

LOUISIANA AGRICULTURAL EXPERIMENT STATION
SMALL GRAIN PERFORMANCE TRIALS
PROCEDURES, POLICIES AND PROTOCOL
AUGUST 2007

POLICIES:

1. The state will be divided into two regions for the purpose of wheat and oat recommendations. The northern half of the state shall include trials at Alexandria, Bossier City, St. Joseph, and Winnsboro. The southern half shall include trials at Baton Rouge, Crowley, and Jeanerette.
2. In order to be recommended an entry must yield at least 90% of the average yield of the three varieties with the highest two-year mean yields across the region. Yield is not the only criterion for recommendation. A variety must also have adequate levels of other desired traits. A variety with an adequate yield to make the list of recommended varieties will not be added to the list if it has a major deficiency such as an unusually low test weight or high level of susceptibility to stripe rust or other disease. The rationale is that these deficiencies will decrease the economic return to the grower due to lower bushel value and higher production costs, such that the grower would realize a higher net return with a lower yielding variety.
3. The LAES mimeo series on small grain performance shall include a two and three-year table on the performance of entries in each of the two regions. A one-year and multi-year table for each test site will also be included. Information on each location will include growing conditions, cultural practices, disease occurrence, and agronomic performance.
4. The LCES shall publish a list of recommended varieties for each region. This list shall include multi-year performance data for the two regions and for each location, as well as data on disease reaction and agronomic traits.
5. The LAES and LCES publications will be released in a timely manner to facilitate planning and seed purchase by seed dealers and growers. The publication of this data shall be the responsibility of the coordinator of the trials and the small grain specialist of the LCES. Preliminary data shall be made available to Louisiana Seedsmen and others with entries in the trials. This data will be made available as soon as available, prior to the publication of results by the LAES or LCES.
6. A variety will be dropped from the recommended list if it fails to make the 90% cut-off for a second year (not necessarily consecutive). A note will be made the first time a recommended variety fails to perform at the level necessary for addition to the recommended list, but the variety will not be dropped. Once dropped from the recommended list, an entry can be retested by the LAES but will not be added back to the recommended list and will be footnoted as '**DROPPED**' in published lists.. Entries that are on the recommended list may be dropped after one year of poor performance if the cause of the poor performance is judged by the committee to be of great concern and likely to recur. An example is a major shift in stripe rust virulence such that a formerly resistant variety is now highly susceptible to prevalent races and the disease had a major effect on yield. Those new entries that do not appear to have potential in Louisiana may be **eXcluded** (excluded) from the trials after two years of testing. The decision to drop/exclude an entry will be made by the committee composed of LAES and LCES scientists responsible for testing and recommendations. This saves testing resources and prevents unnecessary trials fees for the participating company. A variety that has been eXcluded from one region can be tested on the other region, but not statewide. This will typically occur when a variety is too late in maturity for south Louisiana but performs well in north Louisiana. A full fee will be charged for such entries. Excluding late, non-performing varieties from testing in south Louisiana facilitates timely harvest of adapted varieties because very late varieties dry down well after the other entries should have been harvested.

GENERAL PURPOSE OF TRIALS: Members of the Louisiana Agricultural Experiment Station annually conduct performance trials on the following crops: corn, cotton, oats, sorghum, soybeans, summer and winter forages, and wheat. Results from these trials are published to provide performance information to producers seed dealers, originators of the entries, and other interested concerns. This information is used by scientists of the Louisiana State University Agricultural

Center to formulate recommendations for growers, and in managerial decisions by seedsmen and growers. Inclusion of an entry in a performance trial does not constitute an endorsement of that variety by the Louisiana Agricultural Experiment Station (LAES).

SUBMISSION OF ENTRIES: All companies/concerns are eligible to submit entries for the performance trials, providing they are the legal owner or distributor of the variety. All submissions should be marketed or under consideration for marketing in Louisiana. The specific coordinator of the trial, date of submission, seed required, and other details are contained in the following material. Submissions should be listed in order of priority. Seed must be received by the date listed for the crop, and can not be sent COD. All freight charges must be prepaid. In the event that there are more submissions than can be handled in a trial, the coordinator will determine which submissions to omit.

DISCLAIMER: After the trials have been planted and a satisfactory stand established, you will be billed for the varieties you submitted. Every effort will be made to conduct the trials as planned, including recording appropriate notes, harvesting, and publishing the results. In the event that weather patterns or other environmental factors, extreme incidence of disease or insect pressure, or other unavoidable factors preclude the completion of the trials, the LAES will not refund the fees submitted. Scientists of the LAES will act in good faith to conduct the trials in a professional manner and provide unbiased, reliable results to all concerns.

PROTOCOL FOR LAES WHEAT AND OAT VARIETY TRIALS

This document is a guideline for conduct of the LAES wheat and oat performance trials. It is intended to:

1. To serve as a mechanism to inform industry cooperators of the activities and time frame involved in conduct of the trials.
2. To outline and document responsibilities for each phase of the variety trials and serve as a letter of agreement for all persons involved to follow this protocol.
3. To define standard plot procedures that will be followed at all trial locations.
4. To define standard variables and units of measure that will be used in reporting data from each location.
5. To establish standard procedures for analyzing and reporting data.
6. To establish deadlines for completion of each phase of the variety trials.

Calendar of Activities

Target dates are intended to serve as guidelines for planting, fertilization, etc., and are at the cooperators discretion. Target dates listed are the earliest or beginning date.

- Aug 15** Entry forms and list of previously tested varieties and their status should be emailed to seedsmen and breeders.
- Sept 10** Entry forms should be postmarked and mailed back to coordinator.
- Sept 15** All seed should be received by this date. Seed received after this date can not be assured of inclusion on the statewide performance trials, although the coordinator will work with companies as much as possible.
- Oct 1** Seed of early-planted variety trials should be packaged and ready for planting by this date. The coordinator should contact each cooperator via email and arrange for pickup or delivery of the seed and the field books.
- Oct 1** Target date for planting early wheat variety trial in North Louisiana.
- Oct 15** Target date for planting early wheat variety trial at Baton Rouge.
- Oct 15** Seed of normal-date wheat variety trials and oat variety trials should be packaged and ready for planting by this date. The coordinator should contact each cooperator via email and arrange for pickup or delivery of the seed and the field books.
- Oct 21** Target date for planting wheat and oat variety trials at Bossier City, St. Joseph, and Winnsboro.
- Nov 1** Target date for planting wheat and oat trials at Alexandria.
- Nov 10** Target date for planting wheat and oat trials at Baton Rouge, Crowley, and Jeanerette.
- Feeke's Growth Stage 4.5**, Target date for topdress nitrogen application. This will be approximately February 1-7 at Baton Rouge and February 10-20 at Bossier City, depending on planting date. First topdress N should be applied prior to appearance of first node on the 'average variety'. Topdress n may be split at the discretion of the cooperator. Topdress N rate should be between 80 and 100 lbs/acre for wheat and between 60 and 75 lbs/acre for oats, depending on previous crop and residual N.
- May 21** Target harvest date for Baton Rouge, Crowley, and Jeanerette, based on average harvest date from 1990 through 1996.

- May 23** Target harvest date for Alexandria based on average harvest date from 1990 through 1996.
- May 26** Target harvest date for St. Joseph and Winnsboro based on average harvest date from 1990 through 1996.
- June 5** Target harvest date for Bossier City based on average harvest date from 1990 through 1996.
- June 1-15** **Target date for proofed wheat data in prescribed to be sent via email file to coordinator** . The data should be sent to the coordinator within 10 days of harvest. Data must be entered in the excel field book that is identical to the paper field book sent out by the coordinator. It is the responsibility of the cooperator to enter and proof all data.
- June 15** Target date for all South Louisiana wheat data tables and analyses to be posted on the preliminary data website for review and approval.
- July 1** Target date for all North Louisiana wheat data tables and analyses to be posted on the preliminary data website for review and approval.
- July 6** Target date for variety recommendation meeting, based on last data plus 14 days. Date to be set by LCES after consultation with coordinator to ensure that all data has been received.
- July 20** Deadline for publication of final data tables and LCES variety recommendations on LSUAC wheat web page.
- July 27** Deadline to email final copies of wheat mimeo series to cooperators for proofing and approval.
- Aug 10** Deadline for publishing Research Summary on web.

Seed Preparation

All seed will be packaged by the coordinator of the trials unless otherwise arranged.

Seed will be packaged at a rate chosen by the coordinator for the plot size specified by the site cooperator.

1. Each seed packet will be appropriately labeled with a computer-printed label that includes the test code (e.g. WVT06BC), variety designation, and a plot number that corresponds to the printed and diskette field books.
2. Field books will be included with the seed. The Excel files will be emailed to the site cooperator. The original field book or electronic files sent to the site cooperator will be used to record diseases notes where possible, or the notes will be transferred to the original field book as soon as possible.
3. The site cooperator will not change the randomizations, plot assignments, or plot order of the tests, unless this is absolutely essential. If such a change is made, this will be noted in bold at the beginning of the data files sent to the coordinator. This is necessary because the field books and diskettes provided to the cooperator are only valid for the randomization that is sent out with them, and any change will cause considerable confusion when disease notes are taken and data is analyzed.
4. The site coordinator has complete freedom to arrange the tests in any manner that he deems appropriate, other than changing the actual plot order. The site cooperator can arrange the field layout of the plots in any way that matches the space and equipment available for planting, keeping in mind that the blocks (reps) should correspond to variation in the field in order to minimize error variance. For example, a replication may be 1 range x 30 plots, 2 x 15, 3 x 10, 5 x 6, etc. Also the ranges may be serpentine or non-serpentine. The only important aspect is that the variety designated in the field book as falling in a given plot should be planted in that plot to minimize confusion.
5. The coordinator will contact each site cooperator as soon as seed are available. It is the joint responsibility of the coordinator and the cooperator to see that the seed arrive at the test site and are planted in a timely manner.
6. The site cooperator will send the coordinator (Harrison) a copy of the field map with plot assignments prior to note-taking (e.g. November to February).

Planting, Cultural Practices, and Note-taking, and Harvest:

1. All aspects of plot maintenance are the responsibility of the cooperator, including planting, harvest, routine data collection, and application of fertilizers and chemicals (herbicides, insecticides).
2. All site information will be recorded on the site information sheet provided by the coordinator. This information should also be entered as text in front of the data in ASCII data files sent to the coordinator.
3. Preplant and post-emergence herbicides shall be used as needed to control annual ryegrass and other weed problems of wheat and oats.
4. Preplant fertilization will be in accordance with soil test results, or knowledge of previous crop history and soil fertility.
5. Spring nitrogen topdressing rate will be at the discretion of the cooperator, based on crop history, soil types, and previous experience. with the exception of uniform studies such as the statewide nitrogen x fungicide trial. Topdressing rates should generally be at the upper end of the recommended rates for a given site, generally 80-110 lbs/a for wheat and 60-80 lbs/a for oats. Fertilizer should be applied prior to the formation of the first node on

the average variety. This corresponds to Feekes Growth Stages 4-5, and will be usually be in early February for south Louisiana and mid-February for north Louisiana. Topdress N may be applied as a split at the discretion of the cooperator.

6. Plots will be harvested as soon as possible after physiological maturity and drydown.
7. The cooperator is responsible for monitoring of the plots and should observe and make notes on a routine basis. This should include a thorough inspection after the stands have been established to note any stand problems. The cooperator should walk through the plots on a weekly basis in the spring, after the wheat has begun to grow rapidly. Notes should be taken on any problems that are observed, and the general condition of the trials should be recorded. This type of information is quite valuable in the mimeo series to explain genotype by location/year effects that occur.
8. The coordinator will visit the test sites at least once and preferably more frequently during the spring to observe the condition of the tests and take notes on diseases and general conditions of the trials. The extension specialist responsible for variety recommendations will visit every trial every year, preferably during grainfill and with the coordinator and cooperator. This will facilitate communication and serve to familiarize the extension specialist with the trials and varieties.
9. Fungicides will not be routinely applied to the standard wheat and oat variety trials. Disease resistance is a very important component of variety performance in Louisiana. It is intended that the variety trials be conducted without fungicides to measure performance under 'normal' conditions without the protection of fungicides.

Data Format:

1. A standard format will be set by the coordinator for the trials. This format will be followed if at all possible, with the understanding that not all categories of data will be relevant to each test and additional data will be added in the event that new diseases or other phenomena occur. The data will be recorded by the cooperator on the Excel (electronic) version of the field book that is distributed by the coordinator. It is the responsibility of the cooperator to enter and carefully proof all data before sending it to the coordinator. The cooperator should enter all data from that location, including any disease notes or other data taken by persons other than the cooperator. The management practices sheet should accompany the data.
2. Disease data will be rated by Boyd Padgett, Steve Harrison, Pat Colyer, or Clayton Hollier. The cooperator is responsible for notifying Steve that disease notes need to be taken. The cooperator should consider growth stage and severity of the disease when making this decision. The cooperator should notify Steve or John as far in advance as possible to facilitate scheduling.
3. The cooperator will send all data to the coordinator in a timely manner. Every effort should be made to get all data to the coordinator within 10 days of harvest (no later than June 15) if possible. The data will be in printed and diskette form. The diskette will be in the form of an Excel file. The original field book sent out by the coordinator should be used for data entry. The columns rep, entry number, entry, PID, and plot columns should always be included on every line of the data file. Other columns may be added or deleted as needed. Each column of data will include the appropriate heading as listed in the data format guide.
4. The data should be in column format so that a 'list' type of input can be used with SAS. This means that columnar numbers should be right justified, or a 0 leaf rust may have to be entered as 00 so that it lines up properly with a 70 rating. Do not enter a '1' or a '0' for missing data. Missing data should be entered as a '.' or simply left blank.
5. The cooperator is responsible for completely proofing all data after it is entered on diskette and prior to sending it to the coordinator. The coordinator will assume that all data received has been proofed and is correct.
6. Do not send all 0's for data, e.g., leaf rust. Simply include a note with the data that no leaf rust occurred. The same applies for lodging, etc.
7. Moisture should be recorded on all reps, or an average moisture written in for each plots in the data file. Moisture varies considerably from rep to rep within a plot. Either take moisture on all reps or include an average moisture with all plots.
8. Seed must be clean before test weights are taken. Test weights should be taken from at least two replications. Test weight is very important and should be taken for all tests.

Data Publication and Release:

1. It is the responsibility of the cooperator to thoroughly proof all data and get the data to the coordinator in a final, computer-file format in a timely manner. The data should be sent to the coordinator within ten days of harvest. The computer file received should contain all data that was collected in a complete and final format.
2. It is the responsibility of the coordinator to see that all statistical analyses are accurate and that the data is published in a timely manner. The primary instrument of publication will be the LAES Mimeo series.

3. Cooperators will be given the opportunity to review the data prior to its release as preliminary data to seedsmen, and the mimeo series prior to publication. This review will be performed rapidly to facilitate early publication of the Mimeo. The turn around time for review of the data (before release as preliminary data to seedsmen) will be very short (a few days) and the cooperators will FAX or EMAIL any changes to Steve within three days after receiving the data. The data will not be used by the Louisiana Cooperative Extension Service for variety recommendations until after this review. Copies of the preliminary data tables will be sent via EMAIL where possible.
4. Preliminary data will be released to participating seedsmen after it has been proofed by the cooperators, but prior to publication, to provide time for comments and suggestions. This will be accomplished as soon as possible after harvest to permit input from seedsmen before the mimeo series or variety recommendations are published. The preliminary data is not to be used by the seedsmen without prior consent. This data will also be sent electronically, where possible.
5. The coordinator will work with LCES scientists to provide performance data as soon as possible after harvest and will assist the LCES scientists in proofing the data to ensure that the LCES publications to farmers contain accurate data, if requested to do so by the LCES crop specialist. It is the responsibility of the LCES to release accurate and timely data to growers.

Format for Data Lines in Data File

When†	Data Category	Column Heading	Example	Scale
all data lines or as	Experiment Code	EXPT	WVT06SJ	
"	Test ¹		WVT	
"	Year		06	
"	Location ²		SJ	
all lines of data	Rep ³	REP	1	
all	Variety or Line ⁴	VAR	Pioneer 26R61	
bu/acre, moisture	Yield Adjusted for	BUPA	45.8	bu/acre
2 reps, TWT	Test weight in	TWT	56.8	lbs per bushel
2 reps, HDAY	Heading Day ^{6b}	HDAY	95	day of year
2 reps, <u>no HDAY</u>	Maturity day ^{7b}	MDAY	123	day of year
2 reps - optional	Plant Height ^{8b}	HT	37	inches
2 reps if	Lodging ^{9b}	LOD	3	0-9
2 reps	Leaf Rust ^{10a}	LR	60	%
2 reps if occurs,	Stem Rust ^{11a}	STRUST	7	7
2 reps if occurs,	Stripe Rust ^{11a}	STRIPE	35	%
2 reps if occurs,	Septoria ^{12a}	SEPT	6	0-9
2 reps if occurs,	Bacteria ^{13a}	BACT	4	0-9
2 reps or specific	Powdery Mildew ^{14a}	PM	3	0-9
2 reps or specific	Barley Yellow	BYDV	4	0-9
2 reps if occurs	Stripe Rust ^{16a}	STRP	6	0-9
2 reps if occurs	Freeze Damage ^{17b}	FRZ	5	0-9
2 reps or specific	Bird Damage ^{18b}	BRD	15	%

† all = every line of data; 2 reps means ratings on only 2 reps are needed; /plot = only given plots if sporadic.

a = normally taken by Harrison/Padgett/Colyer; b = taken by cooperator

Scales/units for data

1. WVT = wheat variety trial; OVT = oat variety trial; WPA = wheat Preliminary yield trial A.
2. AL, BC, BR, CR, JE, SJ, WN
3. As listed in field book (normally 1-4)
4. As listed in field book and included on data diskette sent to cooperators.
5. Yield in bu/acre, adjusted for moisture.
6. Day of year (1-365) on which heads are 50% emerged. 2 reps only.
7. Day of year in which plot is physiologically mature (crease of seed is no longer green). Do not need both 9. & 10. 2 reps only.
8. Plant height at maturity in inches. 2 reps only.
9. Lodging on a scale of 1 - 9, 1 = no lodging; 5 = lodging severe enough to affect combine efficiency; 9 = all plants flat.
10. Leaf rust rating (flower to mid-dough), percent of upper 2-3 leaves affected.
11. Stem Rust (mid to late dough); 1=none; 9=complete plant death.
12. Septoria glume/leaf blotch; 1 - 9 scale, 1=none, 9=severe.
13. Bacterial streak rating (flower - mid dough); 1-9 scale with 1 = none, 9 = 100% tissue affected.
14. Powdery mildew rating, 1 - 9 scale, with 1= none, 9= severe.
15. Barley yellow dwarf rating, 1 - 9 scale, with 1= none, 9 = severe.
16. Stripe rust rating, 1 - 9 scale.

17. Spring freeze damage, 1 - 9 scale. Should be rated about 14 days after freeze. may cause severe lodging at maturity. 1 = no leaf burn; 3 = minor leaf tip burn; 5 = >25% leaf area burned, but minor stem damage; 7 = most tillers with freeze girdle or death; 9 = all primary tillers killed.
18. Bird damage at harvest, rated as estimated percent of crop lost.