

## Project FY24-EC-001: Database and Analysis Tools to Improve Data Management and Crossing Decision Support

### 1. What are the major goals and objectives of the research project?

- Establish comprehensive list of USDA-coordinated cooperative nurseries Done
- Contact coordinators, communicate, and establish nursery data transmission. Identify sources for historical data Done
- Obtain and upload data In Progress
- Develop lists of wheat lines needing DNA marker genotype data Coming
- Begin canvassing wheat breeding programs to determine which of those wheat lines are still in existence as seed Coming
- Prepare proposal for genotyping Coming

### 2. What was accomplished under these goals or objectives? (For each major goal/objective, address these three items below.)

#### What were the major activities?

The number of cooperative nurseries run for small grains in the USA is quite large. We finally have a comprehensive list (I think; new ones still turn up regularly). There are 58 nurseries on the list. A subset that seems most relevant to USWBSI appear in the addendum below.

#### What were the significant results?

More nurseries being tracked and uploaded. More accessions with data available.

#### List key outcomes or other achievements.

Table: Cooperative Nursery additions to T3 in the past 12 months

Crop	Cooperative Nursery	Number of Trials	Trial Years	New Accessions in T3	
				With Genotype	Without Geno
Wheat	Uniform Regional Scab	6	1995 - 2024	35	96
	Southern Regional Performance	23	2023		
	Northern Regional Performance	14	2023		
Barley	Mississippi Valley Barley Nursery	54	2018-2024	50	246
	Spring North American Barley Scab Evaluation Nursery	6	2023		
	Winter NABSEN – In process	16	2021-2022		
	Winter Malting Barley Trial	Reloaded 242	2011-2023		
Oat	Uniform Early Oat Performance	4	2024	72	98
	Uniform Midseason Oat Performance	8	2024		
	Midwest Cooperative Oat Nursery	6	2024 - 2025		

USDA's Grain Production and Protection National Program Leader, Oswald Crasta, has leant his weight to the eYort to bring data from all Cooperative Nurseries to T3. That eYort has added many nurseries to our list (see Addendum: we are not tracking 14 nurseries that we did not track a year ago). We still have large numbers of accessions in Cooperative Nurseries for which we do not have genotypes. We have an approach for solving this problem (see below).

**3. What opportunities for training and professional development has the project provided?**

We continue to work with the Wheat Coordinated Agricultural Project to provide training to graduate students. We presented T3 at the Forum in December 2024.

**4. How have the results been disseminated to communities of interest?**

- Of course, all data is available online:  
wheat.triticeaetoolbox.org  
barley.triticeaetoolbox.org  
oat.triticeaetoolbox.org
- We send out a newsletter twice per year to all registered T3 users
- We have an Advisory Group and present progress to them twice per year

**5. What do you plan to do during the next reporting period to accomplish the goals and objectives?**

1. Through Oswald's involvement there is much more awareness among nursery Coordinators of the importance of sharing data with T3 and of options available for that purpose. That awareness will make a difference. We expect to get more data directly from curators without having to ask.
2. A perennial challenge has been getting nursery Cooperators to provide data to T3 in the proper template. We are now experimenting with ChatGPTs ability to reformat arbitrary breeder spreadsheets into T3 upload templates. It's too soon to tell when this will be a useful tool. AI is getting consistently more powerful, but so far our prompt engineering has not created an "AI curator" that will help enough to make it worthwhile. It seems inevitable that this will work eventually.  
Decreasing upload times (by not requiring that all uploads go through the curator but instead through AI) would help everyone and add a "carrot" to the task of sending the data here.
3. We have been actively collaborating with the Small Grains Genotyping Labs. In the future, we anticipate that the SGGLs will deliver data to breeders via T3. That would mean that the data would already be here and thus the only decision the breeder would have to make would be to decide whether to allow it to be uploaded to T3 or not. No data transfer would be necessary, lowering the barrier.

## FY24 USDA-ARS/USWBSI Performance Progress Report

PI: Jannink, Jean-Luc | Agreement #:

### Addendum

All Cooperative Nurseries being tracked for the USWBSI database work. Nurseries that are new to T3 as of 2025 are highlighted in orange. We have yet to upload data from some of these nurseries but that will occur in the coming year.

Western Regional Hard Winter Wheat Nursery	x		WRHWWN	Kim Campbell/Jani Chen	USDA-ARS-Pullman, WA	kim.garland-campbell@usda.gov	<a href="https://www.ars.usda.gov/pacific-west-area/">https://www.ars.usda.gov/pacific-west-area/</a>		
Western Regional Soft Winter Wheat Nursery	x		WRSWWN	Kim Campbell/Jani Chen	USDA-ARS-Pullman, WA	kim.garland-campbell@usda.gov	<a href="https://www.ars.usda.gov/pacific-west-area/">https://www.ars.usda.gov/pacific-west-area/</a>	Kim Campbell/Jani Chen	
Regional Hard Spring Wheat Nursery	x		WRHSWN	Campbell/Jani Chen	USDA-ARS-Pullman, WA	kim.garland-campbell@usda.gov	<a href="https://www.ars.usda.gov/pacific-west-area/">https://www.ars.usda.gov/pacific-west-area/</a>	Kim Campbell/Jani Chen	
Western Regional Soft Spring Wheat Nursery	x		WRSSWN	Chen	USDA-ARS-Pullman, WA	kim.garland-campbell@usda.gov	<a href="https://www.ars.usda.gov/pacific-west-area/">https://www.ars.usda.gov/pacific-west-area/</a>	Jessica Rupp	Kansas
FHB nursery	x			State University	jnupp@ksu.edu				
Wheat Stem Sawfly Nursery - Winter	x	<a href="https://wheat.triticeaetoolbox.org/folder/1024SCN">https://wheat.triticeaetoolbox.org/folder/1024SCN</a>		Mary Gutlieri	USDA-ARS HWWGRU	mary.gutlieri@usda.gov			
Wheat Stem Sawfly Nursery - Spring	x	<a href="https://wheat.triticeaetoolbox.org/folder/1024S">https://wheat.triticeaetoolbox.org/folder/1024S</a>		Amanda Peters Haugrud	USDA-ARS Fargo	amanda.peters_haugrud@usda.gov			
Hard Red Spring Wheat Uniform Regional Nursery	x		HRSWURN	Andrew Read	USDA-ARS Saint Paul, MN	andrew.read@usda.gov			
Southern Uniform Nursery-Soft Winter Wheat	x		SUN	Stephen A. Harrison/Noah	Louisiana State University	<sharrison@agctr.lsu.edu>; <NDeWitt@agcenter.lsu.edu>			
Uniform Bread Wheat-Eastern Hard Winter Wheat	x		UBWN	Tan Tuong	USDA-ARS-Raleigh	tan.tuong@usda.gov			
Southern Regional Performance Nursery	x	<a href="https://wheat.triticeaetoolbox.org/folder/6207SRPN">https://wheat.triticeaetoolbox.org/folder/6207SRPN</a>		Jeff Boehm	HWWGRU	jeffrey.boehm@usda.gov	<a href="https://www.ars.usda.gov/plains-area/lincoln">https://www.ars.usda.gov/plains-area/lincoln</a>		
Northern Regional Performance Nursery	x	<a href="https://wheat.triticeaetoolbox.org/folder/6206NRPN">https://wheat.triticeaetoolbox.org/folder/6206NRPN</a>		Jeff Boehm	HWWGRU	jeffrey.boehm@usda.gov	<a href="https://www.ars.usda.gov/plains-area/lincoln">https://www.ars.usda.gov/plains-area/lincoln</a>		
Germplasm Observation Nursery	x		RCON	Jeff Boehm	HWWGRU	jeffrey.boehm@usda.gov	<a href="https://www.ars.usda.gov/plains-area/lincoln">https://www.ars.usda.gov/plains-area/lincoln</a>		
Uniform Regional Scab Nursery	x	<a href="https://wheat.triticeaetoolbox.org/folder/6249URSN">https://wheat.triticeaetoolbox.org/folder/6249URSN</a>		Andrew Read	USDA-ARS Saint Paul, MN	andrew.read@usda.gov			
Uniform Eastern Soft Red Winter Wheat Nursery	x	<a href="https://wheat.triticeaetoolbox.org/folder/6247UESRWWN">https://wheat.triticeaetoolbox.org/folder/6247UESRWWN</a>		Tan Tuong	USDA-ARS-Raleigh	tan.tuong@usda.gov			
Uniform Southern Soft Red Winter Wheat Nursery	x	<a href="https://wheat.triticeaetoolbox.org/folder/6252USSRWWN">https://wheat.triticeaetoolbox.org/folder/6252USSRWWN</a>		Tan Tuong	USDA-ARS-Raleigh	tan.tuong@usda.gov			
Hard Winter Wheat Fusarium Head Blight Nursery	x	<a href="https://wheat.triticeaetoolbox.org/folder/6221HWWFHBN">https://wheat.triticeaetoolbox.org/folder/6221HWWFHBN</a>							
Northern Uniform Winter Wheat Scab Nursery	x	<a href="https://wheat.triticeaetoolbox.org/folder/6229NUWWSN">https://wheat.triticeaetoolbox.org/folder/6229NUWWSN</a>							
Preliminary Northern Uniform Winter Wheat Scab Nursery	x	<a href="https://wheat.triticeaetoolbox.org/folder/6231PNUWWSN">https://wheat.triticeaetoolbox.org/folder/6231PNUWWSN</a>							
Southern Uniform Winter Wheat Scab Nursery	x	<a href="https://wheat.triticeaetoolbox.org/folder/6227SUWWSN">https://wheat.triticeaetoolbox.org/folder/6227SUWWSN</a>							
Uniform Eastern Soft White Winter Wheat Nursery	x	<a href="https://wheat.triticeaetoolbox.org/folder/6138">https://wheat.triticeaetoolbox.org/folder/6138</a>							
Winter North American Barley Scab Evaluation Nursery	x			Eric Stockinger	Ohio State University	stockinger.4@osu.edu			
Mississippi Valley Barley Nursery	x	<a href="https://barley.triticeaetoolbox.org/folder/2984">https://barley.triticeaetoolbox.org/folder/2984</a>		Shengming Yang	USDA-ARS Fargo	shengming.yang@usda.gov			
Uniform Winter Barley Nursery	x		UMBNI	Tan Tuong	USDA-ARS-Raleigh	tan.tuong@usda.gov			
Western Regional Spring Barley Nursery	x	<a href="https://barley.triticeaetoolbox.org/folder/1756WRSN">https://barley.triticeaetoolbox.org/folder/1756WRSN</a>		Chris Evans	USDA-ARS	chris.evans@usda.gov			
North American Barley Scab Evaluation Nursery	x	<a href="https://barley.triticeaetoolbox.org/folder/1600NABSEN">https://barley.triticeaetoolbox.org/folder/1600NABSEN</a>		Thomas Baldwin	North Dakota State University	thomas.l.baldwin@ndsu.edu			
Winter Malting Barley Trial	x	<a href="https://barley.triticeaetoolbox.org/folder/2728WMBT">https://barley.triticeaetoolbox.org/folder/2728WMBT</a>		Kevin Smith	University of Minnesota	smith376@umn.edu			
Eastern Md	x			Nicholas Santantonio	Virginia Tech	nsanti@vt.edu			
Uniform Early Oat Performance Nursery	x	<a href="https://oat.triticeaetoolbox.org/folder/4383">https://oat.triticeaetoolbox.org/folder/4383</a>	UEOPN	Roger Caspers	USDA-ARS Saint Paul, MN	roger.caspers@usda.gov			
Uniform Midseason Oat Performance Nursery	x	<a href="https://oat.triticeaetoolbox.org/folder/4384">https://oat.triticeaetoolbox.org/folder/4384</a>	UMOPN	Roger Caspers	USDA-ARS Saint Paul, MN	roger.caspers@usda.gov			
Uniform Winter Oat Yield Trial	x	<a href="https://oat.triticeaetoolbox.org/folder/4389">https://oat.triticeaetoolbox.org/folder/4389</a>	UWOYT	Tan Tuong	USDA-ARS-Raleigh	tan.tuong@usda.gov			
Uniform Oat Winter Hardiness Nursery	x	<a href="https://oat.triticeaetoolbox.org/folder/4387">https://oat.triticeaetoolbox.org/folder/4387</a>							