nematode positive, consider switching to a different source of soybean cyst nematode resistance. Again, your seed dealers can help identify sources of soybean cyst nematode resistance in their soybean varieties.
Late-season scouting can help you to make better management decisions and avoid costly losses from these pests in the future.

2013 Michigan State University Wheat Performance Trials (Commercially Available Only)

Multi-year data are the most informative.
MSU makes no endorsement of any variety or brand.

Table 2 : Multi-Year Performance Summary (Note: Tables sorted by 2013 Yield, red wheats grouped before white)

Name	Grain Color	Lodging Score (0-9) (0=none)	Flowering Date (Days Past Jan. 1) Multi-Year Averages				Plant Height (Inches) Multi-Year Averages				Powdery Mildew Score (0-9) Multi-Year Averages				Septoria Leaf Blotch Score (0-9) Multi-Year Averages				Barley Yellow Dwarf Score (0-9)
		2013	2013	2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	2013	2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	2013	2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	2012	2 YR 2011-12	3 YR 2010-12	4 YR 2009-12	2013
MCIA Red Devil	Red	2.3	154.9	148.6	150.4	149.5	34.3	32.3	33.4	33.6	0.0	0.6	0.7	0.6	1.3	1.6	1.7	-----	1.8
Emmit	Red	3.7	156.4	150.7	152.2	151.4	36.6	34.0	35.1	35.4	1.0	0.7	1.6	2.2	3.2	3.3	3.0	3.0	2.9
S-1100	Red	2.3	153.2	-----	-----	-----	32.0	-----	-----	-----	0.0	-----	-----	-----	-----	-----	-----	-----	2.6
S-1200	Red	4.6	153.5	-----	-----	-----	34.6	-----	-----	-----	3.0	-----	-----	-----	-----	-----	-----	-----	1.1
Branson	Red	3.4	153.5	-----	-----	-----	33.0	-----	-----	-----	0.0	-----	-----	-----	-----	-----	-----	-----	1.4
GB 1102	Red	4.6	153.2	-----	-----	-----	33.5	-----	-----	-----	0.0	-----	-----	-----	-----	-----	-----	-----	1.3
9053	Red	2.8	154.9	148.8	150.7	-----	32.5	31.3	32.0	-----	2.0	4.1	3.4	-----	3.2	4.2	-----	-----	1.6
Hopewell	Red	1.6	154.7	149.3	151.1	150.4	35.9	34.2	34.4	34.8	1.0	0.7	0.9	1.3	4.4	5.0	3.9	3.5	3.5
Malabar	Red	1.8	153.9	149.5	150.8	150.2	37.2	35.0	35.8	36.2	3.0	2.1	1.4	1.8	3.8	4.6	3.8	3.4	1.1
SC 1302™	Red	4.1	153.0	-----	-----	-----	32.5	-----	-----	-----	0.0	-----	-----	-----	-----	-----	-----	-----	2.1
D 506W	Red	3.7	153.7	147.9	-----	-----	34.1	32.4	-----	-----	0.0	1.3	-----	-----	2.3	-----	-----	-----	1.2
DF 55R	Red	4.9	155.3	149.1	150.9	150.2	34.9	33.0	33.3	33.7	0.0	0.0	0.5	0.8	3.1	3.4	3.1	3.1	4.1
Pioneer 25R39	Red	3.9	156.8	150.1	151.7	151.2	34.5	32.4	33.0	33.5	5.0	4.2	3.5	3.8	2.6	3.8	3.3	3.3	1.1
Shirley	Red	1.2	156.3	149.6	151.3	-----	30.5	29.3	30.1	-----	0.0	0.0	0.0	-----	2.7	2.7	-----	-----	1.2
Red Ruby	Red	2.2	155.2	149.1	150.9	150.4	33.6	32.4	33.1	33.9	0.0	0.9	0.7	1.2	4.4	4.8	3.6	3.4	0.9
Merl	Red	1.0	153.4	147.1	149.0	148.4	32.5	31.8	32.4	32.5	1.0	0.5	1.1	1.1	4.3	3.6	3.6	3.3	3.7
DF 45R	Red	2.6	153.9	-----	-----	-----	33.9	-----	-----	-----	3.0	-----	-----	-----	-----	-----	-----	-----	1.5
HY116-SRW	Red	4.1	155.9	150.6	152.1	151.5	36.3	34.0	35.3	35.5	0.0	0.2	0.7	0.6	2.1	2.3	2.0	1.9	4.4
SC 1341™	Red	3.3	153.9	-----	-----	-----	30.4	-----	-----	-----	3.0	-----	-----	-----	-----	-----	-----	-----	0.0
AC Mountain	White	3.9	155.8	150.7	152.0	151.4	38.9	36.7	36.6	37.1	1.0	0.5	1.4	1.8	2.9	4.1	3.4	3.3	3.1
Pioneer 25W43	White	3.9	154.2	148.3	150.0	149.3	33.6	31.6	32.0	32.3	2.0	3.5	3.2	3.3	3.2	3.1	2.8	2.9	3.4
DF 110W	White	2.7	155.3	149.2	-----	-----	32.8	30.9	-----	-----	1.0	0.9	-----	-----	2.6	-----	-----	-----	1.2
Linebacker	White	2.8	156.9	151.2	152.7	151.8	37.0	35.0	35.4	36.0	3.0	1.9	2.6	3.0	2.1	3.3	3.0	3.2	0.0
Jupiter	White	2.3	156.0	150.6	152.1	151.4	33.2	31.8	32.2	32.2	3.0	1.6	1.8	1.7	5.6	6.1	4.9	4.4	0.8
Ambassador	White	2.2	154.7	148.2	150.0	149.3	34.4	32.8	33.4	34.2	0.0	0.0	0.1	0.9	6.4	6.0	4.8	4.3	2.1
HY319-SWW	White	2.3	156.2	151.0	152.5	151.8	36.7	35.2	36.0	36.6	1.0	0.7	1.2	1.7	2.4	2.3	2.0	-----	3.8
Ava	White	3.6	158.0	152.1	153.4	152.8	37.1	35.8	36.6	36.6	3.0	1.5	1.5	1.9	1.7	2.8	2.7	2.9	2.5
9242W	White	2.0	155.3	149.1	150.7	-----	34.2	32.5	33.4	-----	0.0	0.3	0.8	-----	1.7	2.3	-----	-----	2.7
W1062	White	4.4	155.6	150.0	151.7	150.9	34.8	33.2	33.9	34.3	3.0	2.8	2.1	2.4	2.6	3.0	2.7	2.8	1.0
Aubrey	White	1.9	153.8	147.8	149.7	149.0	35.1	33.7	34.4	34.8	0.0	0.0	0.8	0.8	4.3	3.9	3.3	3.1	2.7
MEAN (2013 93 Entries)		**2.7**	**154.6**	**148.9**	**150.9**	**150.4**	**34.3**	**33.1**	**33.8**	**34.4**	**1.3**	**1.5**	**1.6**	**1.7**	**2.7**	**3.4**	**3.1**	**3.2**	**1.9**
LSD (0.05)		**1.0**	**0.6**	**1.2**	**1.1**	**0.9**	**1.2**	**1.5**	**1.6**	**1.1**	**1.0**	**2.6**	**2.2**	**1.6**	**1.3**	**1.9**	**1.7**	**1.3**	**1.1**
CV (%)		**39.4**	**0.4**	**0.4**	**0.4**	**0.4**	**3.7**	**2.2**	**2.9**	**2.3**	**108.5**	**86.3**	**83.0**	**66.8**	**29.0**	**26.8**	**32.8**	**28.5**	**33.8**

2013 Michigan State University Wheat Performance Trials (Commercially Available Only)

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Table 1 : Multi-Year Performance Summary (Note: Tables sorted by 2013 Yield, red wheats grouped before white)

Name	Grain Color	Chaff Color	Awns	Yield: Bushels/Acre (Adjusted to 13.5% Moisture) Multi-Year Averages				Test Weight: lbs/Bushel Multi-Year Averages				Percent Grain Moisture at Harvest Multi-Year Averages				Organization
				2013	2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	2013	2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	2013	2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	
RS 972	Red	White	Tip Awned	92.2	94.5	-----	-----	57.1	58.0	-----	-----	13.5	13.8	-----	-----	Rupp Seeds, Inc.
Pioneer 25R40	Red	White	Awned	92.0	95.4	-----	-----	58.3	59.4	-----	-----	12.9	13.2	-----	-----	DuPont Pioneer
DF 109R	Red	White	Tip Awned	91.9	92.9	-----	-----	57.4	58.1	-----	-----	13.2	13.6	-----	-----	D.F. Seeds, Inc.
MCIA Red Dragon	Red	White	Tip Awned	91.2	91.7	91.5	91.1	57.5	57.9	58.4	58.2	13.1	13.1	13.1	13.3	Michigan Crop Improvement Association
W 123	Red	White	Awnletted	91.2	90.8	91.8	-----	57.9	58.3	58.6	-----	12.8	13.0	12.9	-----	Wellman Seeds, Inc.
HS 284R	Red	White	Tip Awned	91.0	-----	-----	-----	57.5	-----	-----	-----	12.7	-----	-----	-----	Harrington Seeds, Inc.
RS 907	Red	White	Awned	90.9	-----	-----	-----	59.1	-----	-----	-----	13.4	-----	-----	-----	Rupp Seeds, Inc.
W 206	Red	White	Awned	90.7	-----	-----	-----	59.5	-----	-----	-----	13.1	-----	-----	-----	Wellman Seeds, Inc.
W 125	Red	White	Tip Awned	90.0	91.2	-----	-----	57.4	58.0	-----	-----	12.9	13.0	-----	-----	Wellman Seeds, Inc.
W 207	Red	White	Tip Awned	90.0	-----	-----	-----	57.0	-----	-----	-----	13.8	-----	-----	-----	Wellman Seeds, Inc.
DF Sienna	Red	White	Awnless	89.9	-----	-----	-----	57.5	-----	-----	-----	13.0	-----	-----	-----	D.F. Seeds, Inc.
9223	Red	White	Tip Awned	89.9	91.9	-----	-----	57.3	58.1	-----	-----	13.3	13.5	-----	-----	Dyna-Gro Seed
Heilman	Red	White	Tip Awned	89.7	90.6	-----	-----	57.4	58.0	-----	-----	12.8	13.0	-----	-----	Steyer Seeds
Hunker	Red	White	Tip Awned	89.6	91.2	-----	-----	57.3	57.8	-----	-----	13.4	13.9	-----	-----	Steyer Seeds
AgriMAXX 438	Red	White	Tip Awned	89.2	-----	-----	-----	57.3	-----	-----	-----	13.4	-----	-----	-----	AgriMAXX Wheat Company
SC 1342™	Red	White	Awnletted	88.8	-----	-----	-----	56.9	-----	-----	-----	13.2	-----	-----	-----	Seed Consultants, Inc.
D 512W	Red	White	Tip Awned	88.7	-----	-----	-----	57.0	-----	-----	-----	13.8	-----	-----	-----	Bio-Town Seeds, Inc.
Sienna	Red	White	Awnless	88.5	89.1	91.7	-----	57.2	57.8	58.3	-----	12.9	13.0	13.0	-----	Direct Enterprises
Pioneer 25R34	Red	White	Awned	88.5	92.7	93.1	-----	57.0	57.9	58.3	-----	13.2	13.6	13.7	-----	DuPont Pioneer
AgriMAXX 413	Red	White	Awned	88.2	89.8	-----	-----	57.0	58.2	-----	-----	12.3	12.7	-----	-----	AgriMAXX Wheat Company
Sunburst	Red	White	Tip Awned	88.0	89.9	90.6	90.4	61.0	61.6	60.8	60.7	13.6	14.1	13.6	14.1	Michigan Crop Improvement Association
DF EX-L1	Red	White	Tip Awned	87.9	-----	-----	-----	59.4	-----	-----	-----	13.7	-----	-----	-----	D.F. Seeds, Inc.
DF 111R EX	Red	White	Awned	87.8	-----	-----	-----	58.5	-----	-----	-----	13.2	-----	-----	-----	D.F. Seeds, Inc.
RS 979	Red	White	Tip Awned	87.3	90.8	-----	-----	56.4	57.3	-----	-----	13.1	13.5	-----	-----	Rupp Seeds, Inc.
9042	Red	White	Awnletted	86.5	88.4	89.6	89.2	58.1	58.8	59.2	58.9	12.7	12.9	12.9	13.2	Dyna-Gro Seed
GB 1202	Red	White	Awned	86.5	-----	-----	-----	57.2	-----	-----	-----	12.4	-----	-----	-----	G.B. Seeds and Service
W 208	Red	White	Tip Awned	86.3	89.1	-----	-----	58.0	58.6	-----	-----	13.5	14.0	-----	-----	Wellman Seeds, Inc.
AgriMAXX 427	Red	White	Tip Awned	86.2	-----	-----	-----	56.5	-----	-----	-----	13.3	-----	-----	-----	AgriMAXX Wheat Company
MCIA Blazer	Red	White	Awnletted	86.1	87.4	-----	-----	60.0	60.7	-----	-----	13.2	13.3	-----	-----	Michigan Crop Improvement Association
AgriMAXX 434	Red	White	Awned	86.0	-----	-----	-----	56.5	-----	-----	-----	12.6	-----	-----	-----	AgriMAXX Wheat Company
DF 105R	Red	White	Awned	85.3	89.7	91.0	-----	57.0	58.0	58.4	-----	12.2	12.6	12.5	-----	D.F. Seeds, Inc.
D 492W	Red	White	Awned	85.1	87.3	-----	-----	57.3	58.1	-----	-----	12.4	12.7	-----	-----	Bio-Town Seeds, Inc.
SC 1321™	Red	White	Awned	85.1	-----	-----	-----	56.9	-----	-----	-----	12.4	-----	-----	-----	Seed Consultants, Inc.

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Table 1 : Multi-Year Performance Summary (Note: Tables sorted by 2013 Yield, red wheats grouped before white)

Name	Grain Color	Chaff Color	Awns	Yield: Bushels/Acre (Adjusted to 13.5% Moisture) 2013	Multi-Year Averages 2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	Test Weight: lbs/Bushel 2013	Multi-Year Averages 2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	Percent Grain Moisture at Harvest 2013	Multi-Year Averages 2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	Organization
MCIA Red Devil	Red	White	Awned	85.0	87.4	89.6	91.0	58.4	59.4	59.7	59.5	13.1	13.4	13.6	13.7	Michigan Crop Improvement Association
Emmit	Red	White	Awnletted	84.9	82.9	85.5	85.7	57.8	58.3	58.6	58.3	13.3	13.7	14.0	14.2	Hyland Seeds
S-1100	Red	White	Awned	84.9	-----	-----	-----	57.2	-----	-----	-----	12.2	-----	-----	-----	Sunstar Hybrids
S-1200	Red	White	Tip Awned	84.9	-----	-----	-----	56.5	-----	-----	-----	13.2	-----	-----	-----	Sunstar Hybrids
Branson	Red	White	Awnletted	84.4	-----	-----	-----	57.8	-----	-----	-----	13.2	-----	-----	-----	Syngenta
GB 1102	Red	White	Tip Awned	84.2	-----	-----	-----	56.8	-----	-----	-----	13.0	-----	-----	-----	G.B. Seeds and Service
9053	Red	White	Awned	83.8	86.4	87.0	-----	55.5	57.0	57.2	-----	12.6	12.8	12.8	-----	Dyna-Gro Seed
Hopewell	Red	Bronze	Awnletted	83.6	85.5	86.7	87.3	58.3	59.1	59.6	59.1	12.9	13.2	13.3	13.5	Michigan Crop Improvement Association
Malabar	Red	White	Tip Awned	83.5	83.7	86.0	86.3	58.0	58.8	59.4	59.1	12.9	13.1	13.2	13.4	Ohio Seed Improvement Association
SC 1302™	Red	White	Awnletted	83.4	-----	-----	-----	60.6	-----	-----	-----	13.3	-----	-----	-----	Seed Consultants, Inc.
D 506W	Red	White	Tip Awned	82.3	86.9	-----	-----	56.1	57.1	-----	-----	13.6	14.0	-----	-----	Bio-Town Seeds, Inc.
DF 55R	Red	White	Tip Awned	82.3	86.7	86.7	86.9	59.0	59.4	59.5	59.1	13.2	13.3	13.5	13.6	D.F. Seeds, Inc.
Pioneer 25R39	Red	White	Tip Awned	82.3	86.4	87.9	86.6	57.4	58.7	59.2	58.6	13.3	13.4	13.6	13.8	DuPont Pioneer
Shirley	Red	White	Awnletted	81.8	87.4	89.6	-----	56.6	57.5	57.8	-----	12.9	13.3	13.9	-----	Dyna-Gro Seed
Red Ruby	Red	White	Awned	79.8	83.0	85.3	86.5	57.9	59.2	59.7	59.3	13.0	13.1*	13.1	13.4	Michigan Crop Improvement Association
Merl	Red	White	Tip Awned	78.9	83.7	86.0	84.7	59.5	60.2	60.4	60.0	13.4	13.9	14.1	14.2	Virginia Crop Improvement Assc. / VA Tech
DF 45R	Red	White	Tip Awned	78.3	-----	-----	-----	58.9	-----	-----	-----	13.0	-----	-----	-----	D.F. Seeds, Inc.
HY116-SRW	Red	White	Awnletted	77.7	79.1	82.4	82.6	56.2	57.2	57.9	57.6	12.8	13.2	13.2	13.3	Hyland Seeds
SC 1341™	Red	White	Awned	77.2	-----	-----	-----	56.1	-----	-----	-----	12.4	-----	-----	-----	Seed Consultants, Inc.
AC Mountain	White	White	Awnletted	86.1	87.0	87.0	86.0	56.3	56.9	57.5	57.5	12.6	12.9	12.9	13.1	Michigan Crop Improvement Association
Pioneer 25W43	White	White	Tip Awned	84.4	85.8	86.1	85.2	56.5	57.9	58.3	57.9	12.4	12.9	13.0	13.2	DuPont Pioneer
DF 110W	White	White	Awned	84.1	87.3	-----	-----	57.6	59.0	-----	-----	12.7	13.1	-----	-----	D.F. Seeds, Inc.
Linebacker	White	White	Awnletted	84.0	82.0	84.0	84.0	56.7	57.1	57.5	57.1	13.1	14.1	14.6	15.3	D.F. Seeds, Inc.
Jupiter	White	Bronze	Awnletted	83.8	85.1	86.5	86.7	56.5	57.4	57.9	57.5	12.5	13.3	13.3	13.4	Michigan Crop Improvement Association
Ambassador	White	White	Awnletted	83.5	86.3	86.6	87.4	55.2	56.7	57.3	57.2	12.0	12.5	12.5	12.7	D.F. Seeds, Inc. & Co-op Elevevator, Pigeon
HY319-SWW	White	White	Awnletted	82.5	81.5	83.1	84.1	57.5	58.7	59.3	58.9	12.9	13.2	13.2	13.5	Hyland Seeds
Ava	White	White	Awnletted	82.2	81.5	82.9	83.0	57.6	57.2	57.5	57.1	13.4	14.9	15.4	15.6	Hyland Seeds
9242W	White	White	Awnletted	80.4	84.9	85.2	-----	57.4	58.7	59.2	-----	13.0	13.2	13.2	-----	Dyna-Gro Seed
W1062	White	White	Tip Awned	80.4	80.3	82.9	83.2	57.2	57.5	58.0	57.6	13.3	14.0	14.4	14.7	Syngenta
Aubrey	White	White	Awnletted	78.1	80.9	82.2	84.3	58.3	59.0	59.9	59.7	13.0	13.2	13.3	13.6	D.F. Seeds, Inc.
MEAN (2013 93 Entries)				**85.3**	**87.2**	**87.0**	**86.2**	**57.6**	**58.4**	**58.7**	**58.6**	**13.0**	**13.3**	**13.4**	**13.7**	
LSD (0.05)				**2.7**	**5.5**	**4.3**	**3.8**	**0.3**	**1.1**	**1.1**	**0.9**	**0.3**	**0.7**	**0.8**	**0.7**	
CV (%)				**5.6**	**3.1**	**3.0**	**3.1**	**1.0**	**0.9**	**1.1**	**1.1**	**3.9**	**2.8**	**3.5**	**3.4**	

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Table 2 : Multi-Year Performance Summary (Note: Tables sorted by 2013 Yield, red wheats grouped before white)

Name	Grain Color	Lodging Score (0-9) (0=none) 2013	Flowering Date (Days Past Jan. 1) 2013	Multi-Year Averages 2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	Plant Height (Inches) 2013	Multi-Year Averages 2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	Powdery Mildew Score (0-9) 2013	Multi-Year Averages 2 YR 2012-13	3 YR 2011-13	4 YR 2010-13	Septoria Leaf Blotch Score (0-9) 2012	Multi-Year Averages 2 YR 2011-12	3 YR 2010-12	4 YR 2009-12	Barley Yellow Dwarf Score (0-9) 2013
RS 972	Red	3.1	154.7	148.9	-----	-----	34.0	32.5	-----	-----	2.0	3.1	-----	-----	1.3	-----	-----	-----	1.5
Pioneer 25R40	Red	1.8	154.7	148.7	-----	-----	31.5	30.3	-----	-----	0.0	0.1	-----	-----	1.0	-----	-----	-----	2.1
DF 109R	Red	3.2	155.1	149.4	-----	-----	34.1	32.7	-----	-----	2.0	2.4	-----	-----	1.9	-----	-----	-----	2.0
MCIA Red Dragon	Red	2.0	154.0	148.2	149.8	148.9	38.1	36.0	36.8	36.9	3.0	1.6	1.3	1.8	1.0	3.1	2.9	-----	1.2
W 123	Red	3.1	153.4	147.4	149.2	-----	39.2	36.5	35.3	-----	3.0	3.1	2.0	-----	2.3	3.4	-----	-----	1.9
HS 284R	Red	1.8	154.1	-----	-----	-----	38.4	-----	-----	-----	2.0	-----	-----	-----	-----	-----	-----	-----	1.9
RS 907	Red	2.6	153.6	-----	-----	-----	33.2	-----	-----	-----	1.0	-----	-----	-----	-----	-----	-----	-----	2.0
W 206	Red	1.6	153.6	-----	-----	-----	35.4	-----	-----	-----	1.0	-----	-----	-----	-----	-----	-----	-----	1.2
W 125	Red	2.1	154.0	148.2	-----	-----	38.3	36.1	-----	-----	2.0	2.2	-----	-----	2.5	-----	-----	-----	2.7
W 207	Red	2.2	155.3	-----	-----	-----	35.1	-----	-----	-----	4.0	-----	-----	-----	-----	-----	-----	-----	2.5
DF Sienna	Red	1.7	153.6	-----	-----	-----	39.3	-----	-----	-----	2.0	-----	-----	-----	-----	-----	-----	-----	2.1
9223	Red	2.6	154.8	149.2	-----	-----	34.1	33.0	-----	-----	3.0	3.8	-----	-----	2.0	-----	-----	-----	3.8
Heilman	Red	2.7	154.2	148.1	-----	-----	39.1	36.6	-----	-----	0.0	0.0	-----	-----	2.2	-----	-----	-----	1.3
Hunker	Red	2.8	155.5	149.4	-----	-----	34.9	33.3	-----	-----	0.0	1.6	-----	-----	0.8	-----	-----	-----	2.3
AgriMAXX 438	Red	3.9	154.3	-----	-----	-----	34.9	-----	-----	-----	2.0	-----	-----	-----	-----	-----	-----	-----	3.1
SC 1342™	Red	1.9	154.2	-----	-----	-----	34.8	-----	-----	-----	0.0	-----	-----	-----	-----	-----	-----	-----	2.1
D 512W	Red	2.7	154.7	-----	-----	-----	34.2	-----	-----	-----	4.0	-----	-----	-----	-----	-----	-----	-----	1.3
Sienna	Red	1.7	153.6	148.0	149.7	-----	38.5	36.2	37.4	-----	2.0	1.3	1.1	-----	2.1	2.6	-----	-----	0.9
Pioneer 25R34	Red	4.3	154.0	147.9	149.7	-----	35.3	33.3	33.5	-----	5.0	5.1	4.7	-----	1.1	2.1	-----	-----	1.3
AgriMAXX 413	Red	2.8	152.8	147.0	-----	-----	32.1	31.1	-----	-----	0.0	1.8	-----	-----	4.1	-----	-----	-----	2.9
Sunburst	Red	1.9	156.1	149.6	150.8	150.4	31.6	29.5	31.0	31.2	0.0	0.1	0.6	0.7	1.9	2.2	2.6	2.8	2.5
DF EX-L1	Red	5.2	154.0	-----	-----	-----	36.4	-----	-----	-----	1.0	-----	-----	-----	-----	-----	-----	-----	2.2
DF 111R EX	Red	1.3	154.5	-----	-----	-----	35.5	-----	-----	-----	0.0	-----	-----	-----	-----	-----	-----	-----	1.9
RS 979	Red	4.1	153.2	147.4	-----	-----	33.9	32.2	-----	-----	2.0	3.4	-----	-----	2.6	-----	-----	-----	1.8
9042	Red	1.5	153.9	147.9	150.0	149.5	32.5	31.2	31.6	31.7	1.0	2.4	2.2	2.3	4.3	3.5	2.9	-----	2.1
GB 1202	Red	2.8	152.9	-----	-----	-----	31.7	-----	-----	-----	0.0	-----	-----	-----	-----	-----	-----	-----	2.0
W 208	Red	3.2	154.2	148.7	-----	-----	35.1	34.6	-----	-----	1.0	0.6	-----	-----	1.8	-----	-----	-----	1.2
AgriMAXX 427	Red	4.2	153.4	-----	-----	-----	34.0	-----	-----	-----	0.0	-----	-----	-----	-----	-----	-----	-----	1.6
MCIA Blazer	Red	2.9	153.2	147.0	-----	-----	33.4	32.5	-----	-----	0.0	0.7	-----	-----	1.9	-----	-----	-----	2.0
AgriMAXX 434	Red	2.9	153.6	-----	-----	-----	32.0	-----	-----	-----	0.0	-----	-----	-----	-----	-----	-----	-----	1.4
DF 105R	Red	2.1	153.0	147.1	149.3	-----	32.4	30.5	31.2	-----	1.0	3.3	3.1	-----	3.6	4.6	-----	-----	2.9
D 492W	Red	2.6	153.2	147.7	-----	-----	33.1	31.0	-----	-----	1.0	2.0	-----	-----	2.1	-----	-----	-----	3.4
SC 1321™	Red	2.2	153.5	-----	-----	-----	32.0	-----	-----	-----	0.0	-----	-----	-----	-----	-----	-----	-----	2.8