



DATE: January 19, 2022
TO: Variety Release Committee
FROM: Mike Giroux, Chair
RE: 2022 Variety Release Minutes and Committees
Chair: Mike Giroux, Department Head PSPP
Secretary: Andy Hogg, Research Associate, PSPP

Agenda for 2022 Variety Release Meeting

Following is the agenda for the 2022 Variety Release meeting to be held on **Tuesday, January 19, 2022 at 1:00 pm in 108 Plant BioScience Building.**

1. Approval of the Minutes of the 2021 meeting.
2. New Business Items
3. Discuss and vote on motions
 - Proposal for protected MAES public cultivar release of MT16F02902 ‘Cowgirl’ spring forage barley from Jamie Sherman, Traci Hoogland and Greg Lutgen. Submitted Jan. 4th, 2022.
 - Proposal for protected MAES public cultivar release of MTD18348 durum wheat from Mike Giroux and Andy Hogg. Submitted Jan. 4th, 2022.
 - Proposal for protected MAES public cultivar release of MTD18313 durum wheat from Mike Giroux and Andy Hogg. Submitted Jan. 4th, 2022.
 - Proposal for protected MAES public cultivar release of MTS18149 winter wheat from Phil Bruckner, Jim Berg and Jake Tracy. Submitted Jan. 4th, 2022.

Crop Science

Entomology

Horticulture

Plant Biology

Plant Genetics

Plant Pathology

Mike Giroux
Department Head and
Professor

Department of Plant Sciences
and Plant Pathology
College of Agriculture
119 Plant BioScience Building
PO Box 173150
Montana State University
Bozeman, MT 59717-3150

Telephone: 406-994-7877
Fax: 406-994-7600

Present 11/16

| Wheat Variety Release Committee | | |
|--|---|--|
| <i>Voting Members, 16</i> | <i>Title / Expertise</i> | <i>Appointing Administrator</i> |
| 1. Jim Berg | Professor / Winter Wheat Breeding Assistant Research Professor / Spring Wheat Breeding | PSPP Department Head |
| 2. Deanna Nash | Manager of the Cereal Quality Lab / Cereal Quality | PSPP Department Head |
| 3. Alan Dyer | Professor / Plant Pathology | PSPP Department Head |
| 4. Doug Holen | Manager of the Foundation Seed Program / Varietal Development | MT Foundation Seed Board |
| 5. Heather Unverzagt | Exec. Director of the Montana Seed Growers / Foundation Seed and Seed Quality | MT Seed Growers Association Board |
| 6. Fabian Menalled | Agricultural Specialist / Cropland Weed Research | LRES Department Head |
| 7. Perry Miller | Professor / Cropping Systems | LRES Department Head |
| 8. David Weaver | Professor / Entomology | LRES Department Head |
| 9. Peggy Lamb | Research Scientist NARC / Variety Testing | Research Center Department Head |
| 10. Jed Eberly for Patrick Carr | Associate Professor and Superintendent CARC / Cropping Systems | Research Center Department Head |
| 11. Justin Vetch | Assistant Professor and Superintendent WTARC/ Cropping Systems | Research Center Department Head |
| 12. Jessica Torrión | Assistant Professor and Superintendent NWARC / Crop Physiology | Research Center Department Head |
| 13. Chengci Chen | Professor and Superintendent EARC / Cropping Systems | Research Center Department Head |
| 14. Ken Kephart | Associate Professor and Superintendent SARC / Agronomist | Research Center Department Head |
| 15. TBD | Chair MAES Advisory Council | MAES Advisory Board |
| 16. Mike O'Hara | Montana Wheat and Barley Director, Representing Teton & Chouteau County | Montana Wheat and Barley Committee |
| Ex-officio Daniel Juliano | Associate Director of Technology Licensing / MSU Technology Transfer | V.P. for Research and Economic Development |

Present 11/16

| Barley Variety Release Committee | | |
|---|---|--|
| <i>Voting Members, 16</i> | <i>Title / Expertise</i> | <i>Appointing Administrator</i> |
| 1. Jim Berg | Professor / Winter Wheat Breeding Assistant Research Professor / Spring Wheat Breeding | PSPP Department Head |
| 2. Deanna Nash | Manager of the Cereal Quality Lab / Cereal Quality | PSPP Department Head |
| 3. Alan Dyer | Professor / Plant Pathology | PSPP Department Head |
| 4. Doug Holen | Manager of the Foundation Seed Program / Varietal Development | MT Foundation Seed Board |
| 5. Heather Unverzagt | Exec. Director of the Montana Seed Growers / Foundation Seed and Seed Quality | MT Seed Growers Association Board |
| 6. Fabian Menalled | Agricultural Specialist / Cropland Weed Research | LRES Department Head |
| 7. Perry Miller | Professor / Cropping Systems | LRES Department Head |
| 8. David Weaver | Professor / Entomology | LRES Department Head |
| 9. Peggy Lamb | Research Scientist NARC / Variety Testing | Research Center Department Head |
| 10. Jed Eberly for Patrick Carr | Associate Professor and Superintendent CARC / Cropping Systems | Research Center Department Head |
| 11. Justin Vetch | Assistant Professor and Superintendent WTARC/ Cropping Systems | Research Center Department Head |
| 12. Jessica Torrion | Assistant Professor and Superintendent NWARC / Crop Physiology | Research Center Department Head |
| 13. Chengci Chen | Professor and Superintendent EARC / Cropping Systems | Research Center Department Head |
| 14. Ken Kephart | Associate Professor and Superintendent SARC / Agronomist | Research Center Department Head |
| 15. TBD | Chair MAES Advisory Council | MAES Advisory Board |
| 16. Mike O'Hara | Montana Wheat and Barley Director, Representing Teton & Chouteau County | Montana Wheat and Barley Committee |
| Ex-officio Daniel Juliano | Associate Director of Technology Licensing / MSU Technology Transfer | V.P. for Research and Economic Development |

2022 Variety Release Minutes 1-19-2022

1. Approval of the 2021 Meeting Minutes

- David Weaver motioned to pass 2021 minutes.
- Doug Holen seconded.
- Motion passed unanimously, 10-0.

2. New Business

- Doug Holen motioned that all new MSU released varieties starting in 2022 should have MT as a prefix to increase visibility of MSU varieties. Jason Cook seconded motion.
- Alan Dyer asked if this applies to privately licensed lines. Doug replied the idea is it would be only for public releases. Daniel Juliano concurred.
- Kevin McPhee suggested the MT designation should apply to all plant variety releases.
- Doug Holen agreed and said that was the intention meaning it would apply to pulses and others not just grains.
- Mike Giroux mentioned not having it as a requirement for horticulture plants as it might cause confusion with growing areas.
- Heather Unverzagt and Sam Anderson both thought the MT prefix was a good idea.
- Peggy Lamb suggested the terminology be for all commodity crops, as to exclude horticulture releases.
- Motion was amended by Doug Holen to have it read that all commodity crops released by MSU starting in 2022 get the MT prefix.
- Jason Cook seconded.
- Motion was passed unanimously, 10-0.
- Doug Holen made a second motion that all approved MSU variety releases starting in 2022 go through the AOSCA (Association of Official Seed Certifying Agencies) seed certification review process. Heather Unverzagt seconded the motion and gave reasons why this would be an improvement. Going through the AOSCA process is quicker than the PVP process and information goes into a national database that is easy to use. The database is consistent across states and can be used to find information on a crops description (appearance, off-types) so that seed growers know what to expect when they grow it and it also helps keep track of the seeds production history.
- Jamie Sherman wanted to know if we would be required to do a PVP and AOSCA certification?
- Doug Holen and Mike Giroux responded that both would be required.
- Mike Giroux emphasized to people that these two motions are the suggestions of the variety release committee but ultimately will require approval by MSU.
- **Motion was passed unanimously, 10-0.**
- No other new business was declared.
- Proceed to presentation from Jamie Sherman.

3. Barley Committee

- Jamie Sherman presented data on MT16F02902 ‘Cowgirl’ spring forage barley. Cowgirl has the pedigree Lavina/CDC-Cowboy and is a 2-row, hooded, hulled barley. Lavina is a popular MSU forage variety. Cowgirl was tested between 2017 and 2021 had equal to or higher grain and forage yield compared to top grown Montana forage varieties.
- Cowgirl has a longer grain fill period (early heading late maturing) lending to plumper seeds and is taller lending to higher forage yield. Has similar protein to top grown forage lines but potentially has better quality with lower ADF and NDF.
- Jamie noted that the forage yield differences were lessened with the addition of 2021 data due to the extreme drought conditions across the state.
- Peggy Lamb asked at what locations where the lines tested at as the data presented only had statewide means. Jamie said it was at MSU-MAES Research Centers. Peggy said she would like to see the data separated by location at some point so the variety can be recommended for the appropriate growing region.
- Doug Holen asked if Jamie had any lodging data. Jamie said they didn’t have great lodging data mainly because it wasn’t observed. She did not anticipate this line to have a major lodging problem.
- Jamie mentioned that there was not much diseases testing done. The line was assessed for susceptibility to Ug99 stem rust and was found to be moderately susceptible. This line will be assessed for stripe rust susceptibility this year.
- Mike Giroux asked the group how important stripe rust is as a spring wheat and barley pathogen in Montana.
- Jamie Sherman said it hasn’t been observed much in the last couple years.
- Alan Dyer said stripe rust was an issue about 4 years ago but in general barley doesn’t have a huge stripe rust issue in Montana.
- Alan Dyer asked about its stem rust ratings because stem rust can be an issue in barley and suggested that it be tested with more isolates. Perhaps could be included with the winter wheat stem rust nursery.
- Jason Cook asked if it this line was intended for dual purpose or just for forage. Jamie said just forage.
- Doug Holen said he would like more location specific data too but didn’t think that was reason enough to hold up the release. He noted also that the research stations and foundation seed need to know the locations this line will perform the best in so it can be successful.
- Dave Gettel asked if there were any red flags in the data that it might not do well in certain areas of the state. Jamie said she didn’t recall any data where it performed poorly.
- Mike Giroux said that Jamie should submit an amended release submission containing location specific data that could be reviewed by the committee.
- Jamie Sherman motioned to release MT16F02902 as a public protected variety with the purposed name Cowgirl.
- Alan Dyer seconded the motion.
- **Motion was passed unanimously, 10-0. Note added 1/28, an updated release file**

containing more in-depth data was submitted after the meeting to the barley release committee and posted on the MSU website, the votes remained the same and the motion remained passed.

2. Wheat Committee

- Mike Giroux presented data on MTD18313, a semi-dwarf spring durum wheat. MTD18313 comes from a 4-way cross between diverse lines, Alkabo/Brigade //Alzada/Strongfield. Mike mentioned that this line has the normal cadmium accumulation allele and that he will still release lines if they have high yield and good quality regardless of their cadmium genotype until it is necessary to only release low cadmium lines.
- MTD18313 was selected for its high yield potential, consistent high test weight, short stature, early heading and maturity, and good quality traits. MTD18313 was a top yielding line over 12 location years at dryland locations across the state. At Havre, Conrad, and Huntley in 2020 MTD18313 was the top yielding line. In off-station trials at Loring and Chester in 2021 MTD18313 was one of the highest yielding lines under extreme drought conditions. Even under these conditions a high test weight was observed that was ~2 lb/bu heavier than all other lines tested. The average test weight over 16 location years was 62.1 lb/bu.
- Mike said that this line has good protein like currently grown lines and that it is a challenge breeding for high protein semi-dwarfs as they typically have lower protein compared to full height varieties.
- MTD18313 had high semolina yield and good semolina protein. Its semolina yellow color value was 29.4 and its gluten index was 71.8. Both these are lower than what Alzada has (31.8, 97.9) but are well within the acceptable range and comparable to other top grown lines.
- MTD18313 was susceptible to Fusarium head blight, resistant to stem rust and fungal leaf spot, and very susceptible to stripe rust.
- Alan asked how many semi-dwarf durums were grown in Montana. Mike replied that Alzada was the only one currently grown in our region.
- Linda Dykes did not have any additional comments regarding the quality.
- Mike wondered if MTD18313 susceptibility to stripe rust was big concern.
- Alan Dyer said spring wheats in general are not that affected by stripe rust compared to winter wheat so it shouldn't be a big issue.
- Frankie Crutcher said stripe rust is not an issue in the dryland durum growing areas in the Northeast.
- Mary Burrows concurred stripe rust is typically not a major issue.
- Chengci wondered if it was still short under irrigation. Mike replied that it maintains a very short stature.
- Sam Anderson wondered if pre-harvest sprout was an issue for this variety, or durums in general. Mike mentioned he hadn't tested for this but is doing it this year. Mike did not anticipate it being an issue.
- Dave Gettel wanted to know why a durum grower in the triangle would want to grow it.

Mike said mainly its yield potential compared to Alzada but also that it has a high test weight under poor conditions and has some resistance to sawfly.

- Doug Holen mentioned that he has foundation seed available and is setting up a milling trial for next summer with Pasta Montana where MTD18313 and Alzada will be compared on a large scale.
- Chengci wanted to know how it compared to Lustre. Mike said that Lustre also has a high yield potential and might be better in Northeast Montana but MTD18313 should also perform well.
- Peggy Lamb asked why release two durum varieties. Mike mentioned that both the proposed lines have good yield potential across the state but that MTD18313 might be better adapted to the triangle. If straw residue was a concern for growers MTD18313 would be preferred.
- Mike motioned for release of MTD18313 as public protected variety.
- Peggy Lamb and Alan Dyer seconded the motion.
- **Motion passed unanimously, 10-0.**

- Mike Giroux proposed the release of MTD18348 spring durum wheat and presented supporting data. MTD18348 come from a diverse 4-way cross between Alzada/Strongfield//Brigade/Carpio. MTD18348 is a full height durum with black awns and carries the low cadmium accumulation allele.
- MTD18348 was the top yielding line across 12 dryland location-years 2020-21. It has a height similar to ND-Riveland and Tioga and a heading similar to Carpio but a day later than Joppa and Divide. It has good grain protein similar to top lines.
- Over 2 years, 2020-21, at EARC dryland MTD18348 had a 5 bu/ac yield increase compared to Carpio and ND-Riveland and a 9 bu/ac increase compared to Joppa and Divide.
- At the Dagmar off-station trial in 2021, MTD18348 was the highest yielding line under extreme drought conditions, though not significantly.
- At the Loring off-station trial in 2021, MTD18348 was the highest yielding line and had one of the highest falling numbers. MTD18348 had protein and test weight similar to ND-Riveland.
- At the Chester off-station trial in 2021, MTD18348 was equal to the highest yielding lines. It also had a higher test weight compared to top grown varieties.
- MTD18348 quality data from 16 location years showed it had a test weight (60.5 lb/bu) and grain protein (14.8%) similar to top grown cultivars but a higher falling number (481 sec).
- MTD18348 had the highest percent of large seeds (65%) and a large individual kernel weight (41 mg).
- MTD18348 had a semolina yield equal to the top performing lines and a semolina protein comparable to Alzada, ND-Riveland and Divide. Semolina from MTD18348 had a high yellow color (31.8) and similar to Alzada and Carpio and very strong gluten with a gluten index of 96, which is comparable to Alzada and Carpio.
- Mike mentioned that yellowness and gluten strength are the most important traits for pasta makers.
- MTD18348 had moderate susceptibility to Fusarium head blight and stripe rust but was very resistant to stem rust and fungal leaf spot pathogens.
- Doug Holen said he liked the black awns because it is unique and easy to identify in the field.
- Doug asked if the height of the line caused any lodging concerns. Mike said that lodging had

not been observed in this line and that the height was comparable to other tall durum varieties.

- Mike motioned for release MTD18348 as a public protected variety.
 - Alan seconded the motion.
 - **Motion passed unanimously, 10-0.**
 - Proceed to Presentation from Jim Berg.
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- Jim Berg presented data on MTS18149 hard red winter wheat. MTS18149 has the pedigree Loma*2/AAC Gateway and comes from a double haploid population. AAC Gateway was chosen as a parent because it has good FHB tolerance although that trait is not seen in MTS18149. MTS1849 is semi solid-stemmed and semi-dwarf in height, with a height similar to Bobcat. In 2018 MTS1849 had low sawfly cutting and high stem solidness at the Big Sandy and Bozeman sawfly observation nurseries.
 - MTS18149 was grown in a multi-location winter wheat sawfly trials 2019-2021 across Montana (13 location years). Compared to other solid stemmed varieties MTS1849 has a later flowering date by a couple days than Bobcat, Judee and Warhorse but similar to Loma.
 - In sawfly areas, Conrad and Havre, MTS18149 had a higher yield than Warhorse and Judee and was also the highest yielding line in the Williston area. Over 14 location years under sawfly pressure (>10% cutting) MTS18149 was the second highest yielding line behind Bobcat, with lower cutting than Loma and Judee.
 - MTS18149 has good test weight, good protein, and good winter survival comparable to Warhorse. MTS1849 has mid-level but acceptable falling number that is higher than Loma.
 - Like Loma MTS18149 has low PPO activity and could be good for noodle making. It has good flour yield, mix absorption, and bake absorption. MTS18149 has good/acceptable loaf volume similar to other solid stemmed varieties. Overall has a good quality package.
 - MTS18149 has moderate resistance to stripe rust but was only tested one year. Trials in Kalispel haven't had sufficient stripe rust levels the last couple years to get good data. MTS18149 is moderately susceptible to stem rust in tests done in Minnesota.
 - MTS18149 was also evaluated for aluminum tolerance in low pH soils in Washington and was found to be a 3 out of 4 in terms of survivability with 4 being the best, meaning it has good tolerance.
 - Jim Berg noted that Peggy Lamb had informed him that the Turner off-station site has a low soil pH and interestingly this line did very at that location. This could be related to the tolerance observed in Washington. This line might be a good choice for growers that have low pH soils.
 - Doug Holen asked if there was any physiological leaf spotting like Bobcat? Jim didn't think so. Doug then asked how it is expected to perform relative to Loma. Jim said it should have similar or better yield potential but should have less sawfly cutting.
 - Ken Kephart wanted to know how it performs under high yielding environments. Will it yield as much as hollow stems like Loma does. Jim didn't have any specific data to answer that question.
 - David Weaver mentioned that making yield comparisons under sawfly pressure is the best way to show how it would perform in the real world but it might be worth it to include Yellowstone in these data sets to show how much cutting happens to hollow varieties and the associated yield loss.

- Dave Gettel asked how important the low pH issue with this line. Jim thought it could be important moving forward after more testing is done especially for growers in areas that have low soil pH's.
- Jim motioned for release of MTS18149 as public protected variety.
- David Weaver and Alan Dyer seconded the motion.
- **Motion passed unanimously, 10-0.**
- Mike Giroux motioned to adjourn.
- Alan Dyer Seconded.
- Meeting adjourned

Attendance

In Person:

1. Mike Giroux, MSU-PSPP
2. Andy Hogg, MSU-PSPP
3. Alan Dyer, MSU-PSPP
4. Jason Cook, MSU-PSPP
5. Doug Holen, MSU-Foundation Seed
6. Sam Anderson, MWBC
7. Darin Boss, MSU-COA
8. Peggy Lamb, MSU-NARC
9. Dave Gettel, MSU-COA
10. Jeff Todd, MSU-COA
11. Jim Berg, MSU-PSPP
12. Jamie Sherman, MSU-PSPP
13. Ron Ramsfield, MSU-PSPP
14. Ron Brown, MSU EARC
15. Kevin McPhee, MSU-PSPP
16. Greg Lutgen, MSU-PSPP
17. Traci Hoogland, MSU-PSPP
18. Jason Cook, MSU-PSPP

By Webex:

19. Heather Unverzagt, MSGA
20. Linda Dykes, USDA
21. Alan Dyer, MSU-PSPP
22. Chengci Chen, MSU-EARC
23. Daniel Juliano, MSU-TTO
24. David Weaver, MSU-LRES
25. Deanna Nash, MSU-PSPP
26. Jed Eberly MSU-CARC
27. Ken Kephart, MSU-SARC
28. Mary Burrows, MSU-PSPP/COA
29. Ryan Holt, Nutrien Ag
30. Nancy Blake, MSU-PSPP
31. Dale Clark, Nutrien Ag
32. Lake Seed
33. Lavana ASST PROF MSU
34. Martin Hochholter, Meridian Seeds
35. Nancy Blake, MSU-PSPP
36. Kyla McManara, MSU-NARC
37. Scott Christensen Nutrien
38. Uta McKelvy, MSU-PSPP
39. Trevor Schafer, Nutrien Ag
40. Justin Vetch, MSU-WTARC