2023 Hard Winter Wheat Regional Performance Nursery Quality Report

Hard Winter Wheat Quality Laboratory

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Hard Winter Wheat Quality Laboratory

About the 2023 Crop ...

Locations from the **NRPN**, and **SRPN** were subdivided into **intraregional production zones**. The intraregional production zones represent broad production regions in which several locations have been composited by similar historical yield trends. Full quality testing is performed on these samples, and the data are listed beginning with the name of the nursery followed by a zone identifier (eg. "NRPN-NCP breadmaking properties," the NCP indicating North Central Plains Zone).

The **NRPN**, and **SRPN** regional nursery locations with number of samples submitted in the parenthesis were subdivided and variety-composited according to the following zones:

Northern Regional Performance Nursery (NRPN)

North Central Plains (NCP)

Brookings, SD
Winner, SD
Dakota Lakes, SD
Crookston, MN

Northern High Plains (NHP)

Moccasin, MT
Casselton, ND
Williston, ND
Minot, ND

Northern Plains (NP)

Wichita, KS
Goehner, NE
St. Paul, MN
Lincoln, NE

Southern Regional Performance Nursery (SRPN)

North Central Plains (NCP)

Goehner, NE
Lincoln, NE
Brookings, SD
Dakota Lake, SD
Winner, SD
Manhattan, KS

Northern High Plains (NHP)

Akron, CO
Ft. Collins, CO
Julesburg, CO

South Central Plains (SCP)

Chillicothe, TX
Tipton, OK
Lahoma, OK
Stillwater, OK
Wichita, KS

Southern High Plains (SHP)

Balko, OK
Bushland, TX (irrigated)

HWWQL Laboratory Analyses

About the HWWQL Quality Data ...

Milling, flour chemical, physical dough, breadmaking, noodlemaking properties and flour protein analysis of 2023 Hard Winter Wheat regional performance nurseries have been evaluated and analyzed in the USDA Hard Winter Wheat Quality Laboratory. The nurseries are: **Northern Regional Performance Nursery (NRPN)**, and **Southern Regional Performance Nursery (SRPN).** Tested samples were composites from multi-location trials. Data are reported in five tables: Wheat physical data, Milling, flour chemical, and noodle color data, Mixograph data, Flour pasting properties, and Breadmaking properties.

The following parameters are currently reported:

Physical and Hardness Data

- Test weight (TW) = lbs/bushel. (AACC Method 55-10)
- SKCS kernel moisture, size, and weight = Single Kernel Characterization System: the average of 300 kernels for kernel moisture (%), size (mm), and weight (mg) and their standard deviations.
- SKCS hardness (AACC Method 55-31) = hardness score: the average of 300 kernels for kernel hardness and its standard deviation.

Chemical Data

NIR Protein Content
NIR calibrations for protein were developed according to standard AACC methods: wheat meal (AACC Method 39-10), wheat flour (AACC Method 39-11) and whole kernel wheat (AACC Method 39-25). Laboratory values for protein content and subsequent equation development and calibration checks were determined by nitrogen combustion method (AACC Method 46-30) in all three sample types.

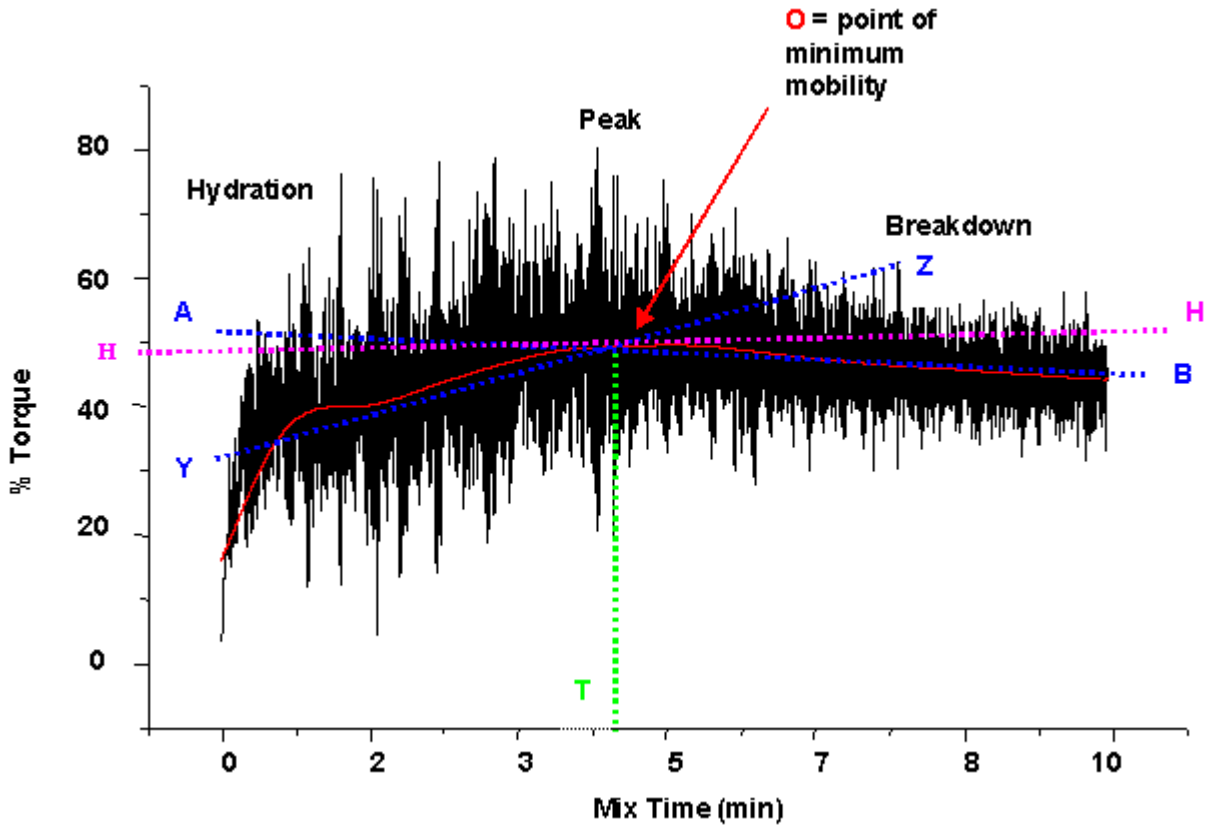
Wheat
- Protein (FP) = grain protein content (%) on 14% mb. (AACC Method 46-30 or 39-10)
- Flour % (FY) = flour yield (extraction) from milling (AACC Methods 26-10A, -50)

Flour
- Ash (FA) = flour ash content (%) on 14% mb. (AACC Method 08-01)
- Protein (FP) = flour protein content (%) on 14% mb. (AACC Method 46-30 or 39-11)
- Color (dry flour) = Minolta method
- PPO = polyphenol oxidase activity defined as a change of 0.001absorbance unit (AU)/min/mL

Mixograph Data

Mixograph (AACC Method 54-40)
- Absorption = optimal water added (% of flour wt. on 14% mb).
- Mix Time = time (as-is), in minutes, to peak dough development.
- Tolerance = resistance of dough to over-mixing (0 = unsatisfactory, 4 = satisfactory, 6 = outstanding).

Mixogram Curve

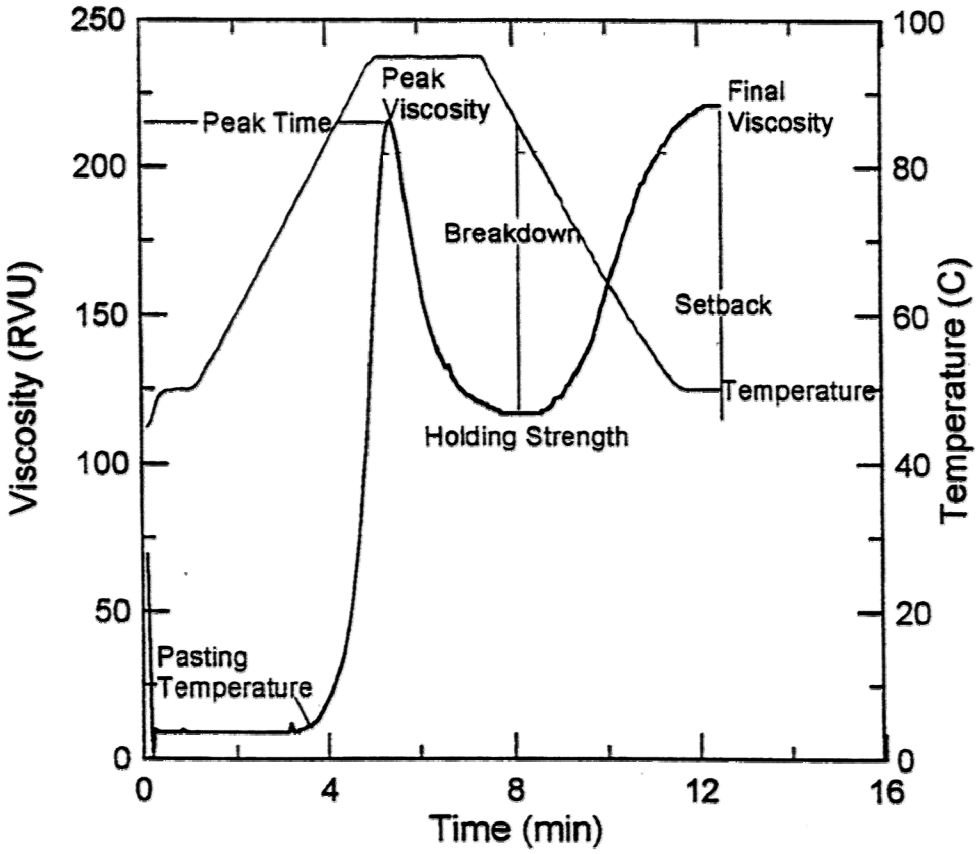


Rapid Visco Analyser (RVA) (AACC Method 61-02)

13 min pasting profile:

- Peak viscosity = maximum viscosity developed during or soon after the heating portion of the test, in RVU.
- Peak time = time at which the peak viscosity occurred, in minutes.
- Pasting temperature = temperature where viscosity first increases by at least 2 RVU over a 20 sec. period, in ºC.
- Peak temperature = temperature at which the peak viscosity occurred, in ºC.
- Holding strength = minimum viscosity after the peak, normally occurring around the commencement of sample cooling, in RVU.
- Breakdown = peak viscosity minus trough viscosity, in RVU.
- Final viscosity = viscosity at the end of the test, in RVU.
- Setback from Peak = final viscosity minus peak viscosity, in RVU.
- Setback from Trough = final viscosity minus trough viscosity, in RVU.

Pasting profile:



Breadmaking Properties *(Pup Loaf based on 100 g flour, AACC Method 10-10B)*
- Flour protein (FP) = flour protein content (14% mb) (AACC Method 46-30 or 39-11).
- Flour absorption = optimal water added (%) for breadmaking.
- Mix time = bake mix time, in min, as-is and corrected.
- Dough weight = dough weight (g) after mixing.
- Proof height = height of fermented dough (cm) after proofing.
- Crumb grain = internal loaf appearance; 0 = unsatisfactory, 4 = satisfactory 6 = outstanding).
- Loaf volume (LV) = cc (by rape seed displacement).

Noodlemaking Properties
- Alkaline noodle color by Minolta colorimeter

ACKNOWLEDGEMENTS

HWWQL personnel who contributed to the collection and analysis of the RPN samples are listed below:

Milling Lab: Rhett Kaufman, PH.D. Austin McDaniel, M.S, and Kenyon Base, AS,.

Bake Lab: Theresa Sutton, B.S.; Susan Xiao, M.D.; Guixiang (Lucy) Lu, M.D.; and Alicsa Mayer, M.S.

Analytical Lab: Kevin Fay, B.S.

Data evaluation & Written report: Yuanhong (Richard) Chen, Ph.D. (HWWQL Associate Director)

HWWQL:

RPN Relational database: Scott Haley, Ph.D (Colorado State University)
Achieving acceptable end-use (milling and baking) quality is a fundamental objective of wheat breeding programs throughout the U.S. hard winter wheat region. Numerous statistical methods have been developed to measure quality. Several years ago, Dr. Scott Haley (Colorado State University), in conjunction with the USDA-ARS Hard Winter Wheat Quality Laboratory (HWWQL), developed a relational database for summarization and interpretation of regional performance nursery wheat end-use quality data generated annually by the HWWQL (Scott D. Haley, Rod D. May, Bradford W. Seabourn, and Okkyung K. Chung. 1999. *Relational database system for summarization and interpretation of Hard Winter Wheat regional quality data*. Crop Sci. 39:309–315). Until that time, few tools were available to assist in the decision-making process when faced with a large number of parameters from comprehensive milling and baking tests. The database system uses a graphical interface that requires input from the user. The database system provides simultaneous assessment of multiple quality traits on a standardized scale, *user-specified prioritization* of end-use quality traits for numerical and qualitative ratings of genotypes, tabulation of major quality deficiencies of genotypes, and summarization of quality ratings for a genotype across multiple nurseries.

Tables for milling and baking scores of each of Intraregional production zones in this report are direct outputs from the Relational Database program.

The data were provided by the Hard Winter Wheat Quality Laboratory (HWWQL), located at the USDA/ARS, Center for Grain and Animal Health Research (CGAHR) (Former name: Grain Marketing and Production Research Center, GMPRC), Manhattan, Kansas. Some data may not appear in all years.

**AACC methods cited are from the American Association of Cereal Chemists Approved Methods. 2000. The Association: St. Paul, MN. Regional Performance Nursery report and data may be viewed and downloaded at: https://www.ars.usda.gov/plains-area/lincoln-ne/wheat-sorghum-and-forage-research/docs/hard-winter-wheat-regional-nursery-program/research/.

Northern
Regional Performance Nursery

2023 NRPN Intraregional Production Zone

Entry	Selection No.	Pedigree	Source
1	Kharkof		Check
2	Overland		Check
3	Wesley		Check
4	Jagalene		Check
5	Jerry		Check
6	19NORD-124	Crux/ND Noreen	NDSU
7	20NORD-138	CM82036/Jerry/5/Lr51/Superb//Norstar/3/Jerry/4/Accipiter	NDSU
8	21NORD-154	WB Matlock/Cadeau-3	NDSU
9	21NORD-155	Accipiter/14RGON-246	NDSU
10	21NORD-157	WB Grainfield/Novus-4	NDSU
11	21NORD-158	14K456-K-1/Jerry-Lr56//SD110085	NDSU
12	LCH20-2091		LCS
13	LCH20-2054		LCS
14	LCH20-2026		LCS
15	LCH20-2031		LCS
16	LCH21-9436		LCS
17	CO18035RA	(AF28/Byrd//AF26/Byrd)//2*Byrd/(AF28/Byrd//AF10 M3/2*Byrd)//2*Byrd/Byrd/	CSU
18	CO18042RA	(AF28/Byrd//AF26/Byrd)//2*Byrd/(AF28/Byrd//AF10 M3/2*Byrd)//2*Byrd/Byrd/	CSU
19	CO18D297R	CO12D906/CO11D1353//Monarch	CSU
20	OK15MASBx7 ARS 8-29	Gallagher*3/ Snowmass	OSU
21	NEB-147-53	OVERLAND-FHB10/LCH13-032	UNL
22	NE19619	TRCH/SRTU//KACHU/7/VEE#8//JUP/BJY/3/F3.71/TRM/4/BCN/5/KAUZ/6/16	UNL
23	NHH19651	NI10703/NH09563//Brawl CL plus	UNL
24	NEB-145-12	LCH13NEDH-14-69/NE13483V	UNL
25	NEB-151-3	PSB13NEDH-14-83/LCH13DH-20-87	UNL
26	NHH19666	OK09915C/NH11565	UNL
27	NE20620	LCH13NEDH-14-31/NE10589	UNL
28	NE20462	WB-Hitch/NE10589	UNL
29	NE19455	NE09521/NE11656	UNL
30	SD18B016-5	Redfield/NE08476	SDSU
31	SD18B025-8	OK07719W/SD07W083-4//SD07W053/3/SD09161	SDSU
32	SD18B055-2	SD09192/Millennium	SDSU
33	SD18B072-2	Alice/SY Wolf	SDSU
34	SD19B019-2	SD09118/Everest	SDSU
35	SD19B033-2	SD07W083-7/NE09499	SDSU
36	SD19B108-3	Overland/Ideal	SDSU
37	SD19B164-3	SD110060-7/SD10026-2	SDSU
38	SD20B088-2	SYWolf/Ruth	SDSU
39	SD20D100-9	SYWolf/Ruth	SDSU
40	AAC Wildfire	L99-1236/AC Bellatrix	AAFC Lethbridge
41	AAC Network	LG237/LG278	AAFC Lethbridge
44	NW13MD108-3	Mace/KS05HW15-2	ARS-Lincoln
45	NW13MD109-1	Mace/KS05HW15-2	ARS-Lincoln
46	N11MD2166W	Mace/SD98W175-1	ARS-Lincoln
47	MTS2068	(Judee sib, MTS0819)//08X350-A6/Warhorse	MT State U
48	MT2019	MT10114/MT10128//MTW1251	MT State U
49	MTCL2010	MT0871/(06X445B1-2, SY Clearstone sib)	MT State U

List of NRPN Sample ID

Entry	Line ID from Breeders	HWWQL ID		
		North Central Plains	Northern High Plains	Northern Plains
1	Kharkof	23-NNC1101	23-NNH1101	23-NNP1101
2	Overland	23-NNC1102	23-NNH1102	23-NNP1102
3	Wesley	23-NNC1103	23-NNH1103	23-NNP1103
4	Jagalene	23-NNC1104	23-NNH1104	23-NNP1104
5	Jerry	23-NNC1105	23-NNH1105	23-NNP1105
6	19NORD-124	23-NNC1106	23-NNH1106	23-NNP1106
7	20NORD-138	23-NNC1107	23-NNH1107	23-NNP1107
8	21NORD-154	23-NNC1108	23-NNH1108	23-NNP1108
9	21NORD-155	23-NNC1109	23-NNH1109	23-NNP1109
10	21NORD-157	23-NNC1110	23-NNH1110	23-NNP1110
11	21NORD-158	23-NNC1111	23-NNH1111	23-NNP1111
12	LCH20-2091	23-NNC1112	23-NNH1112	23-NNP1112
13	LCH20-2054	23-NNC1113	23-NNH1113	23-NNP1113
14	LCH20-2026	23-NNC1114	23-NNH1114	23-NNP1114
15	LCH20-2031	23-NNC1115	23-NNH1115	23-NNP1115
16	LCH21-9436	23-NNC1116	23-NNH1116	23-NNP1116
17	CO18035RA	23-NNC1117	23-NNH1117	23-NNP1117
18	CO18042RA	23-NNC1118	23-NNH1118	23-NNP1118
19	CO18D297R	23-NNC1119	23-NNH1119	23-NNP1119
20	OK15MASBx7 ARS 8-29	23-NNC1120	23-NNH1120	23-NNP1120
21	NEB-147-53	23-NNC1121	23-NNH1121	23-NNP1121
22	NE19619	23-NNC1122	23-NNH1122	23-NNP1122
23	NHH19651	23-NNC1123	23-NNH1123	23-NNP1123
24	NEB-145-12	23-NNC1124	23-NNH1124	23-NNP1124
25	NEB-151-3	23-NNC1125	23-NNH1125	23-NNP1125
26	NHH19666	23-NNC1126	23-NNH1126	23-NNP1126
27	NE20620	23-NNC1127	23-NNH1127	23-NNP1127
28	NE20462	23-NNC1128	23-NNH1128	23-NNP1128
29	NE19455	23-NNC1129	23-NNH1129	23-NNP1129
30	SD18B016-5	23-NNC1130	23-NNH1130	23-NNP1130
31	SD18B025-8	23-NNC1131	23-NNH1131	23-NNP1131
32	SD18B055-2	23-NNC1132	23-NNH1132	23-NNP1132
33	SD18B072-2	23-NNC1133	23-NNH1133	23-NNP1133
34	SD19B019-2	23-NNC1134	23-NNH1134	23-NNP1134
35	SD19B033-2	23-NNC1135	23-NNH1135	23-NNP1135
36	SD19B108-3	23-NNC1136	23-NNH1136	23-NNP1136
37	SD19B164-3	23-NNC1137	23-NNH1137	23-NNP1137
38	SD20B088-2	23-NNC1138	23-NNH1138	23-NNP1138
39	SD20D100-9	23-NNC1139	23-NNH1139	23-NNP1139
40	AAC Wildfire	23-NNC1140	23-NNH1140	23-NNP1140
41	AAC Network	23-NNC1141	23-NNH1141	23-NNP1141
44	NW13MD108-3	23-NNC1144	23-NNH1144	23-NNP1144
45	NW13MD109-1	23-NNC1145	23-NNH1145	23-NNP1145
46	N11MD2166W	23-NNC1146	23-NNH1146	23-NNP1146
47	MTS2068	23-NNC1147	23-NNH1147	23-NNP1147
48	MT2019	23-NNC1148	23-NNH1148	23-NNP1148
49	MTCL2010	23-NNC1149	23-NNH1149	23-NNP1149

Hard Winter Wheat Quality Report

2023 NRPN-NCP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	42.4	Very Poor	71.2	65.6	Very Good	99.0		6,8,10,
Overland	52.4	Average	88.0	61.2	Very Good	92.3		
Wesley	55.7	Very Good	93.6	41.8	Poor	63.0		1,14,15,
Jagalene	54.0	Good	90.7	54.1	Good	81.6		
Jerry	52.0	Average	87.4	43.4	Average	65.4		
19NORD-124	50.8	Poor	85.4	37.3	Very Poor	56.2		12,13,16,17,20,21,
20NORD-138	47.4	Very Poor	79.6	66.3	Very Good	100.0		3,
21NORD-154	51.7	Average	86.9	43.7	Average	65.9		
21NORD-155	48.4	Poor	81.3	47.2	Average	71.2		1,
21NORD-157	49.7	Poor	83.4	30.8	Very Poor	46.4		9,16,18,19,20,
21NORD-158	42.7	Very Poor	71.8	49.0	Good	73.9	1BL	1,9,12,13,16,17,
LCH20-2091	50.7	Poor	85.3	46.3	Average	69.9		
LCH20-2054	51.7	Average	86.9	56.8	Very Good	85.6		
LCH20-2026	47.6	Very Poor	80.1	40.4	Poor	61.0		5,
LCH20-2031	54.2	Good	91.1	41.3	Poor	62.3		14,
LCH21-9436	52.1	Average	87.6	41.7	Poor	63.0		
CO18035RA	44.7	Very Poor	75.2	33.0	Very Poor	49.8		3,5,9,10,11,12,14,15,1
CO18042RA	50.0	Poor	84.0	50.3	Good	75.9		11,14,15,
CO18D297R	47.8	Very Poor	80.4	38.9	Very Poor	58.7		4,14,15,19,
Paradox	47.6	Very Poor	79.9	39.4	Very Poor	59.5		14,15,21,
NEB-147-53	50.8	Poor	85.3	42.4	Average	64.0		5,14,15,18,
NE19619	47.4	Very Poor	79.7	53.7	Good	80.9		9,10,15,
NHH19651	53.3	Good	89.6	59.3	Very Good	89.4		16,
NEB-145-12	53.9	Good	90.5	58.0	Very Good	87.5		
NEB-151-3	55.4	Very Good	93.1	49.2	Good	74.2		
NHH19666	54.1	Good	91.0	50.7	Good	76.5		
NE20620	52.4	Average	88.0	51.2	Good	77.3		12,14,15,17,
NE20462	50.0	Poor	84.1	45.4	Average	68.5		1,11,
NE19455	52.4	Average	88.0	38.6	Very Poor	58.2		
SD18B016-5	53.9	Good	90.6	39.1	Very Poor	59.0		
SD18B025-8	57.8	Very Good	97.2	45.2	Average	68.2		

Quality scores and ratings are calculated directly from the relative trait weightings (printed at the top of the page) and are applicable only to the nursery selected.

Hard Winter Wheat Quality Report

2023 NRPN-NCP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
SD18B055-2	53.1	Good	89.2	57.0	Very Good	86.0		
SD18B072-2	52.1	Average	87.5	56.9	Very Good	85.8		1,5,
SD19B019-2	56.7	Very Good	95.3	40.9	Poor	61.6		
SD19B033-2	59.5	Very Good	100.0	41.0	Poor	61.9		
SD19B108-3	54.2	Good	91.1	29.4	Very Poor	44.4		11,12,13,14,15,17,
SD19B164-3	48.2	Very Poor	81.0	45.3	Average	68.4		9,10,
SD20B088-2	55.0	Very Good	92.4	45.3	Average	68.3		
SD20D100-9	49.2	Poor	82.7	57.4	Very Good	86.6		
AAC Wildfire	56.2	Very Good	94.4	47.8	Good	72.1		
AAC Network	51.5	Poor	86.6	32.6	Very Poor	49.2		4,14,15,
NW13MD108-3	51.6	Average	86.8	42.4	Poor	64.0		
NW13MD109-1	58.8	Very Good	98.8	39.7	Poor	59.8		14,15,
N11MD2166W	45.6	Very Poor	76.7	52.1	Good	78.6		2,4,8,
MTS2068	54.6	Good	91.7	45.6	Average	68.8		14,15,
MT2019	52.0	Average	87.4	37.8	Very Poor	56.9		15,
MTCL2010	56.8	Very Good	95.4	42.1	Poor	63.6		14,15,

2023 NRPN Intraregional Production Zone

North Central Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	61.6	9.8	0.8	30.5	7.3	2.63	0.32	35	16	SOFT	46-29-18-07-04
Overland	61.0	9.7	1.0	31.9	9.1	2.67	0.37	55	15	HARD	07-18-38-37-01
Wesley	59.7	9.1	0.9	34.0	11.1	2.77	0.40	50	15	MIXED	14-23-36-27-03
Jagalene	61.9	9.3	0.8	34.3	11.3	2.82	0.42	61	15	HARD	04-14-30-52-01
Jerry	61.2	9.6	0.8	32.9	11.3	2.70	0.39	59	16	HARD	05-16-27-52-01
19NORD-124	60.4	8.6	1.0	29.4	8.5	2.62	0.33	54	15	HARD	07-23-34-36-01
20NORD-138	61.5	9.1	1.0	33.6	13.1	2.65	0.37	51	15	HARD	10-25-34-31-01
21NORD-154	60.7	9.8	0.8	32.1	10.4	2.66	0.37	56	15	HARD	07-20-34-39-01
21NORD-155	59.4	9.8	0.8	29.9	9.4	2.69	0.41	53	16	HARD	10-23-34-33-01
21NORD-157	60.5	9.8	0.8	33.7	10.6	2.64	0.41	64	16	HARD	04-09-26-61-01
21NORD-158	59.5	9.4	1.0	32.0	11.5	2.58	0.36	46	18	MIXED	22-25-30-23-03
LCH20-2091	60.5	8.0	1.1	33.5	11.6	2.70	0.38	53	17	MIXED	11-21-33-35-03
LCH20-2054	61.6	7.4	1.0	30.7	9.9	2.68	0.40	47	17	MIXED	19-29-28-24-03
LCH20-2026	60.8	7.6	0.9	29.3	11.1	2.57	0.43	46	16	MIXED	19-32-29-20-03
LCH20-2031	62.6	7.8	1.0	31.9	11.8	2.67	0.40	45	15	MIXED	22-31-29-18-03
LCH21-9436	60.7	7.3	1.0	34.5	10.1	2.78	0.40	44	17	MIXED	24-33-27-16-03
CO18035RA	60.3	9.1	0.8	31.0	12.2	2.57	0.44	49	17	MIXED	16-28-27-29-03
CO18042RA	61.2	8.6	1.0	31.7	10.6	2.64	0.40	50	16	MIXED	15-24-34-27-03
CO18D297R	61.0	7.8	1.0	29.7	11.9	2.48	0.41	49	17	MIXED	17-25-29-29-03
OK15MASBx7 ARS 8-29	61.3	7.8	1.1	34.1	11.3	2.73	0.36	62	18	HARD	06-12-26-56-01
NEB-147-53	60.7	7.5	0.9	31.1	10.8	2.62	0.43	47	15	MIXED	19-29-29-23-03
NE19619	59.9	8.6	1.0	34.0	10.2	2.73	0.40	51	15	MIXED	11-23-33-33-03
NHH19651	60.9	7.8	1.0	33.1	9.2	2.78	0.38	45	14	MIXED	20-32-33-15-03
NEB-145-12	60.7	7.6	1.1	32.9	8.8	2.72	0.37	43	15	MIXED	26-35-24-15-03
NEB-151-3	62.4	7.4	1.0	33.3	9.9	2.76	0.37	57	16	HARD	04-22-32-42-01
NHH19666	60.6	8.0	1.3	30.7	8.9	2.69	0.39	52	16	MIXED	14-22-30-34-03
NE20620	61.8	8.3	1.1	33.4	10.9	2.72	0.38	55	16	HARD	09-17-34-40-01
NE20462	59.8	8.9	1.0	29.1	9.3	2.69	0.39	58	15	HARD	06-16-32-46-01
NE19455	61.1	8.4	1.2	29.6	9.7	2.60	0.37	58	15	HARD	05-15-31-49-01
SD18B016-5	62.2	8.4	1.2	35.7	10.7	2.86	0.39	44	16	MIXED	25-31-26-18-03
SD18B025-8	62.0	8.8	1.2	34.8	8.3	2.80	0.37	59	13	HARD	03-14-38-45-01
SD18B055-2	61.6	10.4	0.5	32.8	9.9	2.70	0.42	55	15	HARD	06-21-35-38-01
SD18B072-2	59.7	10.1	0.6	31.2	10.5	2.66	0.42	49	18	MIXED	17-27-28-28-03
SD19B019-2	62.5	10.2	0.6	30.6	8.7	2.60	0.36	58	16	HARD	06-17-27-50-01
SD19B033-2	62.0	10.2	0.6	31.7	9.0	2.66	0.39	65	14	HARD	02-08-25-65-01
SD19B108-3	61.1	10.5	0.5	33.8	11.0	2.73	0.36	50	15	MIXED	13-26-31-30-03
SD19B164-3	60.0	10.5	0.5	32.6	9.5	2.72	0.36	60	16	HARD	05-13-28-54-01
SD20B088-2	62.2	10.5	0.6	33.7	8.7	2.74	0.30	65	15	HARD	03-07-25-65-01
SD20D100-9	61.3	10.3	0.6	30.9	10.4	2.68	0.39	63	16	HARD	04-12-23-61-01
AAC Wildfire	61.5	10.3	0.5	32.1	10.1	2.72	0.41	63	16	HARD	04-11-24-61-01
AAC Network	60.7	10.1	0.6	29.2	10.0	2.51	0.37	76	17	HARD	03-02-11-84-01
NW13MD108-3	60.4	10.4	0.5	32.7	10.2	2.74	0.37	58	16	HARD	07-13-35-45-01
NW13MD109-1	61.1	10.3	0.4	38.2	10.6	2.89	0.36	55	14	HARD	06-20-39-35-01
N11MD2166W	61.5	9.9	0.7	27.1	9.1	2.44	0.35	54	17	MIXED	11-19-30-40-03

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
MTS2068	61.7	10.3	0.6	31.3	10.1	2.59	0.39	67	16	HARD	01-09-19-71-01
MT2019	60.5	10.4	0.6	31.3	9.4	2.67	0.39	68	16	HARD	02-06-24-68-01
MTCL2010	61.6	10.3	0.5	29.9	7.9	2.68	0.33	70	14	HARD	01-05-16-78-01

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	Wheat		Flour			Noodle Color					
	Protein	Milling Yield	Ash	Protein	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
LINE	(%)	(%)	(%)	(%)							
Kharkof	15.3	61.9	0.41	13.9	0.521	78.82	-1.16	22.52	-8.38	1.10	0.18
Overland	13.8	67.4	0.46	12.8	0.543	78.15	-0.84	21.60	-8.68	1.06	1.51
Wesley	14.3	70.1	0.40	13.6	0.630	79.43	-1.05	21.24	-8.63	0.88	0.63
Jagalene	13.8	68.0	0.44	12.9	0.489	79.17	-0.97	22.06	-9.70	1.10	1.79
Jerry	13.6	67.7	0.41	12.8	0.511	78.78	-1.05	23.08	-7.99	1.02	0.92
19NORD-124	13.8	66.3	0.41	13.1	0.684	77.65	-0.99	22.63	-7.75	1.13	0.26
20NORD-138	13.4	65.6	0.39	12.8	0.604	78.80	-1.04	23.41	-8.51	0.85	-0.04
21NORD-154	13.8	67.3	0.43	13.0	0.529	77.30	-1.17	23.38	-7.89	1.13	0.85
21NORD-155	13.7	67.5	0.46	13.0	0.584	76.95	-1.01	21.46	-9.00	1.18	0.22
21NORD-157	13.1	67.5	0.50	12.1	0.632	78.47	-1.37	22.48	-8.91	1.38	1.54
21NORD-158	13.2	67.2	0.51	12.4	0.520	79.21	-1.07	22.45	-9.50	1.11	3.22
LCH20-2091	14.1	68.5	0.44	13.0	0.699	78.61	-0.74	21.12	-10.70	1.29	1.50
LCH20-2054	13.5	68.7	0.41	12.9	0.528	79.83	-1.31	22.37	-7.95	1.01	1.54
LCH20-2026	12.7	68.1	0.42	11.7	0.647	80.75	-1.06	19.23	-8.10	0.89	3.31
LCH20-2031	13.1	69.8	0.41	12.0	0.569	79.74	-0.76	20.23	-8.42	1.03	3.04
LCH21-9436	13.0	67.9	0.38	12.0	0.604	79.12	-0.85	20.30	-8.68	1.00	3.20
CO18035RA	12.6	68.8	0.52	11.5	0.584	79.73	-1.30	22.87	-9.07	1.00	2.64
CO18042RA	12.3	68.8	0.49	11.4	0.542	80.06	-1.27	21.98	-8.76	1.05	1.79
CO18D297R	12.9	68.4	0.40	11.7	0.606	79.19	-1.11	21.70	-8.40	1.05	2.38
OK15MASBx7 ARS 8-29	12.6	65.8	0.46	11.8	0.241	79.87	-1.36	22.67	-7.62	1.00	4.26
NEB-147-53	13.2	69.7	0.46	12.3	0.532	79.17	-0.98	21.99	-8.82	1.17	1.85
NE19619	13.6	66.7	0.51	12.4	0.431	80.11	-1.10	21.30	-8.22	0.94	1.88
NHH19651	13.4	67.8	0.43	12.6	0.539	79.84	-1.63	22.90	-8.34	1.09	-0.11
NEB-145-12	12.9	67.8	0.37	11.9	0.587	79.93	-1.44	22.29	-9.27	1.22	2.06
NEB-151-3	14.1	67.3	0.39	13.1	0.502	78.48	-0.89	20.94	-8.57	1.05	1.77
NHH19666	13.8	68.5	0.39	12.8	0.587	79.17	-1.14	22.16	-8.19	1.05	1.51
NE20620	13.5	67.1	0.41	12.6	0.570	79.06	-0.74	20.83	-9.95	1.08	2.42
NE20462	12.3	67.8	0.48	11.5	0.607	78.63	-1.33	20.67	-8.12	0.99	1.90
NE19455	13.6	67.2	0.40	12.5	0.464	79.58	-0.97	20.80	-9.29	1.08	3.65
SD18B016-5	13.0	68.5	0.42	12.0	0.516	81.48	-1.33	19.78	-9.63	1.03	3.36
SD18B025-8	13.1	66.5	0.40	12.3	0.634	80.40	-1.04	19.67	-11.28	0.95	2.73
SD18B055-2	13.2	68.0	0.44	12.3	0.637	80.14	-1.32	21.67	-9.00	0.90	2.21
SD18B072-2	12.6	70.0	0.39	11.8	0.616	80.97	-1.22	20.30	-8.92	1.06	2.54
SD19B019-2	13.5	68.5	0.38	12.4	0.673	79.11	-1.39	23.22	-9.18	1.09	1.97
SD19B033-2	13.4	69.7	0.43	12.4	0.643	78.31	-0.58	20.84	-10.22	1.37	1.50
SD19B108-3	12.4	70.0	0.48	11.2	0.522	79.65	-1.21	19.98	-10.33	1.21	3.13
SD19B164-3	13.5	66.5	0.52	12.3	0.613	79.71	-1.32	21.39	-9.17	1.18	2.05
SD20B088-2	13.3	66.1	0.45	12.5	0.539	79.70	-1.22	22.52	-8.42	0.84	1.25
SD20D100-9	13.4	66.6	0.47	12.4	0.574	79.53	-1.00	20.72	-10.51	1.19	2.17
AAC Wildfire	12.8	68.6	0.40	12.4	0.480	80.67	-1.43	24.66	-8.15	0.82	2.92
AAC Network	13.1	67.3	0.43	12.4	0.508	78.75	-1.21	24.71	-9.38	1.03	2.68

	Wheat		Flour			Noodle Color					
	Protein	Milling Yield	Ash	Protein	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
LINE	(%)	(%)	(%)	(%)							
NW13MD108-3	12.7	66.8	0.40	11.9	0.560	81.17	-1.37	21.06	-7.83	1.23	2.26
NW13MD109-1	14.2	68.6	0.41	13.1	0.510	79.99	-1.05	20.73	-8.12	0.99	2.64
N11MD2166W	13.8	64.3	0.36	12.7	0.605	81.09	-1.16	19.82	-8.03	0.92	2.28
MTS2068	13.7	68.4	0.43	12.5	0.269	80.86	-1.31	22.02	-9.92	0.98	4.11
MT2019	13.0	67.6	0.47	12.2	0.529	80.01	-1.21	23.25	-8.51	1.24	2.84
MTCL2010	13.3	67.8	0.47	12.8	0.297	79.95	-0.94	22.37	-7.77	1.00	4.53

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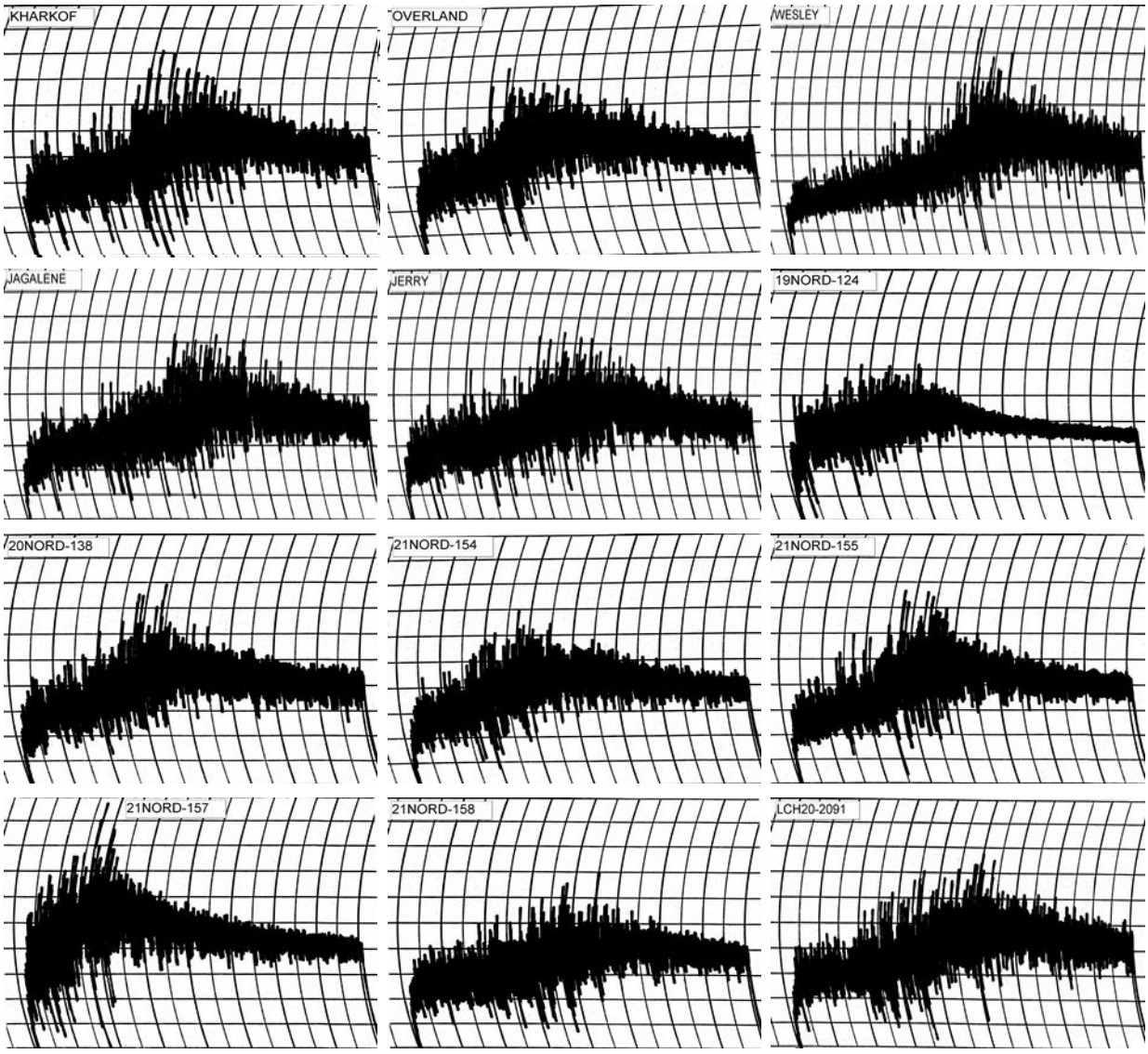
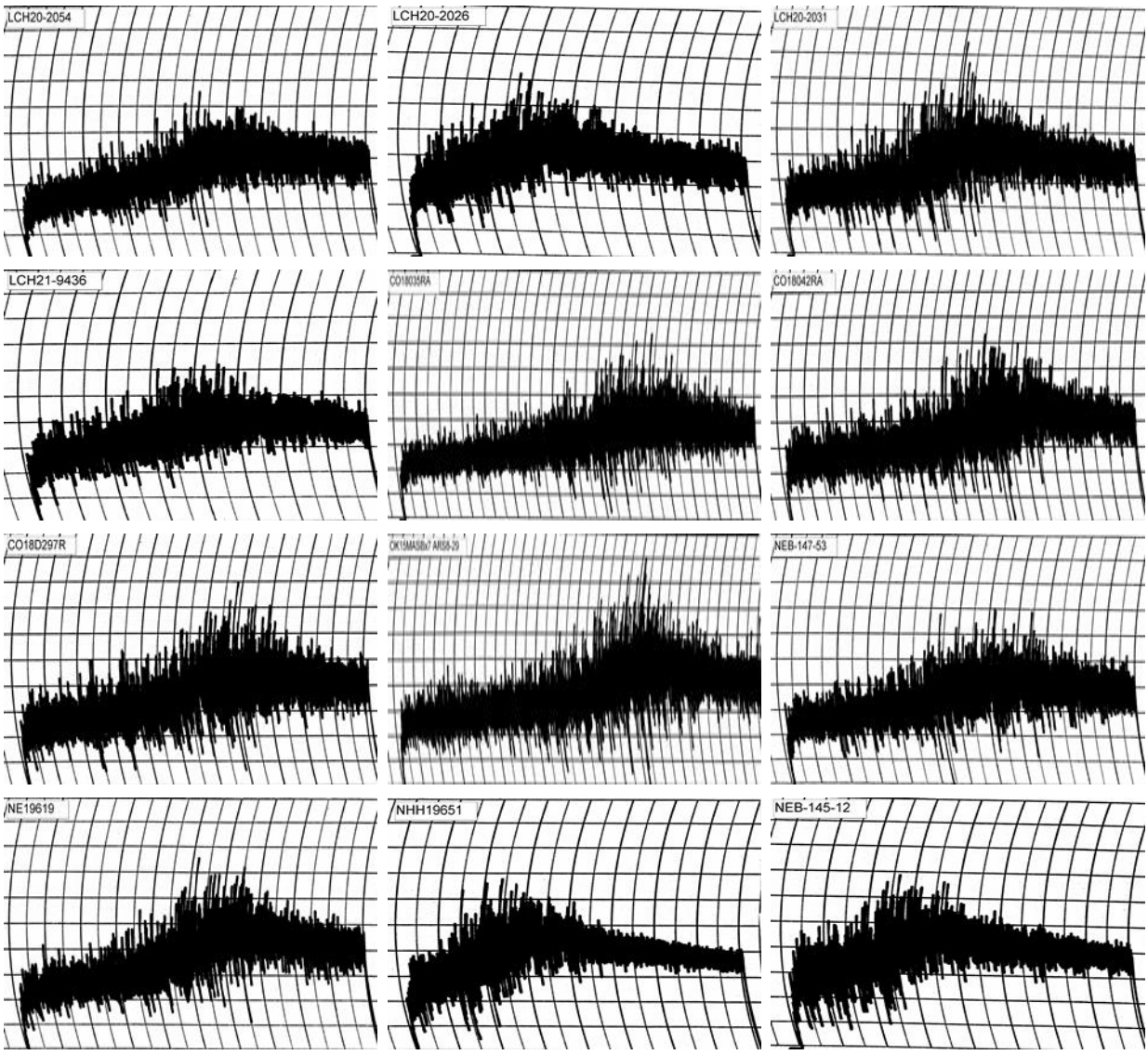
		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	13.9	67.2	4.25	4.25	4
Overland	12.8	65.3	3.25	3.25	3
Wesley	13.6	66.6	6.38	6.38	5
Jagalene	12.9	65.0	5.50	5.50	5
Jerry	12.8	64.8	5.25	5.25	5
19NORD-124	13.1	60.3	2.63	2.63	1
20NORD-138	12.8	64.2	3.38	3.38	3
21NORD-154	13.0	64.6	3.00	3.00	3
21NORD-155	13.0	64.6	3.50	3.50	3
21NORD-157	12.1	64.2	2.13	2.13	1
21NORD-158	12.4	62.1	3.88	3.88	2
LCH20-2091	13.0	65.5	5.00	5.00	4
LCH20-2054	12.9	64.5	5.50	5.50	4
LCH20-2026	11.7	62.9	3.00	2.89	3
LCH20-2031	12.0	63.5	6.13	6.13	5
LCH21-9436	12.0	62.9	4.25	4.24	4
CO18035RA	11.5	62.5	1.00	0.29	6
CO18042RA	11.4	63.3	8.00	7.38	6
CO18D297R	11.7	64.0	6.75	6.52	5
OK15MASBx7 ARS 8-29	11.8	66.1	2.25	2.00	6
NEB-147-53	12.3	65.0	7.25	7.25	5
NE19619	12.4	64.1	6.50	6.50	5
NHH19651	12.6	64.5	2.88	2.88	2
NEB-145-12	11.9	64.8	3.00	2.96	3
NEB-151-3	13.1	65.4	4.00	4.00	4
NHH19666	12.8	65.7	5.25	5.25	5
NE20620	12.6	65.4	6.75	6.75	5
NE20462	11.5	63.7	5.13	4.85	4
NE19455	12.5	64.5	5.25	5.25	4
SD18B016-5	12.0	63.5	5.00	5.00	4
SD18B025-8	12.3	63.9	5.00	5.00	4
SD18B055-2	12.3	63.4	4.88	4.88	4
SD18B072-2	11.8	63.1	5.50	5.39	4
SD19B019-2	12.4	62.7	5.25	5.25	4
SD19B033-2	12.4	63.6	6.00	6.00	5
SD19B108-3	11.2	62.1	7.00	6.33	5
SD19B164-3	12.3	64.0	4.25	4.25	4
SD20B088-2	12.5	64.7	4.63	4.63	4
SD20D100-9	12.4	64.5	5.50	5.50	5
AAC Wildfire	12.4	64.5	5.00	5.00	4

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
AAC Network	12.4	64.5	7.38	7.38	5
NW13MD108-3	11.9	64.2	3.75	3.69	3
NW13MD109-1	13.1	65.8	7.75	7.75	6
N11MD2166W	12.7	65.1	6.13	6.13	4
MTS2068	12.5	65.8	6.63	6.63	5
MT2019	12.2	64.3	6.88	6.88	5
MTCL2010	12.8	65.3	8.00	8.00	6

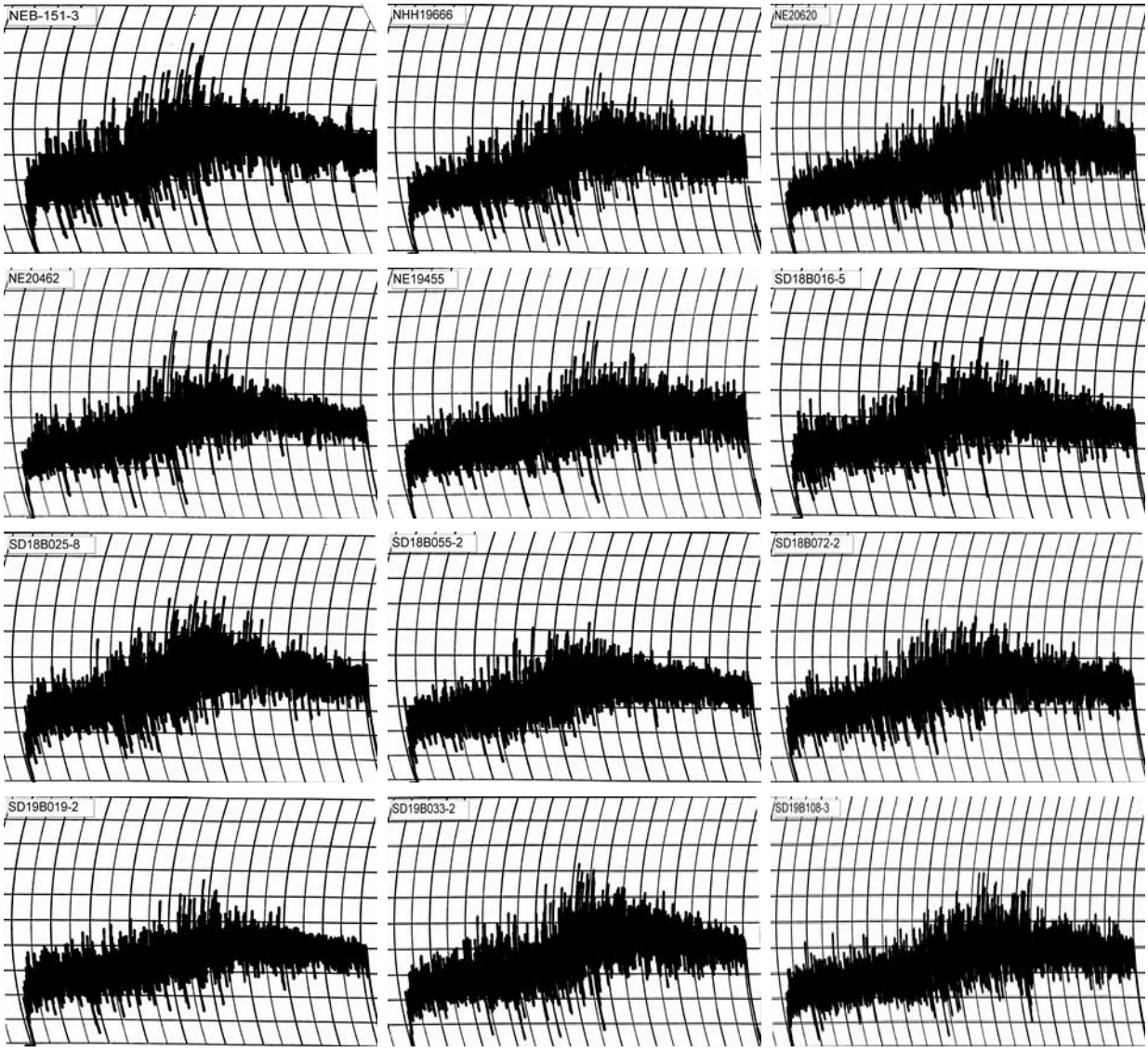
2023 NRPN Intraregional Production Zone
North Central Plains



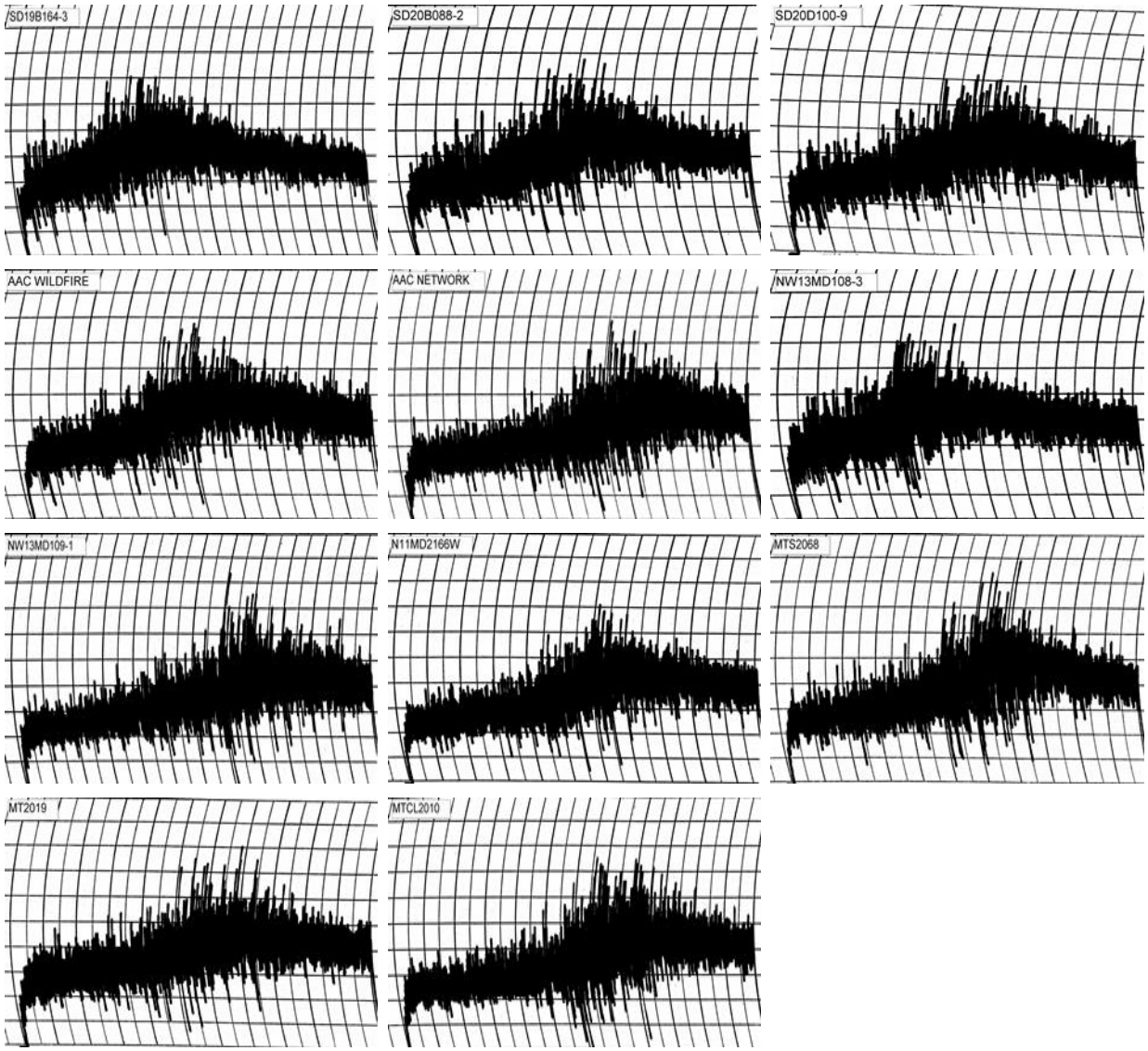
2023 NRPN Intraregional Production Zone
North Central Plains



2023 NRPN Intraregional Production Zone
North Central Plains



2023 NRPN Intraregional Production Zone
North Central Plains



2023 NRPN Intraregional Production Zone

North Central Plains

	RVA							
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)	Pasting Temp (Deg. C)
Kharkof	132.25	242.08	158.08	84.00	269.08	111.00	6.27	85.70
Overland	106.00	232.33	147.75	84.58	261.17	113.42	6.13	67.00
Wesley	94.08	223.67	139.75	83.92	260.67	120.92	6.07	66.90
Jagalene	106.67	229.00	144.08	84.92	259.00	114.92	6.13	66.80
Jerry	100.67	211.83	126.42	85.42	234.25	107.83	6.00	66.80
19NORD-124	107.50	239.00	151.67	87.33	258.58	106.92	6.27	67.80
20NORD-138	120.08	206.67	136.50	70.17	249.50	113.00	6.13	67.75
21NORD-154	132.83	227.25	150.42	76.83	258.33	107.92	6.27	67.05
21NORD-155	115.58	233.92	149.42	84.50	263.67	114.25	6.20	67.75
21NORD-157	109.17	213.92	142.33	71.58	263.50	121.17	6.07	66.05
21NORD-158	98.58	233.17	138.00	95.17	249.33	111.33	6.07	66.20
LCH20-2091	112.08	254.75	160.33	94.42	271.83	111.50	6.27	67.80
LCH20-2054	123.08	242.25	156.58	85.67	274.50	117.92	6.20	67.75
LCH20-2026	106.67	251.25	160.75	90.50	277.83	117.08	6.20	67.80
LCH20-2031	99.17	255.92	154.50	101.42	279.42	124.92	6.00	66.90
LCH21-9436	102.42	263.67	162.83	100.83	279.58	116.75	6.20	67.75
CO18035RA	96.33	245.67	142.00	103.67	267.58	125.58	5.87	66.85
CO18042RA	110.42	253.75	149.75	104.00	274.25	124.50	6.00	66.90
CO18D297R	141.25	255.33	173.25	82.08	302.75	129.50	6.20	84.10
OK15MASBx7 ARS 8-29	111.75	246.17	159.58	86.58	283.17	123.58	6.20	66.10
NEB-147-53	98.92	268.00	150.75	117.25	250.92	100.17	6.13	66.15
NE19619	121.08	237.58	139.67	97.92	250.75	111.08	6.13	67.80
NHH19651	87.58	245.25	154.83	90.42	263.83	109.00	6.27	68.55
NEB-145-12	104.75	251.00	170.50	80.50	297.75	127.25	6.27	66.80
NEB-151-3	111.25	178.08	101.25	76.83	196.75	95.50	5.87	66.00
NHH19666	103.58	223.58	139.83	83.75	259.75	119.92	6.07	67.85
NE20620	101.42	214.33	135.83	78.50	253.33	117.50	6.07	67.75
NE20462	100.50	247.08	154.17	92.92	268.17	114.00	6.20	68.55
NE19455	126.33	239.58	155.83	83.75	279.33	123.50	6.13	66.95
SD18B016-5	130.00	234.75	163.50	71.25	286.58	123.08	6.27	67.80
SD18B025-8	121.75	244.67	161.92	82.75	274.08	112.17	6.27	66.85
SD18B055-2	107.67	241.92	153.50	88.42	272.17	118.67	6.13	66.90
SD18B072-2	92.75	240.83	159.25	81.58	283.25	124.00	6.20	67.80
SD19B019-2	105.42	219.58	146.00	73.58	264.50	118.50	6.13	84.75
SD19B033-2	101.08	237.42	139.00	98.42	245.25	106.25	6.07	66.90
SD19B108-3	107.42	235.42	143.67	91.75	261.42	117.75	6.07	66.85
SD19B164-3	100.75	243.92	148.42	95.50	265.25	116.83	6.13	67.00
SD20B088-2	108.92	229.67	148.33	81.33	267.25	118.92	6.20	66.90
SD20D100-9	98.75	221.75	136.83	84.92	252.67	115.83	6.07	66.95
AAC Wildfire	119.83	212.25	134.92	77.33	249.00	114.08	6.07	67.75
AAC Network	120.08	207.33	132.83	74.50	250.83	118.00	6.00	66.95
NW13MD108-3	100.75	225.33	138.08	87.25	261.42	123.33	6.00	66.95
NW13MD109-1	88.42	213.08	139.83	73.25	268.00	128.17	6.00	66.85
N11MD2166W	118.00	244.25	148.58	95.67	261.08	112.50	6.20	67.85

	RVA							
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)	Pasting Temp (Deg. C)
MTS2068	96.50	261.42	166.42	95.00	295.33	128.92	6.13	67.70
MT2019	101.67	268.83	163.58	105.25	287.58	124.00	6.13	66.95
MTCL2010	123.67	240.75	145.42	95.33	262.33	116.92	6.00	66.95

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North Central Plains

	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
Kharkof	13.9	67.0	6.75	6.75	176.0	8.0	4.0	990	6.4	63
Overland	12.8	65.1	4.50	4.50	174.5	7.7	4.0	955	6.3	67
Wesley	13.6	66.6	10.38	10.38	174.9	7.4	3.5	1005	6.6	66
Jagalene	12.9	65.0	7.00	7.00	173.9	7.5	3.0	965	6.4	67
Jerry	12.8	65.1	6.63	6.63	174.0	7.3	3.5	930	6.2	64
19NORD-124	13.1	60.2	3.88	3.88	169.2	7.5	2.0	895	6.0	59
20NORD-138	12.8	64.2	4.75	4.75	173.7	7.4	5.0	970	6.5	69
21NORD-154	13.0	64.6	4.00	4.00	174.4	7.9	4.5	950	6.3	65
21NORD-155	13.0	64.6	5.00	5.00	173.8	7.9	4.5	950	6.4	65
21NORD-157	12.1	64.2	3.00	3.00	174.8	7.0	2.5	845	5.5	60
21NORD-158	12.4	62.2	5.75	5.75	170.5	7.6	3.0	895	6.0	63
LCH20-2091	13.0	65.2	6.75	6.75	174.4	7.4	4.5	995	6.6	70
LCH20-2054	12.9	64.2	6.75	6.75	173.0	7.4	4.0	950	6.3	65
LCH20-2026	11.7	63.2	5.50	5.30	172.7	7.2	3.5	905	6.1	69
LCH20-2031	12.0	63.2	9.00	9.00	171.3	7.3	3.0	890	6.0	65
LCH21-9436	12.0	63.2	5.88	5.87	172.9	7.2	3.5	900	6.0	67
CO18035RA	11.5	62.1	14.50	13.56	170.2	7.5	3.5	950	6.5	77
CO18042RA	11.4	63.2	12.25	11.29	171.3	7.5	4.0	970	6.6	80
CO18D297R	11.7	64.2	9.13	8.82	173.1	7.1	3.0	850	5.6	63
OK15MASBx7 ARS 8-29	11.8	66.1	17.75	17.39	173.2	7.3	2.0	885	5.8	66
NEB-147-53	12.3	65.1	8.75	8.75	173.5	7.0	3.0	890	5.9	63
NE19619	12.4	64.1	7.75	7.75	173.1	7.5	4.0	960	6.5	70
NHH19651	12.6	64.2	3.75	3.75	173.3	7.8	4.0	1010	6.8	74
NEB-145-12	11.9	64.8	4.50	4.44	174.1	7.6	4.0	920	6.1	70
NEB-151-3	13.1	65.3	5.88	5.88	173.8	7.5	3.5	975	6.5	67
NHH19666	12.8	65.7	7.38	7.38	174.3	7.1	3.0	905	6.1	62
NE20620	12.6	62.2	8.00	8.00	170.7	7.6	4.0	960	6.5	69
NE20462	11.5	64.1	5.88	5.56	172.7	7.9	4.5	965	6.5	78
NE19455	12.5	64.2	7.38	7.38	173.5	7.4	2.5	915	6.2	64
SD18B016-5	12.0	63.3	7.00	7.00	172.5	7.4	3.5	925	6.2	69
SD18B025-8	12.3	64.2	6.88	6.88	172.8	7.8	3.5	1005	6.8	76
SD18B055-2	12.3	63.3	5.38	5.38	172.1	7.3	4.0	895	6.0	64
SD18B072-2	11.8	63.1	7.38	7.24	172.2	7.3	4.0	1015	6.8	81
SD19B019-2	12.4	62.7	6.00	6.00	171.9	7.9	2.5	920	6.2	66
SD19B033-2	12.4	63.2	7.13	7.13	172.4	8.0	3.5	970	6.5	72
SD19B108-3	11.2	62.3	10.00	9.04	170.6	7.5	3.5	905	6.2	73
SD19B164-3	12.3	64.3	5.75	5.75	173.7	7.5	3.5	930	6.3	68
SD20B088-2	12.5	64.3	5.63	5.63	173.3	7.5	3.5	930	6.3	66
SD20D100-9	12.4	64.2	6.75	6.75	173.3	7.5	4.0	945	6.3	69
AAC Wildfire	12.4	64.3	7.63	7.63	173.8	7.1	3.0	910	6.1	65
AAC Network	12.4	64.3	9.38	9.38	172.6	7.2	2.5	915	6.1	65
NW13MD108-3	11.9	64.5	4.75	4.68	173.6	7.3	3.5	890	5.9	66
NW13MD109-1	13.1	65.4	10.75	10.75	173.9	7.5	2.5	995	6.6	69

	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
N11MD2166W	12.7	65.5	7.88	7.88	173.6	7.4	4.0	920	6.1	64
MTS2068	12.5	65.4	9.75	9.75	174.2	7.3	3.0	935	6.3	67
MT2019	12.2	64.4	7.63	7.63	172.7	7.4	3.5	950	6.4	71
MTCL2010	12.8	65.2	9.75	9.75	173.3	7.6	3.5	1045	7.1	76

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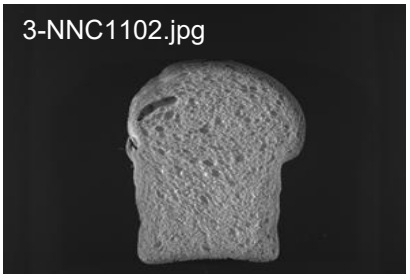

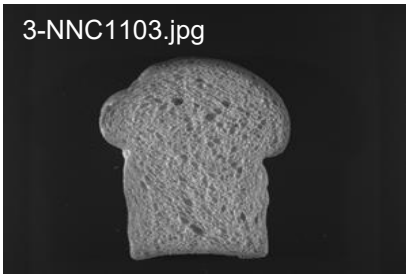

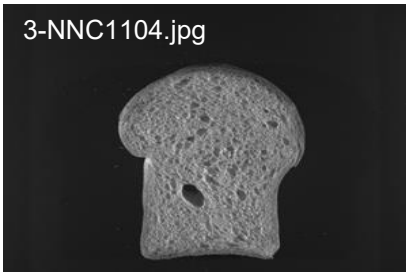

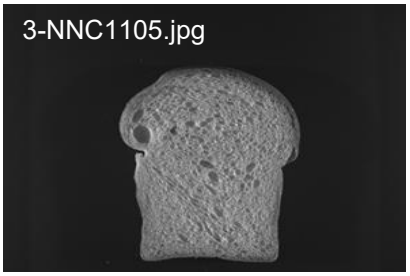

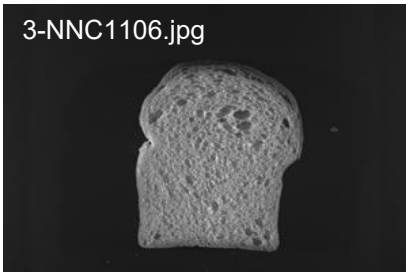

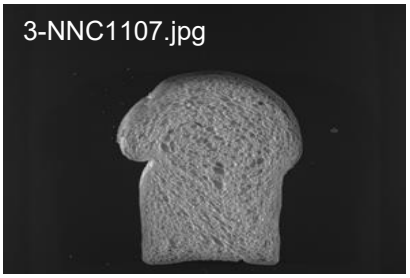

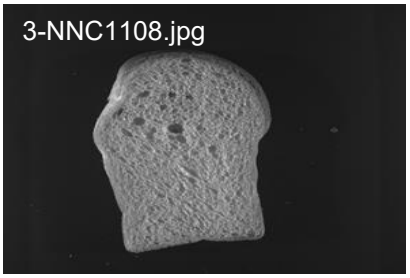

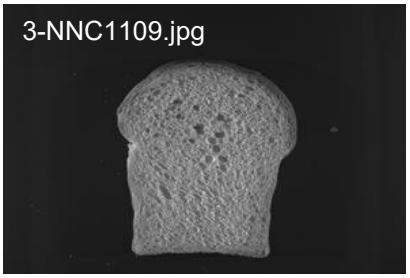

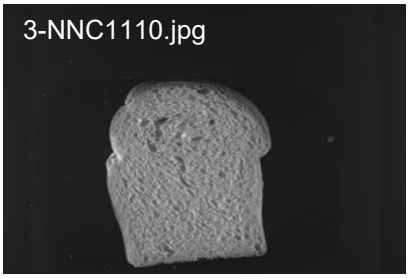

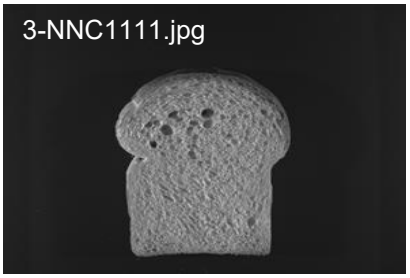

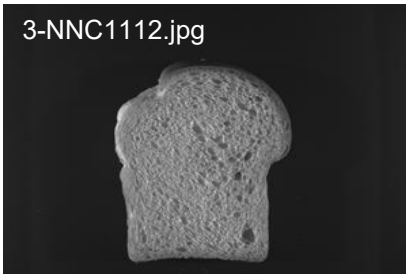

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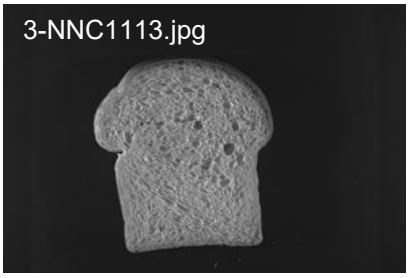
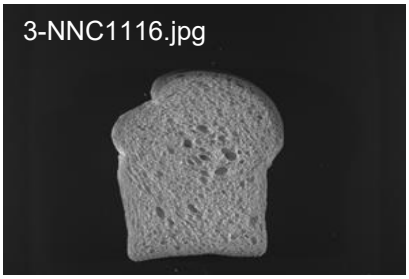
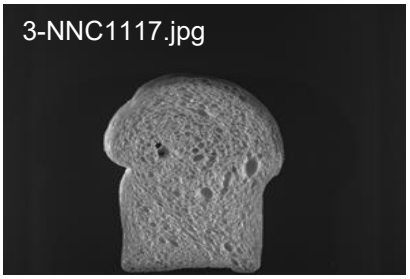
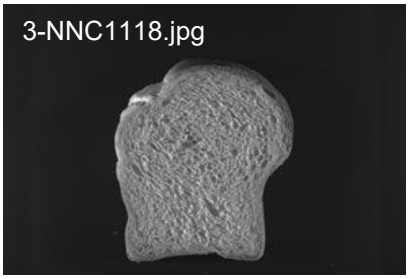
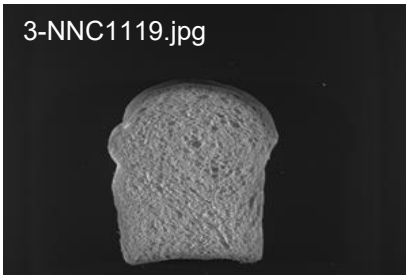
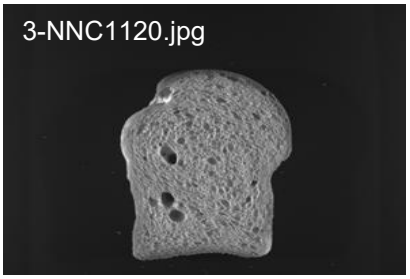


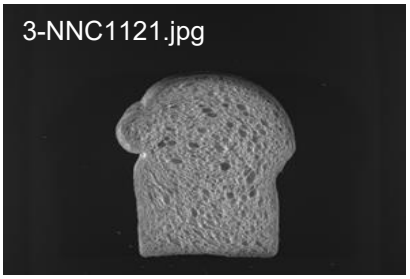


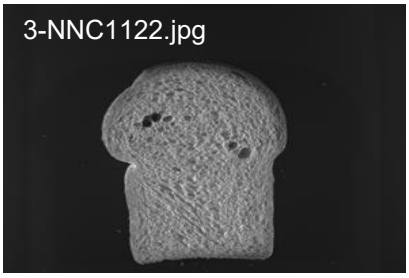


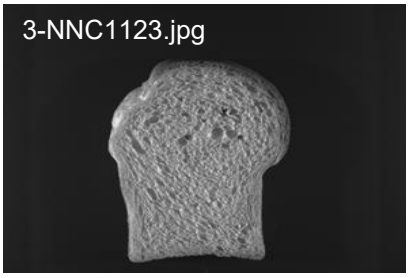


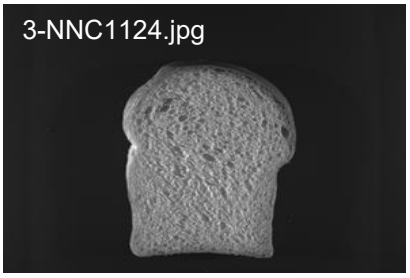




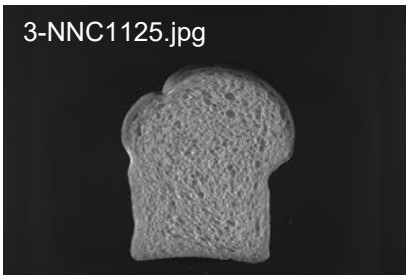


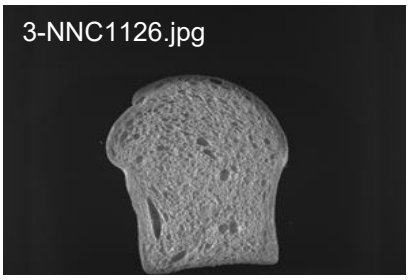


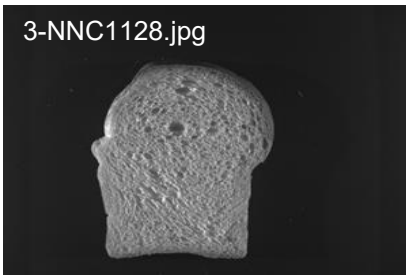


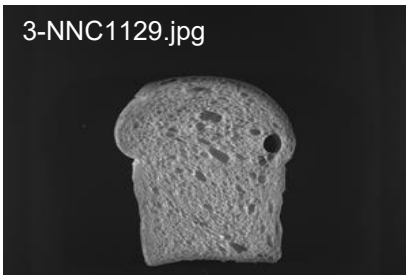


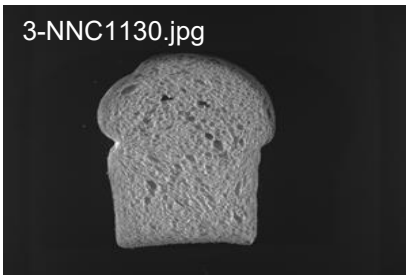
2023 NRPN Intraregional Production Zone
North Central Plains

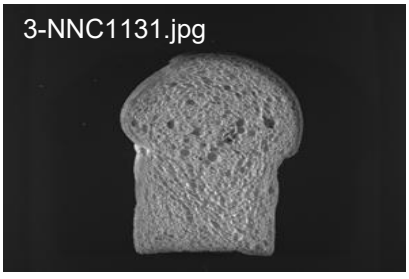


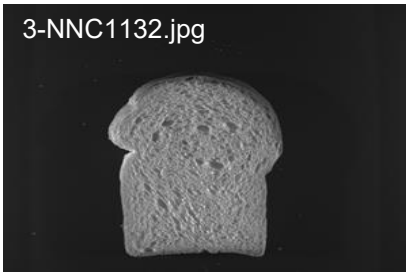


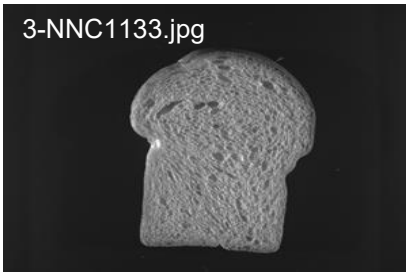


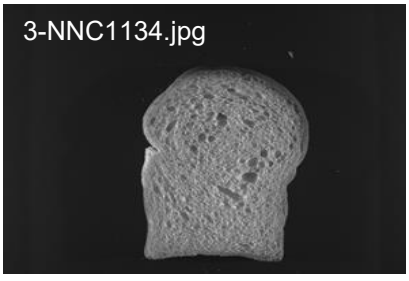


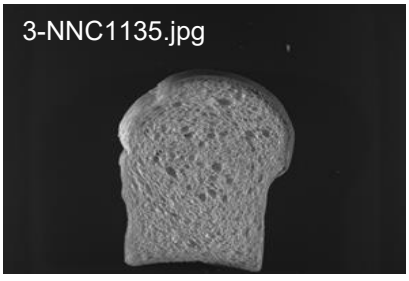


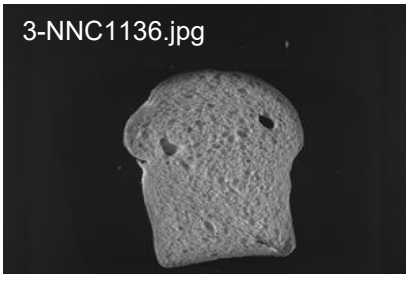




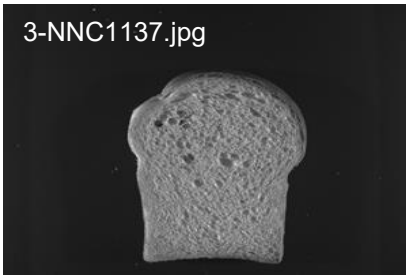


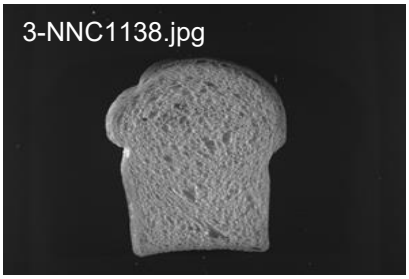


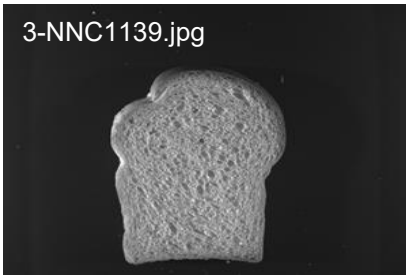


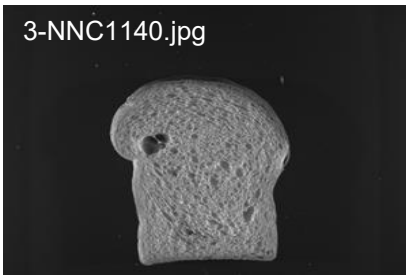


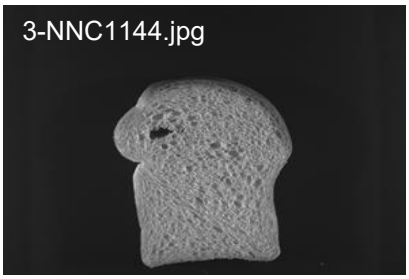
2023 NRPN Intraregional Production Zone
North Central Plains

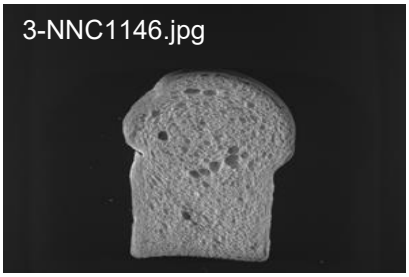


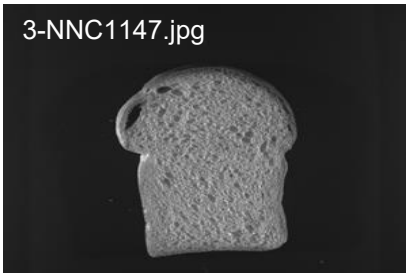


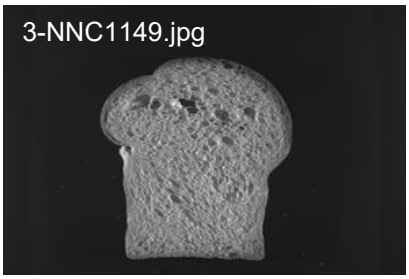












Hard Winter Wheat Quality Report

2023 NRPN-NHP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	45.4	Very Poor	70.7	59.6	Very Good	87.8		6,8,10,
Overland	57.9	Average	90.2	51.6	Good	75.9		16,
Wesley	58.6	Good	91.3	47.0	Good	69.2		
Jagalene	59.7	Very Good	93.0	45.2	Average	66.5		
Jerry	54.1	Very Poor	84.2	42.2	Average	62.1		3,
19NORD-124	53.1	Very Poor	82.6	30.6	Very Poor	45.0		12,13,16,17,18,20,21
20NORD-138	52.0	Very Poor	81.0	56.5	Very Good	83.2		8,
21NORD-154	56.2	Average	87.6	33.8	Poor	49.7		16,
21NORD-155	54.7	Poor	85.2	44.3	Average	65.2		1,
21NORD-157	54.9	Poor	85.6	28.8	Very Poor	42.4		15,16,18,19,20,21,
21NORD-158	51.5	Very Poor	80.2	44.2	Average	65.1	1BL	1,4,12,13,16,
LCH20-2091	57.8	Average	90.0	43.6	Average	64.2		
LCH20-2054	58.0	Good	90.3	45.0	Average	66.3		
LCH20-2026	56.8	Average	88.5	46.8	Good	68.9		11,12,16,
LCH20-2031	64.2	Very Good	100.0	47.3	Good	69.7		
LCH21-9436	57.6	Average	89.7	36.1	Poor	53.1		5,16,
CO18035RA	54.2	Very Poor	84.4	27.5	Very Poor	40.5		4,9,10,14,15,
CO18042RA	53.3	Very Poor	83.1	32.2	Very Poor	47.5		5,11,14,15,
CO18D297R	57.2	Average	89.2	33.0	Very Poor	48.6		2,4,
Paradox	55.9	Poor	87.0	32.2	Very Poor	47.5		14,15,19,20,21,
NEB-147-53	58.3	Good	90.9	37.7	Poor	55.6		5,
NE19619	52.5	Very Poor	81.8	58.8	Very Good	86.5		3,9,10,
NHH19651	55.8	Poor	87.0	33.0	Very Poor	48.5		16,
NEB-145-12	56.3	Average	87.7	28.2	Very Poor	41.5		16,19,
NEB-151-3	59.8	Very Good	93.1	51.6	Good	76.0		
NHH19666	57.6	Average	89.7	60.5	Very Good	89.1		
NE20620	55.7	Poor	86.7	58.9	Very Good	86.8		3,
NE20462	53.1	Very Poor	82.7	56.6	Very Good	83.3		2,16,
NE19455	58.4	Good	91.0	40.8	Poor	60.1		
SD18B016-5	59.2	Good	92.2	42.5	Average	62.6		
SD18B025-8	56.7	Average	88.4	67.9	Very Good	100.0		8,

Quality scores and ratings are calculated directly from the relative trait weightings (printed at the top of the page) and are applicable only to the nursery selected.

Hard Winter Wheat Quality Report

2023 NRPN-NHP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
SD18B055-2	58.4	Good	90.9	52.4	Good	77.1		13,
SD18B072-2	58.3	Good	90.8	55.7	Good	82.0		1,
SD19B019-2	60.8	Very Good	94.8	33.2	Very Poor	48.8		4,12,13,16,17,
SD19B033-2	62.8	Very Good	97.8	53.2	Good	78.4		
SD19B108-3	54.7	Poor	85.1	38.1	Poor	56.1		11,13,14,17,
SD19B164-3	48.0	Very Poor	74.7	45.7	Good	67.2		9,10,16,
SD20B088-2	54.4	Poor	84.7	41.5	Poor	61.0		
SD20D100-9	55.6	Poor	86.7	59.1	Very Good	87.0		
AAC Wildfire	59.5	Very Good	92.8	41.9	Average	61.7		18,
AAC Network	59.5	Good	92.6	43.9	Average	64.6		4,14,15,
NW13MD108-3	56.7	Average	88.3	41.2	Poor	60.7		
NW13MD109-1	61.4	Very Good	95.7	32.8	Very Poor	48.3		14,15,
N11MD2166W	55.8	Poor	86.9	55.8	Very Good	82.2		2,4,
MTS2068	62.3	Very Good	97.0	39.2	Poor	57.8		14,
MT2019	60.2	Very Good	93.7	42.8	Average	63.1		
MTCL2010	58.3	Good	90.9	41.4	Poor	61.0		2,9,14,

2023 NRPN Intraregional Production Zone

Northern High Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	61.5	9.9	0.9	31.6	9.3	2.66	0.35	38	18	MIXED	39-30-20-11-03
Overland	61.5	10.2	0.8	34.3	10.2	2.73	0.39	59	17	HARD	05-20-24-51-01
Wesley	60.9	9.7	0.9	35.2	10.7	2.81	0.43	53	16	HARD	08-24-34-34-01
Jagalene	62.7	9.3	1.0	35.1	10.8	2.80	0.35	65	17	HARD	06-09-20-65-01
Jerry	61.5	9.5	1.0	35.0	11.8	2.76	0.43	60	19	HARD	07-17-24-52-01
19NORD-124	60.8	9.0	1.0	31.5	8.9	2.68	0.36	55	18	MIXED	11-21-27-41-03
20NORD-138	61.7	9.1	1.1	33.7	10.5	2.68	0.39	52	16	MIXED	12-23-35-30-03
21NORD-154	61.7	8.8	1.2	32.8	10.6	2.67	0.39	54	17	MIXED	13-22-30-35-03
21NORD-155	59.8	8.8	1.2	30.8	9.6	2.71	0.40	55	16	HARD	09-21-30-40-01
21NORD-157	61.3	8.7	1.2	35.8	10.6	2.76	0.42	62	17	HARD	04-13-33-50-01
21NORD-158	59.9	8.9	1.2	30.9	9.9	2.58	0.39	49	16	MIXED	12-32-30-26-03
LCH20-2091	61.7	7.8	1.2	34.4	10.7	2.79	0.40	61	17	HARD	06-12-29-53-01
LCH20-2054	63.4	8.6	1.3	33.2	11.2	2.77	0.41	53	17	HARD	10-30-28-32-01
LCH20-2026	62.6	8.8	1.3	34.6	10.6	2.73	0.41	49	17	MIXED	19-25-31-25-03
LCH20-2031	63.6	10.4	0.6	34.0	9.9	2.74	0.38	56	15	HARD	07-18-34-41-01
LCH21-9436	62.4	9.9	0.9	35.8	11.0	2.81	0.46	55	18	HARD	10-21-32-37-01
CO18035RA	61.3	10.4	0.7	31.1	10.4	2.53	0.39	53	16	MIXED	11-22-33-34-03
CO18042RA	61.2	10.4	0.7	33.2	11.2	2.68	0.46	55	17	HARD	10-19-29-42-01
CO18D297R	62.6	10.2	0.6	29.8	9.7	2.54	0.42	64	17	HARD	03-12-24-61-01
OK15MASBx7 ARS 8-29	62.0	9.9	1.1	36.0	10.9	2.82	0.42	72	16	HARD	01-03-18-78-01
NEB-147-53	62.5	10.3	0.7	32.2	10.7	2.72	0.47	57	19	HARD	10-19-28-43-01
NE19619	60.7	10.5	0.5	37.3	11.5	2.84	0.42	57	16	HARD	05-19-33-43-01
NHH19651	61.9	8.5	1.4	32.1	10.5	2.73	0.45	52	17	MIXED	16-21-31-32-03
NEB-145-12	61.1	8.1	1.3	36.0	9.7	2.75	0.36	47	16	MIXED	19-26-32-23-03
NEB-151-3	63.3	8.3	1.2	33.7	9.7	2.79	0.40	60	15	HARD	05-13-30-52-01
NHH19666	62.1	9.0	1.0	32.6	10.2	2.75	0.45	56	17	HARD	08-21-30-41-01
NE20620	62.6	9.4	1.1	38.0	12.1	2.79	0.40	59	17	HARD	07-14-33-46-01
NE20462	60.9	10.3	0.6	29.4	9.5	2.69	0.39	65	17	HARD	03-13-22-62-01
NE19455	62.7	10.0	0.7	31.4	9.3	2.67	0.36	66	17	HARD	02-09-24-65-01
SD18B016-5	62.7	9.6	1.1	35.3	10.3	2.85	0.41	53	16	MIXED	12-25-30-33-03
SD18B025-8	61.9	9.2	1.1	35.0	9.6	2.82	0.44	61	15	HARD	02-14-31-53-01
SD18B055-2	62.2	9.5	1.1	33.7	10.1	2.70	0.44	54	17	MIXED	11-24-32-33-03
SD18B072-2	60.2	8.5	1.4	33.7	10.2	2.74	0.43	45	17	MIXED	23-32-26-19-03
SD19B019-2	63.1	9.0	1.3	30.6	8.7	2.58	0.36	57	16	HARD	06-21-29-44-01
SD19B033-2	62.2	8.4	1.3	31.8	8.5	2.63	0.38	60	16	HARD	05-16-33-46-01
SD19B108-3	61.6	8.6	1.3	31.3	10.7	2.61	0.43	45	18	MIXED	28-28-23-21-03
SD19B164-3	60.5	9.0	1.3	33.1	10.8	2.70	0.41	56	16	HARD	09-16-32-43-01
SD20B088-2	62.2	8.7	1.2	32.7	10.0	2.69	0.39	61	16	HARD	04-13-29-54-01
SD20D100-9	62.5	10.3	0.8	32.1	9.5	2.73	0.44	70	17	HARD	01-09-18-72-01
AAC Wildfire	61.9	10.4	0.5	35.5	10.2	2.77	0.36	64	15	HARD	02-10-26-62-01
AAC Network	61.9	10.3	0.6	31.3	10.2	2.59	0.35	77	18	HARD	01-03-12-84-01
NW13MD108-3	61.2	10.3	0.6	33.6	10.9	2.78	0.45	60	17	HARD	04-15-35-46-01
NW13MD109-1	61.6	9.9	0.7	38.3	10.6	2.88	0.41	54	16	HARD	09-24-32-35-01
N11MD2166W	62.5	9.4	1.1	28.5	8.0	2.54	0.37	54	17	MIXED	11-21-29-39-03

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
MTS2068	61.6	9.2	1.1	32.6	9.6	2.63	0.38	64	15	HARD	02-10-27-61-01
MT2019	61.2	9.4	1.1	32.2	8.9	2.70	0.43	62	15	HARD	04-12-24-60-01
MTCL2010	61.5	9.0	1.2	29.7	8.3	2.64	0.38	63	17	HARD	04-11-28-57-01

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Northern High Plains

	Wheat		Flour			Noodle Color					
LINE	Protein (%)	Milling Yield (%)	Ash (%)	Protein (%)	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
Kharkof	14.4	66.2	0.45	13.3	0.539	79.10	-1.90	24.51	-10.87	1.61	1.89
Overland	13.0	71.1	0.46	12.1	0.539	78.22	-1.57	24.27	-10.27	1.62	2.29
Wesley	13.1	71.4	0.42	12.5	0.612	80.85	-1.77	21.89	-11.54	1.56	3.95
Jagalene	13.0	70.9	0.48	12.4	0.468	78.58	-1.63	25.21	-10.59	1.69	2.64
Jerry	12.6	69.9	0.44	12.1	0.444	79.02	-1.96	25.83	-9.55	1.97	2.74
19NORD-124	13.1	68.0	0.39	12.7	0.639	79.18	-1.50	23.16	-9.39	1.39	2.97
20NORD-138	12.5	67.0	0.38	12.0	0.543	80.46	-1.75	23.51	-10.86	1.48	3.20
21NORD-154	12.5	70.6	0.41	11.9	0.520	78.52	-1.71	25.29	-9.34	1.54	3.29
21NORD-155	12.5	70.5	0.46	12.1	0.564	78.98	-1.62	23.37	-12.03	1.57	2.90
21NORD-157	12.1	69.2	0.45	11.5	0.589	79.18	-1.98	25.29	-9.86	1.69	2.02
21NORD-158	12.2	69.4	0.46	11.5	0.515	79.73	-1.55	25.42	-10.85	1.16	4.34
LCH20-2091	13.0	70.0	0.42	12.0	0.561	78.67	-1.32	24.25	-10.65	1.72	1.26
LCH20-2054	12.7	70.9	0.42	12.1	0.453	81.04	-1.91	22.78	-11.03	1.56	5.09
LCH20-2026	11.6	70.4	0.42	10.8	0.474	80.31	-1.72	22.97	-9.33	1.48	2.92
LCH20-2031	12.1	71.9	0.41	11.3	0.520	80.15	-1.59	22.96	-9.96	1.58	4.69
LCH21-9436	12.4	70.1	0.37	11.5	0.508	78.76	-1.34	23.71	-9.29	1.64	2.30
CO18035RA	11.6	72.0	0.54	10.8	0.456	79.66	-1.85	24.19	-11.38	1.59	4.90
CO18042RA	11.4	71.0	0.49	10.8	0.436	80.33	-2.04	24.76	-10.38	1.52	2.73
CO18D297R	11.8	70.1	0.40	10.9	0.478	79.46	-1.58	23.06	-10.25	1.50	4.96
OK15MASBx7 ARS 8-29	11.9	68.2	0.47	11.4	0.162	80.95	-1.84	23.27	-10.22	1.43	7.10
NEB-147-53	11.8	72.8	0.45	11.2	0.449	78.23	-1.66	25.11	-11.65	2.10	3.33
NE19619	12.6	69.5	0.55	11.8	0.422	78.71	-1.88	25.75	-10.34	1.71	3.06
NHH19651	12.7	70.3	0.40	12.1	0.455	79.14	-2.10	25.98	-9.72	1.66	0.98
NEB-145-12	11.9	69.0	0.40	11.2	0.469	78.72	-1.99	25.98	-10.74	1.82	3.06
NEB-151-3	13.7	69.6	0.42	13.1	0.434	77.92	-1.66	25.20	-9.04	1.50	1.71
NHH19666	12.9	71.1	0.44	12.5	0.446	77.46	-1.62	26.14	-9.05	1.58	0.87
NE20620	12.8	68.5	0.41	12.1	0.455	79.32	-1.40	23.35	-10.93	1.52	3.33
NE20462	11.8	68.4	0.44	11.2	0.488	79.21	-1.85	23.86	-8.89	1.33	2.22
NE19455	12.1	69.3	0.41	11.4	0.410	79.91	-1.75	23.63	-9.40	1.32	3.81
SD18B016-5	12.1	70.6	0.44	11.4	0.416	79.97	-1.82	23.82	-9.34	1.38	2.77
SD18B025-8	12.9	67.6	0.40	12.6	0.499	78.56	-1.27	23.20	-10.62	1.45	2.14
SD18B055-2	11.9	71.1	0.41	11.2	0.517	79.45	-1.79	25.31	-10.85	1.66	3.89
SD18B072-2	11.6	72.6	0.41	11.1	0.621	80.43	-1.83	23.14	-10.49	1.57	3.84
SD19B019-2	12.2	71.4	0.43	11.6	0.605	78.91	-1.71	25.20	-10.63	1.55	3.65
SD19B033-2	12.4	72.4	0.43	11.6	0.616	77.94	-1.17	23.29	-12.12	1.78	3.87
SD19B108-3	11.2	72.1	0.44	10.4	0.510	79.65	-2.06	24.10	-10.44	1.33	3.62
SD19B164-3	12.1	68.2	0.56	11.3	0.576	79.50	-1.78	25.45	-10.63	1.51	2.96
SD20B088-2	12.6	68.8	0.48	12.0	0.546	79.14	-1.80	25.25	-11.52	1.74	4.15
SD20D100-9	12.5	69.3	0.49	11.9	0.559	78.13	-1.55	25.29	-11.27	1.75	1.52
AAC Wildfire	11.6	69.7	0.46	11.2	0.420	80.03	-1.70	26.11	-9.84	1.20	4.85
AAC Network	12.2	70.3	0.42	11.6	0.487	79.21	-1.46	25.62	-10.88	1.30	4.60

	Wheat		Flour			Noodle Color					
	Protein	Milling Yield	Ash	Protein	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
LINE	(%)	(%)	(%)	(%)							
NW13MD108-3	12.1	70.1	0.40	11.4	0.569	80.81	-1.68	22.48	-10.56	1.47	5.18
NW13MD109-1	12.6	71.0	0.39	12.1	0.471	81.09	-1.76	23.75	-9.85	1.29	4.97
N11MD2166W	12.2	69.1	0.39	11.5	0.553	80.39	-2.02	23.80	-9.71	1.51	3.87
MTS2068	12.5	72.4	0.46	12.0	0.227	79.60	-1.65	23.63	-12.82	1.41	7.22
MT2019	12.0	72.0	0.49	11.6	0.494	79.45	-1.37	24.22	-11.82	1.68	5.60
MTCL2010	12.1	71.9	0.51	11.9	0.242	79.04	-1.78	25.73	-9.56	1.64	6.16

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Northern High Plains

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	13.3	65.6	4.00	4.00	4
Overland	12.1	63.1	2.38	2.38	1
Wesley	12.5	64.4	4.25	4.25	4
Jagalene	12.4	63.5	4.25	4.25	3
Jerry	12.1	63.0	3.75	3.75	3
19NORD-124	12.7	58.6	2.25	2.25	1
20NORD-138	12.0	62.9	2.63	2.63	3
21NORD-154	11.9	62.3	2.25	2.23	2
21NORD-155	12.1	63.2	2.50	2.50	3
21NORD-157	11.5	62.6	1.50	1.41	1
21NORD-158	11.5	59.6	2.88	2.72	2
LCH20-2091	12.0	63.4	2.75	2.73	3
LCH20-2054	12.1	63.0	3.25	3.25	3
LCH20-2026	10.8	60.4	2.25	1.92	2
LCH20-2031	11.3	62.9	5.25	4.83	3
LCH21-9436	11.5	61.1	3.50	3.30	2
CO18035RA	10.8	62.0	7.25	6.22	4
CO18042RA	10.8	62.9	6.75	5.76	4
CO18D297R	10.9	62.1	5.88	5.12	4
OK15MASBx7 ARS 8-29	11.4	66.4	1.63	0.78	6
NEB-147-53	11.2	62.6	4.00	3.63	3
NE19619	11.8	63.1	3.63	3.56	3
NHH19651	12.1	62.2	2.00	2.00	1
NEB-145-12	11.2	62.6	2.00	1.80	1
NEB-151-3	13.1	65.8	3.38	3.38	3
NHH19666	12.5	64.2	3.75	3.75	3
NE20620	12.1	64.6	4.63	4.63	4
NE20462	11.2	62.1	4.00	3.63	2
NE19455	11.4	63.1	3.75	3.47	3
SD18B016-5	11.4	61.9	3.63	3.36	3
SD18B025-8	12.6	64.7	5.25	5.25	4
SD18B055-2	11.2	60.4	2.75	2.48	3
SD18B072-2	11.1	61.4	4.25	3.78	3
SD19B019-2	11.6	59.9	3.25	3.08	2
SD19B033-2	11.6	62.8	4.25	4.06	4
SD19B108-3	10.4	60.3	5.25	4.25	4
SD19B164-3	11.3	61.8	3.38	3.11	2
SD20B088-2	12.0	63.4	3.00	3.00	3
SD20D100-9	11.9	62.8	3.75	3.71	3
AAC Wildfire	11.2	62.6	4.00	3.61	4
AAC Network	11.6	62.3	7.38	7.04	4

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
NW13MD108-3	11.4	63.0	2.88	2.69	3
NW13MD109-1	12.1	63.5	6.38	6.38	5
N11MD2166W	11.5	62.6	4.00	3.76	3
MTS2068	12.0	63.9	5.38	5.37	4
MT2019	11.6	63.2	4.00	3.80	3
MTCL2010	11.9	63.7	3.63	3.57	4

2023 NRPN Intraregional Production Zone
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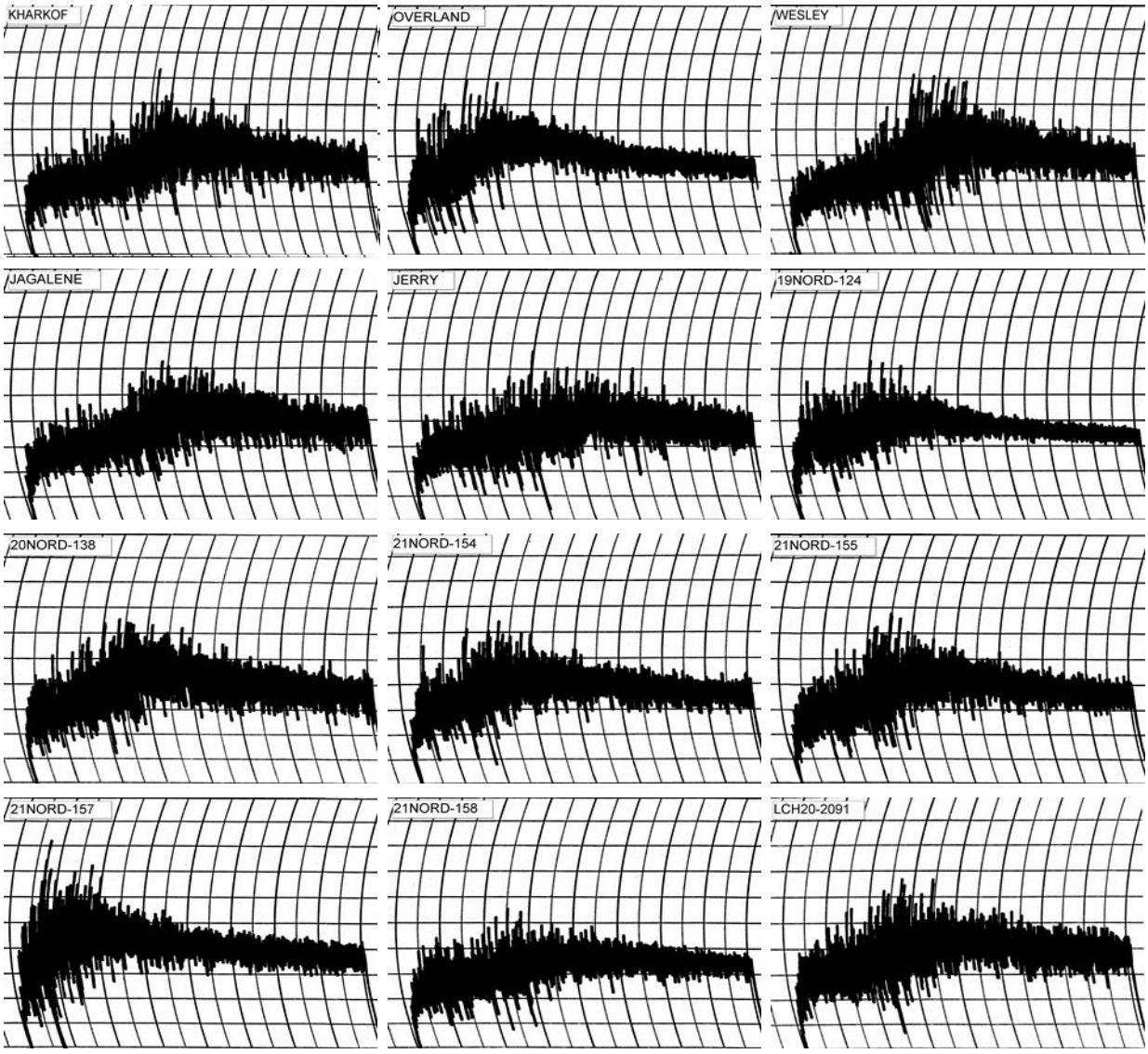
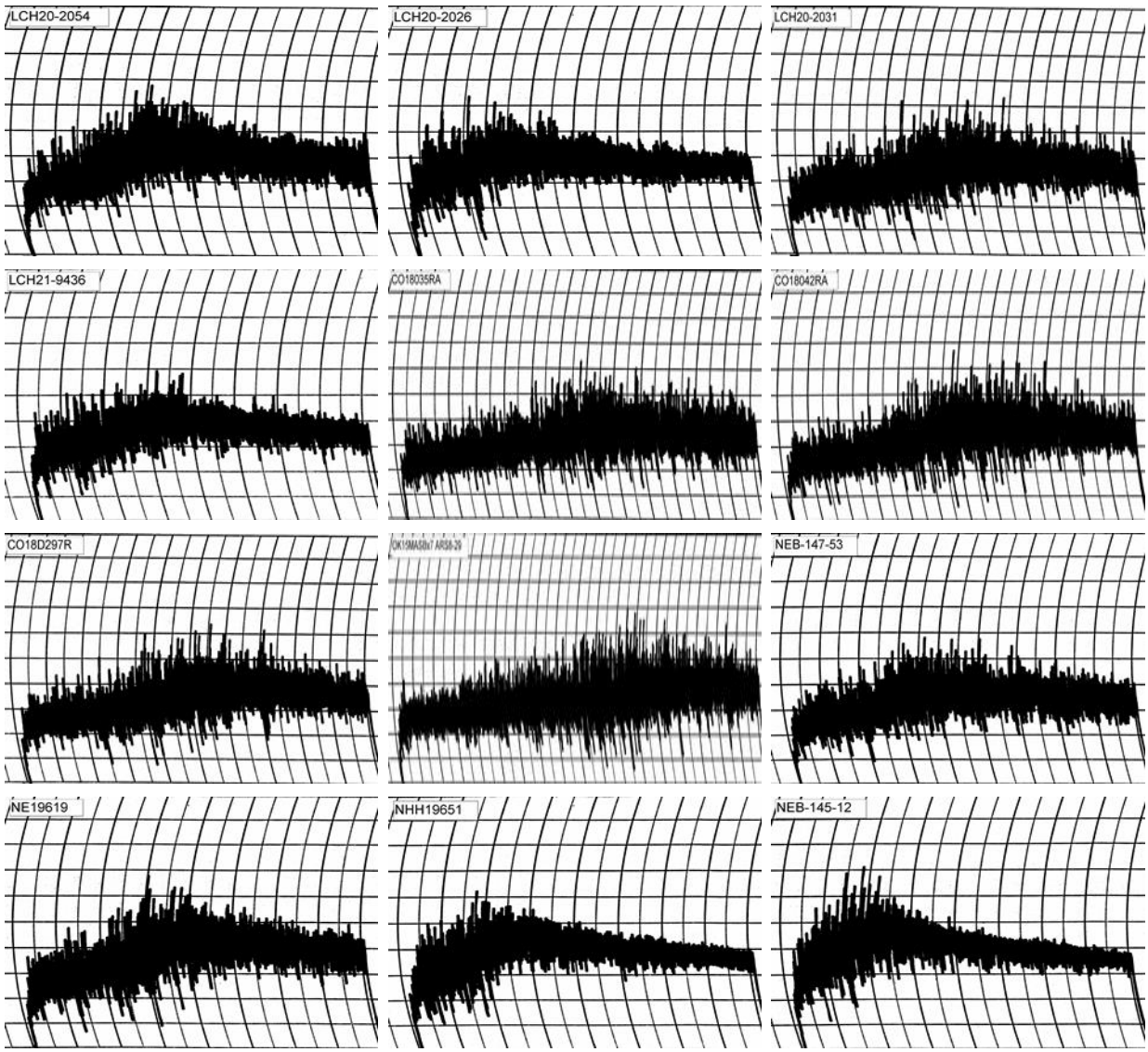
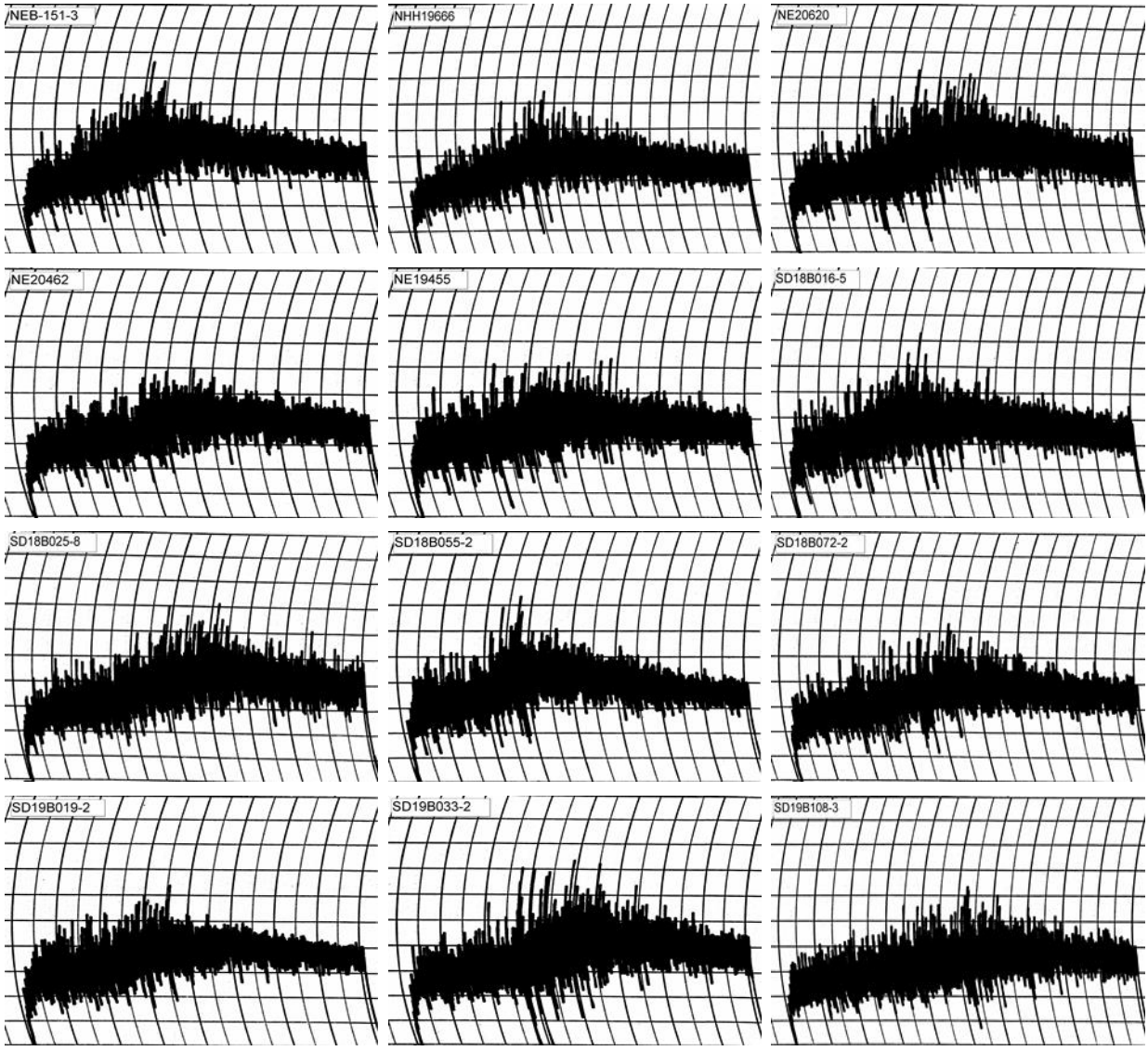


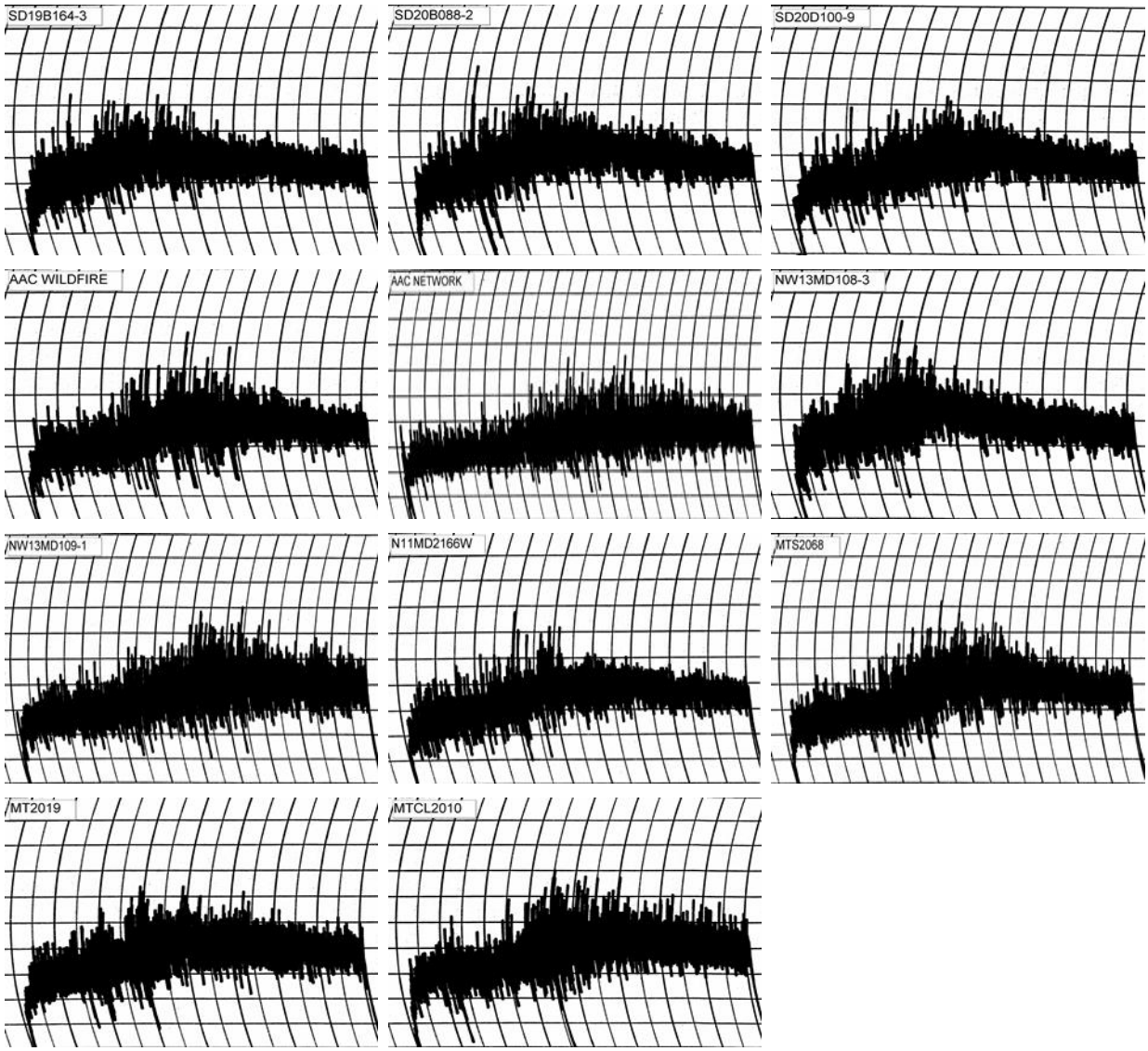
2023 NRPN Intraregional Production Zone
Northern High Plains



2023 NRPN Intraregional Production Zone
Northern High Plains



2023 NRPN Intraregional Production Zone
Northern High Plains



2023 NRPN Intraregional Production Zone

Northern High Plains

	RVA							
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)	Pasting Temp (Deg. C)
Kharkof	131.75	232.00	152.50	79.50	262.67	110.17	6.27	86.50
Overland	95.33	212.75	137.50	75.25	246.92	109.42	6.13	67.70
Wesley	104.92	217.58	139.08	78.50	256.33	117.25	6.07	66.90
Jagalene	113.17	212.00	136.33	75.67	248.33	112.00	6.07	66.90
Jerry	95.42	211.75	129.83	81.92	236.00	106.17	6.07	66.85
19NORD-124	122.33	235.58	154.75	80.83	260.50	105.75	6.27	86.40
20NORD-138	115.00	194.58	131.67	62.92	237.92	106.25	6.13	86.50
21NORD-154	120.42	211.00	139.58	71.42	241.67	102.08	6.20	86.40
21NORD-155	107.67	226.83	145.50	81.33	258.08	112.58	6.20	86.50
21NORD-157	116.67	204.33	141.08	63.25	257.58	116.50	6.13	66.15
21NORD-158	97.67	158.42	75.67	82.75	152.75	77.08	5.73	67.00
LCH20-2091	96.25	229.83	137.67	92.17	238.75	101.08	6.20	67.70
LCH20-2054	103.42	235.58	157.50	78.08	272.58	115.08	6.27	85.75
LCH20-2026	114.25	237.08	154.42	82.67	263.25	108.83	6.27	85.70
LCH20-2031	82.33	226.75	137.67	89.08	253.75	116.08	6.00	83.25
LCH21-9436	107.58	253.25	159.00	94.25	270.92	111.92	6.20	67.70
CO18035RA	70.50	221.00	127.75	93.25	240.17	112.42	5.93	67.65
CO18042RA	87.83	240.33	144.83	95.50	263.83	119.00	6.00	67.75
CO18D297R	108.75	212.50	138.83	73.67	251.58	112.75	6.07	83.35
OK15MASBx7 ARS 8-29	109.67	220.58	143.75	76.83	259.58	115.83	6.20	66.05
NEB-147-53	95.08	245.42	140.17	105.25	230.17	90.00	6.13	66.15
NE19619	85.58	183.33	99.67	83.67	187.25	87.58	5.93	83.25
NHH19651	85.17	193.75	108.17	85.58	194.25	86.08	6.07	84.75
NEB-145-12	96.58	227.17	159.58	67.58	281.75	122.17	6.27	84.80
NEB-151-3	107.50	186.92	122.83	64.08	224.58	101.75	6.07	67.65
NHH19666	97.17	208.42	140.75	67.67	258.75	118.00	6.13	84.95
NE20620	84.33	196.08	130.08	66.00	239.75	109.67	6.00	84.95
NE20462	107.58	240.58	153.00	87.58	264.50	111.50	6.20	67.75
NE19455	91.83	226.42	149.17	77.25	271.83	122.67	6.13	84.85
SD18B016-5	93.33	212.42	147.08	65.33	267.33	120.25	6.20	84.85
SD18B025-8	96.83	230.67	156.67	74.00	267.00	110.33	6.27	85.60
SD18B055-2	85.75	224.00	137.75	86.25	251.67	113.92	6.00	67.65
SD18B072-2	95.33	215.25	138.25	77.00	250.83	112.58	6.07	84.00
SD19B019-2	89.58	191.25	128.25	63.00	234.83	106.58	6.07	84.75
SD19B033-2	89.08	198.83	109.25	89.58	200.00	90.75	5.93	83.35
SD19B108-3	112.25	214.25	130.58	83.67	238.00	107.42	6.07	84.00
SD19B164-3	95.25	218.67	135.00	83.67	246.50	111.50	6.07	67.70
SD20B088-2	103.00	199.25	135.17	64.08	248.67	113.50	6.13	66.05
SD20D100-9	100.08	190.67	122.58	68.08	227.58	105.00	6.07	66.85
AAC Wildfire	97.50	199.25	133.00	66.25	245.58	112.58	6.07	85.65
AAC Network	88.17	193.67	129.42	64.25	244.33	114.92	5.93	84.85
NW13MD108-3	112.58	217.92	138.33	79.58	258.67	120.33	6.07	65.95
NW13MD109-1	102.17	201.83	134.25	67.58	252.58	118.33	6.00	69.55
N11MD2166W	91.75	214.92	126.92	88.00	227.17	100.25	6.13	84.10

	RVA							
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)	Pasting Temp (Deg. C)
MTS2068	78.17	242.08	155.67	86.42	282.08	126.42	6.07	84.15
MT2019	121.25	253.00	158.67	94.33	276.75	118.08	6.13	67.80
MTCL2010	81.58	162.75	80.00	82.75	160.42	80.42	5.73	67.70

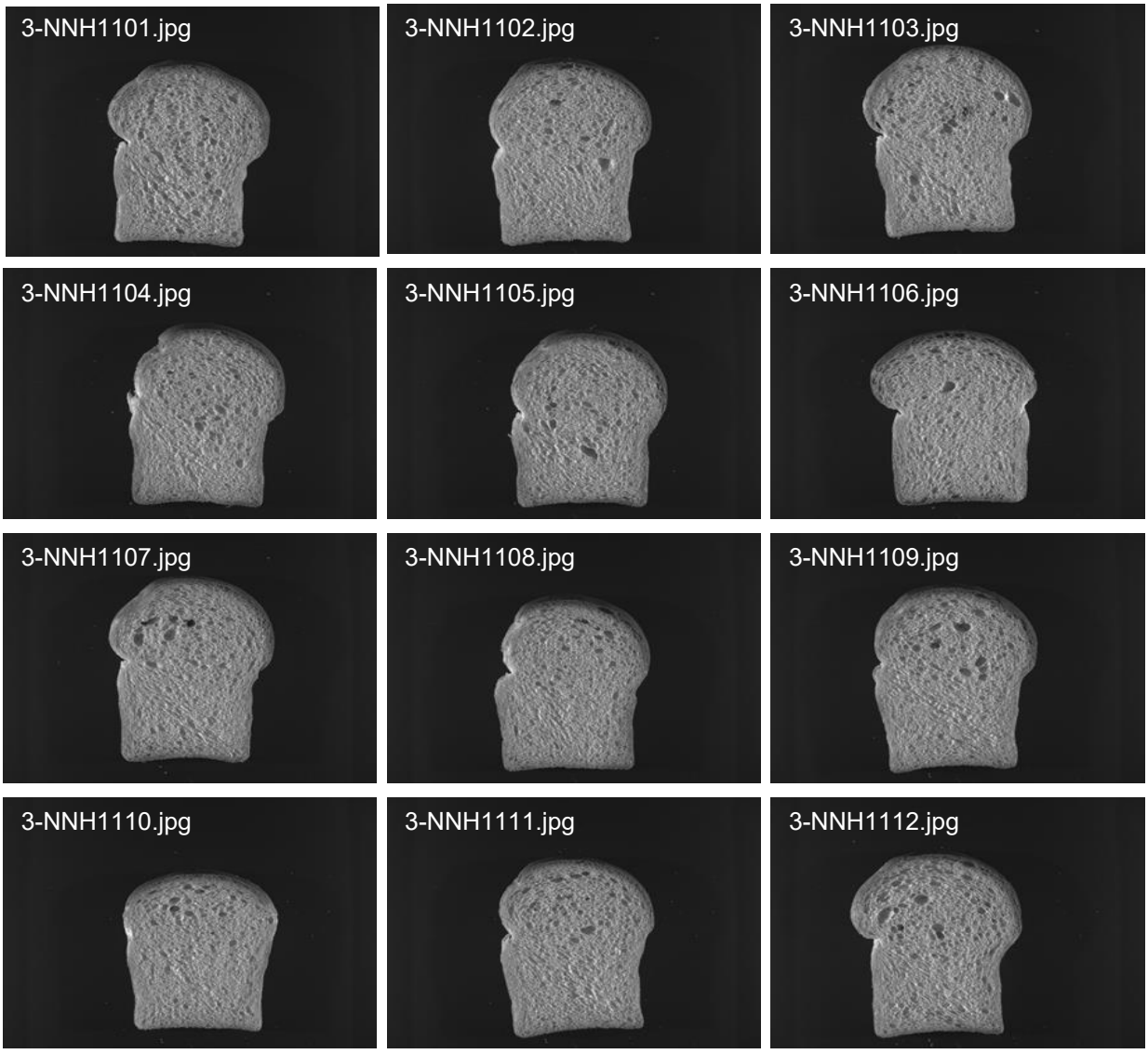
2023 NRPN Intraregional Production Zone

Northern High Plains

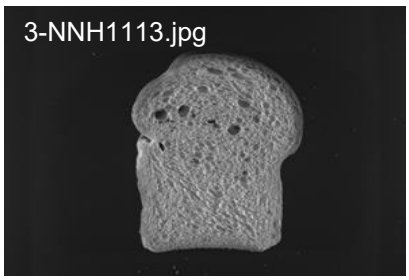
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
Kharkof	13.3	65.9	6.00	6.00	174.7	8.2	3.0	940	6.2	62
Overland	12.1	62.8	3.13	3.13	172.3	8.0	4.0	930	6.2	69
Wesley	12.5	64.1	6.50	6.50	173.9	7.7	3.5	975	6.4	71
Jagalene	12.4	63.7	5.75	5.75	172.8	7.6	3.5	930	6.2	67
Jerry	12.1	62.7	5.38	5.38	172.8	7.4	3.5	885	5.9	65
19NORD-124	12.7	58.9	3.00	3.00	169.0	7.1	2.0	845	5.8	56
20NORD-138	12.0	63.1	4.38	4.37	173.3	7.4	4.0	935	6.3	71
21NORD-154	11.9	62.5	3.75	3.71	172.6	7.5	2.5	855	5.7	62
21NORD-155	12.1	63.6	4.75	4.75	173.6	7.9	3.5	945	6.3	71
21NORD-157	11.5	62.7	2.63	2.47	172.9	6.9	2.0	770	5.1	55
21NORD-158	11.5	59.8	4.25	4.02	170.5	7.5	3.0	890	6.0	69
LCH20-2091	12.0	63.2	4.25	4.22	172.6	7.6	3.5	970	6.6	75
LCH20-2054	12.1	63.0	5.13	5.13	173.2	7.5	3.5	940	6.3	71
LCH20-2026	10.8	60.0	3.50	2.98	170.3	7.4	4.0	900	6.1	77
LCH20-2031	11.3	63.1	6.63	6.10	172.0	7.6	3.0	885	5.9	70
LCH21-9436	11.5	61.2	3.63	3.42	171.4	7.3	3.5	910	6.1	71
CO18035RA	10.8	61.8	11.88	10.20	170.1	7.3	3.5	875	5.9	73
CO18042RA	10.8	63.0	10.75	9.18	170.7	7.6	3.5	930	6.3	80
CO18D297R	10.9	62.3	7.50	6.53	171.3	7.5	3.5	875	5.9	72
OK15MASBx7 ARS 8-29	11.4	66.7	16.63	15.41	173.2	7.3	1.5	810	5.4	61
NEB-147-53	11.2	62.5	6.88	6.24	171.8	7.3	3.5	875	5.8	70
NE19619	11.8	63.5	6.00	5.88	172.6	7.5	4.0	930	6.3	71
NHH19651	12.1	62.2	2.38	2.38	171.8	7.5	3.5	935	6.3	70
NEB-145-12	11.2	63.0	2.75	2.47	173.0	7.2	2.5	825	5.5	64
NEB-151-3	13.1	65.9	5.13	5.13	175.9	7.5	3.5	985	6.5	68
NHH19666	12.5	63.8	5.88	5.88	173.6	7.4	4.0	945	6.2	68
NE20620	12.1	64.9	7.50	7.50	174.0	7.5	4.0	965	6.4	73
NE20462	11.2	62.3	4.75	4.31	171.6	7.4	4.0	915	6.1	74
NE19455	11.4	63.1	6.00	5.55	172.7	7.5	3.5	890	5.9	70
SD18B016-5	11.4	62.0	5.38	4.98	172.1	7.5	4.5	920	6.2	74
SD18B025-8	12.6	65.0	6.38	6.38	173.3	7.7	5.0	1000	6.7	73
SD18B055-2	11.2	60.8	5.00	4.51	170.8	7.5	4.0	875	5.8	70
SD18B072-2	11.1	61.7	6.38	5.68	170.4	7.2	4.0	935	6.3	78
SD19B019-2	11.6	59.6	4.25	4.03	168.7	7.6	3.5	855	5.8	65
SD19B033-2	11.6	62.6	6.13	5.85	172.2	7.5	3.0	920	6.2	72
SD19B108-3	10.4	60.7	9.25	7.50	169.5	7.5	3.0	860	5.8	74
SD19B164-3	11.3	61.7	4.38	4.03	170.7	7.2	3.0	850	5.8	66
SD20B088-2	12.0	63.5	4.25	4.25	174.2	7.5	4.5	905	6.0	67
SD20D100-9	11.9	62.7	5.00	4.95	172.1	7.5	4.0	915	6.1	69
AAC Wildfire	11.2	62.6	5.63	5.08	172.0	7.0	3.5	885	5.9	71
AAC Network	11.6	61.9	9.00	8.59	170.7	7.4	4.0	895	6.1	69
NW13MD108-3	11.4	64.0	5.25	4.90	172.7	7.3	3.5	875	5.8	68
NW13MD109-1	12.1	63.5	8.50	8.50	172.6	7.2	4.5	885	5.9	64

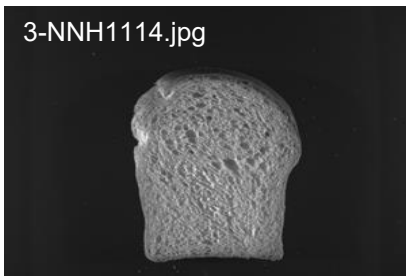
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
N11MD2166W	11.5	62.7	5.63	5.29	171.7	7.3	4.0	870	5.9	67
MTS2068	12.0	63.9	8.63	8.61	172.8	7.3	4.5	975	6.5	75
MT2019	11.6	63.4	6.50	6.17	172.0	7.5	2.5	925	6.3	73
MTCL2010	11.9	63.5	8.25	8.12	172.8	7.5	3.5	975	6.5	76

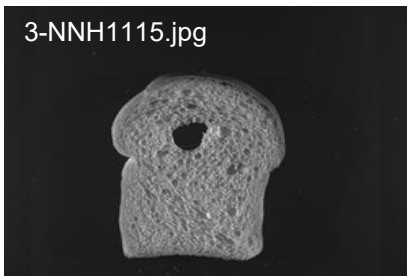
2023 NRPN Intraregional Production Zone
Northern High Plains

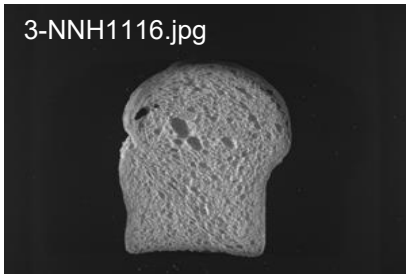


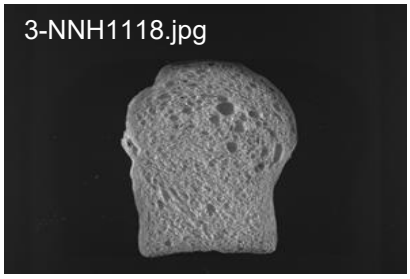
2023 NRPN Intraregional Production Zone
Northern High Plains

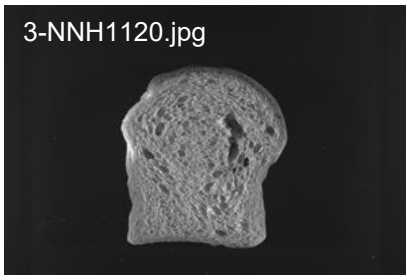


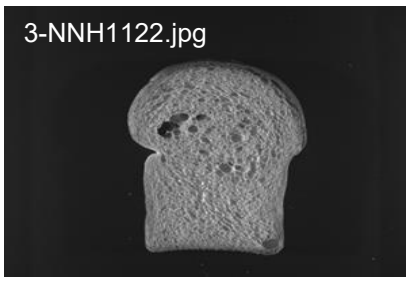


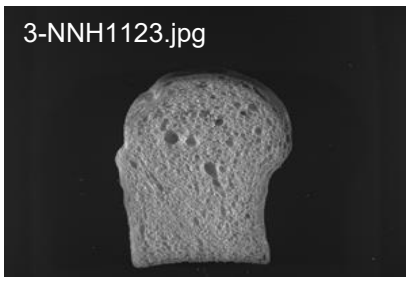


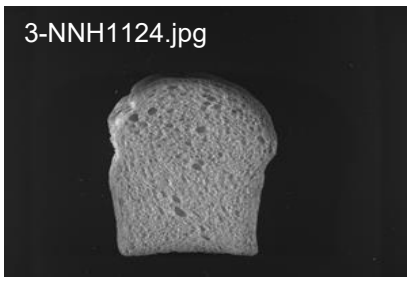




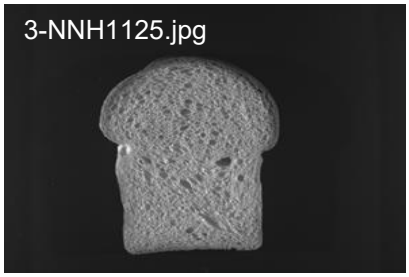


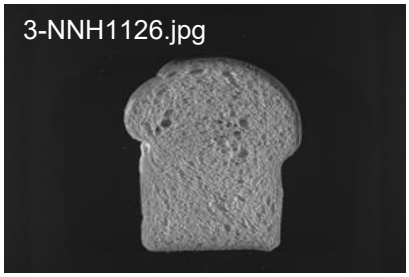


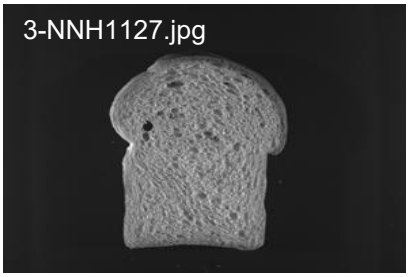


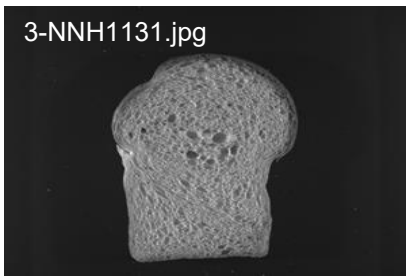


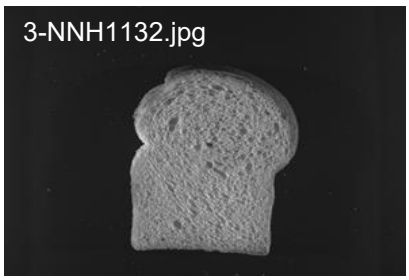
2023 NRPN Intraregional Production Zone
Northern High Plains

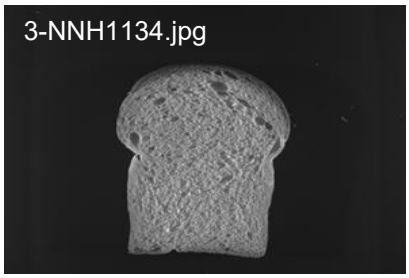


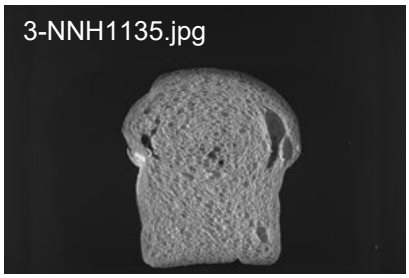


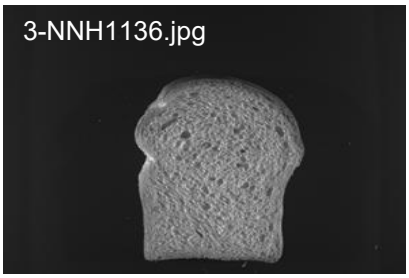




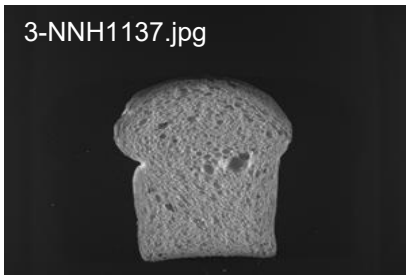


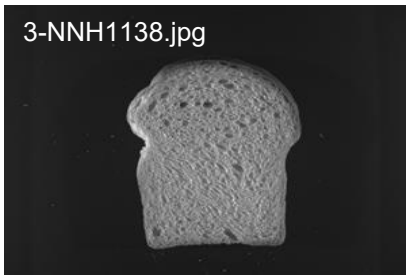


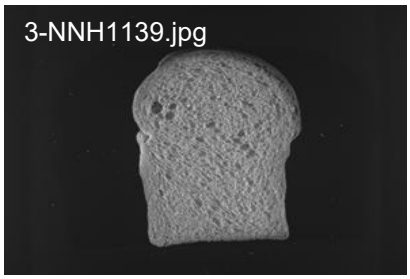


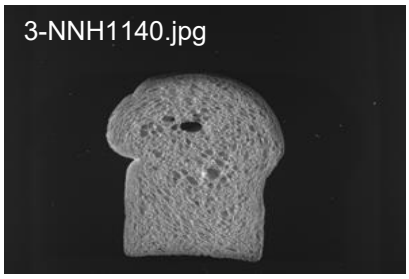


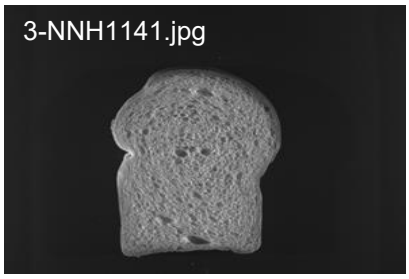
2023 NRPN Intraregional Production Zone
Northern High Plains

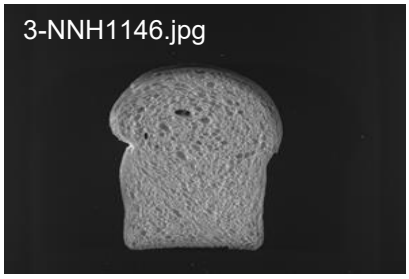


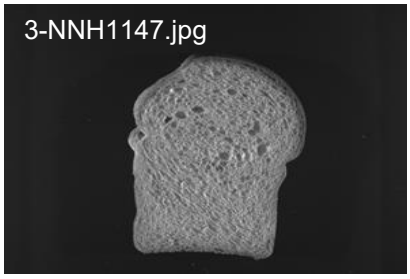


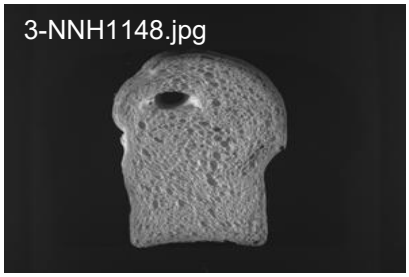












Hard Winter Wheat Quality Report

2023 NRPN-NP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	28.0	Very Poor	58.2	58.2	Good	78.0		6,8,10,20,
Overland	40.7	Poor	84.6	66.4	Very Good	89.0		
Wesley	48.0	Very Good	99.8	63.7	Very Good	85.3		3,14,15,
Jagalene	45.8	Very Good	95.2	51.7	Average	69.2		15,
Jerry	45.6	Good	94.9	44.2	Very Poor	59.2		15,
19NORD-124	35.8	Very Poor	74.4	39.5	Very Poor	52.9		2,4,12,13,17,20,
20NORD-138	38.6	Very Poor	80.2	68.9	Very Good	92.4		
21NORD-154	44.0	Good	91.5	54.1	Average	72.6		
21NORD-155	38.5	Very Poor	80.1	57.8	Good	77.5		1,
21NORD-157	38.4	Very Poor	79.8	38.3	Very Poor	51.4		3,16,19,20,
21NORD-158	35.1	Very Poor	72.9	51.0	Average	68.3	1BL	1,
LCH20-2091	40.6	Poor	84.4	74.6	Very Good	100.0		
LCH20-2054	46.8	Very Good	97.3	50.4	Average	67.6		
LCH20-2026	45.8	Good	95.1	52.5	Average	70.4		
LCH20-2031	46.4	Very Good	96.4	46.8	Poor	62.7		14,15,
LCH21-9436	43.8	Good	90.9	47.7	Poor	63.9		
CO18035RA	36.4	Very Poor	75.6	38.9	Very Poor	52.2		4,5,11,14,15,17,
CO18042RA	40.9	Average	85.0	62.9	Very Good	84.3		14,15,
CO18D297R	42.5	Average	88.3	37.4	Very Poor	50.1		14,15,
Paradox	35.3	Very Poor	73.4	45.5	Poor	61.0		8,14,15,
NEB-147-53	40.7	Average	84.7	49.9	Poor	66.9		14,15,18,
NE19619	40.2	Poor	83.6	43.9	Very Poor	58.8		14,15,
NHH19651	39.9	Poor	82.9	57.8	Good	77.5		
NEB-145-12	48.0	Very Good	99.8	60.0	Good	80.4		
NEB-151-3	46.6	Very Good	96.8	47.2	Poor	63.3		3,14,
NHH19666	44.3	Good	92.0	45.2	Poor	60.6		14,15,
NE20620	44.6	Good	92.7	53.8	Average	72.1		3,14,15,
NE20462	42.9	Average	89.1	50.0	Average	67.0		
NE19455	45.5	Good	94.5	54.8	Good	73.4		14,15,
SD18B016-5	43.1	Good	89.5	51.2	Average	68.6		14,15,
SD18B025-8	40.8	Average	84.8	46.1	Poor	61.8		14,15,

Quality scores and ratings are calculated directly from the relative trait weightings (printed at the top of the page) and are applicable only to the nursery selected.

Hard Winter Wheat Quality Report

2023 NRPN-NP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	Baking %	Baking Score	Rating	%	1RS	Trait Deficiencies
SD18B055-2	40.6	Poor	84.4	58.2	Good	78.1		
SD18B072-2	41.9	Average	87.0	45.8	Poor	61.4		14,15,
SD19B019-2	48.0	Very Good	99.8	62.6	Good	84.0		
SD19B033-2	48.1	Very Good	100.0	45.1	Very Poor	60.5		14,15,
SD19B108-3	39.8	Poor	82.7	38.0	Very Poor	50.9		3,11,14,15,
SD19B164-3	34.4	Very Poor	71.5	62.7	Very Good	84.1		9,10,
SD20B088-2	40.0	Poor	83.2	66.5	Very Good	89.1		
SD20D100-9	44.3	Good	92.0	64.8	Very Good	86.8		
AAC Wildfire	41.1	Average	85.3	58.4	Good	78.3		14,15,
AAC Network	38.4	Very Poor	79.8	38.3	Very Poor	51.3		4,14,15,19,20,
NW13MD108-3	41.0	Average	85.2	50.5	Average	67.7		
NW13MD109-1	47.2	Very Good	98.2	42.1	Very Poor	56.5		14,15,
N11MD2166W	40.2	Poor	83.6	57.5	Good	77.1		4,14,15,
MTS2068	40.2	Poor	83.5	48.1	Poor	64.4		14,15,
MT2019	41.3	Average	85.8	51.2	Average	68.6		14,15,
MTCL2010	41.9	Average	87.1	64.3	Very Good	86.2		2,14,15,

2023 NRPN Intraregional Production Zone

Northern Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	57.9	10.0	0.7	28.4	8.0	2.53	0.31	36	19	SOFT	47-29-15-09-04
Overland	56.9	10.3	0.7	29.8	10.6	2.57	0.40	57	18	MIXED	11-17-29-43-03
Wesley	56.2	9.1	1.0	33.7	11.6	2.72	0.44	51	17	MIXED	14-24-32-30-03
Jagalene	57.7	8.9	1.1	28.0	8.7	2.62	0.42	62	16	HARD	03-11-29-57-01
Jerry	58.0	10.2	0.6	28.6	8.6	2.59	0.38	63	16	HARD	03-11-24-62-01
19NORD-124	55.5	9.9	0.8	23.1	7.4	2.40	0.38	57	17	HARD	09-17-28-46-01
20NORD-138	57.5	9.9	0.7	27.5	8.5	2.54	0.42	54	17	HARD	10-24-32-34-01
21NORD-154	57.6	10.1	0.6	29.1	10.0	2.56	0.37	56	16	HARD	09-17-33-41-01
21NORD-155	55.2	9.6	0.8	27.2	9.7	2.58	0.37	55	17	HARD	09-21-30-40-01
21NORD-157	56.1	10.0	0.7	31.7	11.8	2.61	0.42	63	17	HARD	03-14-22-61-01
21NORD-158	55.2	9.1	1.3	27.4	9.4	2.50	0.39	45	16	MIXED	21-32-26-21-03
LCH20-2091	57.3	9.8	0.8	28.8	10.4	2.57	0.44	63	18	HARD	04-16-25-55-01
LCH20-2054	59.2	9.9	0.7	27.8	9.2	2.55	0.40	55	17	MIXED	11-19-33-37-03
LCH20-2026	58.9	10.1	0.7	27.3	9.5	2.49	0.43	57	17	HARD	09-15-33-43-01
LCH20-2031	58.6	10.2	0.7	29.1	10.4	2.57	0.38	54	16	HARD	10-19-34-37-01
LCH21-9436	56.8	9.7	0.9	29.9	10.4	2.61	0.43	52	16	HARD	10-25-32-33-01
CO18035RA	56.5	8.4	1.2	27.9	11.6	2.44	0.47	48	19	MIXED	22-25-26-27-03
CO18042RA	56.4	8.9	1.2	27.1	9.8	2.45	0.39	51	17	MIXED	13-26-31-30-03
CO18D297R	58.1	8.8	1.1	27.8	10.4	2.48	0.42	51	17	MIXED	15-23-31-31-03
OK15MASBx7 ARS 8-29	56.2	8.4	1.2	28.9	10.2	2.57	0.43	65	16	HARD	03-09-22-66-01
NEB-147-53	57.5	8.6	1.1	28.8	10.8	2.55	0.40	49	18	MIXED	19-23-31-27-03
NE19619	56.4	10.0	0.8	30.3	9.6	2.62	0.41	52	14	HARD	09-26-33-32-01
NHH19651	58.1	9.6	0.8	28.9	10.1	2.57	0.41	50	16	MIXED	15-26-29-30-03
NEB-145-12	57.6	9.8	0.8	31.9	8.7	2.68	0.36	50	15	MIXED	14-28-30-28-03
NEB-151-3	59.0	9.6	0.8	30.9	11.8	2.67	0.42	63	17	HARD	03-13-26-58-01
NHH19666	57.1	9.4	0.8	27.9	10.1	2.58	0.43	61	19	HARD	07-14-21-58-01
NE20620	57.7	9.7	0.7	34.6	12.3	2.72	0.40	54	18	MIXED	13-19-30-38-03
NE20462	55.6	10.2	0.7	27.0	8.9	2.63	0.38	60	16	HARD	04-15-29-52-01
NE19455	58.5	10.0	0.8	28.3	9.9	2.56	0.41	65	17	HARD	03-10-23-64-01
SD18B016-5	57.4	10.0	0.7	32.8	11.5	2.72	0.42	50	17	MIXED	16-27-27-30-03
SD18B025-8	57.8	10.1	0.6	30.4	9.7	2.66	0.41	62	16	HARD	04-11-28-57-01
SD18B055-2	58.2	10.4	0.6	29.8	10.7	2.61	0.44	57	19	MIXED	11-16-26-47-03
SD18B072-2	55.6	9.7	0.8	27.8	10.8	2.51	0.44	54	18	MIXED	13-23-29-35-03
SD19B019-2	59.5	10.2	0.7	28.5	9.2	2.54	0.37	59	17	HARD	06-16-29-49-01
SD19B033-2	58.3	9.3	1.0	28.4	9.1	2.54	0.38	62	17	HARD	05-11-30-54-01
SD19B108-3	56.9	10.0	0.7	30.1	12.3	2.55	0.43	47	18	MIXED	22-26-28-24-03
SD19B164-3	56.0	10.3	0.6	27.4	10.4	2.48	0.40	60	18	HARD	09-13-21-57-01
SD20B088-2	58.1	10.2	0.7	27.9	10.0	2.58	0.44	65	18	HARD	03-13-21-63-01
SD20D100-9	58.2	10.2	0.7	30.3	9.8	2.70	0.40	63	17	HARD	05-11-25-59-01
AAC Wildfire	56.0	9.7	0.9	29.2	10.2	2.61	0.39	61	16	HARD	03-14-27-56-01
AAC Network	56.8	9.0	1.0	27.0	10.1	2.43	0.39	68	18	HARD	02-10-19-69-01
NW13MD108-3	55.8	8.7	1.1	29.8	10.0	2.63	0.38	52	16	HARD	10-24-32-34-01
NW13MD109-1	56.7	8.9	1.1	33.2	10.5	2.74	0.40	50	15	MIXED	13-23-35-29-03
N11MD2166W	58.8	9.3	0.9	25.7	9.9	2.42	0.37	52	17	MIXED	13-23-31-33-03

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
MTS2068	56.1	10.1	0.7	27.0	9.3	2.47	0.42	65	16	HARD	02-13-20-65-01
MT2019	56.3	10.0	0.8	29.6	10.0	2.60	0.39	64	18	HARD	05-11-21-63-01
MTCL2010	56.1	9.4	0.9	25.0	8.1	2.45	0.35	66	15	HARD	02-08-21-69-01

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Northern Plains

	Wheat		Flour			Noodle Color					
LINE	Protein (%)	Milling Yield (%)	Ash (%)	Protein (%)	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
Kharkof	16.5	57.9	0.47	14.7	0.649	76.81	-0.71	21.55	-9.46	1.20	1.24
Overland	15.0	66.4	0.49	13.8	0.591	77.75	-0.79	21.91	-9.90	1.02	1.21
Wesley	15.7	69.2	0.41	14.8	0.640	78.08	-0.99	21.84	-9.01	1.16	-0.20
Jagalene	15.0	66.8	0.48	14.2	0.499	77.10	-0.84	22.74	-9.75	1.16	0.55
Jerry	14.6	66.3	0.49	13.7	0.491	77.89	-0.99	22.98	-8.24	1.15	1.65
19NORD-124	15.5	63.0	0.44	14.5	0.689	75.34	-0.64	20.32	-8.67	1.15	0.68
20NORD-138	15.3	63.8	0.45	14.7	0.650	77.50	-0.91	24.10	-8.96	0.96	0.20
21NORD-154	14.6	66.0	0.44	13.7	0.589	77.39	-0.97	21.75	-9.28	1.11	2.69
21NORD-155	15.8	65.6	0.49	14.8	0.662	74.46	-0.51	19.89	-9.74	1.14	0.79
21NORD-157	15.0	65.2	0.50	14.1	0.706	73.30	-0.68	20.54	-9.91	1.38	1.13
21NORD-158	15.1	64.9	0.51	14.3	0.581	75.48	-0.61	21.43	-9.78	1.08	2.19
LCH20-2091	15.5	66.0	0.48	14.3	0.644	76.75	-0.36	20.99	-11.96	0.99	0.82
LCH20-2054	14.7	67.1	0.42	14.0	0.487	78.45	-0.86	22.32	-9.22	0.81	2.11
LCH20-2026	13.9	67.3	0.43	12.9	0.575	79.38	-0.93	20.24	-9.26	1.03	2.79
LCH20-2031	14.2	68.0	0.47	13.1	0.573	79.71	-0.80	20.82	-9.54	1.00	3.62
LCH21-9436	14.3	65.8	0.38	13.2	0.541	78.65	-0.82	21.23	-8.81	1.11	1.75
CO18035RA	13.9	67.4	0.50	12.8	0.604	79.00	-0.86	21.15	-11.13	0.94	3.66
CO18042RA	14.2	67.3	0.49	13.1	0.594	78.90	-0.88	21.60	-10.24	0.94	2.19
CO18D297R	14.3	66.6	0.41	12.9	0.682	78.67	-0.79	20.71	-10.45	1.04	3.25
OK15MASBx7 ARS 8-29	15.0	62.5	0.49	14.0	0.219	79.03	-0.96	22.35	-9.04	1.07	4.97
NEB-147-53	14.5	66.8	0.46	13.3	0.529	78.54	-0.65	20.88	-10.62	1.09	3.41
NE19619	14.5	64.9	0.50	13.4	0.489	79.35	-1.03	21.57	-8.27	0.98	2.43
NHH19651	14.8	64.3	0.42	13.6	0.567	229.23	-1.46	23.09	-158.79	1.05	1.19
NEB-145-12	14.2	65.4	0.36	12.9	0.584	78.53	-1.09	22.17	-8.78	0.98	2.28
NEB-151-3	15.3	67.3	0.44	14.1	0.605	78.82	-1.05	20.88	-9.08	1.17	2.91
NHH19666	15.2	67.5	0.42	14.3	0.642	78.13	-0.90	22.18	-9.56	1.01	1.66
NE20620	15.2	66.1	0.39	14.0	0.651	76.93	-0.47	19.05	-10.50	0.99	3.02
NE20462	13.8	66.2	0.48	12.9	0.644	77.88	-1.12	19.61	-9.38	1.18	2.86
NE19455	14.8	65.4	0.39	13.6	0.498	78.12	-1.07	22.23	-8.36	1.15	1.51
SD18B016-5	14.4	66.0	0.42	13.4	0.543	80.01	-1.11	19.96	-10.95	1.27	3.48
SD18B025-8	15.3	63.3	0.45	14.0	0.696	77.76	-1.08	21.30	-10.22	0.95	-0.15
SD18B055-2	14.5	65.9	0.47	13.2	0.674	78.23	-1.34	24.48	-8.69	1.17	-0.17
SD18B072-2	14.4	67.7	0.41	13.5	0.735	75.41	-1.00	20.00	-4.88	1.05	1.96
SD19B019-2	14.7	66.5	0.40	13.6	0.709	77.72	-1.35	23.78	-9.53	1.14	0.15
SD19B033-2	15.4	67.5	0.43	14.1	0.732	77.15	-0.34	20.81	-10.95	1.12	1.35
SD19B108-3	13.9	67.6	0.46	12.6	0.563	78.93	-1.25	22.12	-8.85	0.91	0.77
SD19B164-3	14.6	64.1	0.52	13.3	0.631	78.13	-1.14	22.98	-9.42	1.10	0.92
SD20B088-2	15.2	64.5	0.46	14.1	0.608	78.33	-1.09	23.03	-9.58	1.13	1.32
SD20D100-9	14.7	65.4	0.45	13.8	0.573	78.18	-0.75	20.17	-11.77	1.21	2.19
AAC Wildfire	15.4	66.0	0.51	14.8	0.562	77.70	-0.96	23.85	-9.06	1.16	1.38
AAC Network	14.6	64.5	0.48	13.8	0.563	77.54	-0.96	24.45	-9.83	1.21	2.39
NW13MD108-3	14.6	64.8	0.42	13.5	0.644	79.26	-1.06	21.61	-8.36	1.16	2.27

	Wheat		Flour			Noodle Color					
	Protein	Milling Yield	Ash	Protein	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
LINE	(%)	(%)	(%)	(%)							
NW13MD109-1	14.9	66.8	0.40	13.9	0.579	79.73	-1.04	21.64	-8.52	1.03	2.70
N11MD2166W	15.0	63.8	0.35	13.8	0.675	79.68	-1.05	20.29	-8.31	1.08	1.44
MTS2068	15.9	65.4	0.49	14.9	0.270	78.46	-0.83	23.85	-10.21	1.06	2.14
MT2019	15.8	66.0	0.50	14.7	0.592	77.73	-0.67	23.84	-9.13	1.16	1.95
MTCL2010	15.9	65.4	0.51	15.4	0.303	78.03	-0.59	23.41	-7.66	1.15	3.68

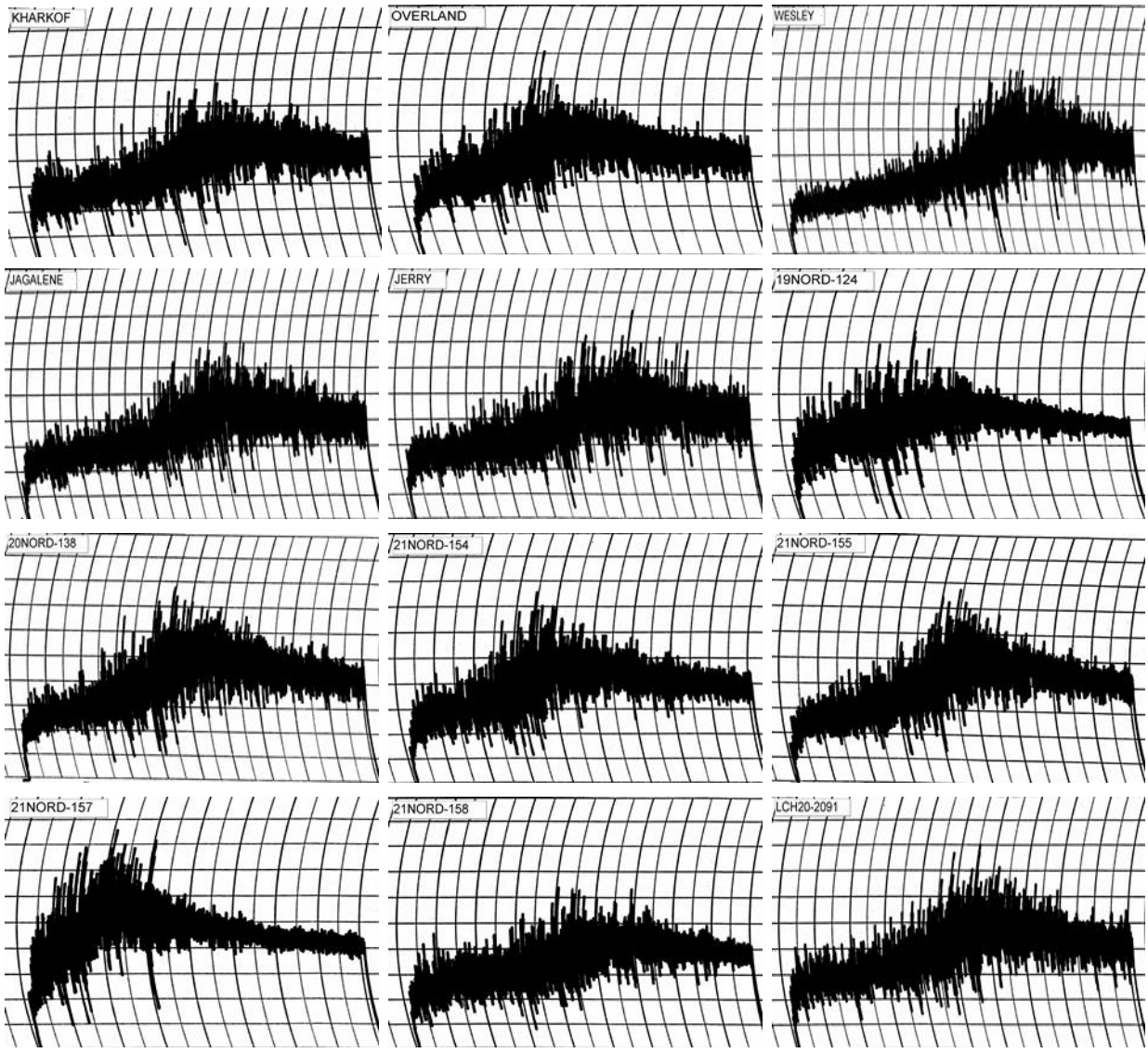
2023 NRPN Intraregional Production Zone

Northern Plains

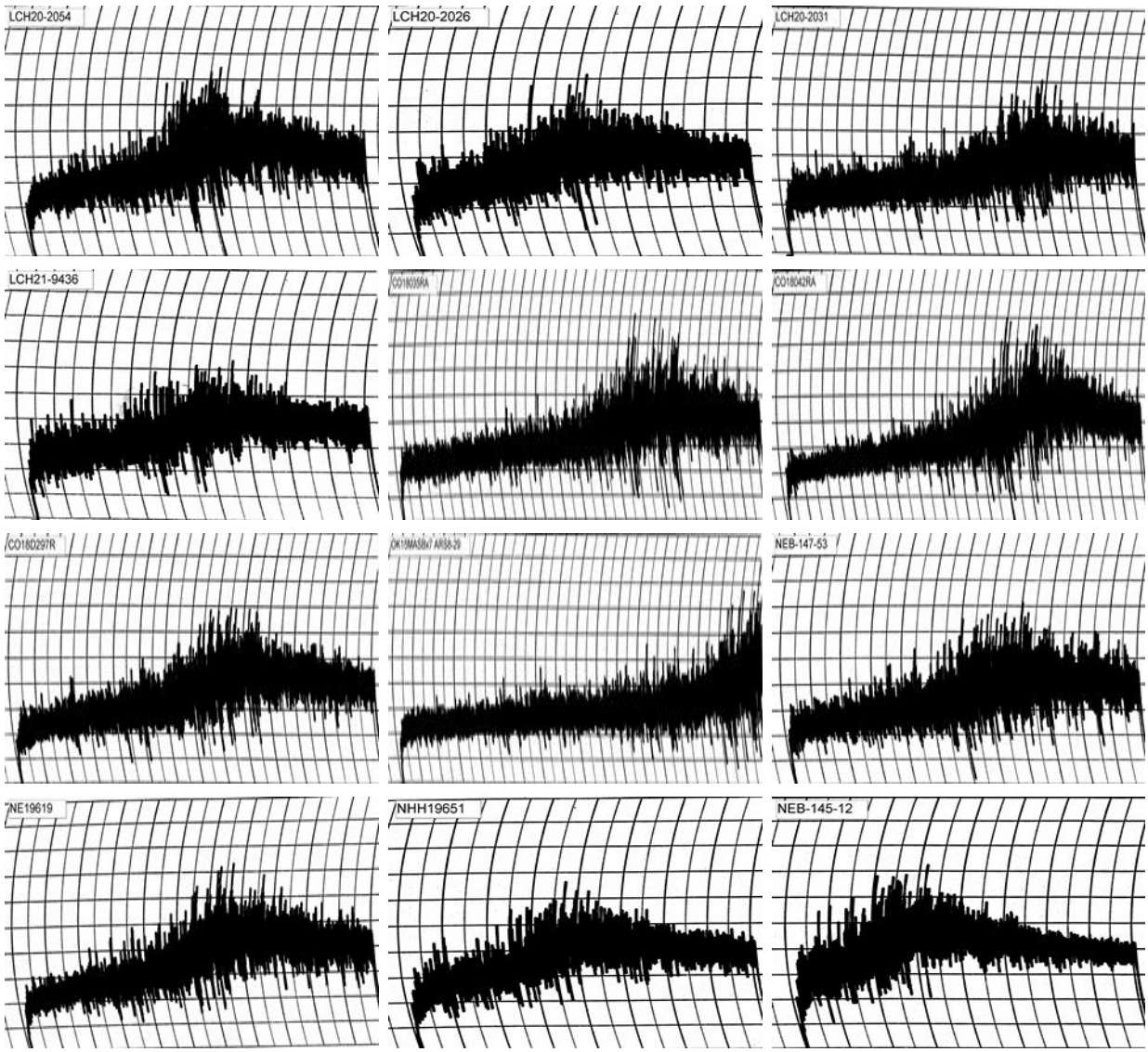
		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	14.7	67.0	5.13	5.13	4
Overland	13.8	65.8	3.13	3.13	3
Wesley	14.8	67.6	8.13	8.13	6
Jagalene	14.2	66.7	6.50	6.50	5
Jerry	13.7	65.8	6.50	6.50	5
19NORD-124	14.5	60.6	3.25	3.25	3
20NORD-138	14.7	67.5	5.88	5.88	4
21NORD-154	13.7	65.8	4.00	4.00	4
21NORD-155	14.8	67.6	4.75	4.75	4
21NORD-157	14.1	66.5	2.25	2.25	1
21NORD-158	14.3	64.2	4.50	4.50	4
LCH20-2091	14.3	66.7	5.63	5.63	5
LCH20-2054	14.0	65.3	5.50	5.50	5
LCH20-2026	12.9	64.4	4.00	4.00	4
LCH20-2031	13.1	64.8	8.75	8.75	6
LCH21-9436	13.2	64.0	5.25	5.25	4
CO18035RA	12.8	64.2	3.75	3.75	6
CO18042RA	13.1	65.8	1.25	1.25	6
CO18D297R	12.9	65.5	8.75	8.75	6
OK15MASBx7 ARS 8-29	14.0	70.3	8.75	8.75	6
NEB-147-53	13.3	66.1	8.13	8.13	5
NE19619	13.4	65.2	6.50	6.50	5
NHH19651	13.6	65.0	4.00	4.00	4
NEB-145-12	12.9	65.4	2.63	2.63	3
NEB-151-3	14.1	68.4	4.88	4.88	4
NHH19666	14.3	67.8	7.13	7.13	5
NE20620	14.0	67.7	9.50	9.50	6
NE20462	12.9	66.0	5.25	5.25	4
NE19455	13.6	67.2	7.00	7.00	6
SD18B016-5	13.4	64.8	7.50	7.50	5
SD18B025-8	14.0	66.8	7.00	7.00	6
SD18B055-2	13.2	65.0	5.00	5.00	4
SD18B072-2	13.5	65.9	7.88	7.88	6
SD19B019-2	13.6	64.7	5.00	5.00	4
SD19B033-2	14.1	66.4	7.88	7.88	6
SD19B108-3	12.6	64.3	9.88	9.88	6
SD19B164-3	13.3	65.7	5.38	5.38	4
SD20B088-2	14.1	66.9	5.38	5.38	5
SD20D100-9	13.8	66.4	5.88	5.88	5
AAC Wildfire	14.8	68.5	8.25	8.25	6
AAC Network	13.8	66.9	0.38	0.38	6

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
NW13MD108-3	13.5	66.4	5.38	5.38	5
NW13MD109-1	13.9	67.1	0.00	0.00	6
N11MD2166W	13.8	66.3	7.38	7.38	5
MTS2068	14.9	68.8	2.00	2.00	6
MT2019	14.7	68.5	8.13	8.13	6
MTCL2010	15.4	69.5	2.25	2.25	6

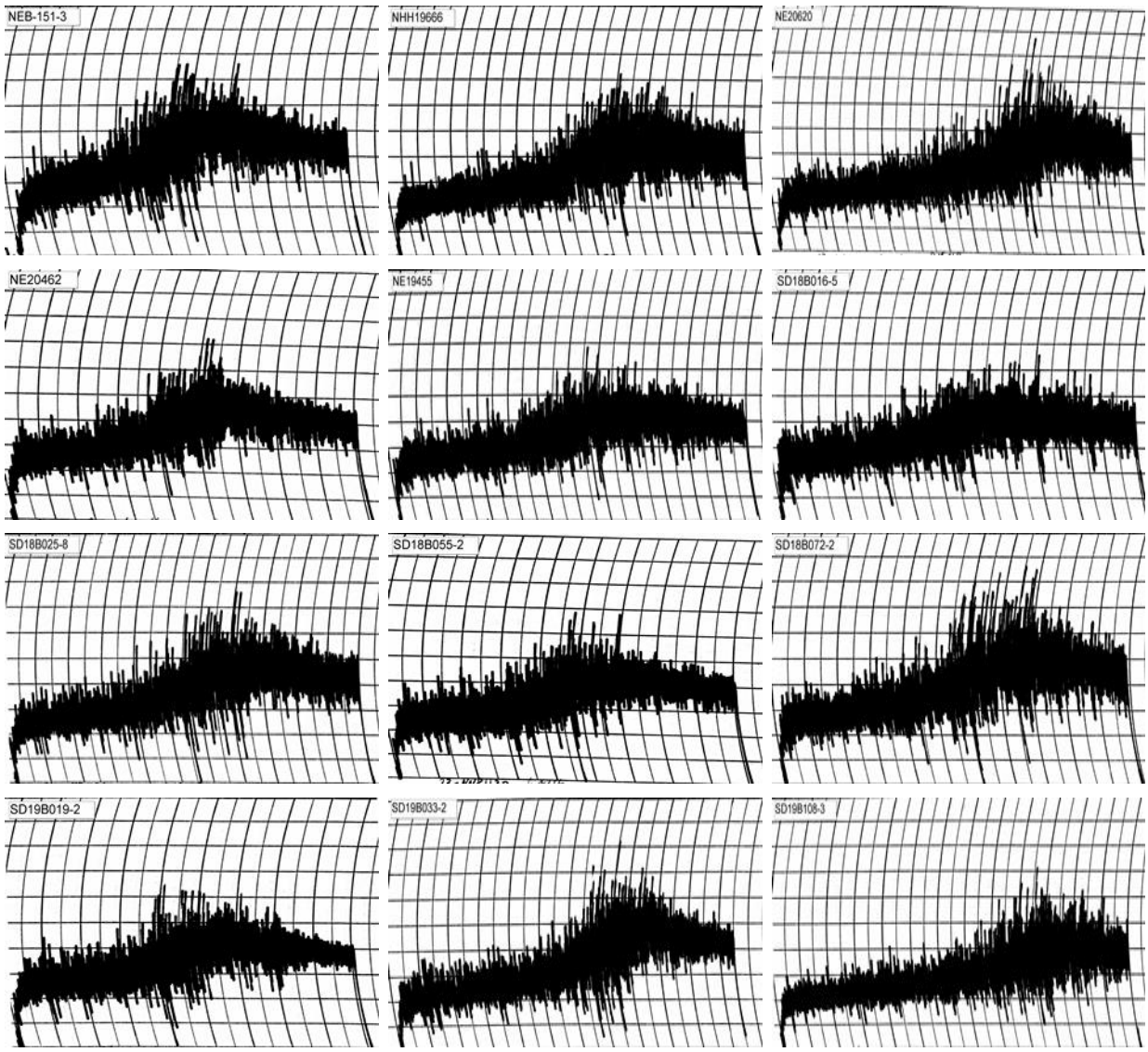
2023 NRPN Intraregional Production Zone
Northern Plains



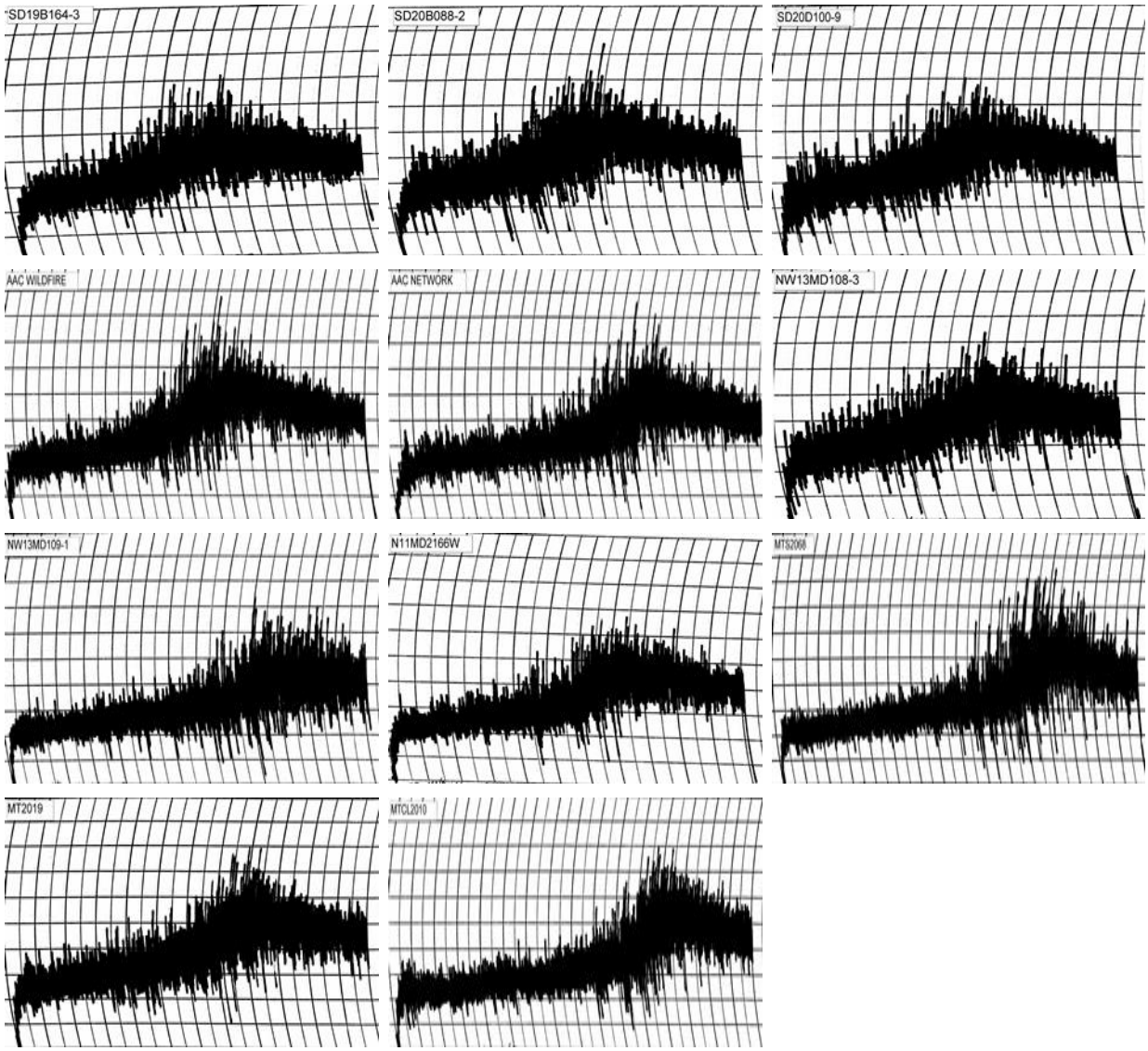
2023 NRPN Intraregional Production Zone
Northern Plains



2023 NRPN Intraregional Production Zone
Northern Plains



2023 NRPN Intraregional Production Zone
Northern Plains



2023 NRPN Intraregional Production Zone

Northern Plains

	RVA							
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)	Pasting Temp (Deg. C)
Kharkof	130.42	216.67	139.75	76.92	247.33	107.58	6.20	84.80
Overland	98.50	226.33	140.25	86.08	257.58	117.33	6.07	66.85
Wesley	91.08	187.67	107.42	80.25	214.42	107.00	5.87	67.70
Jagalene	115.00	219.67	135.83	83.83	252.08	116.25	6.07	67.75
Jerry	92.50	185.33	103.25	82.08	205.17	101.92	5.87	67.80
19NORD-124	127.58	226.33	150.67	75.67	259.75	109.08	6.33	68.55
20NORD-138	104.33	187.75	122.83	64.92	232.67	109.83	6.07	67.75
21NORD-154	107.17	216.75	143.75	73.00	253.42	109.67	6.20	67.70
21NORD-155	116.00	230.67	152.42	78.25	277.33	124.92	6.20	67.80
21NORD-157	126.42	208.58	145.92	62.67	271.00	125.08	6.13	66.95
21NORD-158	78.83	159.67	72.67	87.00	157.00	84.33	5.60	66.90
LCH20-2091	102.92	216.50	125.92	90.58	230.75	104.83	6.13	67.75
LCH20-2054	110.67	231.33	150.50	80.83	266.75	116.25	6.20	67.80
LCH20-2026	113.00	244.17	156.83	87.33	275.17	118.33	6.27	67.65
LCH20-2031	71.42	243.33	150.17	93.17	272.75	122.58	6.00	66.80
LCH21-9436	111.08	254.33	160.58	93.75	277.83	117.25	6.20	67.75
CO18035RA	102.50	245.75	146.42	99.33	268.33	121.92	6.00	67.75
CO18042RA	79.42	249.33	154.17	95.17	274.92	120.75	6.00	67.65
CO18D297R	134.58	245.42	176.25	69.17	308.00	131.75	6.27	83.20
OK15MASBx7 ARS 8-29	125.08	184.83	104.17	80.67	206.00	101.83	5.87	66.85
NEB-147-53	102.42	246.25	146.00	100.25	243.92	97.92	6.20	67.80
NE19619	108.17	250.17	157.83	92.33	277.92	120.08	6.20	68.55
NHH19651	86.17	237.92	152.50	85.42	268.17	115.67	6.27	68.55
NEB-145-12	109.58	238.17	164.00	74.17	291.17	127.17	6.20	66.95
NEB-151-3	98.25	144.17	73.08	71.08	158.00	84.92	5.67	66.95
NHH19666	116.92	209.33	132.17	77.17	251.33	119.17	6.00	67.80
NE20620	105.83	214.17	141.17	73.00	266.50	125.33	6.07	67.75
NE20462	89.92	247.33	158.33	89.00	277.33	119.00	6.13	68.50
NE19455	94.42	221.67	141.25	80.42	264.25	123.00	6.07	66.85
SD18B016-5	130.17	219.58	147.25	72.33	272.33	125.08	6.13	67.00
SD18B025-8	110.00	239.33	162.50	76.83	277.58	115.08	6.33	67.65
SD18B055-2	97.67	242.17	151.50	90.67	273.25	121.75	6.13	67.65
SD18B072-2	99.83	233.42	152.08	81.33	278.83	126.75	6.00	67.80
SD19B019-2	110.42	215.92	147.25	68.67	271.42	124.17	6.13	67.70
SD19B033-2	115.08	234.00	141.17	92.83	254.50	113.33	6.07	67.70
SD19B108-3	96.00	224.08	134.42	89.67	252.08	117.67	6.00	67.80
SD19B164-3	108.08	236.17	146.00	90.17	265.67	119.67	6.07	67.65
SD20B088-2	101.42	206.50	134.50	72.00	249.25	114.75	6.07	67.75
SD20D100-9	123.08	226.00	144.58	81.42	264.75	120.17	6.13	66.90
AAC Wildfire	125.75	197.17	128.17	69.00	244.50	116.33	6.07	67.75
AAC Network	96.00	191.75	127.58	64.17	246.42	118.83	5.93	67.75
NW13MD108-3	75.33	163.42	83.83	79.58	178.92	95.08	5.60	66.95
NW13MD109-1	73.42	150.58	79.50	71.08	169.75	90.25	5.60	66.95
N11MD2166W	79.25	151.58	67.92	83.67	144.83	76.92	5.60	67.65

	RVA							
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)	Pasting Temp (Deg. C)
MTS2068	109.33	231.83	151.08	80.75	279.25	128.17	6.07	67.70
MT2019	107.42	254.00	162.67	91.33	283.00	120.33	6.20	67.70
MTCL2010	81.17	182.92	97.83	85.08	196.58	98.75	5.80	67.70

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Northern Plains

	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
Kharkof	14.7	67.3	6.88	6.88	175.4	8.0	3.0	975	6.5	58
Overland	13.8	66.2	4.50	4.50	175.0	8.1	4.0	1025	6.8	67
Wesley	14.8	67.2	10.50	10.50	174.4	8.2	4.0	1100	7.4	68
Jagalene	14.2	67.1	7.75	7.75	175.9	7.8	4.5	1125	7.4	73
Jerry	13.7	65.4	7.25	7.25	173.9	7.5	2.5	1005	6.7	66
19NORD-124	14.5	60.3	4.00	4.00	169.1	7.5	2.5	965	6.7	58
20NORD-138	14.7	67.4	7.13	7.13	176.4	7.9	4.0	1125	7.5	71
21NORD-154	13.7	65.8	5.25	5.25	174.8	8.0	3.5	1015	6.8	67
21NORD-155	14.8	67.2	5.75	5.75	175.8	8.1	4.5	1085	7.2	66
21NORD-157	14.1	66.3	3.00	3.00	176.2	7.6	2.5	910	5.9	55
21NORD-158	14.3	64.2	5.63	5.63	173.5	8.0	4.5	1020	6.9	64
LCH20-2091	14.3	66.7	7.63	7.63	175.3	8.3	5.0	1150	7.8	76
LCH20-2054	14.0	65.3	7.00	7.00	173.7	7.8	3.5	1075	7.4	71
LCH20-2026	12.9	64.1	5.38	5.38	172.7	7.7	4.5	1035	7.1	74
LCH20-2031	13.1	65.2	10.50	10.50	174.0	7.6	3.0	945	6.3	64
LCH21-9436	13.2	64.3	5.50	5.50	173.6	7.6	5.5	990	6.6	67
CO18035RA	12.8	64.3	17.00	17.00	171.4	7.6	3.5	1010	6.9	73
CO18042RA	13.1	65.8	15.63	15.63	173.4	8.1	4.0	1135	7.6	83
CO18D297R	12.9	65.5	10.00	10.00	173.8	7.8	3.5	950	6.4	66
OK15MASBx7 ARS 8-29	14.0	70.2	18.75	18.75	176.3	7.6	2.5	980	6.5	62
NEB-147-53	13.3	66.3	9.50	9.50	174.4	7.4	3.0	1000	6.7	68
NE19619	13.4	65.1	9.25	9.25	174.1	7.5	4.5	1085	7.3	76
NHH19651	13.6	65.2	4.75	4.75	174.0	7.6	4.5	1120	7.5	78
NEB-145-12	12.9	65.4	4.00	4.00	174.7	7.8	4.0	975	6.5	68
NEB-151-3	14.1	68.2	8.25	8.25	177.0	7.7	4.5	1000	6.6	63
NHH19666	14.3	67.8	9.63	9.63	175.9	7.9	3.5	1050	7.0	66
NE20620	14.0	67.7	12.38	12.38	174.9	7.6	3.0	1010	6.7	64
NE20462	12.9	66.3	6.50	6.50	175.0	8.0	4.5	1030	6.9	74
NE19455	13.6	67.5	10.00	10.00	175.6	7.8	3.0	1040	7.0	70
SD18B016-5	13.4	64.5	8.13	8.13	173.4	7.9	3.0	1025	6.9	70
SD18B025-8	14.0	66.4	8.38	8.38	174.6	7.9	3.5	1060	7.1	69
SD18B055-2	13.2	65.4	7.75	7.75	174.2	7.7	4.0	985	6.5	67
SD18B072-2	13.5	66.3	10.00	10.00	172.8	7.7	3.5	1090	7.3	75
SD19B019-2	13.6	64.3	6.63	6.63	173.7	8.0	4.0	1025	6.9	68
SD19B033-2	14.1	66.3	9.38	9.38	174.2	7.7	3.5	1070	7.1	70
SD19B108-3	12.6	64.3	13.75	13.75	172.5	7.7	4.5	990	6.7	72
SD19B164-3	13.3	65.3	6.63	6.63	174.1	7.8	4.0	1020	6.8	70
SD20B088-2	14.1	67.2	6.25	6.25	176.3	8.0	4.0	1000	6.5	63
SD20D100-9	13.8	66.3	7.50	7.50	175.2	8.2	4.0	1070	7.2	71
AAC Wildfire	14.8	68.3	11.25	11.25	176.6	7.9	3.0	1075	7.0	66
AAC Network	13.8	66.9	11.75	11.75	174.3	7.5	2.5	930	6.1	59
NW13MD108-3	13.5	66.5	6.00	6.00	175.8	7.7	3.5	1000	6.5	67
NW13MD109-1	13.9	67.5	12.38	12.38	174.6	7.7	3.5	990	6.6	63

	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
N11MD2166W	13.8	66.4	8.63	8.63	174.8	7.7	4.0	1030	6.8	68
MTS2068	14.9	68.8	16.00	16.00	176.5	7.7	3.5	1060	7.0	64
MT2019	14.7	68.3	10.50	10.50	176.3	7.9	3.5	1130	7.5	71
MTCL2010	15.4	69.1	15.75	15.75	176.9	8.3	3.0	1195	8.0	72

2023 NRPN Intraregional Production Zone
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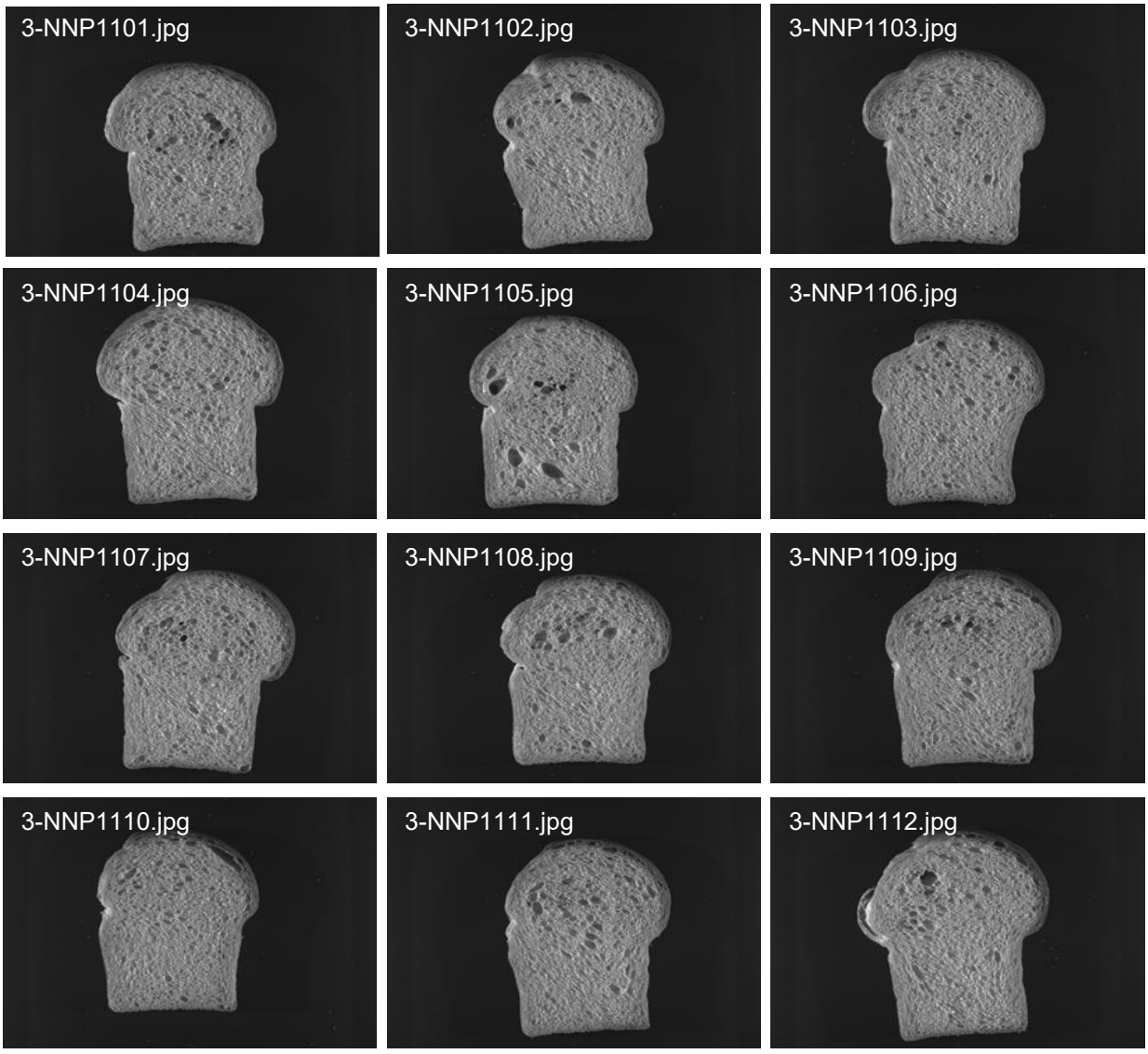
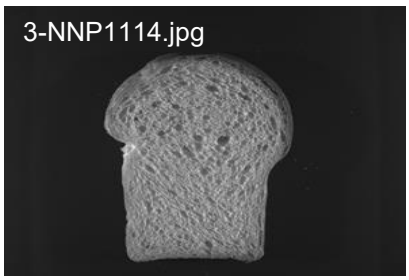
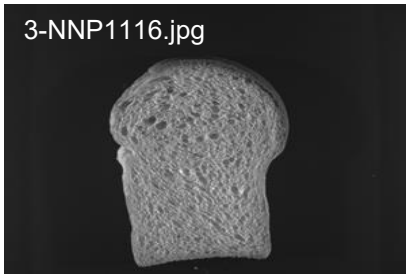
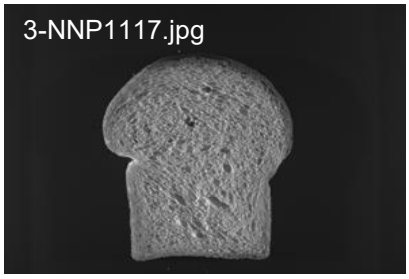
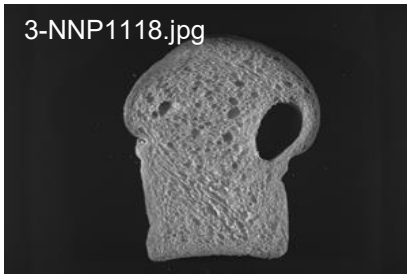


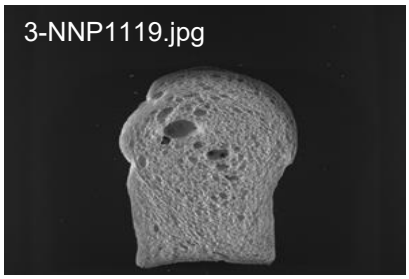
2023 NRPN Intraregional Production Zone
Northern Plains

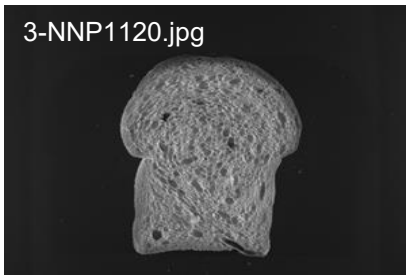


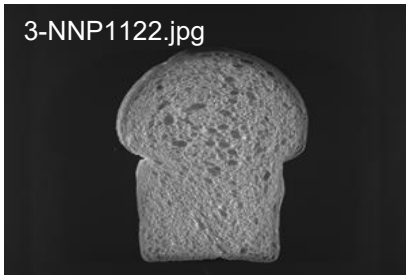


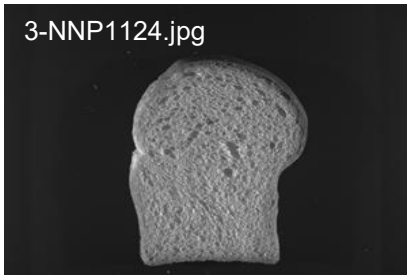












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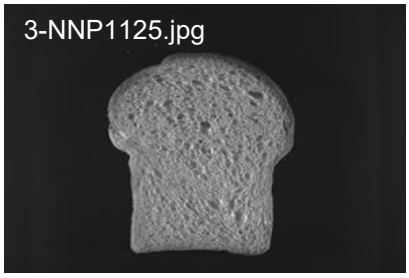
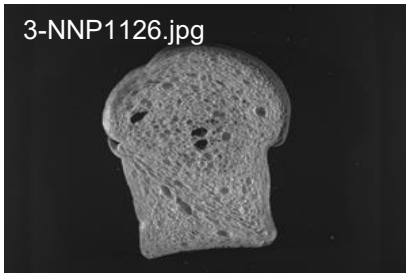
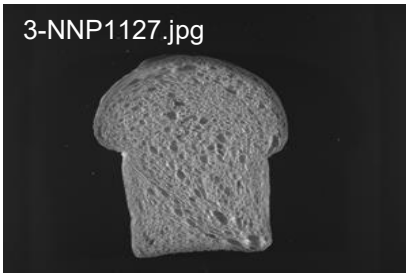
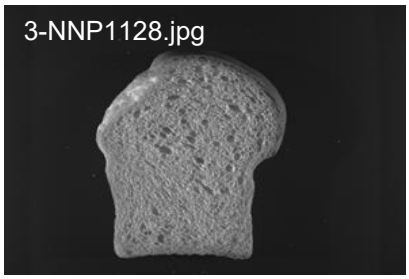
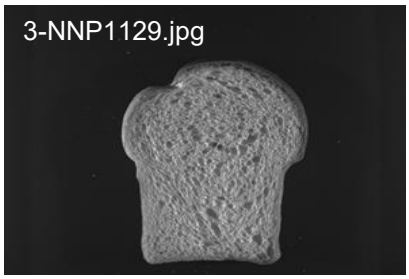
Northern Plains

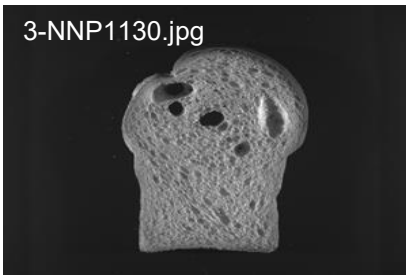


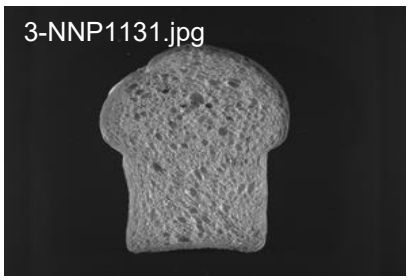


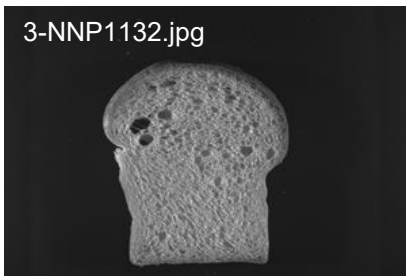


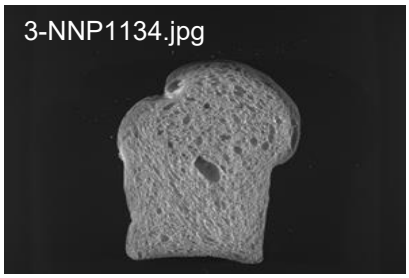


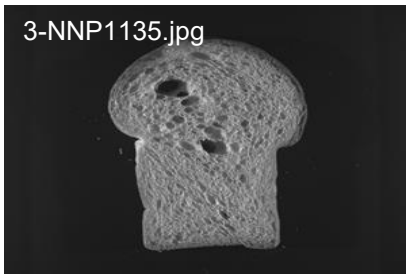


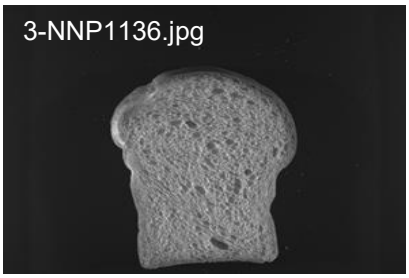












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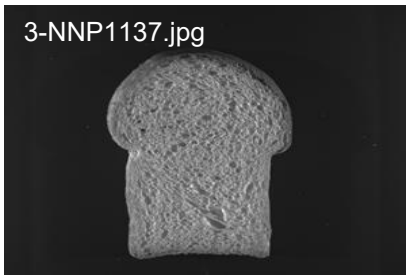
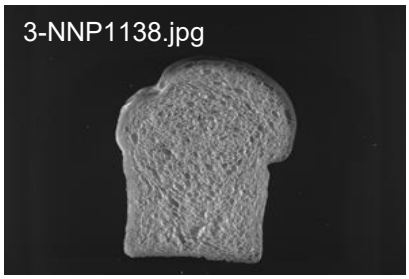
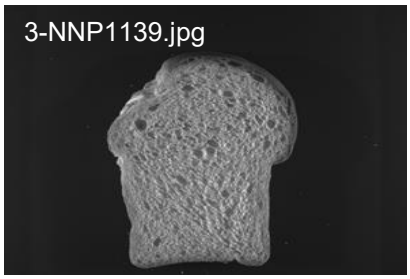
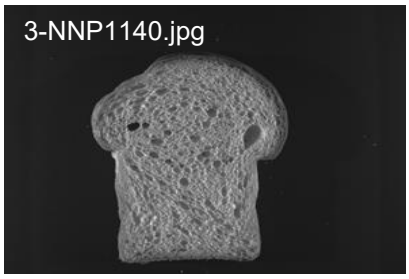
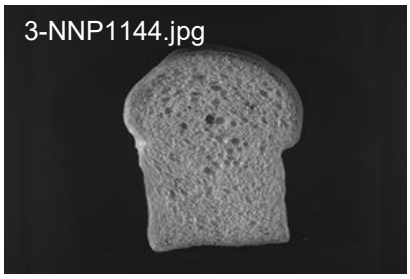
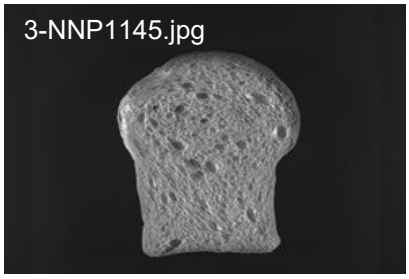


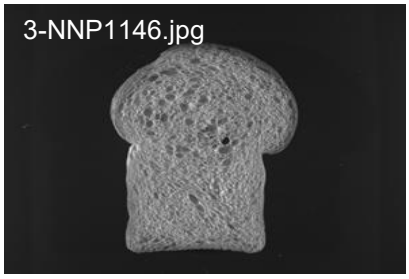


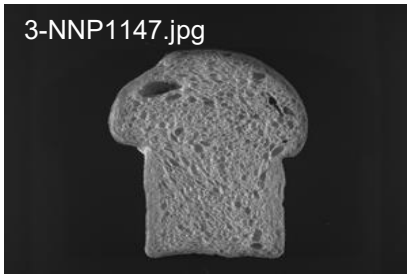


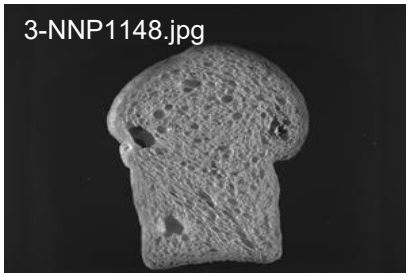


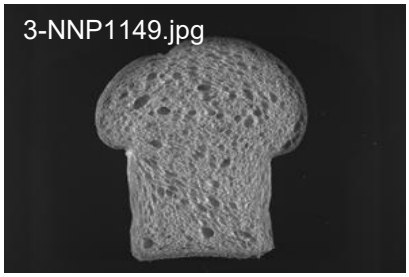












Southern
Regional Performance Nursery

2023 SRPN Intraregional Production Zone

Entry	Selection No.	Pedigree	Source
1	Kharkof	Kharkof	check
2	Scout66	Scout66	check
3	TAM-107	TAM-107	check
4	Jagalene	Jagalene	check
5	KS20HDW185	KS11HW53/Snowmass	KSU-Hays
6	KS20H105	TX08A001249/KS14H180	KSU-Hays
7	KS20H106	TX08A001249/KS14H180	KSU-Hays
8	KS20H124	KS14-50809/Brawl CL Plus	KSU-Hays
9	BASF-23-23		BASF
10	BASF-23-24		BASF
11	BASF-23-1		BASF
12	BASF-23-22		BASF
13	LCH21-9485		LCS
14	LCH20-2165		LCS
15	LCH21-9398		LCS
16	LCH20-2264		LCS
17	CO18042RA	(AF28/Byrd//AF26/Byrd)//2*Byrd/(AF28/Byrd//AF10 M3/2*Byrd)//2*Byrd/Byrd/	CSU
18	CO18D297R	CO12D906/CO11D1353//Monarch	CSU
19	CO19D304R	Snowmass 2.0/CO13D1164	CSU
20	CO200037R	Canvas//X170868/Canvas	CSU
21	KS14FHB0732M-4	KWS Erasmus/KS061193K-3//Bob Dole	KSU-Manhattan
22	KS160563S-3	SY Monument/Larry//KS090616K-1	KSU-Manhattan
23	KS160786S-6	SY Wolf/Joe//WB Grainfield	KSU-Manhattan
24	KS170013D-19	Bob Dole/KS13H20-5	KSU-Manhattan
25	KS22U7321.B2.B7	ZENDA/CO15D006R	USDA-ARS (KS)
26	KS21U7269.C1.B8	OK11D25056/CO15D006R	USDA-ARS (KS)
27	OK19225	KS06O3A~58-2/OK10408//RubyLee	OSU
28	OK18205-19HRBulk	Greer/OK09729	OSU
29	OK18217-19HR-4	OK07214/OK10338	OSU
30	OK20418-7C21	KS040640K-1/OK11D25056	OSU
31	TX19A001030	TAM 113 (=TX02A0252=TX90V6313//TX94V3724(TAM-200 BC41254-1-8-1	TAMU-AMA
32	TX15A001482-19AZ16	TX06A001431 (TAM 111Sib)/TX06A001281	TAMU-AMA
33	TX18DH129	AF1-95-6 (=Tatanka/TAM 114)	TAMU-AMA
34	TX18DH266	MP8-17 [= (TX1112-108/TAM 113)/(TAM 1112-20/Gallagher)]/[(TX12A0010	TAMU-AMA
35	TX18DH287	MP8-7[(TX1112-108/TAM 113)/(TAM 1112-20/Gallagher)]/[(TX12A001044/	TAMU-AMA
36	TX18DH313	AF1-216-20 (=CO11D1767/TX12V7229)	TAMU-AMA
37	TX15M8456-19AZ435	X08A586S [=ME-1-1/TX04M410164)]/TX01V5134RC-3	TAMU-CS
38	TX15M8456-19AZ504	X08A586S [=ME-1-1/TX04M410164)]/TX01V5134RC-3	TAMU-CS
39	NHH19651	NI10703/NH09563//Brawl CL plus	UNL
40	NE19619	TRCH/SRTU//KACHU/7/VEE#8//JUP/BJY/3/F3.71/TRM/4/BCN/5/KAUZ/6/16	UNL
41	NE19454	NE09517/NE06430	UNL
42	NE19412	OK09528/NE07486	UNL
43	NHH19668	OK09915C/NH11565	UNL
44	22CP900076	2180/BC98324-01$-2//APH12T4332	AgriPro_Syngenta
45	22CP900085	SY Wolverine/06BC722#17	AgriPro_Syngenta
46	TX19M3183	TAM 304/TX10A001016 (=Doans/TX01M5009-28)	TAMU-CS

List of SRPN Sample ID

Entry	Breeder ID	HWWQL ID			
		North Central Plains	Northern High Plains	South Central Plains	Southern High Plains
1	Kharkof	23-SNC1001	23-SNH1001	23-SSC1001	23-SSH1001
2	Scout66	23-SNC1002	23-SNH1002	23-SSC1002	23-SSH1002
3	TAM-107	23-SNC1003	23-SNH1003	23-SSC1003	23-SSH1003
4	Jagalene	23-SNC1004	23-SNH1004	23-SSC1004	23-SSH1004
5	KS20HDW185	23-SNC1005	23-SNH1005	23-SSC1005	23-SSH1005
6	KS20H105	23-SNC1006	23-SNH1006	23-SSC1006	23-SSH1006
7	KS20H106	23-SNC1007	23-SNH1007	23-SSC1007	23-SSH1007
8	KS20H124	23-SNC1008	23-SNH1008	23-SSC1008	23-SSH1008
9	BASF-23-23	23-SNC1009	23-SNH1009	23-SSC1009	23-SSH1009
10	BASF-23-24	23-SNC1010	23-SNH1010	23-SSC1010	23-SSH1010
11	BASF-23-1	23-SNC1011	23-SNH1011	23-SSC1011	23-SSH1011
12	BASF-23-22	23-SNC1012	23-SNH1012	23-SSC1012	23-SSH1012
13	LCH21-9485	23-SNC1013	23-SNH1013	23-SSC1013	23-SSH1013
14	LCH20-2165	23-SNC1014	23-SNH1014	23-SSC1014	23-SSH1014
15	LCH21-9398	23-SNC1015	23-SNH1015	23-SSC1015	23-SSH1015
16	LCH20-2264	23-SNC1016	23-SNH1016	23-SSC1016	23-SSH1016
17	CO18042RA	23-SNC1017	23-SNH1017	23-SSC1017	23-SSH1017
18	CO18D297R	23-SNC1018	23-SNH1018	23-SSC1018	23-SSH1018
19	CO19D304R	23-SNC1019	23-SNH1019	23-SSC1019	23-SSH1019
20	CO200037R	23-SNC1020	23-SNH1020	23-SSC1020	23-SSH1020
21	KS14FHB0732M-4	23-SNC1021	23-SNH1021	23-SSC1021	23-SSH1021
22	KS160563S-3	23-SNC1022	23-SNH1022	23-SSC1022	23-SSH1022
23	KS160786S-6	23-SNC1023	23-SNH1023	23-SSC1023	23-SSH1023
24	KS170013D-19	23-SNC1024	23-SNH1024	23-SSC1024	23-SSH1024
25	KS22U7321.B2.B7	23-SNC1025	23-SNH1025	23-SSC1025	23-SSH1025
26	KS21U7269.C1.B8	23-SNC1026	23-SNH1026	23-SSC1026	23-SSH1026
27	OK19225	23-SNC1027	23-SNH1027	23-SSC1027	23-SSH1027
28	OK18205-19HRBulk	23-SNC1028	23-SNH1028	23-SSC1028	23-SSH1028
29	OK18217-19HR-4	23-SNC1029	23-SNH1029	23-SSC1029	23-SSH1029
30	OK20418-7C21	23-SNC1030	23-SNH1030	23-SSC1030	23-SSH1030
31	TX19A001030	23-SNC1031	23-SNH1031	23-SSC1031	23-SSH1031
32	TX15A001482-19AZ16	23-SNC1032	23-SNH1032	23-SSC1032	23-SSH1032
33	TX18DH129	23-SNC1033	23-SNH1033	23-SSC1033	23-SSH1033
34	TX18DH266	23-SNC1034	23-SNH1034	23-SSC1034	23-SSH1034
35	TX18DH287	23-SNC1035	23-SNH1035	23-SSC1035	23-SSH1035
36	TX18DH313	23-SNC1036	23-SNH1036	23-SSC1036	23-SSH1036
37	TX15M8456-19AZ435	23-SNC1037	23-SNH1037	23-SSC1037	23-SSH1037
38	TX15M8456-19AZ504	23-SNC1038	23-SNH1038	23-SSC1038	23-SSH1038
39	NHH19651	23-SNC1039	23-SNH1039	23-SSC1039	23-SSH1039
40	NE19619	23-SNC1040	23-SNH1040	23-SSC1040	23-SSH1040
41	NE19454	23-SNC1041	23-SNH1041	23-SSC1041	23-SSH1041
42	NE19412	23-SNC1042	23-SNH1042	23-SSC1042	23-SSH1042
43	NHH19668	23-SNC1043	23-SNH1043	23-SSC1043	23-SSH1043
44	22CP900076	23-SNC1044	23-SNH1044	23-SSC1044	23-SSH1044
45	22CP900085	23-SNC1045	23-SNH1045	23-SSC1045	23-SSH1045
46	TX19M3183	23-SNC1046	23-SNH1046	23-SSC1046	23-SSH1046
47	BASF 23-25	23-SNC1047	23-SNH1047	23-SSC1047	23-SSH1047

Hard Winter Wheat Quality Report

2023 SRPN-NCP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	33.5	Very Poor	57.4	55.0	Good	74.0		6,8,10,20,
Scout 66	53.6	Very Good	91.9	56.5	Good	76.0		
TAM 107	50.6	Good	86.8	66.2	Very Good	89.1	1AL	
Jagalene	54.1	Very Good	92.8	47.8	Poor	64.3		
KS20HDW185	52.3	Good	89.8	37.3	Very Poor	50.2		9,10,14,15,
KS20H105	51.2	Good	87.9	33.9	Very Poor	45.6	1AL	14,15,17,
KS20H106	49.8	Average	85.4	49.9	Average	67.2	1AL	5,14,15,
KS20H124	54.5	Very Good	93.5	41.2	Very Poor	55.4		14,15,
BASF-23-23	54.8	Very Good	94.0	60.4	Good	81.3		
BASF-23-24	46.7	Poor	80.2	60.8	Good	81.7		18,
BASF-23-1	44.8	Very Poor	76.8	42.9	Poor	57.7		3,
BASF-23-22	49.0	Average	84.1	70.8	Very Good	95.2	1AL	
LCH21-9485	47.6	Average	81.7	70.1	Very Good	94.4		
LCH20-2165	52.3	Good	89.6	61.1	Good	82.3		
LCH21-9398	46.2	Poor	79.3	68.7	Very Good	92.5		
LCH20-2264	48.6	Average	83.4	52.4	Average	70.4		
CO18042RA	45.1	Very Poor	77.4	51.0	Average	68.6		4,5,14,15,
CO18D297R	49.1	Average	84.3	48.2	Poor	64.9		4,14,15,19,
CO19D304R	51.9	Good	89.0	35.0	Very Poor	47.0		14,15,
CO200037R	53.8	Very Good	92.4	52.7	Average	70.9		4,15,
KS14FHB0732M-4	42.5	Very Poor	73.0	48.7	Average	65.6		
KS160563S-3	46.0	Poor	78.9	43.3	Poor	58.3		1,14,15,
KS160786S-6	50.1	Average	86.0	39.8	Very Poor	53.6		18,19,
KS170013D-19	38.0	Very Poor	65.1	67.2	Very Good	90.4		8,
KS22U7321.B2.B7	48.2	Average	82.7	51.4	Average	69.1		1,3,
KS21U7269.C1.B8	45.8	Very Poor	78.6	47.2	Poor	63.5		
OK19225	58.3	Very Good	100.0	52.9	Average	71.1		
OK18205-19HRBulk	53.8	Very Good	92.3	68.3	Very Good	91.9		
OK18217-19HR-4	52.2	Good	89.5	54.2	Good	73.0	1BL	9,10,
OK20418-7C21	52.9	Very Good	90.8	41.8	Very Poor	56.2	1BL	
TX19A001030	50.8	Good	87.1	47.1	Poor	63.3		9,10,

Quality scores and ratings are calculated directly from the relative trait weightings (printed at the top of the page) and are applicable only to the nursery selected.

Hard Winter Wheat Quality Report

2023 SRPN-NCP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
TX15A001482-19AZ16	44.5	Very Poor	76.4	61.9	Good	83.2		1,2,4,14,
TX18DH129	51.0	Good	87.4	34.4	Very Poor	46.2		3,9,14,15,
TX18DH266	42.7	Very Poor	73.3	45.8	Poor	61.6		1,9,10,14,15,
TX18DH287	50.3	Average	86.3	38.4	Very Poor	51.6		3,11,13,
TX18DH313	51.1	Good	87.7	40.4	Very Poor	54.3		11,18,19,
TX15M8456-19AZ435	46.8	Poor	80.3	62.5	Very Good	84.1		
TX15M8456-19AZ504	42.8	Very Poor	73.4	59.1	Good	79.6		1,2,14,
NHH19651	48.5	Average	83.2	52.1	Average	70.1		
NE19619	46.4	Poor	79.6	45.7	Poor	61.4		10,
NE19454	46.5	Poor	79.8	40.2	Very Poor	54.1		14,15,
NE19412	47.8	Average	82.0	59.2	Good	79.7		
NHH19668	47.1	Poor	80.8	48.6	Average	65.3		
22CP900076	47.5	Poor	81.5	49.5	Average	66.6		
22CP900085	56.9	Very Good	97.7	70.7	Very Good	95.1		
TX19M3183	43.7	Very Poor	74.9	74.3	Very Good	100.0		1,8,
BASF 23-25	47.5	Poor	81.4	45.2	Poor	60.8		14,15,

2023 SRPN Intraregional Production Zone

North Central Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	59.8	10.9	0.8	29.7	8.5	2.55	0.33	40	17	MIXED	33-32-22-13-03
Scout66	59.4	10.7	0.7	31.8	9.4	2.68	0.38	56	16	HARD	09-17-34-40-01
TAM-107	58.9	10.6	0.7	33.4	10.0	2.70	0.41	56	15	HARD	06-22-32-40-01
Jagalene	60.8	10.5	0.6	30.6	9.3	2.71	0.39	69	18	HARD	02-08-19-71-01
KS20HDW185	59.0	10.8	0.6	34.3	8.4	2.84	0.34	71	15	HARD	00-06-18-76-01
KS20H105	60.9	11.1	0.7	30.1	9.2	2.59	0.43	54	18	MIXED	12-21-30-37-03
KS20H106	60.7	10.7	0.8	30.3	9.5	2.62	0.44	54	17	MIXED	11-22-30-37-03
KS20H124	60.7	10.2	0.8	32.8	9.6	2.74	0.41	73	16	HARD	01-04-14-81-01
BASF-23-23	60.6	10.4	0.7	30.8	9.2	2.62	0.34	65	17	HARD	03-10-23-64-01
BASF-23-24	59.9	10.6	0.6	29.4	9.3	2.61	0.40	61	17	HARD	04-17-28-51-01
BASF-23-1	59.2	10.9	0.6	30.4	11.5	2.66	0.41	60	17	HARD	06-13-28-53-01
BASF-23-22	59.5	10.5	0.7	34.8	9.8	2.85	0.41	66	16	HARD	02-08-22-68-01
LCH21-9485	59.8	10.3	0.6	28.2	9.5	2.56	0.38	56	16	HARD	06-20-32-42-01
LCH20-2165	60.0	10.5	0.6	31.5	10.8	2.63	0.42	57	16	HARD	07-18-34-41-01
LCH21-9398	59.4	10.7	0.7	31.7	10.3	2.68	0.42	55	17	HARD	09-20-32-39-01
LCH20-2264	58.6	10.3	0.7	33.9	11.1	2.69	0.42	48	17	MIXED	20-27-32-21-03
CO18042RA	59.2	10.8	0.6	28.6	11.0	2.50	0.44	62	19	HARD	07-12-25-56-01
CO18D297R	59.9	10.2	0.7	29.1	10.0	2.50	0.40	57	16	HARD	07-18-29-46-01
CO19D304R	60.1	10.0	0.9	28.4	9.5	2.56	0.39	61	19	HARD	06-17-22-55-01
CO200037R	60.1	10.2	0.8	28.0	9.3	2.48	0.39	55	19	HARD	10-21-30-39-01
KS14FHB0732M-4	58.2	10.4	0.8	29.2	9.8	2.60	0.40	60	17	HARD	04-15-30-51-01
KS160563S-3	57.5	8.4	1.5	33.3	10.1	2.75	0.40	50	16	MIXED	13-29-30-28-03
KS160786S-6	60.7	7.5	1.1	30.8	8.9	2.66	0.39	58	17	HARD	08-17-28-47-01
KS170013D-19	58.6	7.6	1.2	29.4	10.1	2.57	0.41	69	17	HARD	03-07-21-69-01
KS22U7321.B2.B7	57.6	8.6	1.3	35.4	11.2	2.74	0.41	53	16	MIXED	12-22-30-36-03
KS21U7269.C1.B8	58.4	8.4	1.2	35.7	11.1	2.76	0.42	48	19	MIXED	25-25-22-28-03
OK19225	62.0	10.6	0.6	31.4	9.0	2.68	0.37	62	15	HARD	03-09-33-55-01
OK18205-19HRBulk	59.4	10.3	0.7	31.3	9.3	2.64	0.42	54	15	HARD	08-21-35-36-01
OK18217-19HR-4	61.2	9.7	1.0	34.2	9.0	2.86	0.36	67	15	HARD	01-09-19-71-01
OK20418-7C21	59.5	10.1	0.9	31.6	9.0	2.66	0.39	69	14	HARD	01-04-23-72-01
TX19A001030	60.8	10.7	0.7	32.2	9.7	2.67	0.40	56	15	HARD	07-19-34-40-01
TX15A001482-19AZ16	57.4	9.7	0.9	26.2	8.4	2.47	0.40	52	16	HARD	10-27-31-32-01
TX18DH129	60.5	10.5	0.7	33.3	12.0	2.63	0.41	61	17	HARD	05-11-30-54-01
TX18DH266	57.6	10.8	0.6	34.5	10.3	2.67	0.39	63	17	HARD	03-14-24-59-01
TX18DH287	59.7	10.7	0.5	36.9	11.8	2.78	0.41	62	16	HARD	04-12-26-58-01
TX18DH313	59.4	10.5	0.5	33.8	10.4	2.75	0.37	57	16	HARD	07-17-31-45-01
TX15M8456-19AZ435	58.8	10.3	0.6	28.2	9.3	2.56	0.37	69	17	HARD	01-07-18-74-01
TX15M8456-19AZ504	55.9	10.3	0.6	27.6	9.3	2.58	0.41	69	16	HARD	03-08-17-72-01
NHH19651	60.1	8.0	1.2	31.2	8.6	2.69	0.38	48	16	MIXED	16-29-30-25-03
NE19619	59.0	8.5	1.2	34.7	9.9	2.76	0.38	53	15	MIXED	11-24-31-34-03
NE19454	60.4	10.2	0.6	29.0	10.4	2.56	0.39	64	18	HARD	05-10-23-62-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
NE19412	58.8	10.2	0.6	32.8	9.8	2.66	0.40	59	17	HARD	07-14-32-47-01
NHH19668	59.0	10.3	0.6	29.1	10.3	2.63	0.42	60	18	HARD	08-15-24-53-01
22CP900076	59.4	10.2	0.7	29.3	11.1	2.62	0.42	59	18	HARD	06-17-30-47-01
22CP900085	60.1	10.0	0.7	32.5	9.2	2.62	0.40	62	15	HARD	03-13-29-55-01
TX19M3183	57.3	8.6	1.2	30.0	8.7	2.63	0.38	60	15	HARD	03-15-28-54-01
BASF 23-25	58.1	10.5	0.7	32.8	9.5	2.77	0.42	54	18	HARD	10-21-32-37-01

2023 SRPN Intraregional Production Zone

North Central Plains

	Wheat		Flour			Noodle Color					
LINE	Protein (%)	Milling Yield (%)	Ash (%)	Protein (%)	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
Kharkof	16.3	59.0	0.40	14.3	0.571	77.65	-1.08	23.32	-7.40	1.04	-0.19
Scout66	14.9	68.4	0.37	13.8	0.617	78.42	-0.86	21.51	-8.07	1.04	0.71
TAM-107	13.6	66.7	0.37	12.2	0.575	78.37	-1.14	23.52	-8.67	1.17	1.57
Jagalene	14.1	68.4	0.44	12.9	0.511	78.16	-1.09	22.87	-8.46	1.10	0.56
KS20HDW185	14.0	65.7	0.47	12.5	0.572	78.89	-1.33	21.99	-11.88	1.21	3.19
KS20H105	13.7	68.6	0.40	12.3	0.615	79.52	-0.80	20.75	-9.71	0.79	2.30
KS20H106	13.8	67.8	0.41	12.4	0.607	79.59	-0.98	20.62	-9.47	1.00	2.14
KS20H124	14.8	66.8	0.41	13.6	0.663	78.75	-1.33	22.69	-10.84	1.49	2.19
BASF-23-23	14.7	67.7	0.38	13.1	0.536	78.65	-1.28	23.71	-8.26	1.23	1.84
BASF-23-24	13.5	64.8	0.38	12.2	0.580	79.08	-1.69	24.76	-8.60	1.18	1.29
BASF-23-1	13.4	66.0	0.42	12.3	0.565	80.45	-1.97	25.02	-7.60	1.05	1.08
BASF-23-22	14.6	64.4	0.40	13.2	0.517	77.83	-1.44	24.80	-8.91	1.34	1.21
LCH21-9485	13.6	66.4	0.40	12.5	0.681	80.02	-1.40	21.39	-8.54	0.85	2.21
LCH20-2165	13.8	68.9	0.41	12.4	0.563	79.02	-1.14	22.14	-9.36	1.13	1.88
LCH21-9398	13.5	66.1	0.42	12.0	0.580	79.02	-1.31	22.17	-8.59	1.22	1.47
LCH20-2264	13.5	66.6	0.31	12.0	0.604	79.07	-0.93	20.79	-7.35	1.05	1.41
CO18042RA	13.9	67.5	0.42	12.6	0.603	79.86	-0.97	21.31	-9.71	0.96	1.94
CO18D297R	13.3	66.9	0.37	11.9	0.603	79.20	-0.94	20.64	-8.65	0.76	2.73
CO19D304R	13.5	69.0	0.39	12.2	0.622	79.87	-1.51	21.99	-10.45	0.95	2.50
CO200037R	13.5	70.0	0.34	12.2	0.561	79.45	-1.52	24.35	-7.85	0.91	2.29
KS14FHB0732M-4	14.1	64.5	0.42	12.9	0.496	79.35	-1.03	21.15	-8.76	1.01	2.55
KS160563S-3	14.2	67.1	0.46	13.0	0.429	79.98	-1.40	23.24	-9.54	1.19	1.71
KS160786S-6	13.7	66.3	0.40	12.4	0.603	79.80	-1.23	20.55	-9.66	0.93	3.55
KS170013D-19	15.0	61.1	0.40	13.8	0.513	78.81	-0.67	21.58	-9.80	1.09	2.80
KS22U7321.B2.B7	14.2	67.9	0.45	12.9	0.618	78.42	-1.11	22.26	-10.18	1.05	1.59
KS21U7269.C1.B8	14.1	67.3	0.42	13.0	0.588	79.25	-0.73	19.94	-11.97	1.13	3.28
OK19225	15.0	68.7	0.39	13.8	0.494	77.19	-0.35	22.23	-7.91	1.52	1.52
OK18205-19HRBulk	14.7	68.3	0.37	13.3	0.520	77.77	-1.22	22.84	-7.77	1.34	-0.09
OK18217-19HR-4	15.6	64.9	0.47	14.3	0.569	77.38	-0.98	24.56	-9.38	1.18	-0.11
OK20418-7C21	14.3	66.9	0.44	13.2	0.320	78.10	-0.83	22.95	-9.30	1.23	0.91
TX19A001030	13.8	67.6	0.47	12.4	0.589	78.06	-1.10	21.68	-9.07	1.22	1.55
TX15A001482-19AZ16	14.3	65.6	0.37	13.3	0.608	78.75	-1.04	22.28	-8.52	1.24	1.31
TX18DH129	13.4	69.4	0.48	12.1	0.562	77.01	-0.97	22.83	-8.39	1.18	2.31
TX18DH266	13.8	64.6	0.50	12.6	0.653	79.38	-1.39	22.62	-9.76	1.18	2.88
TX18DH287	12.8	66.5	0.42	11.5	0.532	79.35	-1.61	24.69	-7.73	1.22	2.46
TX18DH313	12.9	67.8	0.45	11.7	0.629	78.35	-1.42	23.84	-8.15	1.32	0.94
TX15M8456-19AZ435	14.3	65.0	0.39	12.8	0.522	78.49	-1.09	22.62	-8.50	1.08	1.66
TX15M8456-19AZ504	13.8	64.6	0.40	12.6	0.274	78.72	-1.09	23.70	-6.59	1.14	2.97
NHH19651	14.5	65.8	0.39	13.0	0.636	79.57	-1.70	23.65	-8.37	1.11	-0.59
NE19619	14.7	65.1	0.46	13.0	0.550	79.93	-1.10	21.56	-8.04	1.04	1.84
NE19454	14.2	65.6	0.40	12.7	0.276	79.09	-0.87	22.48	-7.39	1.10	3.79
NE19412	14.1	66.5	0.43	12.7	0.544	78.72	-1.01	22.84	-7.79	1.08	1.74

	Wheat		Flour			Noodle Color					
	Protein	Milling Yield	Ash	Protein	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
LINE	(%)	(%)	(%)	(%)							
NHH19668	14.3	66.9	0.38	12.9	0.541	79.59	-1.42	22.46	-7.38	1.22	0.95
22CP900076	14.1	68.3	0.44	12.8	0.608	78.87	-0.79	20.55	-11.63	1.39	2.63
22CP900085	14.7	68.7	0.35	13.4	0.591	78.77	-0.96	20.80	-10.73	1.10	0.05
TX19M3183	15.0	63.3	0.39	13.6	0.510	77.68	-0.77	22.19	-10.04	1.08	0.89
BASF 23-25	14.3	65.9	0.36	13.0	0.297	80.50	-0.99	20.61	-7.19	0.69	3.90

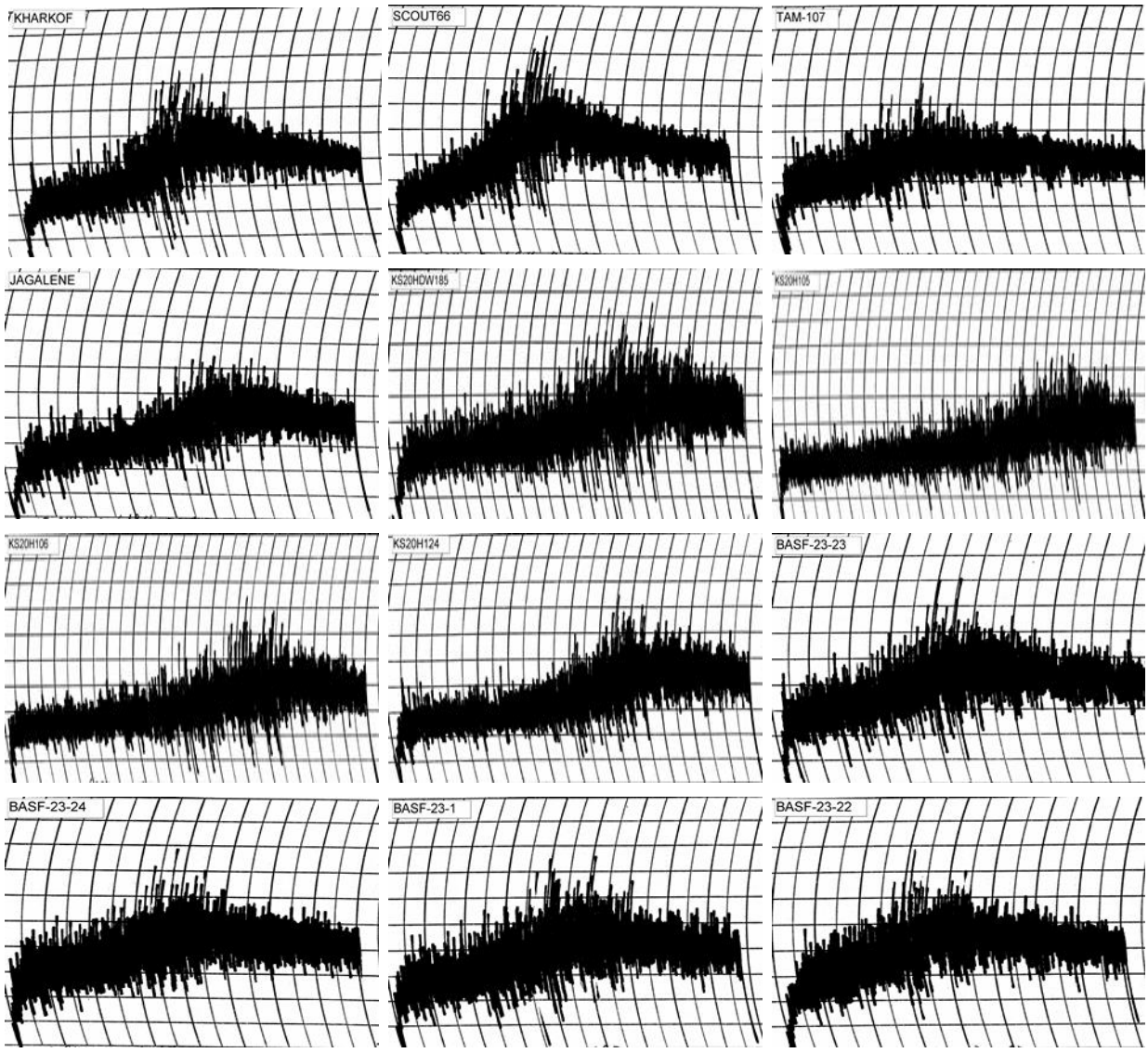
2023 SRPN Intraregional Production Zone

North Central Plains

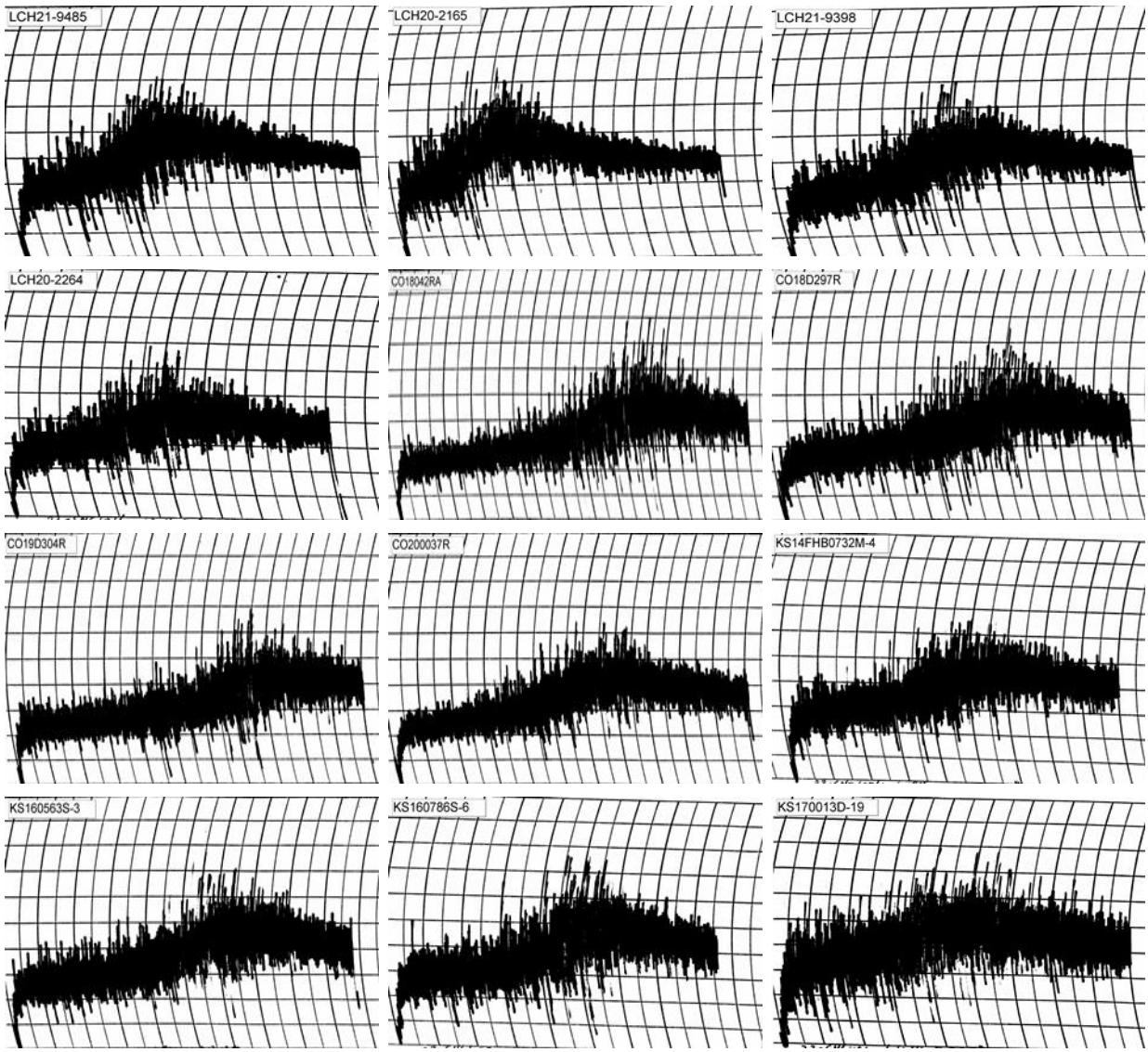
		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	14.3	69.7	4.13	4.13	4
Scout66	13.8	69.9	3.75	3.75	4
TAM-107	12.2	65.7	4.00	4.00	3
Jagalene	12.9	67.4	5.25	5.25	4
KS20HDW185	12.5	63.7	8.38	8.38	6
KS20H105	12.3	64.0	3.13	3.13	6
KS20H106	12.4	64.5	0.38	0.38	6
KS20H124	13.6	66.6	8.00	8.00	5
BASF-23-23	13.1	65.7	4.63	4.63	4
BASF-23-24	12.2	64.3	4.25	4.25	4
BASF-23-1	12.3	64.4	5.00	5.00	4
BASF-23-22	13.2	65.9	4.13	4.13	3
LCH21-9485	12.5	64.7	3.50	3.50	3
LCH20-2165	12.4	64.5	2.75	2.75	3
LCH21-9398	12.0	63.9	4.13	4.11	4
LCH20-2264	12.0	63.9	4.00	3.99	4
CO18042RA	12.6	64.9	9.25	9.25	6
CO18D297R	11.9	63.8	6.63	6.54	5
CO19D304R	12.2	64.2	8.00	8.00	5
CO200037R	12.2	63.8	6.50	6.50	5
KS14FHB0732M-4	12.9	65.5	5.00	5.00	4
KS160563S-3	13.0	65.6	6.38	6.38	5
KS160786S-6	12.4	64.5	5.00	5.00	5
KS170013D-19	13.8	66.8	5.00	5.00	5
KS22U7321.B2.B7	12.9	65.4	2.38	2.38	3
KS21U7269.C1.B8	13.0	65.6	5.13	5.13	4
OK19225	13.8	66.9	4.25	4.25	4
OK18205-19HRBulk	13.3	66.2	4.25	4.25	4
OK18217-19HR-4	14.3	67.8	3.13	3.13	3
OK20418-7C21	13.2	64.9	4.88	4.88	4
TX19A001030	12.4	64.0	3.50	3.50	3
TX15A001482-19AZ16	13.3	66.1	5.63	5.63	4
TX18DH129	12.1	64.1	6.88	6.88	5
TX18DH266	12.6	65.4	0.75	0.75	6
TX18DH287	11.5	63.1	5.13	4.81	4
TX18DH313	11.7	63.4	3.38	3.25	3
TX15M8456-19AZ435	12.8	65.2	4.38	4.38	4
TX15M8456-19AZ504	12.6	65.0	6.00	6.00	5

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
NHH19651	13.0	65.2	3.13	3.13	3
NE19619	13.0	65.7	5.25	5.25	4
NE19454	12.7	65.0	8.50	8.50	6
NE19412	12.7	65.1	4.75	4.75	5
NHH19668	12.9	65.4	3.50	3.50	3
22CP900076	12.8	65.2	3.00	3.00	3
22CP900085	13.4	66.3	6.13	6.13	5
TX19M3183	13.6	66.6	4.50	4.50	4
BASF 23-25	13.0	65.6	7.00	7.00	4

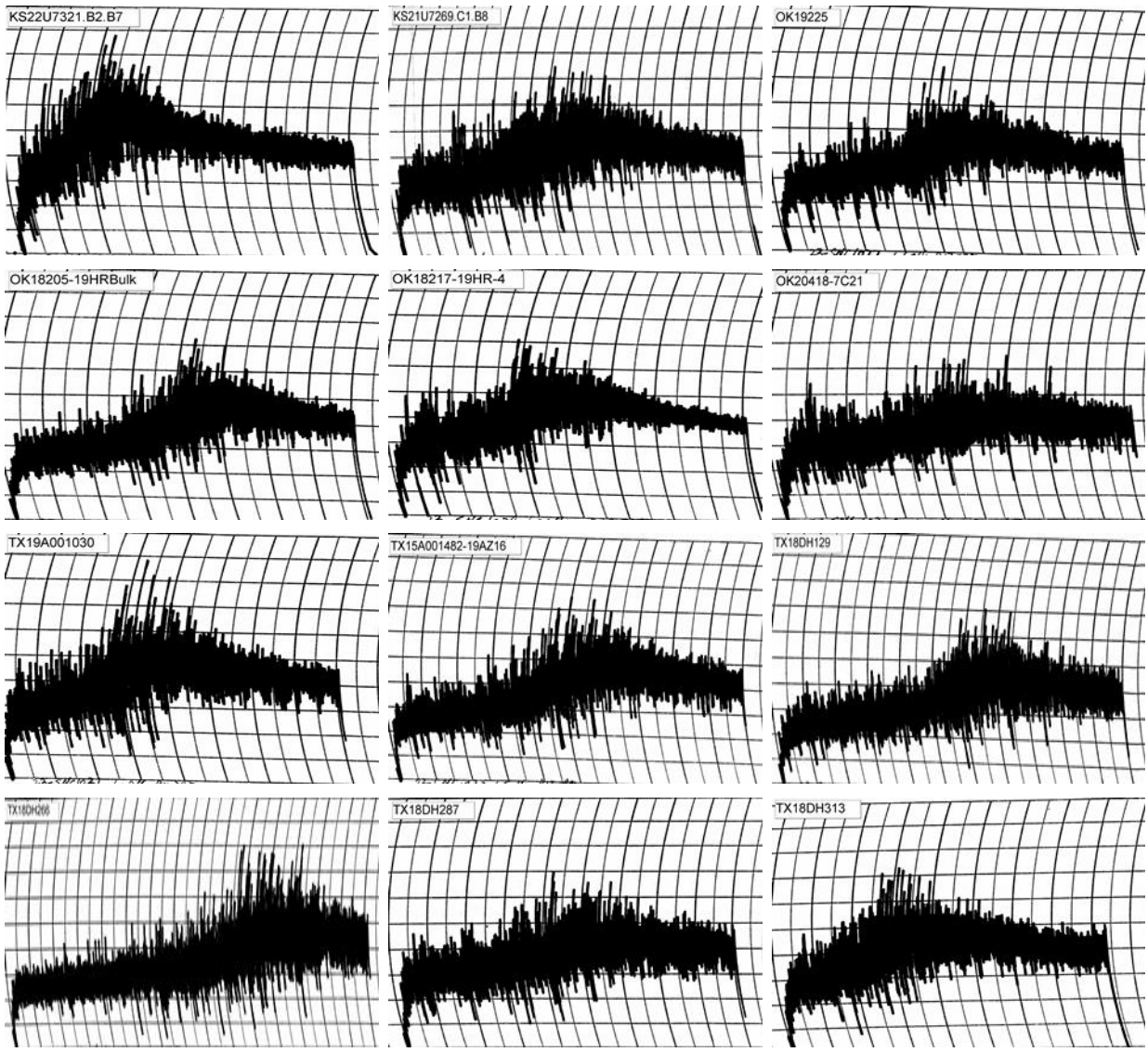
2023 SRPN Intraregional Production Zone
North Central Plains



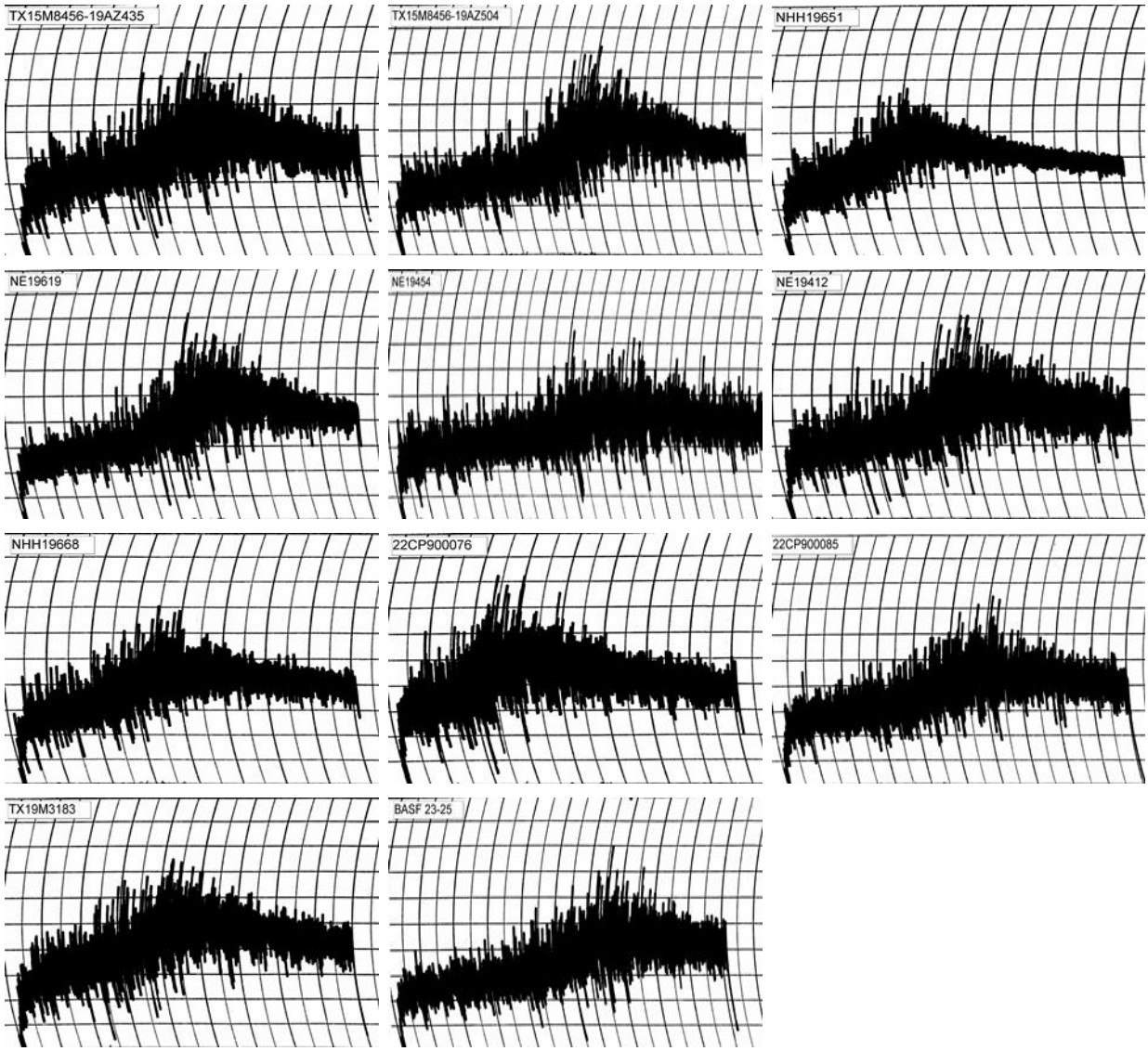
2023 SRPN Intraregional Production Zone
North Central Plains



2023 SRPN Intraregional Production Zone
North Central Plains



2023 SRPN Intraregional Production Zone
North Central Plains



2023 SRPN Intraregional Production Zone

North Central Plains

	RVA							
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)	Pasting Temp (Deg. C)
Kharkof	137.75	232.33	152.92	79.42	262.75	109.83	6.20	85.70
Scout66	100.83	209.83	125.08	84.75	232.25	107.17	6.00	66.90
TAM-107	125.42	250.58	152.33	98.25	263.92	111.58	6.20	67.75
Jagalene	114.17	221.92	135.00	86.92	244.92	109.92	6.00	66.90
KS20HDW185	92.75	239.00	130.58	108.42	219.50	88.92	6.13	66.95
KS20H105	72.92	270.08	155.50	114.58	271.00	115.50	6.07	67.65
KS20H106	89.08	264.17	153.67	110.50	264.67	111.00	6.13	67.75
KS20H124	108.33	275.50	150.00	125.50	245.08	95.08	6.20	67.00
BASF-23-23	107.67	213.00	126.00	87.00	233.75	107.75	6.07	66.85
BASF-23-24	101.33	223.92	125.50	98.42	230.08	104.58	6.07	67.80
BASF-23-1	110.58	238.67	155.17	83.50	272.08	116.92	6.20	67.75
BASF-23-22	87.42	169.75	98.25	71.50	192.58	94.33	5.87	66.90
LCH21-9485	92.75	248.50	154.00	94.50	264.08	110.08	6.20	67.70
LCH20-2165	96.00	234.42	137.00	97.42	249.17	112.17	6.00	66.95
LCH21-9398	76.58	230.92	145.58	85.33	263.50	117.92	6.07	67.75
LCH20-2264	93.67	203.83	89.17	114.67	193.67	104.50	5.60	66.15
CO18042RA	107.92	241.75	139.67	102.08	258.25	118.58	5.93	66.90
CO18D297R	96.75	240.92	165.17	75.75	291.00	125.83	6.20	83.25
CO19D304R	116.67	245.25	149.42	95.83	266.83	117.42	6.13	67.70
CO200037R	113.00	249.00	160.67	88.33	280.42	119.75	6.13	67.80
KS14FHB0732M-4	96.17	233.17	147.50	85.67	266.75	119.25	6.13	67.65
KS160563S-3	80.00	206.17	93.75	112.42	173.17	79.42	5.87	67.10
KS160786S-6	89.67	231.67	143.67	88.00	259.25	115.58	6.07	66.90
KS170013D-19	126.92	230.67	145.42	85.25	258.25	112.83	6.20	66.95
KS22U7321.B2.B7	133.83	240.83	157.25	83.58	264.83	107.58	6.27	67.80
KS21U7269.C1.B8	80.33	153.42	66.75	86.67	141.00	74.25	5.60	67.00
OK19225	96.75	220.08	131.92	88.17	239.33	107.42	6.00	66.90
OK18205-19HRBulk	97.75	223.50	134.25	89.25	240.58	106.33	6.13	67.75
OK18217-19HR-4	116.08	231.58	140.42	91.17	243.33	102.92	6.20	66.85
OK20418-7C21	97.08	180.17	97.17	83.00	191.25	94.08	5.93	66.05
TX19A001030	87.92	259.58	148.08	111.50	243.08	95.00	6.20	66.90
TX15A001482-19AZ16	101.25	260.75	158.75	102.00	262.50	103.75	6.27	68.65
TX18DH129	89.67	275.33	141.83	133.50	239.08	97.25	6.00	67.65
TX18DH266	101.50	257.75	151.83	105.92	270.00	118.17	6.13	67.65
TX18DH287	92.25	253.92	146.42	107.50	246.75	100.33	6.20	67.70
TX18DH313	69.75	215.75	126.00	89.75	240.92	114.92	5.87	66.10
TX15M8456-19AZ435	124.75	243.33	152.83	90.50	271.33	118.50	6.13	66.95
TX15M8456-19AZ504	101.75	211.75	134.25	77.50	255.00	120.75	6.00	66.95
NHH19651	120.58	227.67	140.25	87.42	248.83	108.58	6.13	67.70
NE19619	104.25	239.58	145.75	93.83	257.42	111.67	6.13	68.50
NE19454	91.67	148.50	67.67	80.83	145.92	78.25	5.53	67.70
NE19412	128.17	229.08	136.42	92.67	249.42	113.00	6.07	66.95

	RVA							
	Stirring Number	Peak Viscosity	Trough Viscosity	Breakdown	Final Viscosity	Set back	Peak Time	Pasting Temp
Line	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(min)	(Deg. C)
NHH19668	127.25	230.83	148.92	81.92	268.00	119.08	6.13	67.75
22CP900076	83.58	209.92	116.08	93.83	213.33	97.25	6.00	66.05
22CP900085	131.92	240.00	147.92	92.08	260.67	112.75	6.13	66.95
TX19M3183	123.67	205.75	138.42	67.33	255.42	117.00	6.07	66.90
BASF 23-25	116.92	236.50	147.33	89.17	264.83	117.50	6.13	67.75

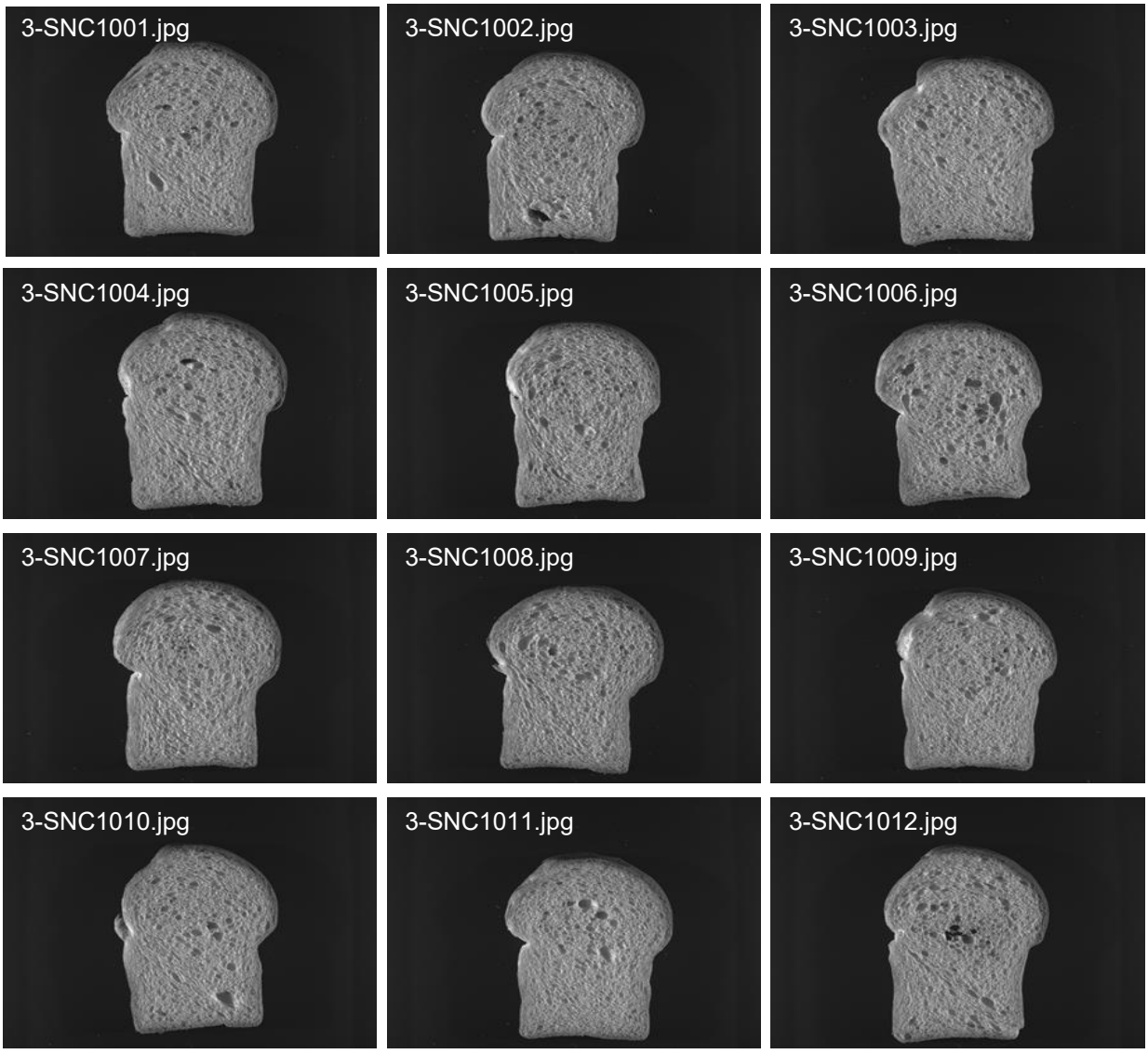
2023 SRPN Intraregional Production Zone

North Central Plains

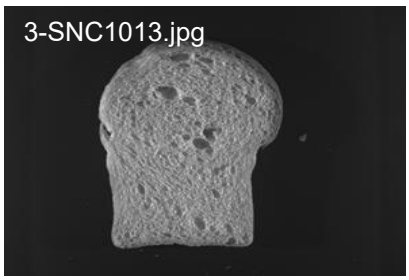
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
Kharkof	14.3	69.4	6.63	6.63	178.5	8.2	3.5	1005	6.6	63
Scout66	13.8	69.5	4.63	4.63	178.8	8.1	3.5	995	6.5	64
TAM-107	12.2	65.5	5.50	5.50	175.0	7.5	4.0	1015	6.8	78
Jagalene	12.9	67.3	7.75	7.75	175.4	8.0	4.5	1025	6.9	73
KS20HDW185	12.5	65.4	13.75	13.75	172.5	7.6	2.5	965	6.4	70
KS20H105	12.3	64.0	17.75	17.75	171.4	7.7	2.5	925	6.3	67
KS20H106	12.4	65.4	14.50	14.50	173.2	7.6	3.0	1010	6.7	76
KS20H124	13.6	66.2	9.50	9.50	174.0	7.4	4.5	1020	6.9	68
BASF-23-23	13.1	65.3	6.38	6.38	174.0	7.7	4.0	940	6.3	64
BASF-23-24	12.2	64.4	5.63	5.63	173.5	7.2	4.0	935	6.3	69
BASF-23-1	12.3	64.4	7.00	7.00	173.3	7.4	4.5	970	6.5	72
BASF-23-22	13.2	65.9	4.50	4.50	174.9	7.8	5.0	1000	6.7	69
LCH21-9485	12.5	64.5	5.38	5.38	174.2	7.7	5.0	1025	6.8	76
LCH20-2165	12.4	64.4	4.00	4.00	173.8	7.7	4.0	1020	6.8	77
LCH21-9398	12.0	63.7	4.25	4.22	172.8	7.9	5.0	1015	6.9	80
LCH20-2264	12.0	63.6	5.00	4.99	173.4	7.6	3.5	1050	7.0	84
CO18042RA	12.6	64.6	11.13	11.13	172.2	7.9	3.0	1040	7.0	77
CO18D297R	11.9	63.6	8.38	8.27	172.5	7.5	4.0	915	6.1	69
CO19D304R	12.2	64.4	11.13	11.13	172.5	7.6	3.5	955	6.5	72
CO200037R	12.2	63.5	7.63	7.63	172.2	7.6	4.0	955	6.5	71
KS14FHB0732M-4	12.9	65.4	6.38	6.38	174.3	7.9	3.5	1015	6.8	72
KS160563S-3	13.0	65.3	8.00	8.00	173.9	7.6	3.5	1025	6.9	72
KS160786S-6	12.4	64.4	7.25	7.25	173.3	7.1	3.5	910	6.1	65
KS170013D-19	13.8	69.2	6.75	6.75	177.7	7.6	4.0	1000	6.5	65
KS22U7321.B2.B7	12.9	65.2	3.00	3.00	174.7	7.5	3.0	970	6.5	68
KS21U7269.C1.B8	13.0	65.5	6.50	6.50	174.8	7.6	3.5	1000	6.7	70
OK19225	13.8	67.2	5.63	5.63	176.6	7.3	3.5	990	6.5	64
OK18205-19HRBulk	13.3	66.5	6.13	6.13	175.6	7.9	4.0	1040	6.9	72
OK18217-19HR-4	14.3	68.1	4.50	4.50	178.0	7.9	2.5	1030	6.8	64
OK20418-7C21	13.2	65.3	7.63	7.63	174.5	7.6	3.5	950	6.4	64
TX19A001030	12.4	64.4	6.00	6.00	173.8	7.9	4.5	1000	6.7	75
TX15A001482-19AZ16	13.3	65.1	8.00	8.00	173.1	7.7	4.0	1090	7.3	77
TX18DH129	12.1	64.5	9.00	9.00	173.3	7.6	2.5	945	6.3	71
TX18DH266	12.6	67.5	17.25	17.25	174.3	7.8	3.5	1075	7.3	81
TX18DH287	11.5	63.5	7.00	6.56	172.9	7.3	3.5	920	6.2	73
TX18DH313	11.7	63.4	5.25	5.04	172.3	7.0	3.5	880	5.8	67
TX15M8456-19AZ435	12.8	65.6	6.38	6.38	174.6	7.5	4.0	980	6.5	69
TX15M8456-19AZ504	12.6	65.4	8.13	8.13	174.1	7.9	4.0	1035	7.0	76
NHH19651	13.0	65.4	4.63	4.63	176.5	8.0	3.5	1060	7.0	76
NE19619	13.0	65.3	7.50	7.50	174.0	7.9	3.5	1020	7.0	72
NE19454	12.7	65.3	10.00	10.00	173.9	7.7	2.5	1010	6.8	73

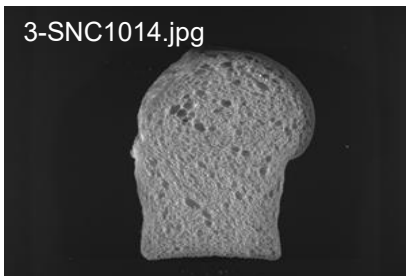
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
NE19412	12.7	65.1	7.00	7.00	174.3	7.6	4.0	950	6.4	67
NHH19668	12.9	65.6	5.00	5.00	175.1	7.7	3.5	965	6.4	67
22CP900076	12.8	65.4	5.00	5.00	174.6	7.8	4.5	1000	6.7	72
22CP900085	13.4	66.4	6.63	6.63	175.0	8.1	5.0	1055	7.1	73
TX19M3183	13.6	66.4	5.75	5.75	176.1	8.6	4.0	1130	7.4	78
BASF 23-25	13.0	65.4	9.50	9.50	174.1	7.5	3.0	950	6.3	65

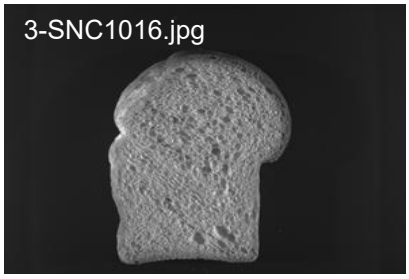
2023 SRPN Intraregional Production Zone
North Central Plains

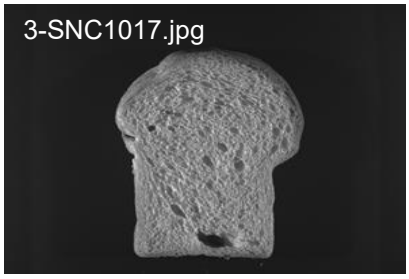


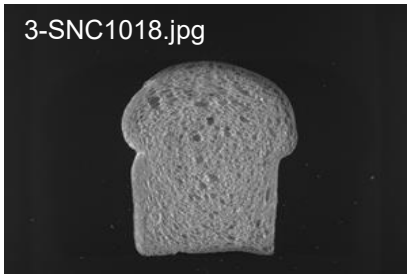
2023 SRPN Intraregional Production Zone
North Central Plains

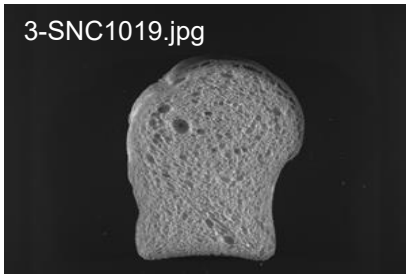


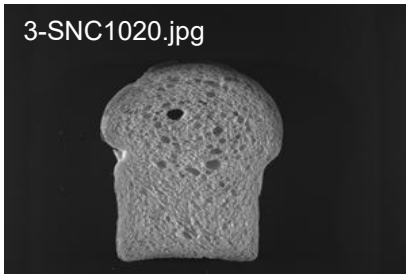


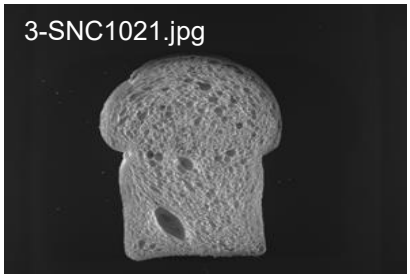


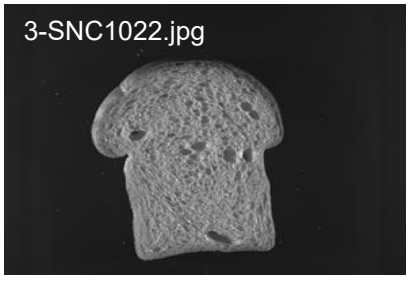


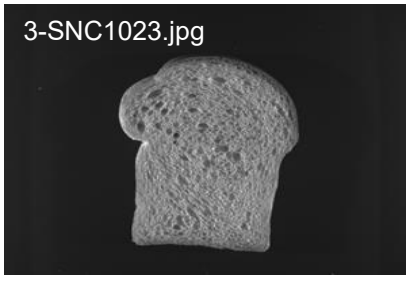




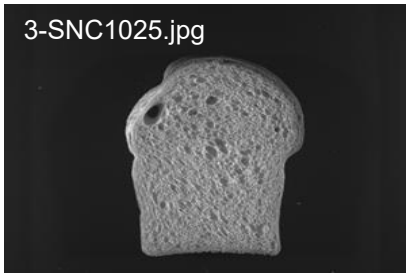


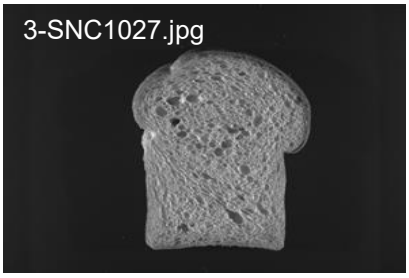


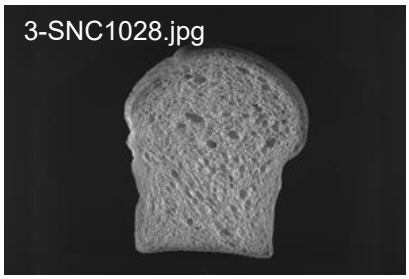


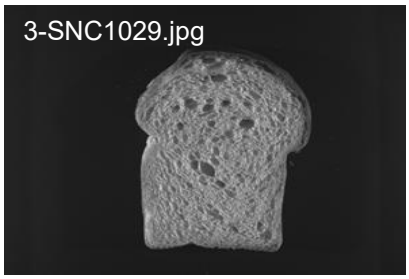


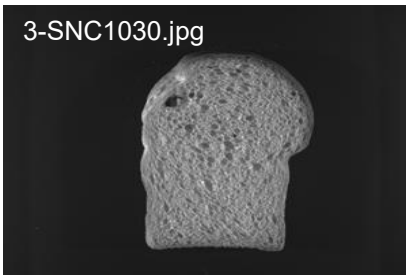
2023 SRPN Intraregional Production Zone
North Central Plains

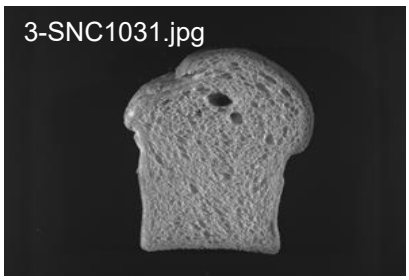


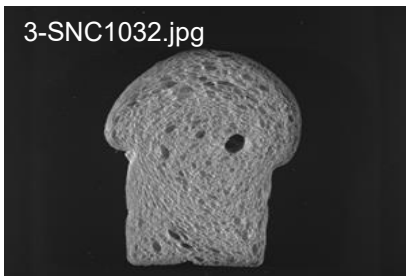


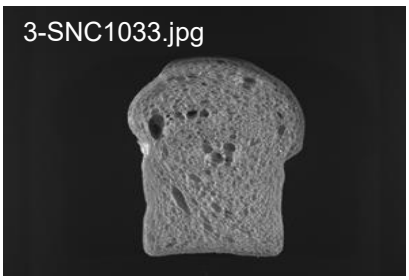


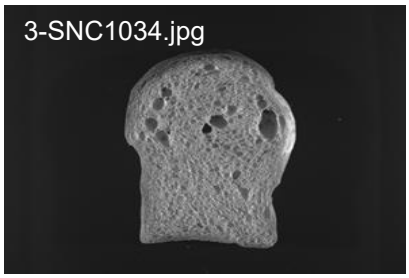


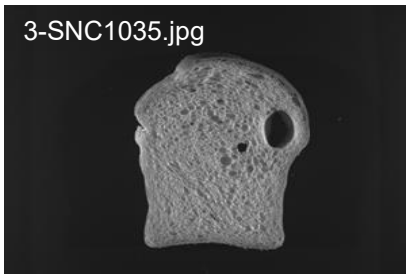


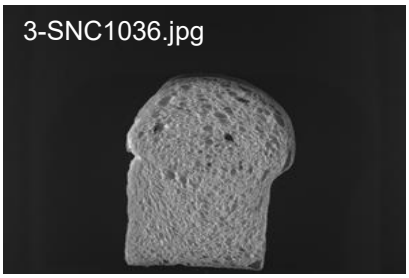




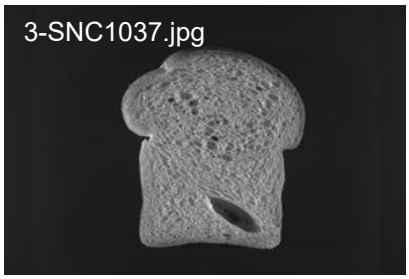


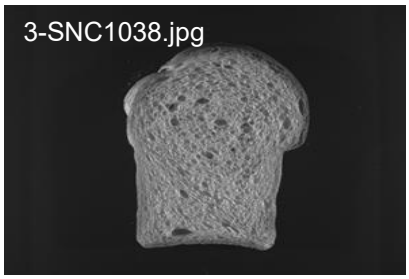


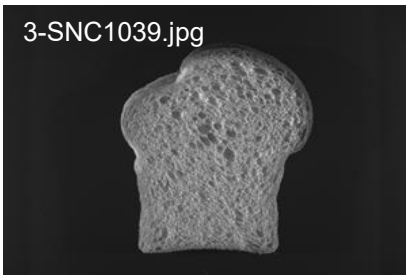


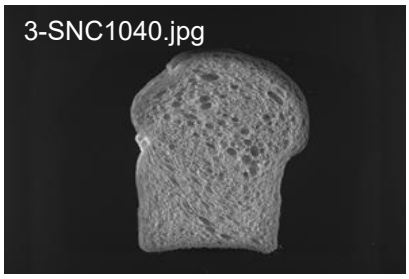


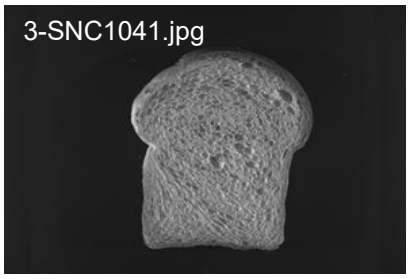
2023 SRPN Intraregional Production Zone
North Central Plains

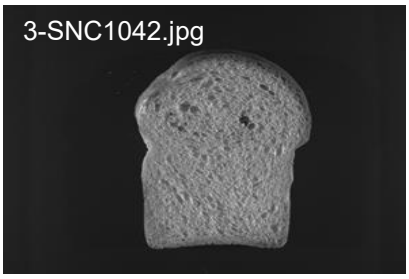


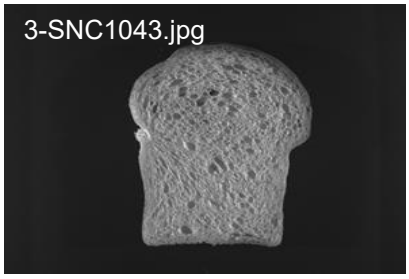


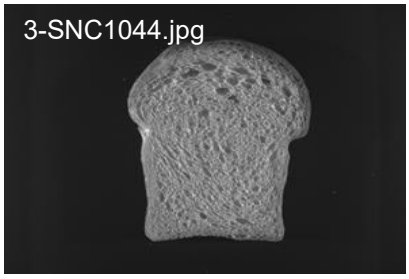


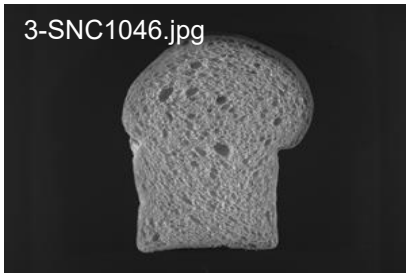


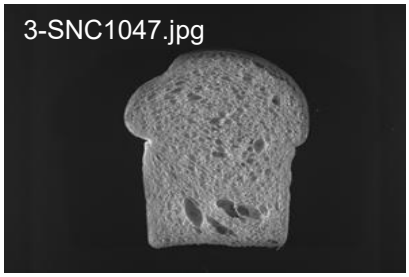












Hard Winter Wheat Quality Report

2023 SRPN-NHP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	36.4	Very Poor	66.0	61.1	Very Good	97.1		6,8,10,20,
Scout 66	53.1	Very Good	96.3	44.8	Average	71.1		
TAM 107	46.8	Average	84.9	53.0	Good	84.1	1AL	
Jagalene	46.0	Poor	83.5	54.3	Good	86.3		
KS20HDW185	46.7	Average	84.6	43.2	Average	68.6		10,14,15,
KS20H105	49.9	Good	90.5	29.9	Very Poor	47.5	1AL	14,15,17,
KS20H106	54.1	Very Good	98.1	46.9	Average	74.5	1AL	14,15,
KS20H124	55.1	Very Good	100.0	54.5	Very Good	86.7		14,
BASF-23-23	49.3	Good	89.4	55.0	Very Good	87.3		
BASF-23-24	44.2	Very Poor	80.2	38.9	Poor	61.8		
BASF-23-1	41.9	Very Poor	76.0	53.4	Good	84.8		
BASF-23-22	47.3	Average	85.9	35.0	Very Poor	55.6	1AL	
LCH21-9485	45.2	Poor	81.9	41.6	Poor	66.2		
LCH20-2165	52.9	Very Good	96.0	37.6	Poor	59.8		21,
LCH21-9398	46.7	Average	84.7	52.4	Good	83.3		
LCH20-2264	51.9	Very Good	94.1	37.7	Poor	59.9		17,
CO18042RA	44.1	Very Poor	80.0	48.9	Average	77.7		3,14,
CO18D297R	50.9	Very Good	92.3	34.6	Very Poor	54.9		4,
CO19D304R	51.2	Very Good	92.9	34.7	Very Poor	55.1		
CO200037R	50.0	Good	90.7	52.9	Good	84.1		2,4,
KS14FHB0732M-4	43.7	Very Poor	79.3	59.4	Very Good	94.4		
KS160563S-3	44.6	Poor	80.9	54.9	Very Good	87.2		1,
KS160786S-6	47.4	Average	85.9	57.8	Very Good	91.9		
KS170013D-19	36.8	Very Poor	66.8	38.3	Poor	60.9		8,10,20,
KS22U7321.B2.B7	47.5	Average	86.1	23.9	Very Poor	38.0		15,16,18,19,20,21,
KS21U7269.C1.B8	50.5	Very Good	91.6	53.8	Good	85.4		3,5,
OK19225	48.6	Good	88.2	43.0	Poor	68.3		3,
OK18205-19HRBulk	48.0	Average	87.1	48.4	Average	76.9		18,
OK18217-19HR-4	50.9	Very Good	92.3	34.9	Very Poor	55.4	1BL	10,16,20,
OK20418-7C21	49.0	Good	88.8	38.4	Poor	61.0	1BL	
TX19A001030	46.2	Poor	83.7	37.5	Very Poor	59.7		3,

Quality scores and ratings are calculated directly from the relative trait weightings (printed at the top of the page) and are applicable only to the nursery selected.

Hard Winter Wheat Quality Report

2023 SRPN-NHP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
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7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
TX15A001482-19AZ16	41.5	Very Poor	75.3	55.9	Very Good	88.9		1,
TX18DH129	50.0	Good	90.7	49.1	Good	78.0		
TX18DH266	38.3	Very Poor	69.4	46.0	Average	73.0		1,3,9,10,14,15,
TX18DH287	46.6	Poor	84.4	36.2	Very Poor	57.5		18,
TX18DH313	45.5	Poor	82.5	33.9	Very Poor	53.9		
TX15M8456-19AZ435	47.9	Average	86.8	51.8	Good	82.3		
TX15M8456-19AZ504	42.0	Very Poor	76.1	45.4	Average	72.2		1,2,
NHH19651	46.6	Poor	84.4	29.0	Very Poor	46.1		12,13,16,
NE19619	44.7	Poor	81.1	62.9	Very Good	100.0		9,10,
NE19454	47.4	Average	86.0	43.4	Average	68.9		
NE19412	44.4	Poor	80.5	55.9	Very Good	88.9		
NHH19668	48.8	Good	88.5	39.1	Poor	62.1		5,12,13,16,
22CP900076	49.0	Good	88.9	47.7	Average	75.8		
22CP900085	49.7	Good	90.1	47.5	Average	75.5		
TX19M3183	41.7	Very Poor	75.7	42.7	Poor	67.8		16,
BASF 23-25	47.6	Average	86.3	51.0	Good	81.0		

2023 SRPN Intraregional Production Zone

Northern High Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	57.7	10.4	0.7	30.5	8.7	2.61	0.36	28	17	SOFT	64-21-10-05-05
Scout66	58.1	10.4	0.7	36.0	11.1	2.79	0.37	43	16	MIXED	24-31-32-13-03
TAM-107	57.6	10.3	0.8	35.6	10.9	2.78	0.44	47	16	MIXED	18-30-31-21-03
Jagalene	57.9	10.2	0.6	31.9	11.1	2.74	0.43	53	16	HARD	09-22-36-33-01
KS20HDW185	57.0	10.9	0.5	35.6	10.2	2.87	0.42	57	14	HARD	06-18-34-42-01
KS20H105	58.6	10.7	0.6	33.0	10.3	2.70	0.40	44	17	MIXED	25-31-26-18-03
KS20H106	59.2	10.7	0.6	34.4	9.1	2.76	0.40	43	14	MIXED	24-36-27-13-03
KS20H124	58.9	10.3	0.5	35.4	9.8	2.81	0.40	59	14	HARD	03-14-33-50-01
BASF-23-23	58.3	10.2	0.6	30.3	9.4	2.62	0.38	55	17	MIXED	11-18-32-39-03
BASF-23-24	57.6	10.6	0.6	31.2	10.4	2.70	0.41	52	16	HARD	09-27-31-33-01
BASF-23-1	57.0	10.5	0.6	30.5	10.5	2.68	0.46	47	17	MIXED	22-29-25-24-03
BASF-23-22	58.6	10.4	0.5	36.0	9.6	2.83	0.44	49	14	MIXED	11-31-36-22-03
LCH21-9485	57.4	10.1	0.7	29.9	9.6	2.58	0.37	47	14	MIXED	16-34-32-18-03
LCH20-2165	58.4	10.2	0.6	34.1	10.6	2.76	0.45	47	15	MIXED	17-31-32-20-03
LCH21-9398	56.8	10.3	0.6	31.0	9.0	2.66	0.42	47	15	MIXED	17-30-31-22-03
LCH20-2264	57.8	10.1	0.6	34.8	10.4	2.75	0.41	40	14	SOFT	33-34-24-09-04
CO18042RA	57.0	10.8	0.8	30.6	12.3	2.56	0.44	47	17	MIXED	18-34-24-24-03
CO18D297R	58.1	10.8	0.6	29.2	9.2	2.52	0.41	50	15	MIXED	12-31-30-27-03
CO19D304R	56.9	11.1	0.7	28.9	8.6	2.58	0.42	51	16	MIXED	12-27-35-26-03
CO200037R	57.7	10.3	0.7	27.0	9.4	2.44	0.41	50	17	MIXED	15-26-28-31-03
KS14FHB0732M-4	56.1	10.8	0.7	30.4	10.3	2.65	0.40	51	16	MIXED	11-24-38-27-03
KS160563S-3	54.8	11.0	0.8	31.4	9.3	2.72	0.44	47	15	MIXED	15-33-29-23-03
KS160786S-6	58.6	8.7	1.4	32.6	9.2	2.75	0.42	46	16	MIXED	18-36-25-21-03
KS170013D-19	57.3	8.7	1.4	32.4	10.2	2.67	0.42	56	16	HARD	07-19-34-40-01
KS22U7321.B2.B7	56.4	10.4	0.8	37.1	10.3	2.84	0.45	47	15	MIXED	17-33-30-20-03
KS21U7269.C1.B8	58.1	10.5	0.6	38.1	11.6	2.84	0.48	43	16	MIXED	27-30-30-13-03
OK19225	59.3	10.1	0.7	33.2	11.7	2.74	0.43	50	15	MIXED	12-30-32-26-03
OK18205-19HRBulk	57.8	9.9	0.8	33.2	10.5	2.68	0.45	46	16	MIXED	17-33-32-18-03
OK18217-19HR-4	59.7	10.1	0.6	35.8	10.5	2.94	0.41	61	14	HARD	03-12-33-52-01
OK20418-7C21	58.5	10.1	0.6	31.9	9.1	2.71	0.43	56	15	HARD	04-26-32-38-01
TX19A001030	58.8	10.4	0.6	33.1	11.8	2.71	0.41	50	16	MIXED	14-24-36-26-03
TX15A001482-19AZ16	54.7	10.1	0.6	28.7	9.6	2.54	0.41	46	15	MIXED	19-29-32-20-03
TX18DH129	57.1	10.5	0.7	31.3	10.4	2.58	0.39	52	17	MIXED	14-23-31-32-03
TX18DH266	55.2	10.7	0.5	36.5	11.7	2.71	0.44	50	17	MIXED	13-27-32-28-03
TX18DH287	57.2	10.5	0.6	32.3	11.0	2.65	0.40	53	15	HARD	09-21-34-36-01
TX18DH313	56.9	10.5	0.6	32.0	10.6	2.71	0.44	52	16	HARD	08-28-33-31-01
TX15M8456-19AZ435	57.1	10.2	0.7	29.5	9.9	2.58	0.36	57	17	HARD	10-16-26-48-01
TX15M8456-19AZ504	54.7	10.4	0.7	28.1	8.7	2.56	0.39	59	15	HARD	05-14-32-49-01
NHH19651	58.2	10.2	0.7	29.9	9.1	2.65	0.43	48	16	MIXED	16-31-33-20-03
NE19619	56.5	10.6	0.6	32.0	10.4	2.65	0.41	52	15	HARD	08-28-36-28-01
NE19454	59.0	10.3	0.8	31.0	10.4	2.68	0.38	50	17	MIXED	12-29-32-27-03

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
NE19412	57.4	9.4	0.8	30.4	10.4	2.55	0.44	50	15	MIXED	13-30-31-26-03
NHH19668	57.8	9.8	0.7	28.9	9.2	2.68	0.47	49	17	MIXED	15-28-30-27-03
22CP900076	58.1	10.0	0.7	30.2	9.6	2.70	0.41	52	15	HARD	09-26-34-31-01
22CP900085	57.6	9.9	0.7	31.0	10.1	2.60	0.44	55	16	HARD	08-21-33-38-01
TX19M3183	56.5	10.1	0.7	30.5	9.6	2.62	0.40	57	17	HARD	06-25-27-42-01
BASF 23-25	56.6	10.4	0.6	33.2	8.8	2.75	0.43	44	15	MIXED	20-35-31-14-03

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	Wheat		Flour			Noodle Color					
LINE	Protein (%)	Milling Yield (%)	Ash (%)	Protein (%)	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
Kharkof	14.2	61.0	0.35	12.4	0.539	78.93	-1.75	23.76	-8.00	1.18	0.41
Scout66	13.2	69.5	0.39	12.0	0.550	79.38	-1.47	23.22	-8.23	1.11	0.04
TAM-107	12.3	66.2	0.38	11.1	0.537	78.42	-1.64	26.00	-8.95	1.38	-0.28
Jagalene	12.1	67.3	0.44	10.9	0.475	79.10	-1.77	25.30	-7.94	1.21	-0.74
KS20HDW185	12.1	65.5	0.46	10.8	0.571	79.88	-2.02	24.51	-12.58	1.46	0.11
KS20H105	11.6	69.0	0.41	10.4	0.560	80.11	-1.66	22.71	-9.85	1.20	0.71
KS20H106	12.2	68.3	0.37	10.9	0.590	80.47	-1.26	21.62	-10.16	1.02	1.78
KS20H124	13.0	68.2	0.42	11.8	0.546	78.54	-1.83	25.33	-9.73	1.59	-0.15
BASF-23-23	12.7	67.6	0.40	11.3	0.409	79.45	-1.68	25.48	-8.53	1.21	1.41
BASF-23-24	11.8	65.2	0.39	10.6	0.473	79.10	-2.08	26.94	-9.28	1.36	-0.16
BASF-23-1	11.2	66.7	0.43	10.3	0.482	80.34	-2.24	26.48	-8.72	1.18	-0.34
BASF-23-22	11.8	64.6	0.42	10.7	0.457	78.86	-2.44	27.90	-8.69	1.59	-0.96
LCH21-9485	11.6	66.2	0.43	10.5	0.567	80.44	-2.04	24.26	-8.32	1.30	0.03
LCH20-2165	11.8	69.5	0.39	10.6	0.490	79.36	-1.67	24.99	-8.29	1.24	-0.31
LCH21-9398	11.7	66.9	0.41	10.4	0.538	80.37	-1.80	23.78	-8.78	1.35	0.17
LCH20-2264	11.4	67.7	0.31	10.2	0.508	79.91	-1.34	21.53	-7.36	1.04	0.68
CO18042RA	11.2	69.4	0.45	10.2	0.490	81.00	-1.74	22.77	-10.07	1.07	1.59
CO18D297R	11.4	68.3	0.35	10.1	0.509	80.30	-1.62	22.66	-8.71	1.16	1.68
CO19D304R	11.5	69.2	0.37	10.2	0.541	79.71	-2.21	25.38	-11.36	1.37	-1.14
CO200037R	11.7	69.8	0.37	10.6	0.490	79.72	-2.08	27.01	-8.20	1.00	0.46
KS14FHB0732M-4	12.2	66.0	0.39	10.9	0.468	80.13	-1.67	22.74	-9.22	1.28	1.60
KS160563S-3	12.6	67.5	0.46	11.4	0.349	80.10	-2.02	25.30	-9.19	1.13	-0.60
KS160786S-6	11.9	66.7	0.42	10.7	0.513	80.07	-1.79	23.49	-10.00	1.26	1.47
KS170013D-19	12.3	61.3	0.43	11.2	0.403	79.17	-1.38	23.87	-8.98	1.26	1.78
KS22U7321.B2.B7	12.0	67.2	0.44	10.9	0.567	78.78	-2.05	24.39	-10.14	1.31	-1.19
KS21U7269.C1.B8	12.3	68.4	0.38	11.1	0.498	79.45	-1.46	22.06	-10.02	1.14	0.49
OK19225	12.6	67.1	0.39	11.4	0.399	79.14	-1.31	23.22	-8.02	1.22	0.85
OK18205-19HRBulk	12.5	68.2	0.41	11.4	0.414	79.26	-1.81	23.91	-9.67	1.28	0.01
OK18217-19HR-4	13.2	65.4	0.43	11.9	0.526	79.01	-1.80	26.26	-9.82	1.01	-0.16
OK20418-7C21	12.0	66.6	0.42	10.8	0.378	79.07	-1.58	25.76	-9.23	0.83	-0.42
TX19A001030	11.8	67.2	0.44	10.6	0.530	79.21	-1.76	24.11	-10.10	1.22	0.98
TX15A001482-19AZ16	12.0	65.6	0.36	10.7	0.545	79.68	-1.69	24.09	-8.25	1.02	0.50
TX18DH129	11.2	69.9	0.43	10.1	0.451	79.36	-1.83	26.48	-8.92	1.09	1.23
TX18DH266	12.1	65.2	0.50	10.8	0.511	80.13	-2.06	25.01	-10.00	1.03	1.52
TX18DH287	11.3	67.0	0.42	10.1	0.430	79.75	-2.33	26.78	-8.79	1.12	1.47
TX18DH313	11.4	67.5	0.45	10.1	0.481	78.63	-2.11	26.25	-9.40	1.32	-0.12
TX15M8456-19AZ435	12.2	67.5	0.38	10.7	0.457	78.73	-1.98	25.36	-8.54	1.06	-0.09
TX15M8456-19AZ504	11.7	65.2	0.43	10.6	0.257	79.23	-1.68	25.96	-6.26	0.78	0.81
NHH19651	12.0	66.5	0.38	10.9	0.465	79.83	-2.50	24.87	-8.11	1.35	-1.24
NE19619	13.2	67.0	0.47	11.8	0.476	80.70	-1.72	21.65	-10.06	1.20	1.75
NE19454	11.6	66.6	0.37	10.4	0.211	79.72	-1.88	24.95	-6.08	1.05	2.69
NE19412	12.2	66.3	0.39	10.9	0.458	79.28	-1.81	25.36	-8.15	1.01	0.73

	Wheat		Flour			Noodle Color					
	Protein	Milling Yield	Ash	Protein	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
LINE	(%)	(%)	(%)	(%)							
NHH19668	12.0	68.1	0.36	10.6	0.437	79.49	-2.01	23.87	-8.01	1.03	0.01
22CP900076	12.0	68.1	0.43	10.6	0.483	78.90	-1.82	23.70	-9.79	1.21	0.07
22CP900085	13.3	68.5	0.40	12.1	0.494	79.05	-1.77	23.56	-11.21	1.37	-1.87
TX19M3183	12.6	64.6	0.40	11.4	0.429	79.14	-1.75	24.30	-9.56	1.34	-0.15
BASF 23-25	12.4	66.7	0.39	11.2	0.265	80.65	-1.99	24.09	-6.00	0.82	0.88

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		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	12.4	65.4	3.38	3.38	3
Scout66	12.0	65.4	2.50	2.49	3
TAM-107	11.1	63.0	3.50	3.12	3
Jagalene	10.9	62.0	3.75	3.27	3
KS20HDW185	10.8	62.5	6.75	5.80	6
KS20H105	10.4	61.2	0.00	8.02	6
KS20H106	10.9	61.2	8.00	6.97	5
KS20H124	11.8	62.6	6.13	5.98	5
BASF-23-23	11.3	62.7	4.13	3.77	4
BASF-23-24	10.6	61.2	3.50	2.90	3
BASF-23-1	10.3	61.2	3.50	2.77	3
BASF-23-22	10.7	61.3	3.00	2.54	3
LCH21-9485	10.5	61.3	3.63	2.95	3
LCH20-2165	10.6	61.7	2.63	2.19	3
LCH21-9398	10.4	60.6	3.00	2.42	3
LCH20-2264	10.2	60.6	4.13	3.25	3
CO18042RA	10.2	61.2	5.00	3.92	4
CO18D297R	10.1	60.9	4.75	3.67	4
CO19D304R	10.2	60.6	5.63	4.43	4
CO200037R	10.6	61.2	5.25	4.38	4
KS14FHB0732M-4	10.9	62.4	3.75	3.27	3
KS160563S-3	11.4	62.4	5.75	5.33	4
KS160786S-6	10.7	61.6	4.13	3.47	4
KS170013D-19	11.2	62.9	3.13	2.82	3
KS22U7321.B2.B7	10.9	62.0	1.75	1.53	1
KS21U7269.C1.B8	11.1	62.9	4.00	3.55	4
OK19225	11.4	61.8	4.25	3.95	4
OK18205-19HRBulk	11.4	62.5	3.88	3.58	3
OK18217-19HR-4	11.9	62.1	2.75	2.73	2
OK20418-7C21	10.8	61.4	4.00	3.42	3
TX19A001030	10.6	61.1	3.50	2.92	3
TX15A001482-19AZ16	10.7	61.4	4.50	3.78	4
TX18DH129	10.1	60.4	4.75	3.65	4
TX18DH266	10.8	63.0	7.13	6.10	6
TX18DH287	10.1	60.8	3.50	2.69	3
TX18DH313	10.1	61.3	3.00	2.31	3
TX15M8456-19AZ435	10.7	62.5	3.75	3.16	3
TX15M8456-19AZ504	10.6	61.7	4.00	3.34	4

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
NHH19651	10.9	59.1	2.00	1.73	1
NE19619	11.8	62.7	4.25	4.14	4
NE19454	10.4	61.2	5.13	4.11	4
NE19412	10.9	62.3	3.75	3.26	4
NHH19668	10.6	59.3	2.50	2.07	1
22CP900076	10.6	61.0	3.00	2.50	3
22CP900085	12.1	64.0	5.00	5.00	4
TX19M3183	11.4	62.9	3.00	2.78	2
BASF 23-25	11.2	62.0	5.50	4.97	4

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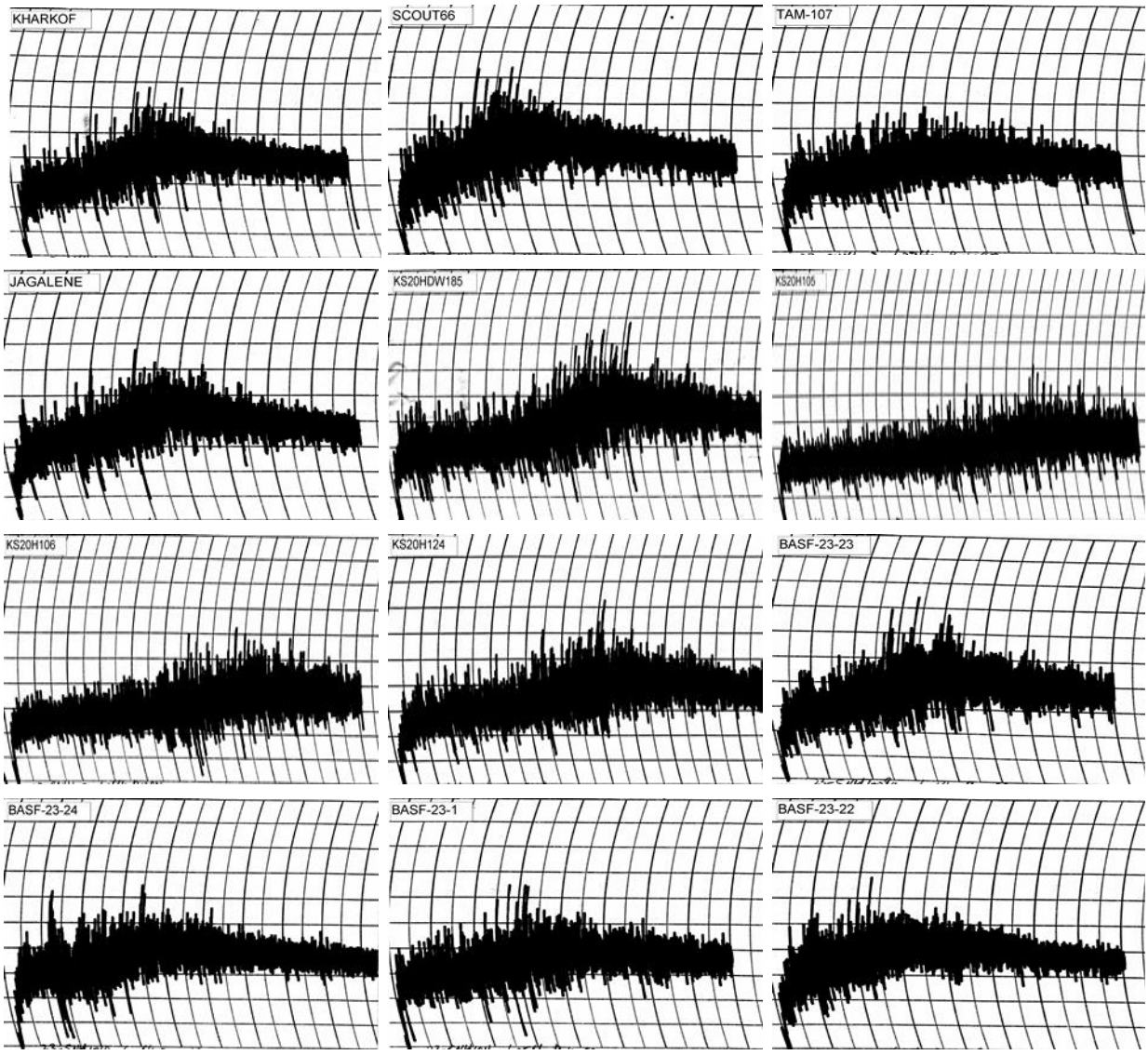
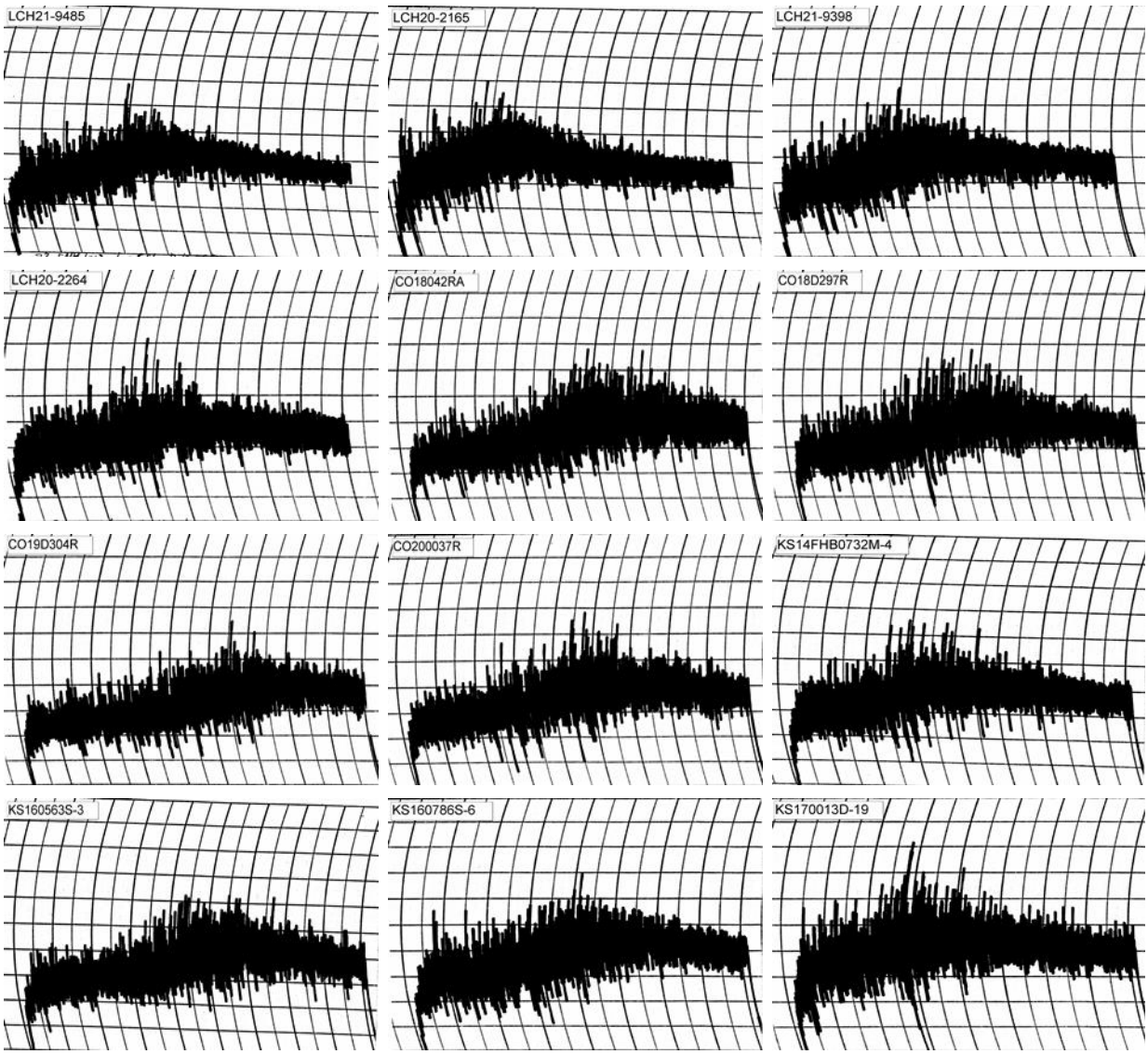
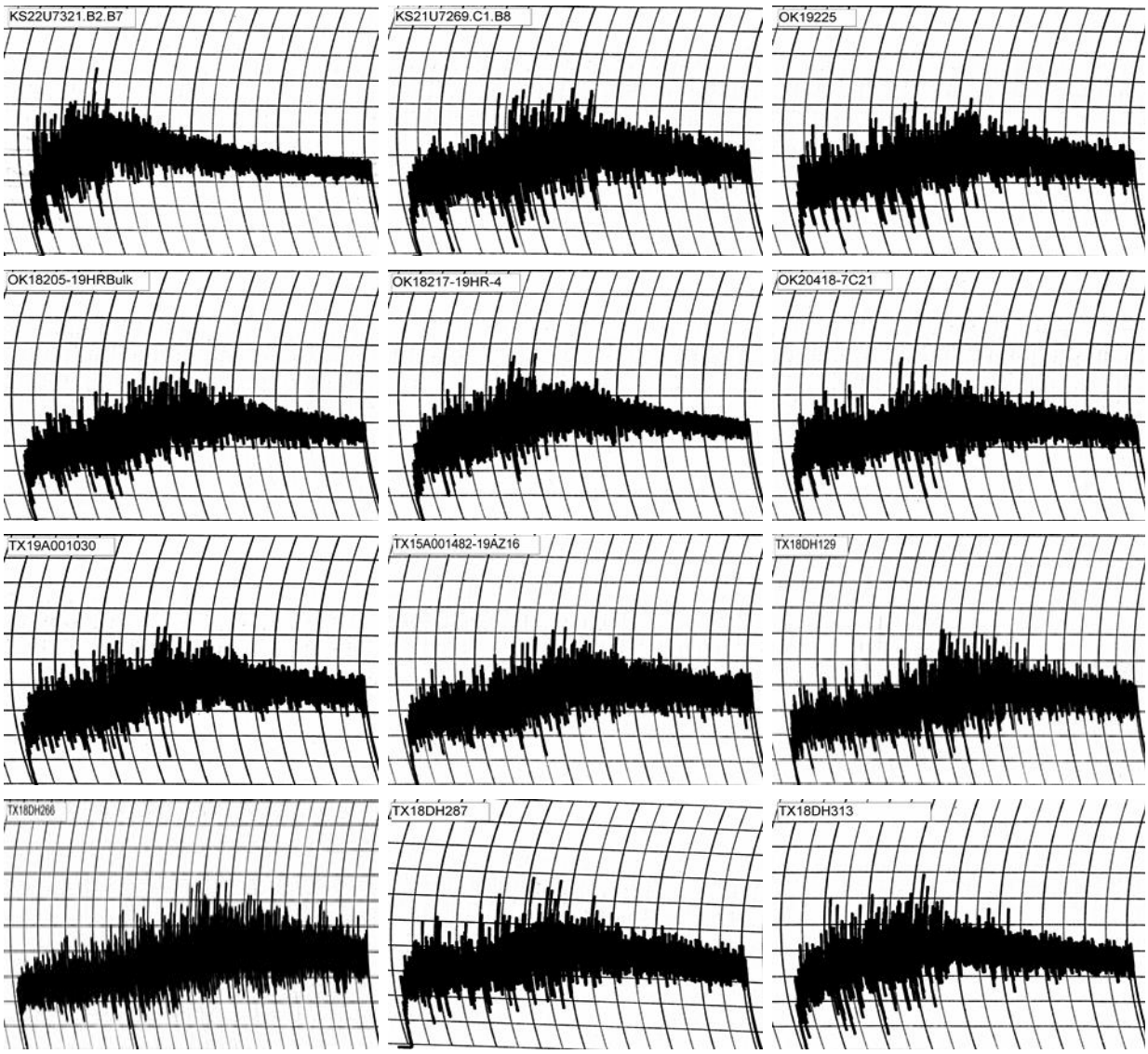


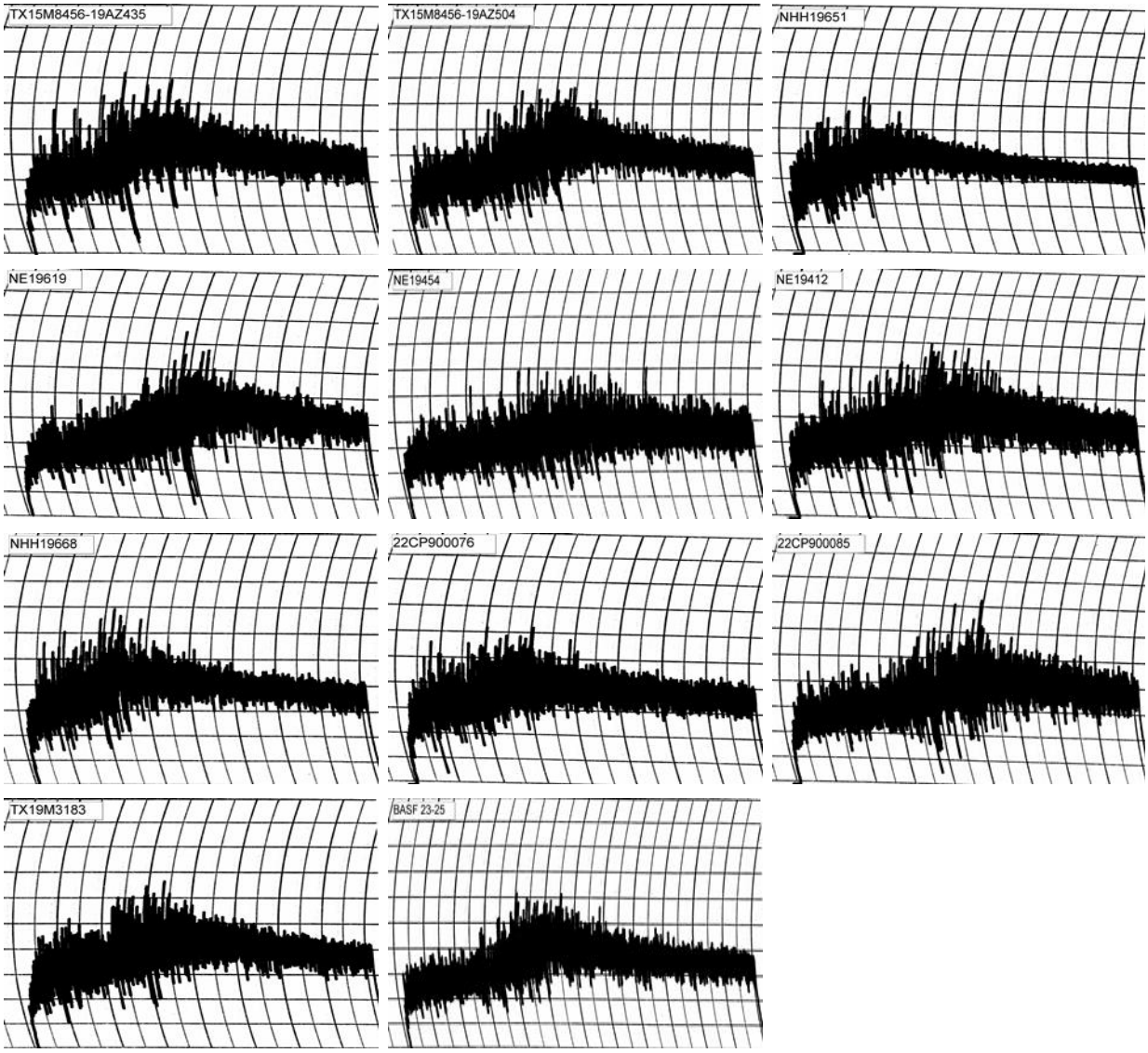
2023 SRPN Intraregional Production Zone
Northern High Plains



2023 SRPN Intraregional Production Zone
Northern High Plains



2023 SRPN Intraregional Production Zone
Northern High Plains



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	RVA							
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)	Pasting Temp (Deg. C)
Kharkof	152.33	220.50	151.67	68.83	260.83	109.17	6.33	86.60
Scout66	96.67	158.92	89.50	69.42	178.00	88.50	5.87	83.25
TAM-107	118.17	234.17	148.25	85.92	260.00	111.75	6.27	67.75
Jagalene	123.25	211.25	133.50	77.75	244.25	110.75	6.07	67.80
KS20HDW185	112.17	252.00	147.67	104.33	239.83	92.17	6.27	66.10
KS20H105	130.92	259.17	157.50	101.67	277.50	120.00	6.13	83.15
KS20H106	112.25	251.83	151.17	100.67	268.08	116.92	6.13	67.85
KS20H124	131.25	262.33	150.67	111.67	242.17	91.50	6.27	66.05
BASF-23-23	129.00	200.92	125.08	75.83	231.17	106.08	6.13	84.90
BASF-23-24	125.17	210.33	121.42	88.92	223.67	102.25	6.07	67.70
BASF-23-1	132.67	214.17	138.25	75.92	244.92	106.67	6.20	86.50
BASF-23-22	106.50	199.25	130.92	68.33	239.75	108.83	6.13	67.00
LCH21-9485	115.25	248.08	161.08	87.00	279.50	118.42	6.20	67.65
LCH20-2165	106.92	222.58	136.17	86.42	247.25	111.08	6.13	67.70
LCH21-9398	89.67	226.83	147.83	79.00	270.50	122.67	6.13	84.05
LCH20-2264	88.83	188.33	101.83	86.50	192.08	90.25	5.93	83.25
CO18042RA	115.83	235.83	146.17	89.67	267.83	121.67	6.07	67.75
CO18D297R	129.58	207.83	135.58	72.25	249.42	113.83	6.07	83.35
CO19D304R	113.00	240.75	150.92	89.83	269.08	118.17	6.20	84.85
CO200037R	121.08	246.92	164.75	82.17	289.25	124.50	6.20	84.90
KS14FHB0732M-4	136.42	226.17	151.17	75.00	266.92	115.75	6.27	85.80
KS160563S-3	135.17	253.83	145.17	108.67	236.75	91.58	6.20	67.80
KS160786S-6	128.75	200.50	129.08	71.42	236.00	106.92	6.07	84.90
KS170013D-19	148.75	221.33	145.58	75.75	253.08	107.50	6.27	66.00
KS22U7321.B2.B7	152.33	226.75	154.50	72.25	262.00	107.50	6.33	66.90
KS21U7269.C1.B8	111.75	207.58	123.42	84.17	223.75	100.33	6.07	67.85
OK19225	120.33	197.25	116.42	80.83	214.75	98.33	6.00	84.85
OK18205-19HRBulk	125.08	214.00	133.08	80.92	238.50	105.42	6.20	85.65
OK18217-19HR-4	131.92	211.25	134.92	76.33	233.50	98.58	6.27	66.85
OK20418-7C21	96.00	171.75	102.00	69.75	195.67	93.67	6.07	66.00
TX19A001030	112.67	259.83	161.08	98.75	262.42	101.33	6.33	67.65
TX15A001482-19AZ16	119.00	261.75	165.08	96.67	275.75	110.67	6.27	67.75
TX18DH129	102.33	267.08	144.75	122.33	245.25	100.50	6.13	67.80
TX18DH266	117.83	255.00	168.42	86.58	294.83	126.42	6.13	67.85
TX18DH287	111.00	250.42	156.00	94.42	260.17	104.17	6.33	66.85
TX18DH313	127.00	218.33	142.42	75.92	265.17	122.75	6.07	66.15
TX15M8456-19AZ435	141.00	237.08	153.25	83.83	271.50	118.25	6.20	84.90
TX15M8456-19AZ504	127.42	192.08	123.58	68.50	232.17	108.58	6.07	85.70
NHH19651	136.83	220.50	138.17	82.33	242.92	104.75	6.20	86.50
NE19619	108.67	230.42	141.67	88.75	253.08	111.42	6.20	84.80
NE19454	120.42	175.50	102.08	73.42	194.50	92.42	5.93	84.85
NE19412	134.92	219.83	142.00	77.83	253.08	111.08	6.20	85.65

	RVA							
	Stirring Number	Peak Viscosity	Trough Viscosity	Breakdown	Final Viscosity	Set back	Peak Time	Pasting Temp
Line	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(min)	(Deg. C)
NHH19668	125.58	211.50	141.17	70.33	254.17	113.00	6.13	86.50
22CP900076	122.75	228.42	144.75	83.67	250.75	106.00	6.20	67.70
22CP900085	136.00	230.42	154.00	76.42	267.42	113.42	6.27	66.90
TX19M3183	128.67	173.92	119.83	54.08	223.67	103.83	6.13	67.80
BASF 23-25	129.00	232.17	146.00	86.17	262.50	116.50	6.20	84.95

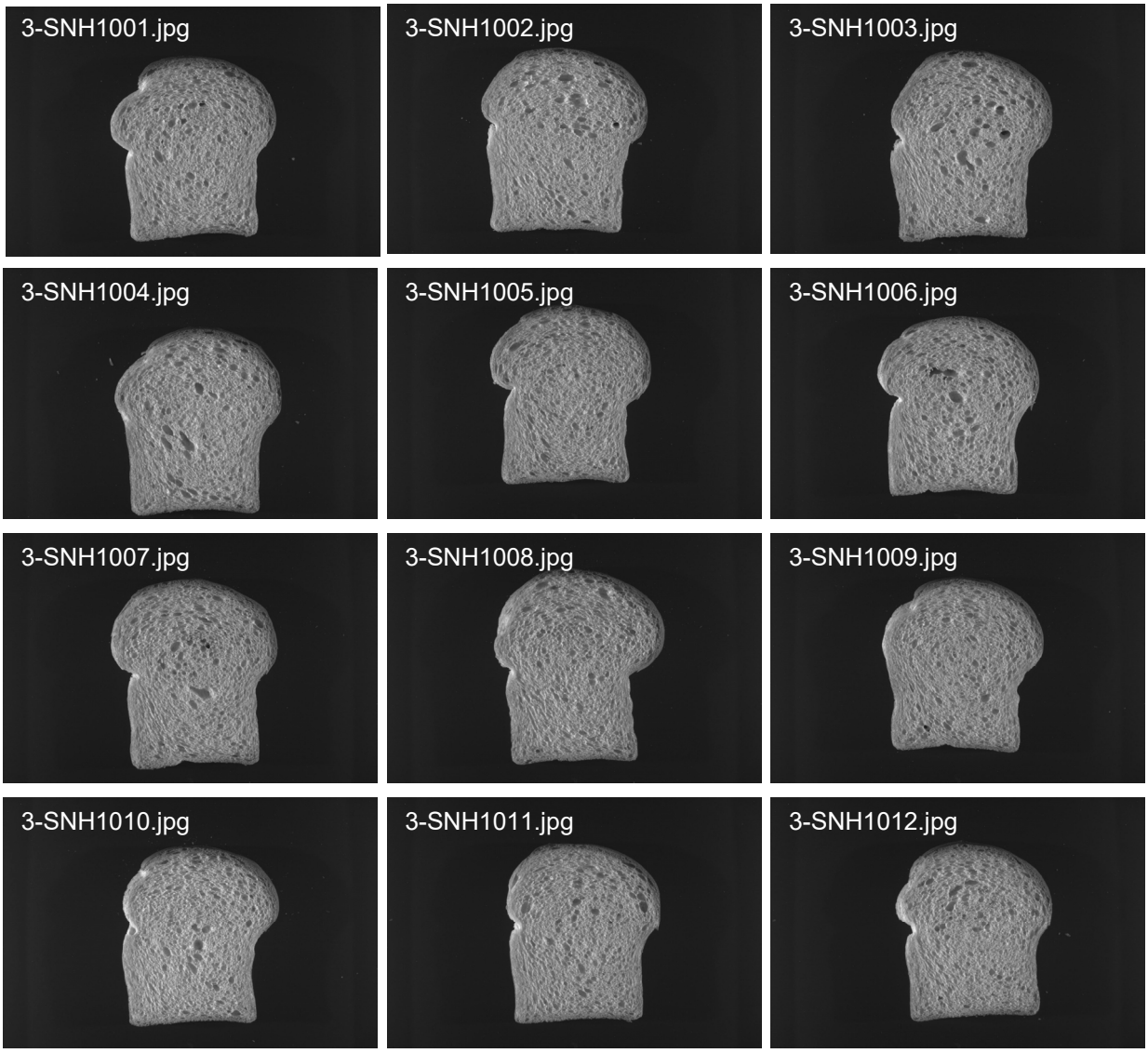
2023 SRPN Intraregional Production Zone

Northern High Plains

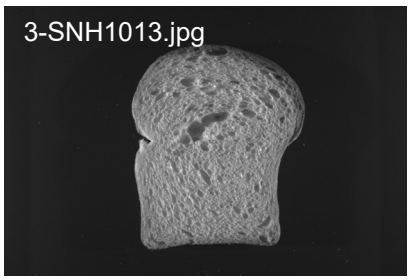
	Flour		Mix Time		Dough					
Line	Protein (%)	Water Abs. (%)	As-is (min)	Corrected (min)	Weight (g)	Proof Height (cm)	Crumb Grain	As-Rec'd. (cc)	Specific Volume (cc/g)	Loaf Volume Potential (cc/%)
Kharkof	12.4	65.5	5.25	5.25	173.8	8.0	4.0	920	6.1	66
Scout66	12.0	65.5	4.13	4.12	174.8	7.9	3.5	970	6.3	75
TAM-107	11.1	62.9	4.75	4.23	171.9	7.5	3.0	940	6.4	79
Jagalene	10.9	62.5	5.50	4.80	172.3	7.9	3.0	965	6.6	83
KS20HDW185	10.8	62.4	8.75	7.52	170.9	7.8	3.0	940	6.4	81
KS20H105	10.4	61.4	12.88	10.33	167.9	7.7	2.5	915	6.3	82
KS20H106	10.9	61.4	10.50	9.15	169.5	8.0	4.0	965	6.6	83
KS20H124	11.8	62.2	8.38	8.18	170.7	7.9	4.0	1035	7.0	83
BASF-23-23	11.3	62.4	6.00	5.48	171.2	7.5	4.0	885	5.9	70
BASF-23-24	10.6	61.3	4.75	3.94	170.4	7.7	2.5	900	6.1	78
BASF-23-1	10.3	61.3	5.50	4.35	170.3	7.4	4.0	895	6.0	81
BASF-23-22	10.7	61.4	4.50	3.81	170.8	7.5	3.5	860	5.8	72
LCH21-9485	10.5	61.5	4.25	3.46	170.5	7.9	2.5	965	6.6	88
LCH20-2165	10.6	61.4	3.63	3.03	170.5	7.4	2.0	870	5.9	74
LCH21-9398	10.4	60.3	4.75	3.83	169.5	7.7	4.0	910	6.3	81
LCH20-2264	10.2	60.5	6.25	4.92	168.8	7.6	3.5	920	6.3	84
CO18042RA	10.2	60.4	8.75	6.86	169.1	7.7	4.0	975	6.7	92
CO18D297R	10.1	61.4	7.75	5.98	170.2	7.5	4.5	920	6.2	86
CO19D304R	10.2	60.3	7.63	6.00	169.2	8.0	3.5	955	6.5	89
CO200037R	10.6	61.5	6.00	5.01	170.8	7.6	4.0	910	6.2	79
KS14FHB0732M-4	10.9	62.2	5.25	4.58	170.8	8.0	4.0	950	6.4	81
KS160563S-3	11.4	62.3	6.13	5.68	171.5	7.9	3.0	1030	6.9	87
KS160786S-6	10.7	61.5	5.75	4.83	170.2	7.8	4.0	945	6.4	83
KS170013D-19	11.2	63.3	5.63	5.07	173.0	7.5	3.5	865	5.8	69
KS22U7321.B2.B7	10.9	62.3	2.38	2.07	171.2	7.0	1.5	815	5.3	64
KS21U7269.C1.B8	11.1	62.4	5.13	4.56	171.9	7.6	3.0	910	6.2	75
OK19225	11.4	62.4	5.00	4.65	171.4	7.4	3.5	915	6.1	73
OK18205-19HRBulk	11.4	62.3	3.50	3.23	171.6	7.3	3.0	920	6.3	74
OK18217-19HR-4	11.9	62.3	3.75	3.72	171.2	7.5	2.5	895	6.0	67
OK20418-7C21	10.8	61.3	5.75	4.92	170.6	7.4	3.5	890	6.0	75
TX19A001030	10.6	61.4	4.63	3.86	171.1	7.5	3.5	885	6.1	76
TX15A001482-19AZ16	10.7	61.4	6.38	5.35	169.8	8.0	3.0	1050	7.1	97
TX18DH129	10.1	60.3	7.13	5.48	169.3	7.6	4.0	900	6.1	83
TX18DH266	10.8	62.9	12.38	10.60	171.7	7.6	3.0	990	6.7	88
TX18DH287	10.1	60.4	5.88	4.52	169.0	7.3	3.5	895	6.0	83
TX18DH313	10.1	61.3	4.00	3.08	170.8	7.5	2.5	865	5.8	78
TX15M8456-19AZ435	10.7	62.4	4.38	3.69	171.5	7.8	3.0	935	6.3	82
TX15M8456-19AZ504	10.6	61.4	5.50	4.60	171.3	8.1	3.5	975	6.5	88
NHH19651	10.9	59.4	2.75	2.38	169.4	7.7	2.5	940	6.4	81
NE19619	11.8	62.2	5.50	5.36	171.7	8.2	4.0	1000	6.7	80
NE19454	10.4	61.4	7.38	5.92	170.4	7.6	3.0	890	6.1	79

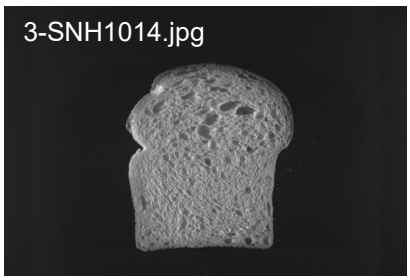
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
NE19412	10.9	62.5	5.88	5.12	172.3	7.7	4.0	905	6.0	76
NHH19668	10.6	59.4	3.25	2.70	169.0	7.4	3.0	905	6.1	79
22CP900076	10.6	61.5	4.00	3.33	171.6	7.8	3.0	930	6.3	82
22CP900085	12.1	64.5	5.88	5.88	174.4	8.0	3.5	995	6.6	76
TX19M3183	11.4	62.9	4.38	4.06	172.2	8.0	3.5	980	6.6	81
BASF 23-25	11.2	62.5	7.13	6.45	172.2	7.6	4.0	915	6.1	75

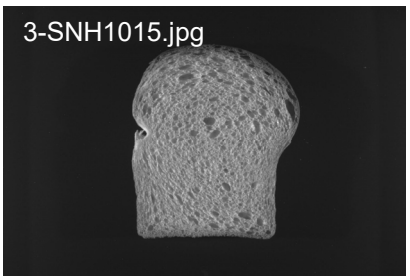
2023 SRPN Intraregional Production Zone
Northern High Plains

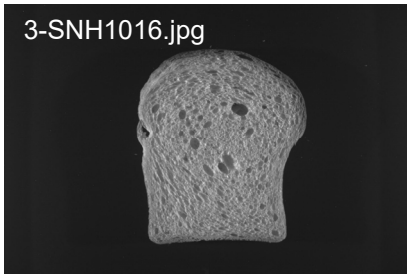


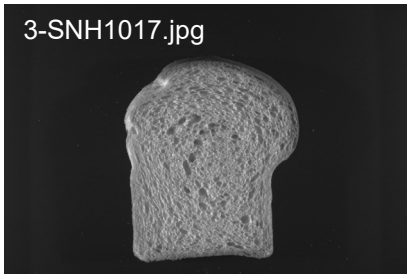
2023 SRPN Intraregional Production Zone
Northern High Plains

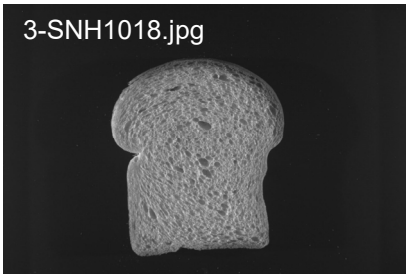


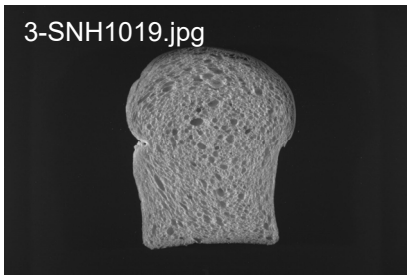


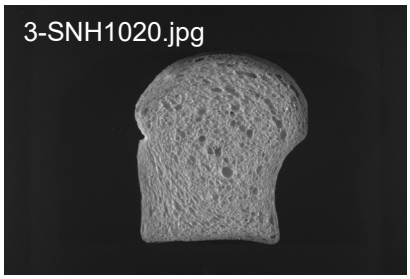


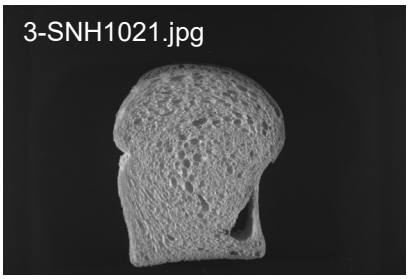


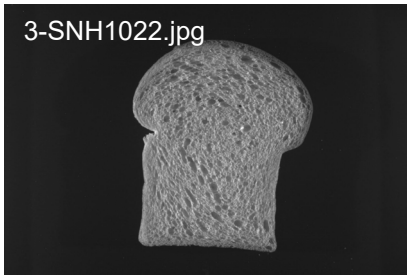


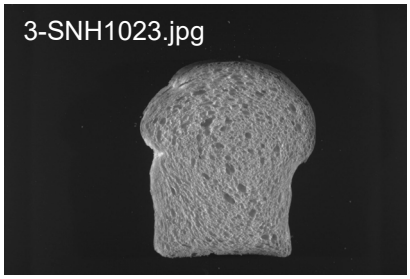


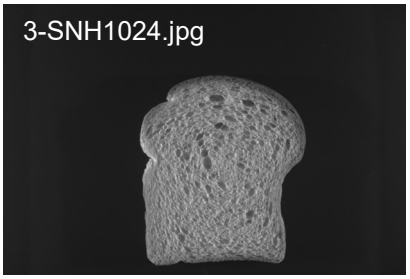




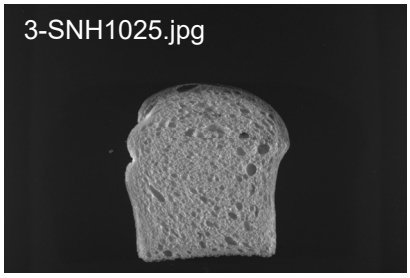


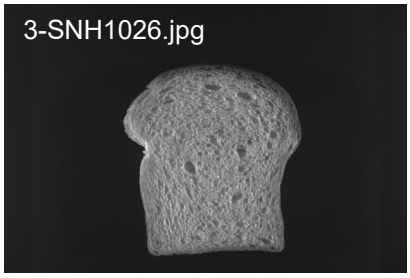


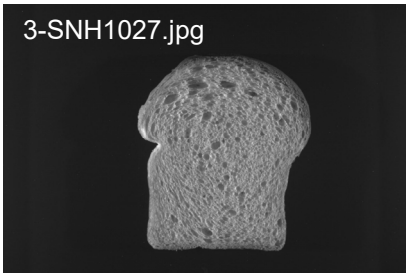


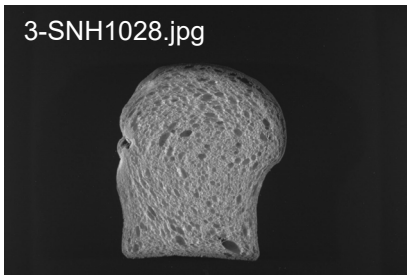


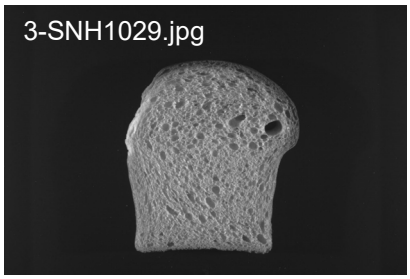
2023 SRPN Intraregional Production Zone
Northern High Plains

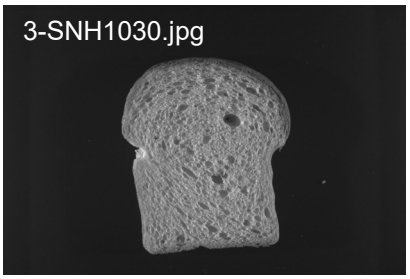


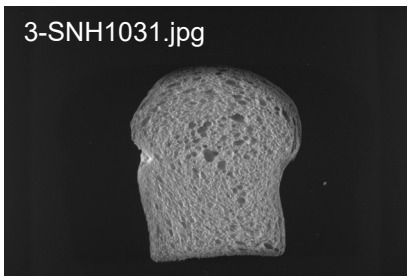


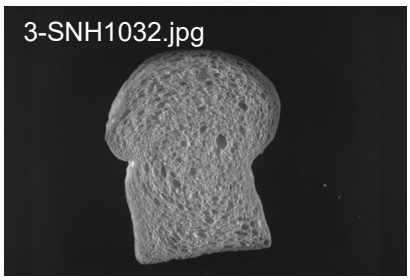


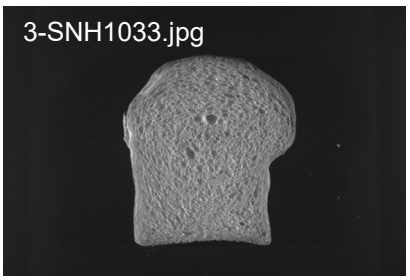


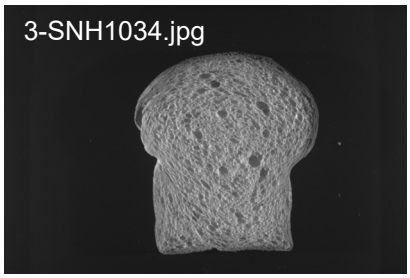


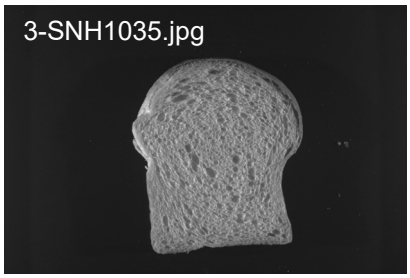


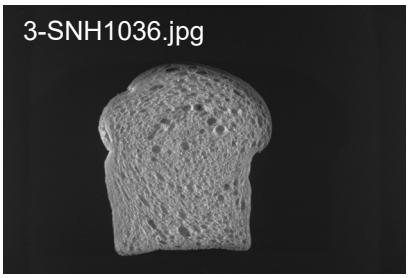










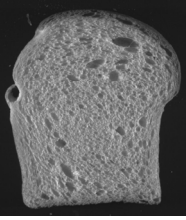


2023 SRPN Intraregional Production Zone
Northern High Plains

3-SNH1037.jpg

3-SNH1038.jpg

3-SNH1039.jpg



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3-SNH1043.jpg

3-SNH1044.jpg

3-SNH1045.jpg

3-SNH1046.jpg

3-SNH1047.jpg

Hard Winter Wheat Quality Report

2023 SRPN-SCP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	40.0	Very Poor	67.9	43.6	Average	72.6		8,
Scout 66	55.0	Very Good	93.4	59.1	Very Good	98.3		
TAM 107	48.3	Poor	82.1	45.2	Average	75.2	1AL	
Jagalene	56.9	Very Good	96.7	53.4	Very Good	88.9		
KS20HDW185	49.0	Average	83.2	26.8	Very Poor	44.6		14,15,17,19,
KS20H105	50.4	Average	85.6	28.6	Very Poor	47.6	1AL	14,15,17,
KS20H106	52.1	Good	88.5	33.6	Very Poor	55.9	1AL	14,15,
KS20H124	53.1	Good	90.1	37.0	Poor	61.5		14,15,
BASF-23-23	49.7	Average	84.4	58.3	Very Good	97.0		
BASF-23-24	43.0	Very Poor	73.0	47.5	Good	79.1		
BASF-23-1	43.5	Very Poor	73.8	54.1	Very Good	89.9		
BASF-23-22	47.6	Poor	80.9	51.5	Good	85.6	1AL	
LCH21-9485	45.5	Poor	77.3	41.6	Average	69.3		
LCH20-2165	52.2	Good	88.7	47.0	Good	78.2		16,
LCH21-9398	46.4	Poor	78.8	40.5	Poor	67.3		
LCH20-2264	50.2	Average	85.2	51.7	Good	86.0		
CO18042RA	50.2	Average	85.3	45.7	Average	76.0		5,14,15,17,
CO18D297R	48.6	Average	82.6	28.5	Very Poor	47.4		2,4,14,15,19,
CO19D304R	51.2	Good	86.9	27.0	Very Poor	44.9		2,14,15,17,
CO200037R	55.3	Very Good	93.9	45.3	Average	75.3		4,5,14,15,
KS14FHB0732M-4	51.2	Good	87.0	41.1	Average	68.3		
KS160563S-3	47.9	Poor	81.4	34.2	Poor	56.9		1,14,15,
KS160786S-6	53.3	Very Good	90.6	52.0	Good	86.5		
KS170013D-19	44.5	Very Poor	75.5	53.1	Very Good	88.3		8,20,
KS22U7321.B2.B7	51.6	Good	87.7	37.5	Poor	62.4		1,
KS21U7269.C1.B8	55.6	Very Good	94.4	32.8	Very Poor	54.6		14,15,20,
OK19225	55.2	Very Good	93.7	35.4	Poor	58.8		
OK18205-19HRBulk	49.0	Average	83.2	57.2	Very Good	95.1		
OK18217-19HR-4	54.4	Very Good	92.3	52.6	Very Good	87.5	1BL	20,
OK20418-7C21	53.3	Good	90.5	36.5	Poor	60.7	1BL	20,
TX19A001030	46.8	Poor	79.5	37.4	Poor	62.3		3,

Quality scores and ratings are calculated directly from the relative trait weightings (printed at the top of the page) and are applicable only to the nursery selected.

Hard Winter Wheat Quality Report

2023 SRPN-SCP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
TX15A001482-19AZ16	43.1	Very Poor	73.2	45.3	Average	75.4		1,14,15,
TX18DH129	53.7	Very Good	91.3	36.4	Poor	60.6		11,12,13,14,15,17,
TX18DH266	40.0	Very Poor	68.0	37.7	Poor	62.7		1,3,5,14,15,
TX18DH287	49.5	Average	84.1	26.4	Very Poor	43.9		11,12,13,14,17,
TX18DH313	45.4	Very Poor	77.1	31.5	Very Poor	52.4		5,9,10,11,12,13,19,
TX15M8456-19AZ435	51.0	Good	86.6	47.3	Good	78.7		
TX15M8456-19AZ504	43.9	Very Poor	74.6	33.9	Very Poor	56.4		1,2,14,15,
NHH19651	49.8	Average	84.7	44.3	Average	73.8		
NE19619	45.3	Very Poor	76.9	52.5	Good	87.3		9,10,14,
NE19454	48.6	Poor	82.5	52.4	Good	87.2		14,15,
NE19412	48.2	Poor	81.9	46.7	Good	77.6		5,14,
NHH19668	50.7	Average	86.0	41.0	Average	68.2		
22CP900076	53.0	Good	90.0	42.2	Average	70.3		
22CP900085	58.9	Very Good	100.0	58.1	Very Good	96.7		15,
TX19M3183	40.9	Very Poor	69.5	60.1	Very Good	100.0		9,10,
BASF 23-25	48.3	Poor	82.0	32.3	Very Poor	53.8		14,15,

2023 SRPN Intraregional Production Zone

South Central Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	60.2	11.2	0.8	29.7	9.5	2.56	0.31	41	18	MIXED	34-27-24-15-03
Scout66	59.8	11.2	0.6	31.6	9.6	2.67	0.35	56	18	MIXED	11-20-25-44-03
TAM-107	58.2	10.7	0.7	31.1	9.6	2.61	0.36	57	19	MIXED	11-17-29-43-03
Jagalene	61.1	10.6	0.6	34.0	11.0	2.81	0.33	61	17	HARD	04-14-28-54-01
KS20HDW185	59.4	10.8	0.7	32.8	10.1	2.78	0.34	67	17	HARD	03-08-23-66-01
KS20H105	59.8	10.7	0.7	30.6	10.5	2.56	0.35	50	18	MIXED	20-25-27-28-03
KS20H106	60.4	11.0	0.7	30.3	9.3	2.61	0.37	50	17	MIXED	16-26-29-29-03
KS20H124	61.1	11.1	0.5	32.2	11.1	2.68	0.36	71	19	HARD	02-08-15-75-01
BASF-23-23	59.5	10.8	0.6	29.2	9.0	2.57	0.34	63	18	HARD	05-12-25-58-01
BASF-23-24	59.4	10.4	0.7	29.8	10.7	2.59	0.32	59	18	HARD	07-21-22-50-01
BASF-23-1	59.0	10.7	0.6	30.2	10.9	2.66	0.37	57	18	HARD	09-16-31-44-01
BASF-23-22	59.5	10.6	0.6	35.4	10.6	2.79	0.35	55	15	HARD	09-18-34-39-01
LCH21-9485	59.3	10.6	0.8	29.3	10.3	2.58	0.35	51	15	MIXED	11-27-34-28-03
LCH20-2165	59.7	11.2	0.7	31.8	11.0	2.66	0.38	56	17	HARD	10-19-28-43-01
LCH21-9398	59.3	11.3	0.7	30.1	9.4	2.61	0.35	53	17	MIXED	12-24-31-33-03
LCH20-2264	58.9	10.7	0.7	34.1	10.2	2.73	0.36	47	16	MIXED	18-28-32-22-03
CO18042RA	59.6	11.3	0.8	30.0	11.3	2.54	0.41	55	16	HARD	09-21-31-39-01
CO18D297R	59.5	11.1	0.7	27.9	10.0	2.43	0.38	55	15	HARD	09-21-34-36-01
CO19D304R	59.5	11.6	0.6	28.3	9.7	2.53	0.39	61	18	HARD	05-17-26-52-01
CO200037R	60.1	11.6	0.7	28.6	9.4	2.46	0.40	53	18	MIXED	13-21-30-36-03
KS14FHB0732M-4	59.1	11.1	0.9	31.9	10.4	2.73	0.38	57	17	HARD	08-18-29-45-01
KS160563S-3	57.1	10.9	0.8	32.4	9.7	2.73	0.36	54	15	HARD	10-20-32-38-01
KS160786S-6	60.1	11.1	0.7	29.8	8.4	2.60	0.32	69	17	HARD	03-07-17-73-01
KS170013D-19	59.1	10.6	0.7	31.7	10.3	2.64	0.38	71	16	HARD	02-06-14-78-01
KS22U7321.B2.B7	57.6	10.9	0.8	33.3	9.4	2.72	0.36	58	16	HARD	05-19-32-44-01
KS21U7269.C1.B8	58.6	11.0	0.6	35.8	10.1	2.75	0.35	56	16	HARD	06-22-30-42-01
OK19225	62.4	10.6	0.8	33.4	11.3	2.71	0.33	59	17	HARD	06-17-29-48-01
OK18205-19HRBulk	58.9	10.0	0.9	32.4	10.4	2.67	0.40	48	17	MIXED	19-27-27-27-03
OK18217-19HR-4	61.7	11.0	0.7	33.3	8.0	2.85	0.32	69	14	HARD	01-05-15-79-01
OK20418-7C21	59.9	10.5	0.6	32.7	9.7	2.74	0.36	64	16	HARD	03-11-27-59-01
TX19A001030	60.0	10.8	0.6	33.7	12.7	2.67	0.38	50	16	MIXED	14-26-31-29-03
TX15A001482-19AZ16	57.3	10.5	0.8	30.4	11.1	2.57	0.34	49	18	MIXED	19-22-32-27-03
TX18DH129	59.8	10.6	0.8	32.8	10.8	2.64	0.35	55	18	HARD	09-23-30-38-01
TX18DH266	57.2	10.9	0.6	34.3	11.8	2.63	0.42	57	16	HARD	08-15-30-47-01
TX18DH287	59.4	11.6	0.5	35.4	10.7	2.76	0.36	58	16	HARD	05-17-30-48-01
TX18DH313	59.0	10.9	0.7	31.6	11.4	2.67	0.40	53	16	MIXED	13-19-32-36-03
TX15M8456-19AZ435	59.2	10.9	0.8	29.8	8.9	2.62	0.30	61	17	HARD	06-15-25-54-01
TX15M8456-19AZ504	56.5	10.5	0.8	27.5	8.8	2.58	0.36	66	16	HARD	03-07-24-66-01
NHH19651	60.3	10.6	0.8	32.1	10.1	2.73	0.34	55	16	HARD	06-25-33-36-01
NE19619	59.4	11.1	0.7	32.1	10.2	2.67	0.37	63	17	HARD	04-11-29-56-01
NE19454	59.9	10.9	0.7	29.4	10.8	2.59	0.38	64	18	HARD	06-10-24-60-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
NE19412	58.9	10.5	0.7	31.4	10.0	2.62	0.40	59	16	HARD	06-17-25-52-01
NHH19668	59.5	10.4	0.8	30.3	10.3	2.68	0.39	58	17	HARD	06-18-31-45-01
22CP900076	60.1	10.6	0.7	31.5	10.1	2.72	0.39	57	15	HARD	05-17-33-45-01
22CP900085	59.9	10.6	0.7	31.0	8.4	2.62	0.34	59	14	HARD	02-17-30-51-01
TX19M3183	57.8	10.1	0.8	30.4	9.7	2.64	0.37	60	16	HARD	05-13-30-52-01
BASF 23-25	58.6	10.4	0.7	33.0	10.1	2.74	0.33	51	16	MIXED	13-24-32-31-03

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	Wheat		Flour			Noodle Color					
LINE	Protein (%)	Milling Yield (%)	Ash (%)	Protein (%)	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
Kharkof	13.9	62.4	0.37	12.3	0.542	78.52	-1.66	23.14	-6.86	1.07	0.96
Scout66	12.7	69.9	0.39	11.3	0.545	78.69	-1.55	22.43	-7.28	1.02	1.26
TAM-107	12.6	67.2	0.38	11.3	0.563	78.17	-1.75	24.84	-7.94	1.04	1.03
Jagalene	12.4	69.6	0.43	11.3	0.490	78.77	-1.62	23.04	-7.72	0.91	1.28
KS20HDW185	12.0	65.8	0.45	10.7	0.604	79.71	-1.86	23.51	-10.18	1.12	2.49
KS20H105	12.2	69.1	0.40	10.8	0.604	79.39	-1.40	21.07	-8.75	0.79	2.40
KS20H106	12.5	68.6	0.38	11.3	0.581	79.56	-1.37	21.61	-8.77	0.90	1.61
KS20H124	13.0	67.8	0.40	11.9	0.653	77.97	-1.50	22.27	-10.32	1.17	2.67
BASF-23-23	13.3	67.2	0.42	11.8	0.540	78.62	-1.60	23.45	-7.76	0.94	2.37
BASF-23-24	12.4	64.2	0.41	11.1	0.497	78.13	-1.82	24.27	-8.09	1.00	1.79
BASF-23-1	12.3	65.4	0.44	11.3	0.487	79.63	-1.78	24.52	-7.44	0.75	1.86
BASF-23-22	13.0	64.4	0.41	11.7	0.484	79.06	-2.23	26.25	-7.99	1.06	1.91
LCH21-9485	12.0	65.6	0.42	11.0	0.602	79.09	-1.75	22.03	-7.84	0.85	1.73
LCH20-2165	12.1	69.0	0.39	10.8	0.528	78.79	-1.72	22.98	-7.63	0.90	0.96
LCH21-9398	12.3	66.0	0.42	11.0	0.528	79.29	-1.86	22.69	-7.04	0.91	1.14
LCH20-2264	12.1	66.7	0.36	10.8	0.578	78.63	-1.32	21.49	-6.58	1.03	1.68
CO18042RA	11.7	69.3	0.42	10.4	0.530	79.51	-1.51	21.49	-7.92	0.86	2.37
CO18D297R	11.9	67.6	0.39	10.4	0.562	79.61	-1.49	20.85	-7.57	0.90	3.56
CO19D304R	11.6	69.5	0.43	10.4	0.602	80.23	-2.15	23.86	-8.74	0.98	1.94
CO200037R	12.5	71.6	0.37	11.1	0.524	77.89	-1.82	24.10	-7.20	0.84	1.96
KS14FHB0732M-4	12.1	68.8	0.45	11.0	0.454	77.93	-1.55	22.22	-9.04	1.10	2.79
KS160563S-3	12.7	67.6	0.48	11.5	0.353	79.46	-2.05	23.62	-7.73	1.19	1.97
KS160786S-6	12.8	66.7	0.38	11.7	0.555	79.49	-1.64	23.07	-8.40	0.85	2.20
KS170013D-19	13.2	62.4	0.37	12.2	0.423	78.55	-1.18	21.90	-8.68	0.86	3.71
KS22U7321.B2.B7	12.4	68.1	0.44	11.4	0.636	79.15	-1.75	23.69	-9.19	0.93	1.46
KS21U7269.C1.B8	13.1	68.7	0.38	11.9	0.645	79.37	-1.37	22.06	-8.91	0.88	1.58
OK19225	12.6	68.5	0.40	11.4	0.532	78.99	-1.28	22.47	-5.99	0.95	0.84
OK18205-19HRBulk	13.2	67.9	0.40	11.9	0.572	78.78	-1.73	24.23	-6.35	0.82	-0.54
OK18217-19HR-4	13.5	64.5	0.44	12.4	0.668	78.63	-1.85	25.09	-8.01	0.99	1.05
OK20418-7C21	12.9	67.4	0.41	11.9	0.297	78.12	-1.48	24.68	-7.49	1.03	0.06
TX19A001030	12.1	66.7	0.41	10.9	0.646	78.51	-1.85	23.89	-8.11	0.95	0.88
TX15A001482-19AZ16	12.0	66.4	0.41	11.1	0.611	79.00	-1.66	23.14	-6.49	0.96	0.98
TX18DH129	11.1	69.5	0.39	10.0	0.523	79.45	-2.10	25.77	-6.69	0.82	1.15
TX18DH266	12.3	64.3	0.46	10.8	0.633	79.68	-2.25	24.60	-7.58	0.95	1.93
TX18DH287	11.0	66.1	0.43	9.9	0.530	79.49	-2.30	26.18	-6.43	0.93	1.19
TX18DH313	11.3	68.3	0.54	9.8	0.610	78.01	-1.94	25.46	-7.38	1.07	0.39
TX15M8456-19AZ435	12.3	66.6	0.39	11.0	0.529	78.32	-1.91	24.21	-6.98	1.00	0.58
TX15M8456-19AZ504	12.7	64.7	0.42	11.4	0.241	78.10	-1.41	24.48	-5.80	0.72	2.38
NHH19651	13.2	66.3	0.42	11.9	0.538	79.38	-2.12	23.99	-6.81	0.83	-0.43
NE19619	13.5	66.0	0.51	12.1	0.498	78.71	-1.44	22.19	-6.77	0.84	0.26
NE19454	13.1	66.6	0.37	11.8	0.266	78.45	-1.40	24.37	-6.30	0.87	2.31
NE19412	13.3	67.3	0.45	12.0	0.551	78.66	-1.63	23.84	-7.29	0.93	1.04

	Wheat		Flour			Noodle Color					
	Protein	Milling Yield	Ash	Protein	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
LINE	(%)	(%)	(%)	(%)							
NHH19668	13.0	67.9	0.39	11.8	0.527	79.00	-1.65	23.87	-6.18	0.80	-0.14
22CP900076	12.2	68.6	0.45	11.1	0.546	78.53	-1.55	23.22	-8.69	1.15	0.51
22CP900085	13.3	69.6	0.39	12.3	0.557	78.95	-1.70	22.59	-9.20	0.97	-0.97
TX19M3183	13.4	65.5	0.66	12.0	0.440	75.52	-0.70	22.21	-8.51	0.84	1.02
BASF 23-25	13.0	66.4	0.42	11.8	0.321	80.36	-1.66	22.24	-5.89	0.67	2.29

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		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	12.3	65.3	4.75	4.75	4
Scout66	11.3	64.8	3.38	3.10	3
TAM-107	11.3	62.7	4.75	4.33	4
Jagalene	11.3	62.8	4.63	4.22	4
KS20HDW185	10.7	61.9	2.50	0.61	6
KS20H105	10.8	61.9	5.25	3.02	6
KS20H106	11.3	61.7	1.50	0.48	6
KS20H124	11.9	63.3	8.13	8.04	5
BASF-23-23	11.8	63.6	3.88	3.78	4
BASF-23-24	11.1	62.3	4.63	4.10	4
BASF-23-1	11.3	62.8	4.25	3.91	4
BASF-23-22	11.7	63.4	3.50	3.37	3
LCH21-9485	11.0	62.3	4.13	3.64	4
LCH20-2165	10.8	61.8	2.88	2.45	2
LCH21-9398	11.0	62.2	4.75	4.16	4
LCH20-2264	10.8	62.0	4.13	3.56	4
CO18042RA	10.4	61.2	8.88	7.16	6
CO18D297R	10.4	61.3	7.00	5.67	6
CO19D304R	10.4	61.2	9.50	7.62	6
CO200037R	11.1	62.5	8.25	7.40	6
KS14FHB0732M-4	11.0	62.3	4.88	4.31	4
KS160563S-3	11.5	63.1	8.50	7.99	6
KS160786S-6	11.7	64.0	6.00	5.79	5
KS170013D-19	12.2	65.3	5.00	5.00	5
KS22U7321.B2.B7	11.4	63.0	2.63	2.45	3
KS21U7269.C1.B8	11.9	63.7	7.13	7.03	5
OK19225	11.4	62.4	5.13	4.75	4
OK18205-19HRBulk	11.9	63.2	5.25	5.16	4
OK18217-19HR-4	12.4	63.2	4.75	4.75	4
OK20418-7C21	11.9	62.3	5.75	5.68	4
TX19A001030	10.9	61.6	4.75	4.11	4
TX15A001482-19AZ16	11.1	61.9	6.38	5.68	5
TX18DH129	10.0	60.2	7.38	5.64	6
TX18DH266	10.8	63.5	3.13	1.27	6
TX18DH287	9.9	60.4	5.63	4.19	4
TX18DH313	9.8	60.3	3.75	2.78	3
TX15M8456-19AZ435	11.0	62.2	5.13	4.51	4
TX15M8456-19AZ504	11.4	63.9	6.63	6.16	5

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
NHH19651	11.9	61.3	3.25	3.20	3
NE19619	12.1	64.1	6.13	6.13	5
NE19454	11.8	64.1	9.25	9.03	6
NE19412	12.0	64.0	6.13	6.13	5
NHH19668	11.8	61.1	3.75	3.66	4
22CP900076	11.1	63.0	3.25	2.91	3
22CP900085	12.3	64.5	6.63	6.63	5
TX19M3183	12.0	63.9	5.25	5.25	4
BASF 23-25	11.8	63.6	7.63	7.44	5

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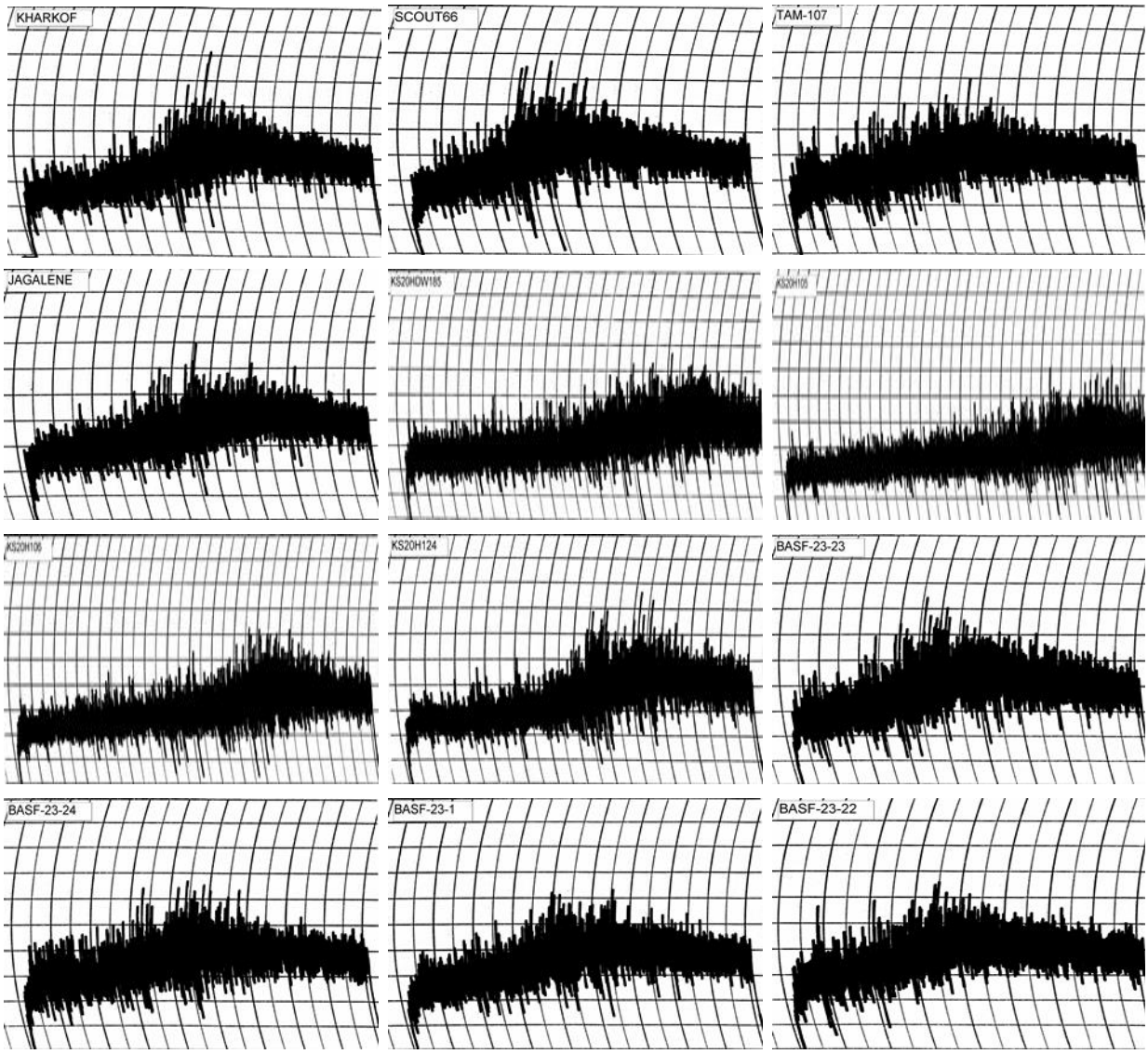
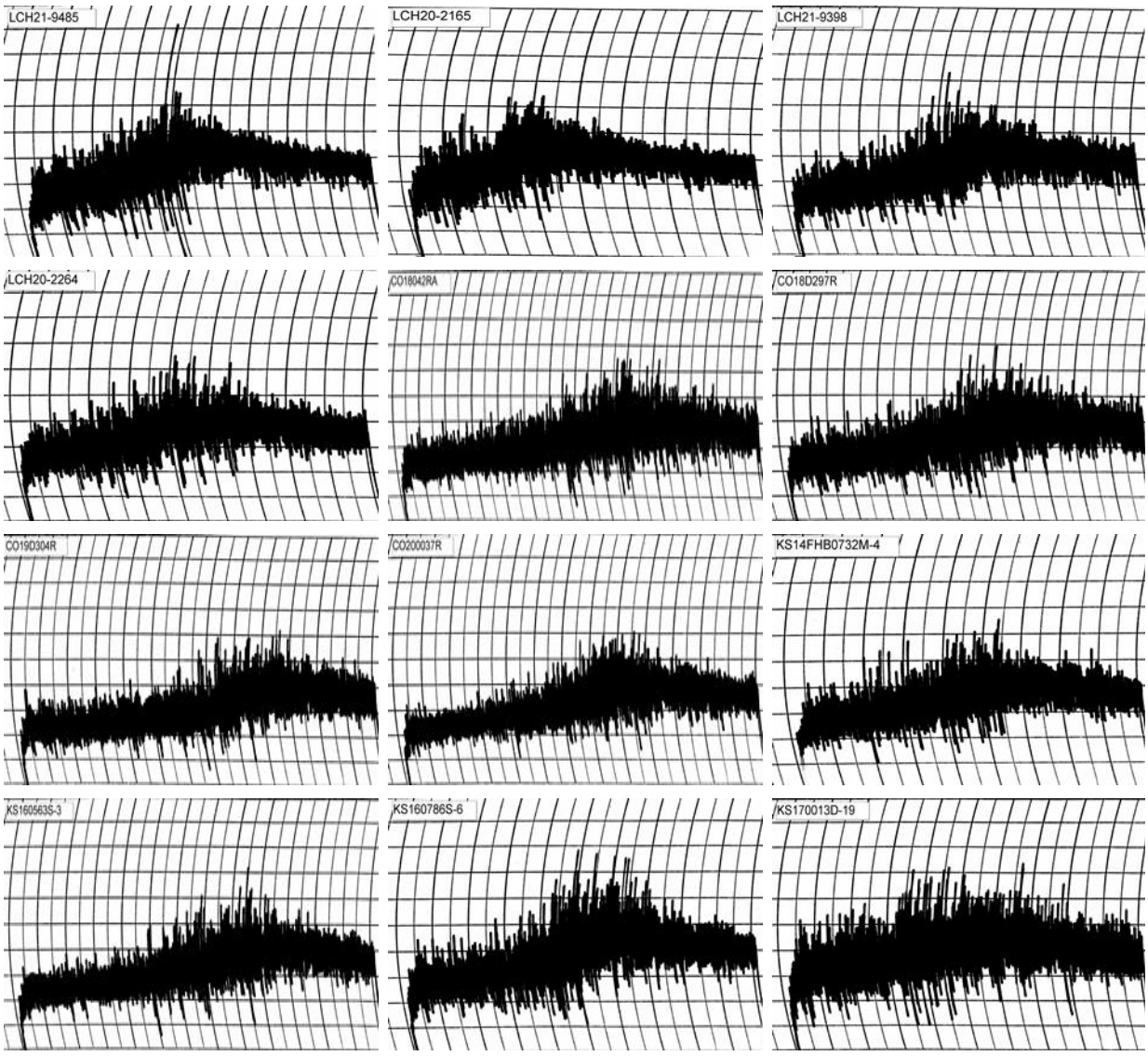


2023 SRPN Intraregional Production Zone
South Central Plains



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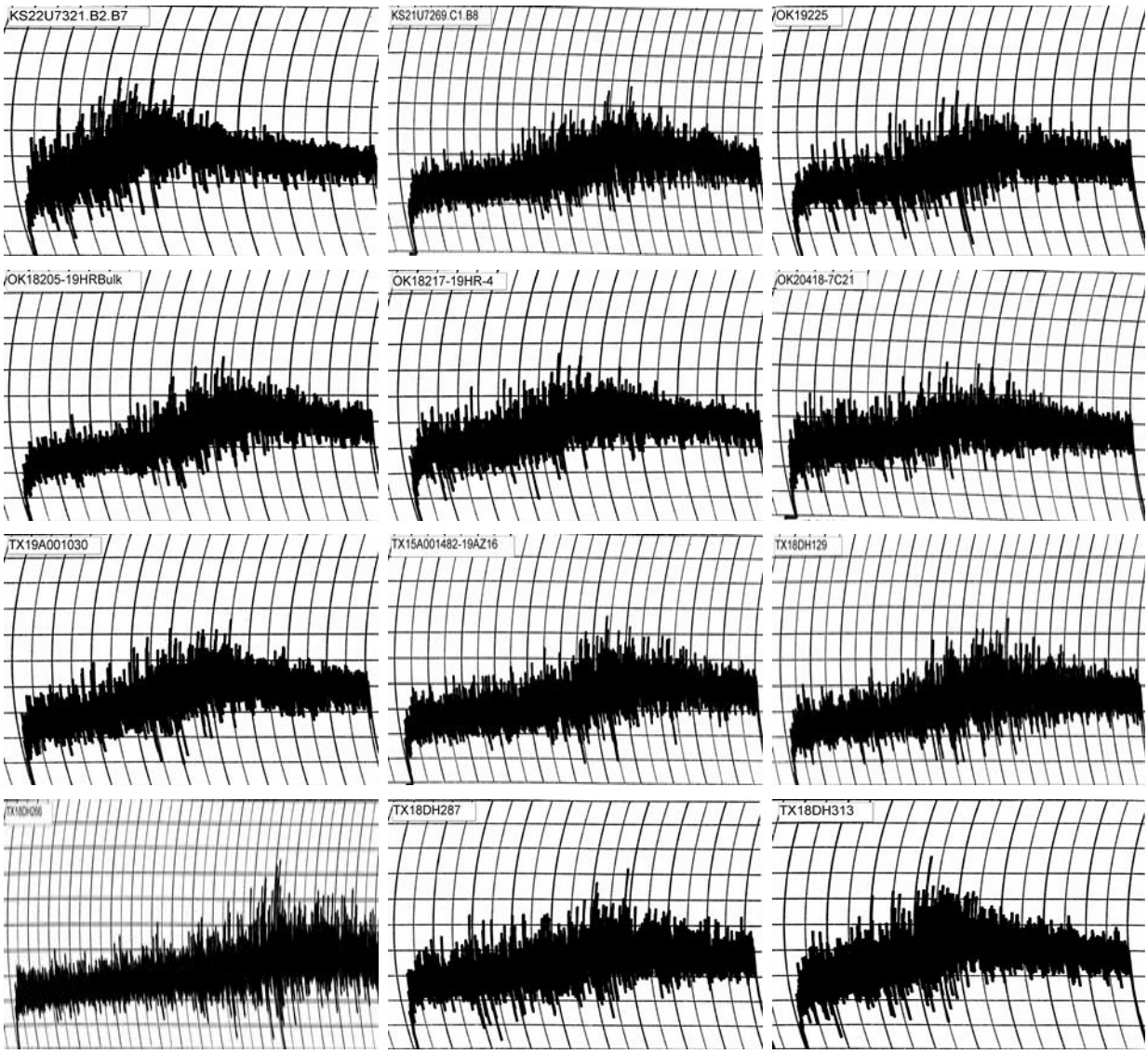
South Central Plains



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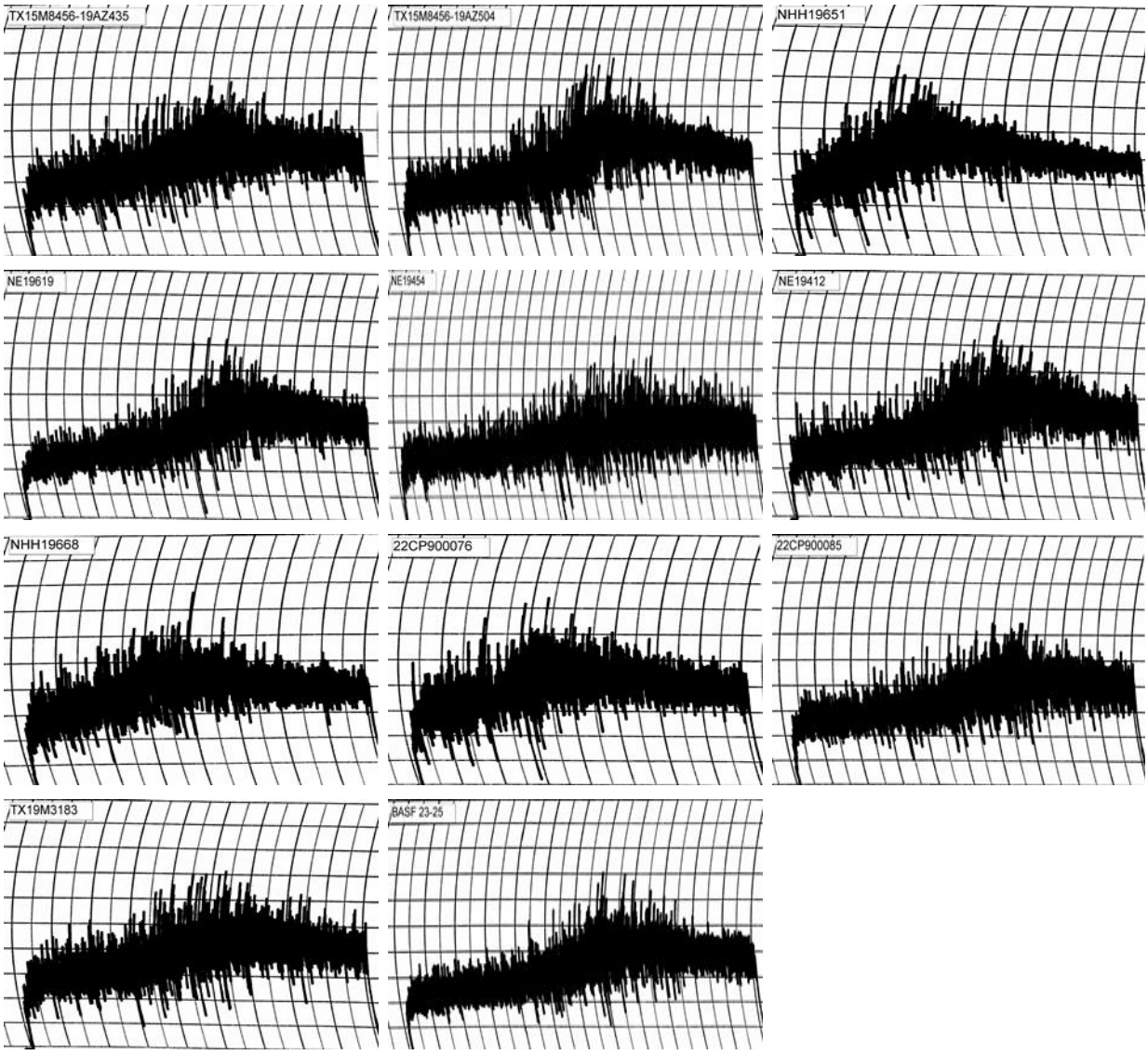
South Central Plains



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	RVA							
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)	Pasting Temp (Deg. C)
Kharkof	105.25	251.08	157.08	94.00	272.50	115.42	6.13	84.75
Scout66	84.83	211.00	117.17	93.83	217.83	100.67	5.87	67.65
TAM-107	77.08	262.75	165.42	97.33	280.25	114.83	6.20	67.65
Jagalene	105.33	223.42	139.67	83.75	253.00	113.33	6.07	67.75
KS20HDW185	87.33	275.75	149.83	125.92	244.33	94.50	6.20	66.95
KS20H105	107.00	276.50	162.08	114.42	281.75	119.67	6.07	67.75
KS20H106	108.50	262.67	149.08	113.58	260.17	111.08	6.07	67.70
KS20H124	99.33	286.25	159.08	127.17	257.50	98.42	6.20	67.70
BASF-23-23	100.92	219.17	137.42	81.75	251.00	113.58	6.07	67.70
BASF-23-24	99.50	253.00	148.17	104.83	264.08	115.92	6.07	67.15
BASF-23-1	83.50	237.83	143.83	94.00	263.17	119.33	6.07	67.75
BASF-23-22	93.92	211.50	136.67	74.83	252.67	116.00	6.07	66.85
LCH21-9485	75.08	265.83	166.33	99.50	283.42	117.08	6.13	67.80
LCH20-2165	79.08	239.25	149.25	90.00	270.50	121.25	6.00	67.70
LCH21-9398	96.83	251.42	161.00	90.42	286.42	125.42	6.00	66.85
LCH20-2264	92.08	247.92	154.92	93.00	272.33	117.42	6.13	67.80
CO18042RA	113.83	251.75	154.33	97.42	279.33	125.00	6.00	67.80
CO18D297R	120.83	253.83	177.17	76.67	311.42	134.25	6.13	83.20
CO19D304R	68.33	255.75	151.50	104.25	275.17	123.67	6.07	68.60
CO200037R	90.67	256.42	162.92	93.50	286.42	123.50	6.07	67.75
KS14FHB0732M-4	100.75	239.42	154.92	84.50	275.92	121.00	6.13	67.70
KS160563S-3	93.33	265.58	146.25	119.33	249.08	102.83	6.07	67.65
KS160786S-6	93.42	241.83	152.42	89.42	271.92	119.50	6.07	66.80
KS170013D-19	108.33	239.17	154.00	85.17	272.50	118.50	6.13	66.10
KS22U7321.B2.B7	97.67	240.67	151.67	89.00	262.42	110.75	6.20	67.80
KS21U7269.C1.B8	109.25	238.67	147.50	91.17	265.75	118.25	6.00	66.90
OK19225	107.25	237.42	145.92	91.50	261.25	115.33	6.00	67.70
OK18205-19HRBulk	92.83	236.75	147.92	88.83	262.17	114.25	6.13	67.80
OK18217-19HR-4	96.92	237.92	147.25	90.67	255.75	108.50	6.20	66.95
OK20418-7C21	69.50	204.50	126.00	78.50	232.33	106.33	6.07	66.80
TX19A001030	121.25	277.25	157.25	120.00	264.83	107.58	6.13	67.70
TX15A001482-19AZ16	101.17	274.00	162.67	111.33	274.33	111.67	6.20	68.50
TX18DH129	78.17	292.75	149.25	143.50	255.50	106.25	6.00	67.75
TX18DH266	100.42	269.33	160.92	108.42	287.33	126.42	6.07	67.65
TX18DH287	64.33	258.83	148.58	110.25	258.33	109.75	6.07	67.75
TX18DH313	112.92	231.33	149.33	82.00	278.33	129.00	5.93	66.15
TX15M8456-19AZ435	80.42	251.00	163.75	87.25	288.67	124.92	6.13	67.80
TX15M8456-19AZ504	114.58	212.25	142.33	69.92	270.50	128.17	6.00	67.65
NHH19651	97.33	248.50	158.25	90.25	272.00	113.75	6.20	68.55
NE19619	95.33	252.42	156.42	96.00	270.50	114.08	6.20	69.35
NE19454	89.42	216.67	137.00	79.67	262.17	125.17	5.93	67.05
NE19412	98.42	245.33	156.67	88.67	283.17	126.50	6.07	66.85

	RVA							
	Stirring Number	Peak Viscosity	Trough Viscosity	Breakdown	Final Viscosity	Set back	Peak Time	Pasting Temp
Line	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(min)	(Deg. C)
NHH19668	109.42	233.08	149.92	83.17	268.83	118.92	6.07	67.80
22CP900076	80.67	248.00	158.42	89.58	279.33	120.92	6.13	66.10
22CP900085	114.83	242.08	156.58	85.50	276.67	120.08	6.13	67.00
TX19M3183	98.25	199.92	138.58	61.33	260.92	122.33	6.07	66.95
BASF 23-25	107.83	252.67	157.67	95.00	282.25	124.58	6.07	67.80

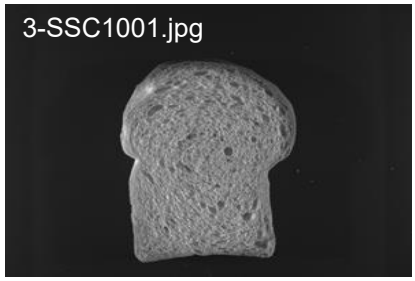
2023 SRPN Intraregional Production Zone

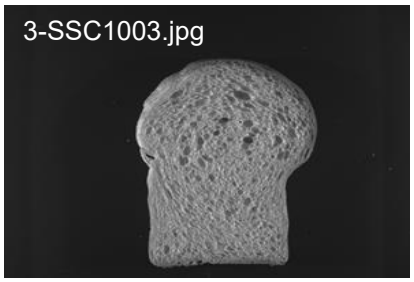
South Central Plains

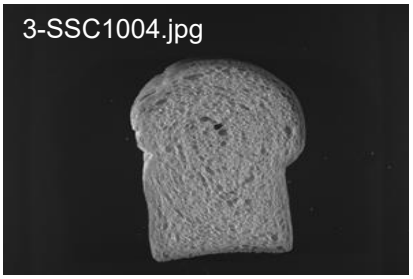
	Flour		Mix Time		Dough					
Line	Protein (%)	Water Abs. (%)	As-is (min)	Corrected (min)	Weight (g)	Proof Height (cm)	Crumb Grain	As-Rec'd. (cc)	Specific Volume (cc/g)	Loaf Volume Potential (cc/%)
Kharkof	12.3	65.4	7.00	7.00	174.7	7.9	4.5	945	6.3	70
Scout66	11.3	64.8	4.63	4.25	174.2	7.8	4.0	920	6.1	74
TAM-107	11.3	62.4	5.63	5.13	171.7	7.4	3.5	985	6.5	83
Jagalene	11.3	62.4	7.13	6.51	171.8	7.4	4.0	930	6.2	76
KS20HDW185	10.7	61.9	16.75	14.22	169.0	7.5	2.5	850	5.8	70
KS20H105	10.8	61.6	21.00	17.93	168.2	7.6	2.5	890	6.1	75
KS20H106	11.3	61.5	15.00	13.67	170.1	7.7	3.5	980	6.7	82
KS20H124	11.9	63.4	10.50	10.39	171.8	7.4	3.5	1020	6.9	81
BASF-23-23	11.8	63.3	6.00	5.85	172.5	7.3	4.0	930	6.2	72
BASF-23-24	11.1	62.5	6.25	5.54	172.3	7.0	3.0	880	5.9	72
BASF-23-1	11.3	62.4	6.75	6.21	171.7	7.1	4.0	915	6.1	74
BASF-23-22	11.7	63.5	4.75	4.58	172.9	7.2	3.0	905	6.0	69
LCH21-9485	11.0	62.6	5.75	5.07	171.9	7.3	3.5	910	6.2	76
LCH20-2165	10.8	61.5	4.63	3.95	171.7	7.4	3.0	910	6.2	78
LCH21-9398	11.0	62.2	6.13	5.36	171.9	7.4	3.5	935	6.3	79
LCH20-2264	10.8	62.4	6.38	5.49	171.8	7.2	3.0	945	6.3	82
CO18042RA	10.4	61.4	11.25	9.08	169.2	7.3	4.0	935	6.4	85
CO18D297R	10.4	61.5	8.00	6.48	170.1	7.3	3.5	855	5.7	74
CO19D304R	10.4	61.4	13.00	10.43	169.3	7.3	3.5	870	5.9	76
CO200037R	11.1	62.3	10.50	9.42	171.0	7.2	4.0	905	6.0	74
KS14FHB0732M-4	11.0	62.4	6.50	5.74	171.8	7.5	3.5	940	6.4	79
KS160563S-3	11.5	63.3	10.00	9.40	172.1	7.5	4.5	950	6.3	76
KS160786S-6	11.7	64.0	7.75	7.48	173.0	7.1	4.0	930	6.1	72
KS170013D-19	12.2	67.4	7.25	7.25	176.8	7.4	3.0	910	6.0	66
KS22U7321.B2.B7	11.4	63.3	4.00	3.73	172.8	7.2	3.5	900	6.0	71
KS21U7269.C1.B8	11.9	63.4	8.00	7.88	172.4	7.3	2.5	900	6.0	68
OK19225	11.4	62.6	7.00	6.48	171.7	7.1	4.5	890	5.9	70
OK18205-19HRBulk	11.9	63.6	6.50	6.39	173.0	7.2	4.0	970	6.4	76
OK18217-19HR-4	12.4	63.4	5.00	5.00	172.7	7.1	3.0	900	6.0	64
OK20418-7C21	11.9	62.4	6.38	6.30	171.5	7.4	3.5	895	6.1	67
TX19A001030	10.9	61.6	6.75	5.83	170.6	7.2	3.5	925	6.3	79
TX15A001482-19AZ16	11.1	62.3	9.25	8.24	171.0	7.0	4.0	915	6.3	76
TX18DH129	10.0	60.5	10.00	7.64	169.2	7.1	3.0	885	6.0	82
TX18DH266	10.8	63.5	19.25	16.52	171.9	7.6	3.5	1010	6.7	90
TX18DH287	9.9	60.4	8.50	6.33	169.0	7.0	2.5	865	5.9	80
TX18DH313	9.8	60.4	6.50	4.82	169.6	7.0	2.5	840	5.6	77
TX15M8456-19AZ435	11.0	62.5	6.25	5.49	171.7	7.2	3.0	890	6.0	73
TX15M8456-19AZ504	11.4	63.9	8.63	8.02	172.7	7.3	3.5	935	6.2	75
NHH19651	11.9	61.6	4.50	4.44	171.5	8.0	4.5	1015	6.8	80
NE19619	12.1	64.4	9.00	9.00	173.7	7.6	4.0	980	6.6	75
NE19454	11.8	64.1	11.00	10.74	172.8	7.8	4.0	990	6.6	78

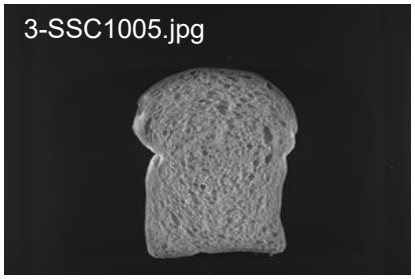
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
NE19412	12.0	63.6	8.00	8.00	173.0	7.3	3.0	945	6.3	71
NHH19668	11.8	61.1	5.38	5.25	170.9	7.3	3.5	920	6.2	70
22CP900076	11.1	62.6	5.13	4.60	172.0	7.2	3.5	930	6.3	77
22CP900085	12.3	64.5	7.63	7.63	173.2	7.8	4.0	1035	7.0	79
TX19M3183	12.0	63.5	6.75	6.75	173.3	8.0	4.0	1020	6.8	80
BASF 23-25	11.8	63.6	10.00	9.75	172.6	7.2	3.5	935	6.3	72

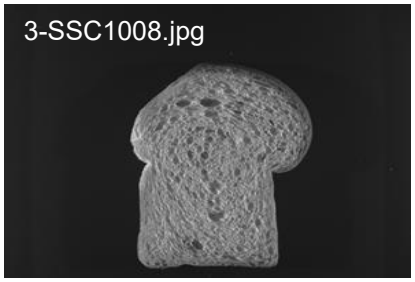
2023 SRPN Intraregional Production Zone
South Central Plains

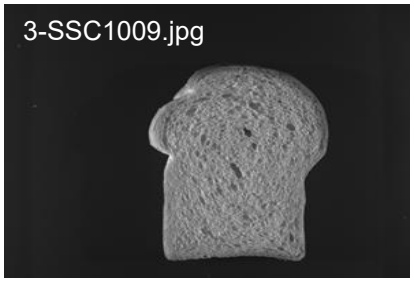




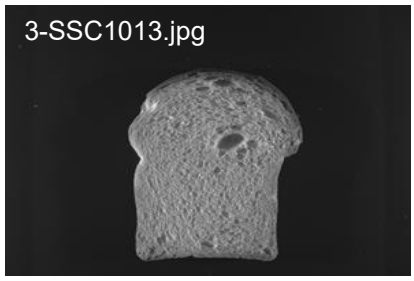


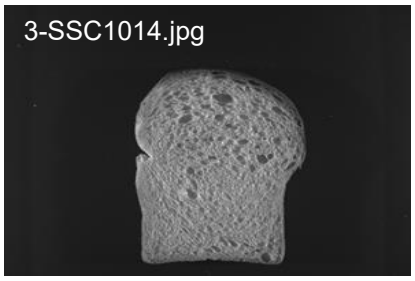


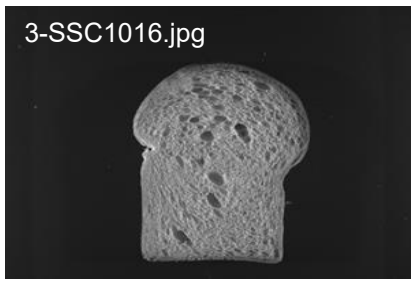


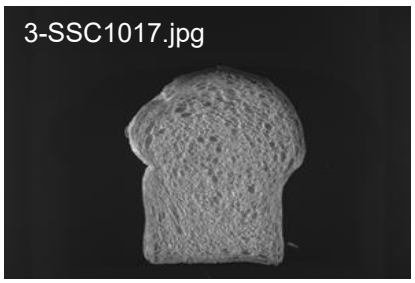


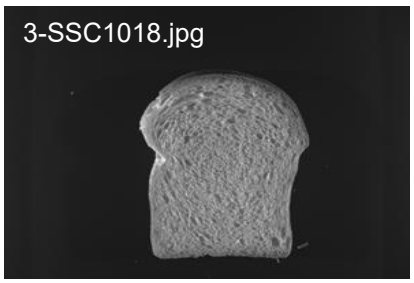
2023 SRPN Intraregional Production Zone
South Central Plains

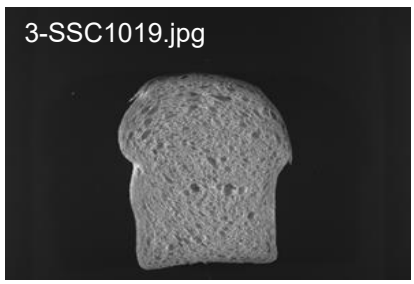


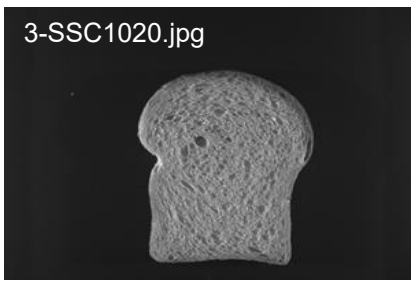


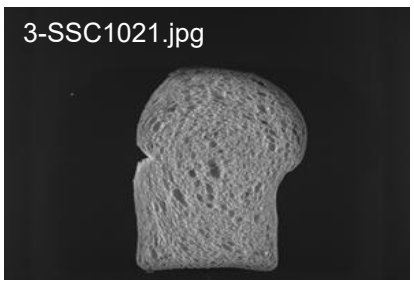


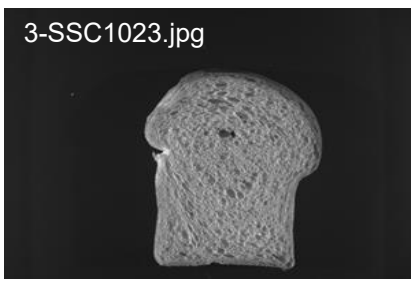




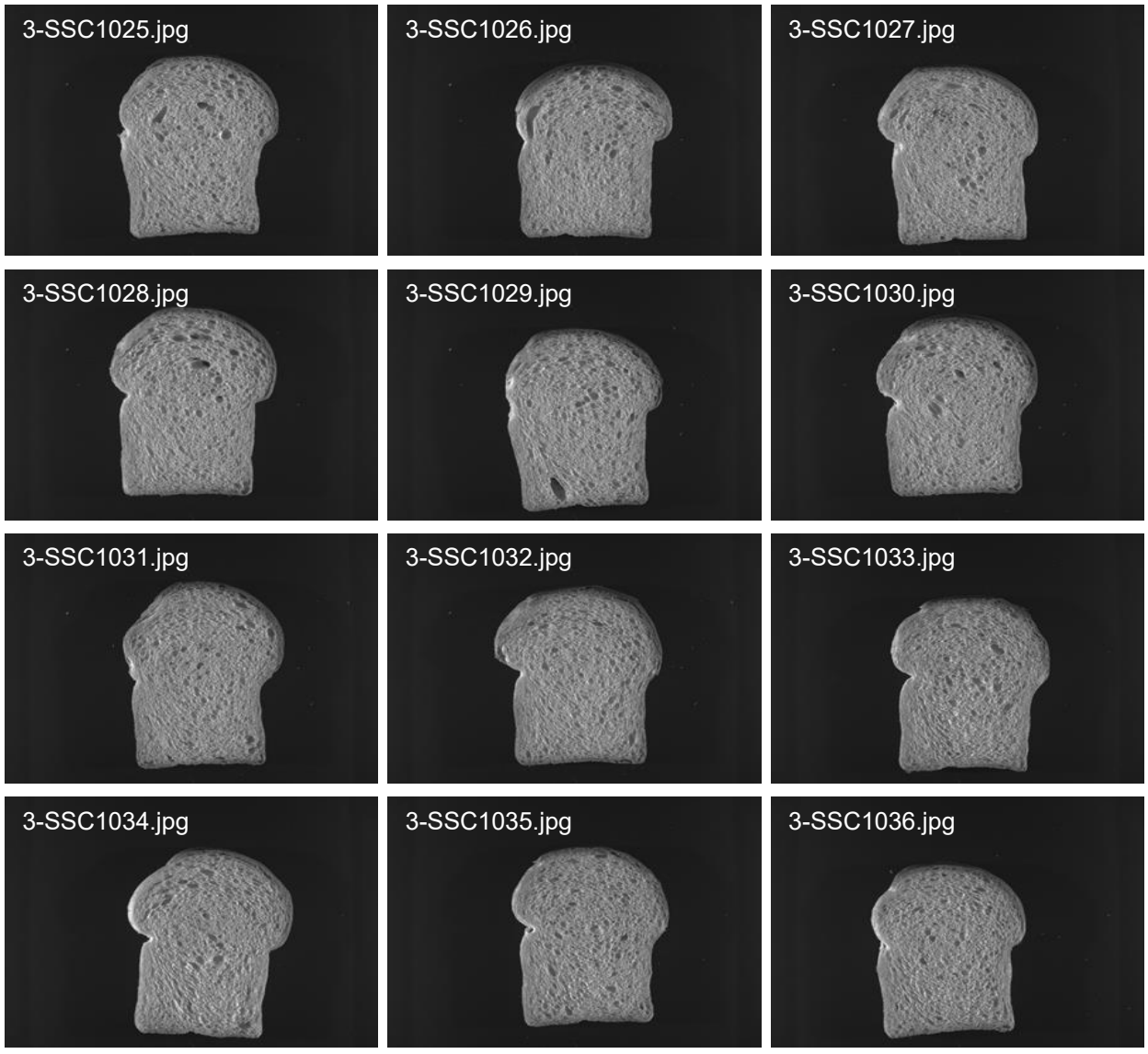








2023 SRPN Intraregional Production Zone
South Central Plains



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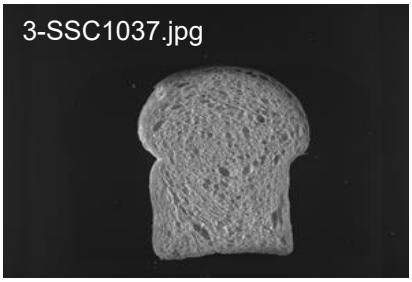

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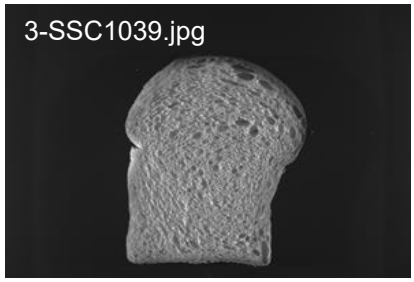

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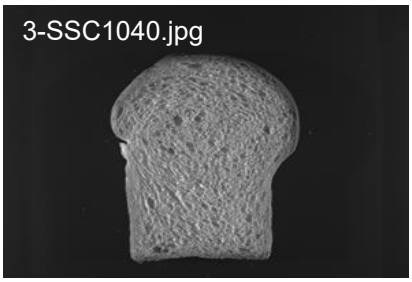

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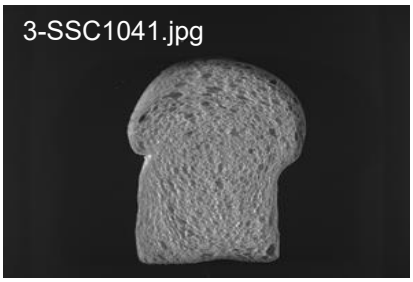

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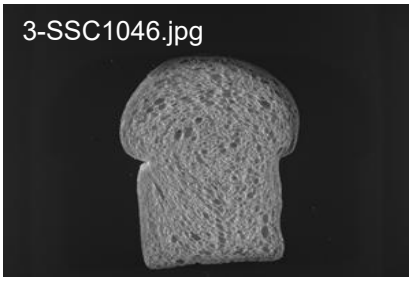

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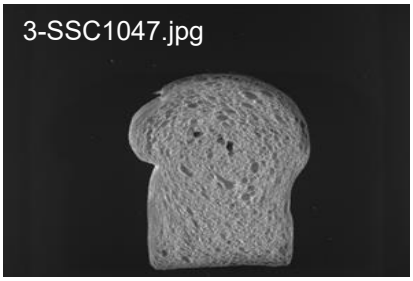


Hard Winter Wheat Quality Report

2023 SRPN-SHP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	38.8	Very Poor	66.0	39.8	Average	78.8		4,6,8,
Scout 66	57.6	Very Good	97.9	48.3	Very Good	95.6		
TAM 107	52.3	Average	88.8	46.3	Very Good	91.6	1AL	
Jagalene	57.6	Very Good	97.8	44.9	Good	88.8		
KS20HDW185	49.5	Poor	84.1	30.9	Very Poor	61.2		14,15,21,
KS20H105	52.7	Good	89.5	17.4	Very Poor	34.4	1AL	14,15,17,19,
KS20H106	53.7	Good	91.2	31.2	Very Poor	61.7	1AL	14,15,
KS20H124	54.7	Very Good	92.9	35.5	Poor	70.2		
BASF-23-23	56.3	Very Good	95.6	37.6	Average	74.3		20,
BASF-23-24	49.9	Average	84.8	46.7	Very Good	92.3		
BASF-23-1	51.1	Average	86.8	35.8	Poor	70.8		
BASF-23-22	48.2	Poor	81.9	44.2	Good	87.4	1AL	3,
LCH21-9485	52.2	Average	88.7	40.6	Average	80.4		
LCH20-2165	55.7	Very Good	94.7	35.5	Poor	70.2		11,16,
LCH21-9398	45.0	Very Poor	76.4	31.0	Very Poor	61.4		16,
LCH20-2264	56.6	Very Good	96.2	42.3	Average	83.8		3,
CO18042RA	51.5	Average	87.5	29.7	Very Poor	58.8		
CO18D297R	53.0	Good	90.0	38.1	Average	75.4		4,
CO19D304R	51.9	Average	88.1	34.7	Poor	68.6		2,4,12,13,17,
CO200037R	56.0	Very Good	95.2	46.1	Good	91.2		4,
KS14FHB0732M-4	44.1	Very Poor	75.0	45.6	Good	90.3		
KS160563S-3	49.3	Poor	83.7	43.4	Good	85.8		1,
KS160786S-6	53.2	Good	90.3	48.6	Very Good	96.2		
KS170013D-19	41.1	Very Poor	69.8	46.2	Good	91.4		8,20,
KS22U7321.B2.B7	52.4	Good	88.9	22.5	Very Poor	44.4		15,16,
KS21U7269.C1.B8	49.2	Poor	83.6	43.4	Average	85.8		3,5,
OK19225	52.8	Good	89.6	45.7	Good	90.5		18,
OK18205-19HRBulk	54.6	Very Good	92.7	46.4	Very Good	91.7		
OK18217-19HR-4	53.3	Good	90.5	39.2	Average	77.5	1BL	5,
OK20418-7C21	52.9	Good	89.9	46.1	Good	91.2	1BL	
TX19A001030	50.7	Average	86.2	35.6	Poor	70.4		

Quality scores and ratings are calculated directly from the relative trait weightings (printed at the top of the page) and are applicable only to the nursery selected.

Hard Winter Wheat Quality Report

2023 SRPN-SHP

1 - Test weight	10	11 - Flour protein	8
2 - SKCS kernel weight	8	12 - Bake absorption	15
3 - Kernel weight SD	8	13 - Mixograph absorption	5
4 - SKCS kernel diameter	8	14 - Bake mix time	10
5 - Kernel diameter SD	8	15 - Mixograph mix time	5
6 - SKCS hardness	10	16 - Mixograph tolerance	5
7 - Hardness SD	8	17 - Dough weight	
8 - Flour yield	30	18 - Proof height	2
9 - Flour ash	10	19 - Loaf volume	20
10 - Milling score		20 - Volume regression	5
		21 - Crumb grain	25

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
TX15A001482-19AZ16	45.6	Very Poor	77.5	49.7	Very Good	98.3		
TX18DH129	53.5	Good	90.9	25.9	Very Poor	51.2		15,
TX18DH266	40.3	Very Poor	68.5	32.5	Very Poor	64.4		1,8,9,10,14,15,19,
TX18DH287	48.8	Poor	83.0	32.6	Very Poor	64.5		11,21,
TX18DH313	50.4	Average	85.6	39.1	Average	77.3		18,19,
TX15M8456-19AZ435	48.5	Poor	82.4	35.8	Poor	70.8		
TX15M8456-19AZ504	45.2	Very Poor	76.9	47.8	Very Good	94.6		1,2,8,
NHH19651	49.1	Poor	83.4	27.0	Very Poor	53.5		13,16,21,
NE19619	43.2	Very Poor	73.3	50.5	Very Good	100.0		1,9,10,
NE19454	48.7	Poor	82.8	34.5	Poor	68.2		14,15,
NE19412	46.1	Very Poor	78.3	45.7	Good	90.3		
NHH19668	48.4	Poor	82.2	34.9	Poor	69.1		5,12,16,
22CP900076	51.3	Average	87.2	33.8	Poor	66.8		
22CP900085	58.9	Very Good	100.0	42.8	Average	84.7		
TX19M3183	46.6	Very Poor	79.1	42.3	Average	83.6		
BASF 23-25	50.2	Average	85.2	48.2	Very Good	95.3		

2023 SRPN Intraregional Production Zone

Southern High Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	60.6	11.5	1.3	29.9	7.3	2.57	0.29	36	19	MIXED	44-29-15-12-03
Scout66	61.3	11.9	0.8	36.2	10.3	2.83	0.35	57	17	HARD	09-20-26-45-01
TAM-107	60.6	11.7	1.0	36.5	9.7	2.83	0.41	61	16	HARD	03-15-28-54-01
Jagalene	62.4	11.3	1.0	35.2	10.3	2.94	0.42	65	19	HARD	03-13-23-61-01
KS20HDW185	60.0	12.2	0.9	36.8	8.8	2.98	0.39	67	20	HARD	02-15-24-59-01
KS20H105	62.0	12.3	0.9	32.8	9.2	2.71	0.40	57	24	MIXED	19-17-18-46-03
KS20H106	62.3	12.1	0.9	35.3	8.2	2.81	0.39	56	21	MIXED	14-22-24-40-03
KS20H124	62.1	11.4	0.8	36.0	9.8	2.88	0.39	70	18	HARD	01-07-21-71-01
BASF-23-23	61.7	12.2	0.9	32.8	8.5	2.72	0.33	68	19	HARD	04-09-22-65-01
BASF-23-24	61.4	11.6	0.6	33.1	10.5	2.78	0.39	64	17	HARD	03-11-27-59-01
BASF-23-1	61.8	11.9	0.7	34.2	10.1	2.83	0.41	59	17	HARD	06-17-32-45-01
BASF-23-22	61.3	11.0	0.8	39.1	11.6	2.94	0.42	60	18	HARD	07-18-27-48-01
LCH21-9485	61.4	11.5	0.7	34.5	9.6	2.78	0.32	55	18	MIXED	11-24-26-39-03
LCH20-2165	61.3	11.9	0.8	37.7	10.3	2.90	0.43	53	20	MIXED	18-24-20-38-03
LCH21-9398	60.4	11.8	0.7	33.1	9.8	2.78	0.40	58	22	MIXED	14-18-21-47-03
LCH20-2264	60.8	11.2	0.8	41.2	12.2	2.94	0.40	46	19	MIXED	26-25-22-27-03
CO18042RA	61.3	11.9	0.8	31.5	10.1	2.65	0.41	56	19	MIXED	13-19-27-41-03
CO18D297R	61.6	11.4	0.9	30.2	10.1	2.55	0.36	62	18	HARD	06-14-26-54-01
CO19D304R	59.5	11.6	0.9	28.3	8.4	2.59	0.41	66	18	HARD	03-12-24-61-01
CO200037R	61.0	11.7	0.7	30.1	10.2	2.56	0.44	58	18	HARD	09-17-31-43-01
KS14FHB0732M-4	60.1	12.4	0.8	32.3	10.2	2.74	0.38	64	20	HARD	04-16-25-55-01
KS160563S-3	59.0	12.3	0.7	34.4	11.0	2.79	0.41	61	15	HARD	04-13-31-52-01
KS160786S-6	61.8	12.0	0.8	31.9	8.7	2.73	0.39	73	19	HARD	02-08-16-74-01
KS170013D-19	60.6	11.7	0.8	32.5	9.8	2.71	0.40	77	19	HARD	01-05-15-79-01
KS22U7321.B2.B7	60.2	11.6	0.6	39.6	9.7	2.97	0.41	58	18	HARD	07-20-30-43-01
KS21U7269.C1.B8	60.0	11.5	0.8	41.2	12.4	2.96	0.45	52	20	MIXED	18-23-23-36-03
OK19225	62.8	11.1	0.9	35.5	10.9	2.85	0.37	60	18	HARD	06-19-29-46-01
OK18205-19HRBulk	61.4	10.6	1.0	35.5	10.0	2.78	0.42	48	17	MIXED	22-26-28-24-03
OK18217-19HR-4	62.6	11.3	0.7	37.6	10.7	3.00	0.45	69	17	HARD	03-05-18-74-01
OK20418-7C21	60.7	11.5	0.7	32.6	8.7	2.74	0.41	70	19	HARD	02-10-18-70-01
TX19A001030	62.2	12.1	0.6	34.3	10.8	2.77	0.34	60	18	HARD	06-16-28-50-01
TX15A001482-19AZ16	59.6	11.5	0.8	30.3	10.4	2.61	0.40	58	18	HARD	06-19-32-43-01
TX18DH129	61.5	11.8	0.9	34.5	10.9	2.72	0.38	64	21	HARD	06-15-26-53-01
TX18DH266	59.3	12.2	0.7	37.0	10.1	2.76	0.42	59	20	MIXED	11-18-20-51-03
TX18DH287	61.1	12.2	0.7	37.5	11.0	2.82	0.40	61	22	MIXED	10-22-15-53-03
TX18DH313	61.2	11.7	0.9	34.1	10.0	2.78	0.42	63	19	HARD	05-18-18-59-01
TX15M8456-19AZ435	60.5	11.4	0.9	30.8	9.4	2.63	0.35	64	19	HARD	05-10-26-59-01
TX15M8456-19AZ504	58.0	11.7	0.7	28.8	7.1	2.61	0.33	73	19	HARD	01-07-17-75-01
NHH19651	61.1	11.8	0.8	32.1	9.6	2.73	0.41	58	19	HARD	09-22-22-47-01
NE19619	59.3	11.8	0.8	33.4	9.7	2.73	0.40	59	17	HARD	06-18-29-47-01
NE19454	62.0	10.2	1.0	31.5	9.7	2.73	0.39	59	18	HARD	08-16-27-49-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
NE19412	60.6	9.9	1.2	33.8	10.9	2.72	0.44	56	18	HARD	10-24-27-39-01
NHH19668	60.8	10.7	1.0	32.6	10.9	2.79	0.46	53	18	MIXED	14-22-24-40-03
22CP900076	61.2	10.3	1.0	32.3	10.2	2.79	0.43	56	18	HARD	08-22-29-41-01
22CP900085	62.1	10.5	1.1	36.2	9.2	2.83	0.38	54	18	MIXED	13-22-25-40-03
TX19M3183	59.8	11.3	0.7	33.5	10.0	2.73	0.37	67	18	HARD	03-08-26-63-01
BASF 23-25	60.2	11.6	0.7	35.2	10.2	2.82	0.44	56	18	HARD	09-19-29-43-01

2023 SRPN Intraregional Production Zone

Southern High Plains

	Wheat		Flour			Noodle Color					
LINE	Protein (%)	Milling Yield (%)	Ash (%)	Protein (%)	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
Kharkof	13.0	61.5	0.40	11.2	0.438	79.13	-1.75	24.47	-6.38	0.98	1.11
Scout66	12.4	68.8	0.37	11.1	0.437	79.27	-1.32	22.89	-7.95	1.11	0.98
TAM-107	11.9	65.2	0.38	10.6	0.452	77.92	-1.44	25.54	-7.90	1.24	1.25
Jagalene	12.6	68.9	0.39	11.3	0.354	78.11	-1.32	23.61	-6.88	1.12	0.92
KS20HDW185	11.2	65.5	0.48	9.9	0.455	80.78	-1.92	23.49	-11.15	1.33	2.34
KS20H105	10.6	69.3	0.40	9.3	0.448	80.56	-1.49	22.34	-8.59	0.98	2.09
KS20H106	11.0	67.6	0.41	9.8	0.431	80.17	-1.33	21.77	-8.43	1.13	2.11
KS20H124	12.0	67.2	0.46	10.7	0.496	79.11	-1.72	24.27	-9.85	1.54	1.64
BASF-23-23	12.1	67.9	0.40	10.7	0.400	79.44	-1.65	25.14	-7.06	0.94	1.82
BASF-23-24	11.7	65.6	0.42	10.4	0.408	78.77	-1.86	27.24	-8.73	1.16	-0.27
BASF-23-1	11.3	66.9	0.46	10.3	0.417	80.47	-2.09	25.93	-7.36	0.91	0.18
BASF-23-22	12.3	64.3	0.41	11.1	0.396	77.80	-2.06	28.22	-8.25	1.46	-0.84
LCH21-9485	10.7	66.4	0.40	9.7	0.459	79.50	-1.80	23.28	-7.31	1.15	0.92
LCH20-2165	10.3	70.0	0.41	9.2	0.412	79.47	-1.73	23.82	-7.19	1.17	0.87
LCH21-9398	10.9	65.8	0.44	9.4	0.436	79.41	-1.65	23.99	-6.77	0.98	0.60
LCH20-2264	10.7	69.3	0.31	9.3	0.428	78.82	-1.17	21.33	-7.46	0.92	1.26
CO18042RA	10.9	69.4	0.45	9.7	0.403	80.08	-1.41	22.55	-7.91	0.90	1.30
CO18D297R	10.9	68.1	0.38	9.5	0.454	79.37	-1.52	23.09	-7.11	0.96	1.56
CO19D304R	10.6	69.1	0.44	9.5	0.475	80.16	-2.24	25.78	-9.34	1.15	0.61
CO200037R	11.5	70.9	0.37	10.3	0.464	80.28	-2.05	26.35	-6.93	0.80	1.31
KS14FHB0732M-4	11.0	64.8	0.46	9.7	0.390	80.38	-1.79	23.40	-7.65	1.09	1.70
KS160563S-3	12.5	67.3	0.49	11.3	0.331	81.15	-1.87	24.55	-9.32	1.18	2.41
KS160786S-6	11.7	66.8	0.44	10.6	0.450	79.51	-1.82	24.39	-7.77	1.10	1.43
KS170013D-19	12.1	61.3	0.45	10.8	0.355	80.05	-1.37	22.46	-9.08	1.18	3.87
KS22U7321.B2.B7	11.0	67.0	0.47	10.0	0.523	79.47	-1.79	24.14	-8.71	1.01	-0.13
KS21U7269.C1.B8	11.4	67.5	0.41	10.1	0.490	79.07	-1.25	21.89	-8.61	0.98	0.75
OK19225	11.7	67.1	0.44	10.5	0.379	79.64	-1.24	22.52	-7.33	1.10	1.97
OK18205-19HRBulk	11.9	68.3	0.38	10.5	0.405	79.30	-1.82	23.89	-6.61	1.11	-0.02
OK18217-19HR-4	12.8	66.4	0.47	11.5	0.499	78.66	-1.94	26.50	-8.85	1.27	-0.61
OK20418-7C21	11.8	68.0	0.47	10.5	0.291	78.45	-1.71	26.11	-7.68	1.18	-0.48
TX19A001030	11.0	66.9	0.48	9.7	0.437	79.36	-1.87	25.33	-8.35	1.12	-0.01
TX15A001482-19AZ16	11.3	65.7	0.39	10.1	0.487	79.74	-1.66	24.28	-6.25	0.91	0.02
TX18DH129	10.8	69.8	0.45	9.6	0.418	79.04	-1.79	26.16	-6.74	1.15	1.02
TX18DH266	11.0	63.6	0.51	9.6	0.462	80.53	-2.22	24.95	-8.41	1.25	2.31
TX18DH287	10.5	66.8	0.44	9.2	0.420	79.91	-2.29	26.40	-6.73	1.19	2.09
TX18DH313	10.7	67.1	0.45	9.3	0.505	79.41	-2.19	27.31	-7.30	1.43	0.11
TX15M8456-19AZ435	11.7	66.4	0.43	10.2	0.463	79.15	-1.97	25.61	-7.13	1.18	0.86
TX15M8456-19AZ504	11.7	63.7	0.43	10.6	0.219	79.37	-1.66	24.93	-6.02	0.93	2.73
NHH19651	11.0	66.9	0.44	9.8	0.420	80.02	-2.53	26.24	-7.69	1.18	-1.70
NE19619	11.1	65.6	0.56	9.4	0.362	80.32	-2.03	23.88	-6.76	1.46	-0.01
NE19454	11.8	65.5	0.41	10.4	0.205	79.77	-1.67	24.82	-5.77	1.00	2.22
NE19412	12.1	66.2	0.45	10.6	0.429	79.09	-1.58	25.48	-6.85	1.01	1.01

	Wheat		Flour			Noodle Color					
	Protein	Milling Yield	Ash	Protein	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
LINE	(%)	(%)	(%)	(%)							
NHH19668	11.9	68.0	0.45	10.5	0.404	80.31	-1.93	23.46	-6.97	1.15	-0.09
22CP900076	11.9	68.9	0.48	10.6	0.472	79.18	-1.53	23.29	-9.00	1.38	0.04
22CP900085	12.0	70.1	0.43	11.0	0.447	79.05	-1.32	22.54	-9.29	1.13	-0.46
TX19M3183	12.1	64.7	0.45	10.8	0.398	78.18	-1.29	24.23	-8.06	1.10	0.41
BASF 23-25	11.8	67.3	0.44	10.4	0.292	80.81	-1.92	23.63	-5.18	0.67	0.95

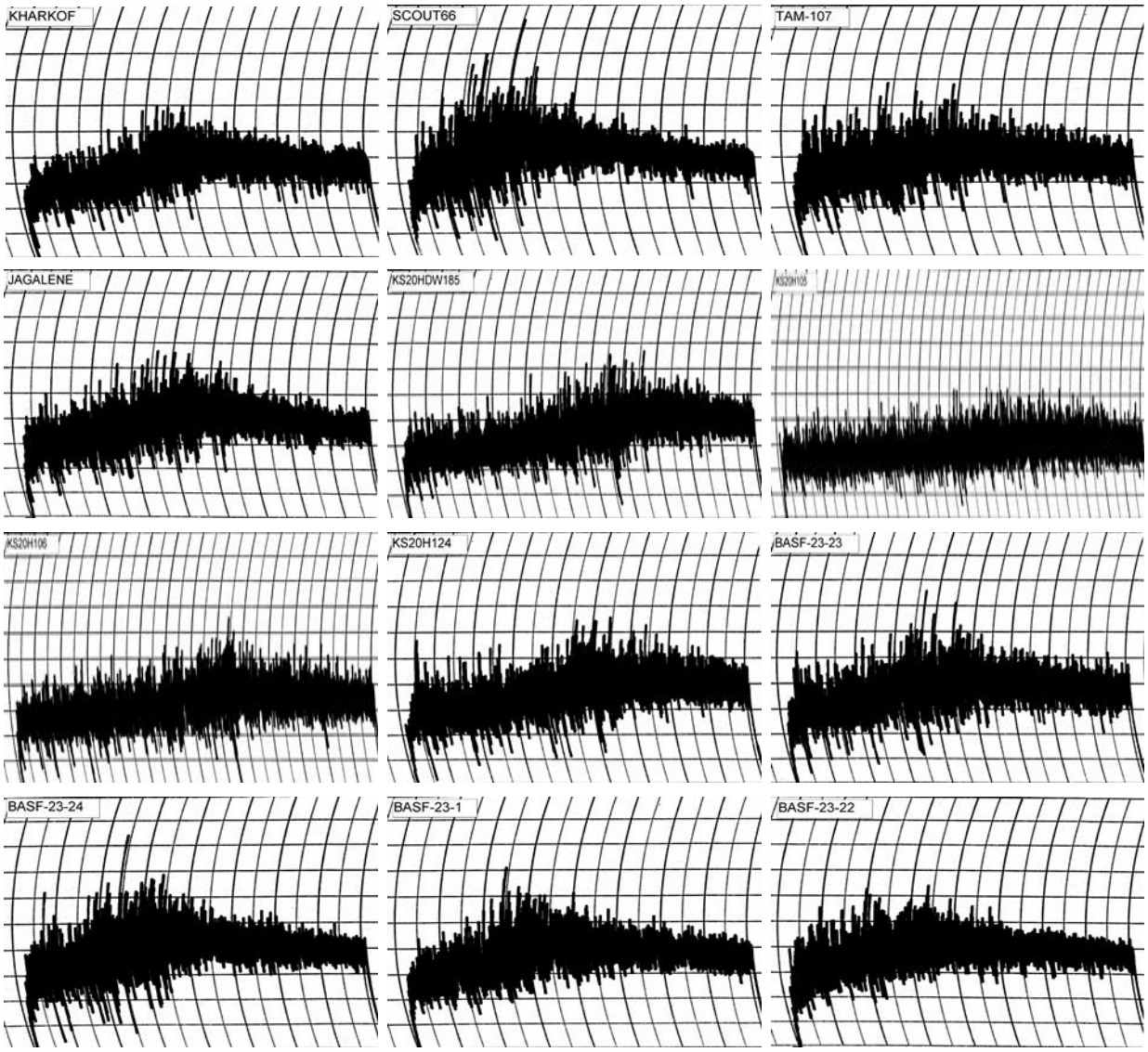
2023 SRPN Intraregional Production Zone

Southern High Plains

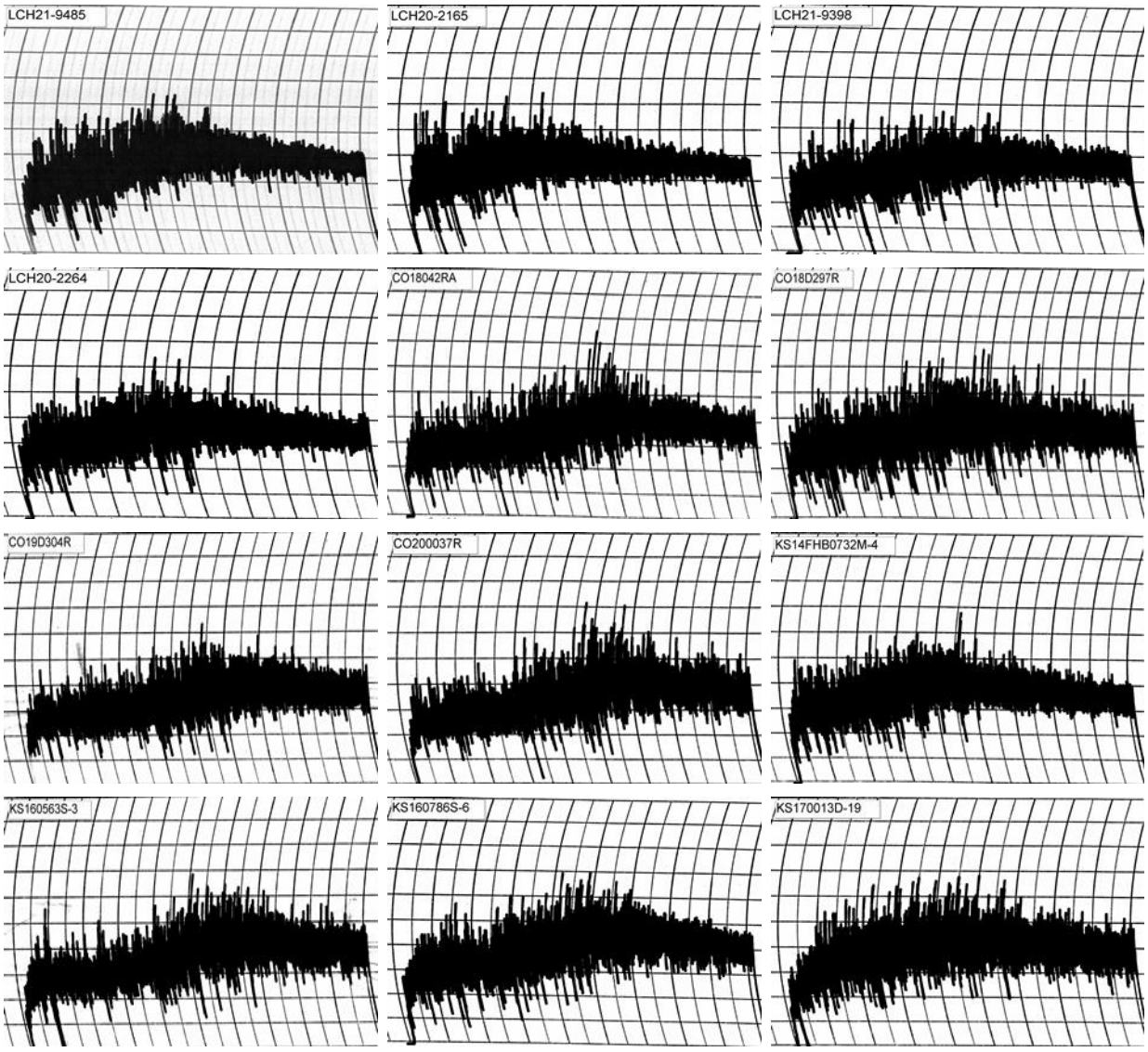
		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	11.2	62.4	3.50	3.16	3
Scout66	11.1	63.9	2.50	2.22	3
TAM-107	10.6	61.6	3.75	3.10	3
Jagalene	11.3	62.8	4.38	4.03	4
KS20HDW185	9.9	62.4	6.63	4.94	5
KS20H105	9.3	59.4	2.00	8.11	6
KS20H106	9.8	59.3	8.38	6.16	6
KS20H124	10.7	61.2	5.00	4.21	4
BASF-23-23	10.7	61.9	3.50	2.97	4
BASF-23-24	10.4	61.3	3.25	2.63	3
BASF-23-1	10.3	61.1	3.00	2.38	3
BASF-23-22	11.1	62.4	3.00	2.68	3
LCH21-9485	9.7	59.1	3.63	2.62	3
LCH20-2165	9.2	59.2	2.38	1.58	2
LCH21-9398	9.4	59.6	3.75	2.58	2
LCH20-2264	9.3	59.4	3.25	2.19	3
CO18042RA	9.7	60.6	5.88	4.24	4
CO18D297R	9.5	60.7	5.00	3.48	4
CO19D304R	9.5	58.7	5.38	3.73	4
CO200037R	10.3	61.7	5.50	4.40	4
KS14FHB0732M-4	9.7	60.2	3.50	2.55	3
KS160563S-3	11.3	63.3	6.00	5.51	4
KS160786S-6	10.6	61.5	4.63	3.84	4
KS170013D-19	10.8	63.4	4.50	3.84	4
KS22U7321.B2.B7	10.0	60.8	1.88	1.43	1
KS21U7269.C1.B8	10.1	60.7	3.50	2.70	3
OK19225	10.5	61.5	4.13	3.39	4
OK18205-19HRBulk	10.5	61.4	3.63	2.97	3
OK18217-19HR-4	11.5	62.0	3.13	2.92	3
OK20418-7C21	10.5	60.0	4.00	3.29	3
TX19A001030	9.7	59.7	3.88	2.83	4
TX15A001482-19AZ16	10.1	61.2	5.00	3.84	4
TX18DH129	9.6	59.9	6.25	4.41	5
TX18DH266	9.6	61.9	0.00	7.10	6
TX18DH287	9.2	59.3	4.63	3.10	4
TX18DH313	9.3	60.4	3.25	2.19	3
TX15M8456-19AZ435	10.2	62.9	3.63	2.84	3
TX15M8456-19AZ504	10.6	63.0	4.25	3.51	4

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
NHH19651	9.8	57.2	2.00	1.46	1
NE19619	9.4	60.1	4.63	3.20	4
NE19454	10.4	61.7	6.63	5.32	5
NE19412	10.6	62.0	4.88	4.05	4
NHH19668	10.5	59.0	2.25	1.86	2
22CP900076	10.6	62.6	2.25	1.87	3
22CP900085	11.0	63.3	4.50	3.97	3
TX19M3183	10.8	63.4	3.50	2.98	3
BASF 23-25	10.4	61.8	5.25	4.27	4

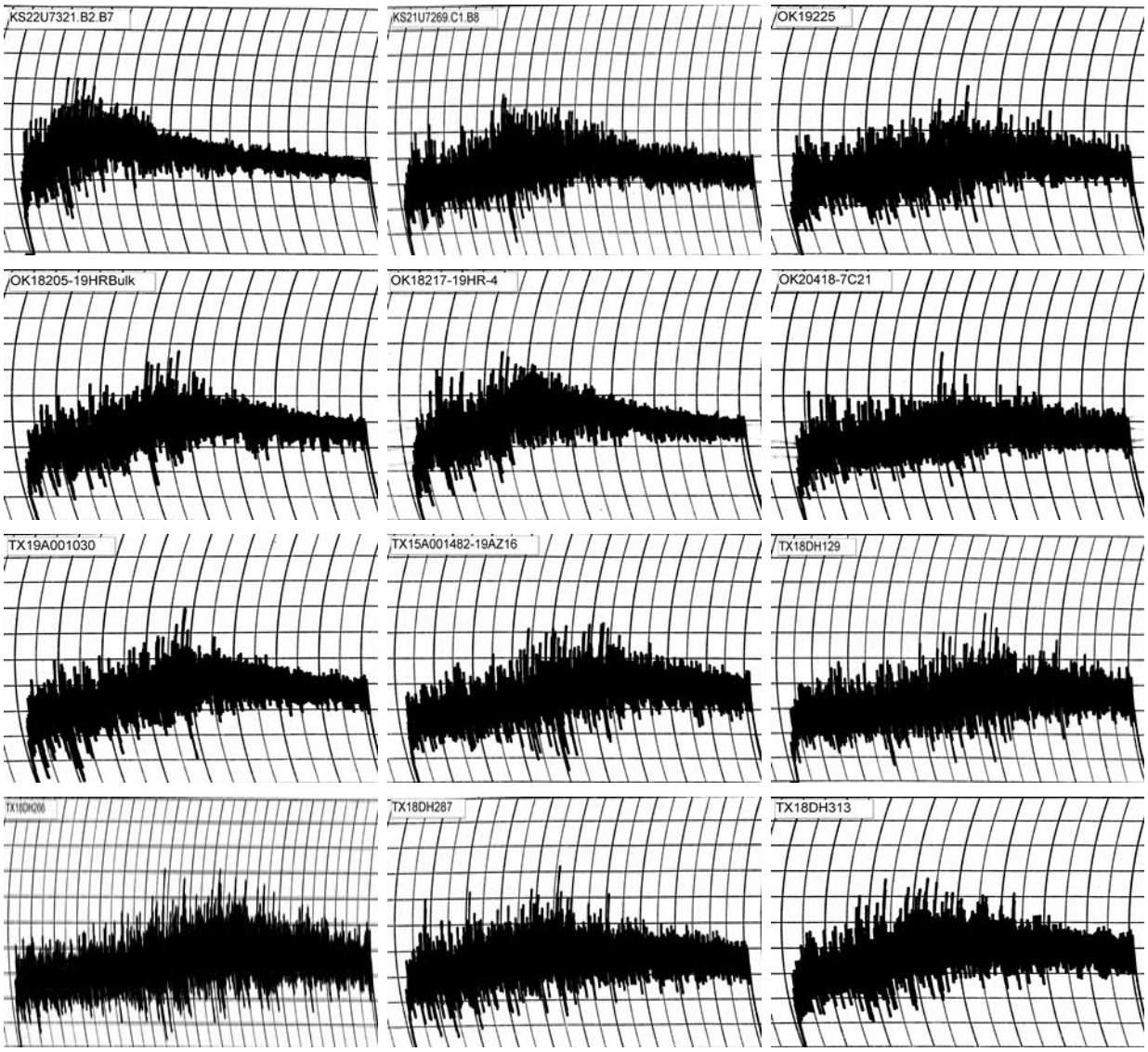
2023 SRPN Intraregional Production Zone
Southern High Plains



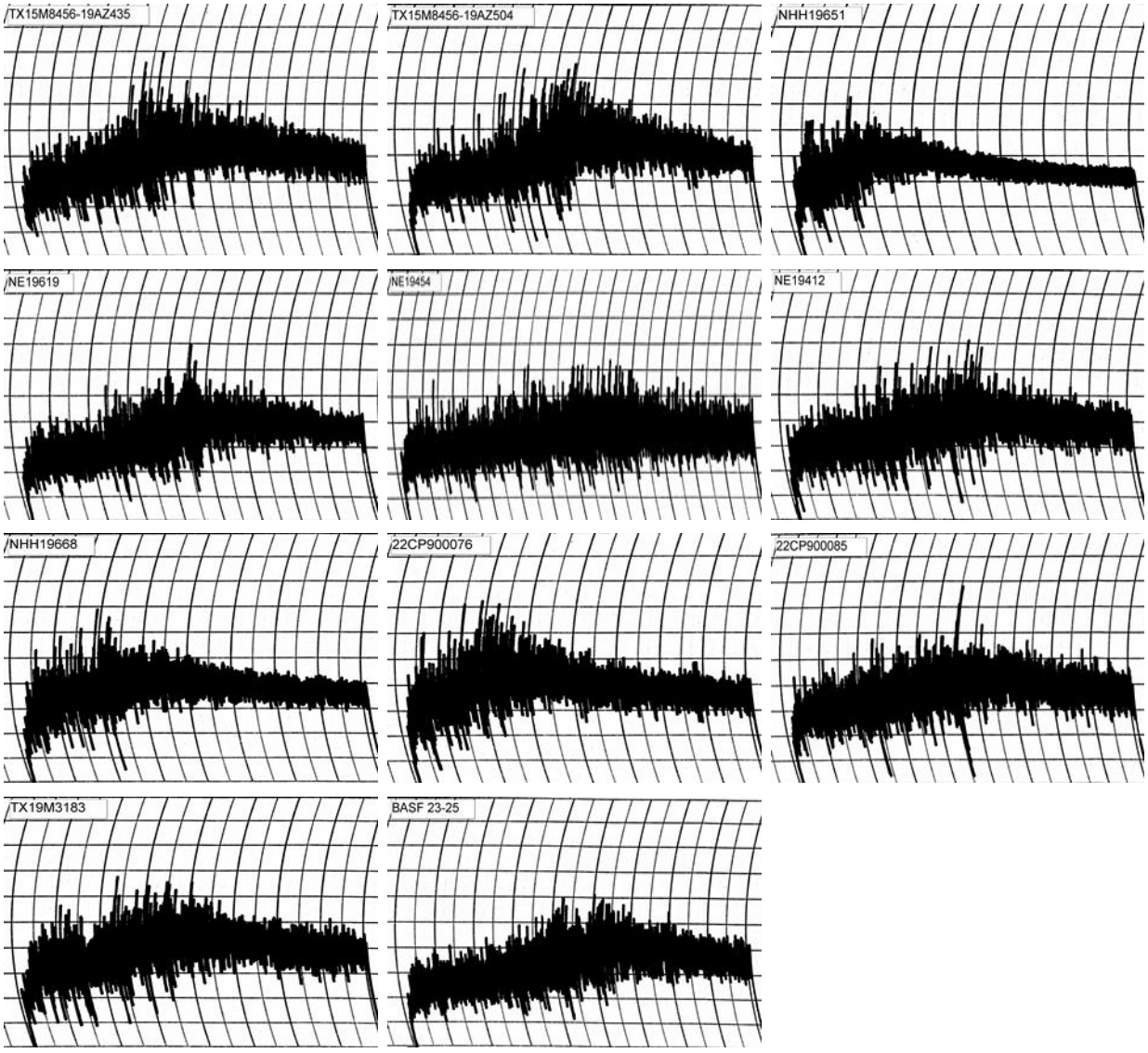
2023 SRPN Intraregional Production Zone
Southern High Plains



2023 SRPN Intraregional Production Zone
Southern High Plains



2023 SRPN Intraregional Production Zone
Southern High Plains



2023 SRPN Intraregional Production Zone

Southern High Plains

	RVA							
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)	Pasting Temp (Deg. C)
Kharkof	137.67	223.42	151.00	72.42	266.50	115.50	6.20	86.50
Scout66	83.33	182.17	106.25	75.92	202.42	96.17	5.93	84.90
TAM-107	91.75	252.67	152.25	100.42	266.42	114.17	6.20	65.30
Jagalene	102.17	213.17	136.08	77.08	249.25	113.17	6.07	66.05
KS20HDW185	106.00	270.08	153.92	116.17	247.67	93.75	6.27	66.10
KS20H105	67.42	257.00	148.58	108.42	268.25	119.67	6.07	66.10
KS20H106	114.92	255.08	145.25	109.83	259.75	114.50	6.13	66.10
KS20H124	105.75	290.00	161.08	128.92	258.42	97.33	6.27	65.25
BASF-23-23	113.42	211.50	134.25	77.25	248.00	113.75	6.13	66.10
BASF-23-24	89.50	232.58	142.50	90.08	260.67	118.17	6.07	66.05
BASF-23-1	117.58	217.25	139.67	77.58	255.17	115.50	6.13	86.45
BASF-23-22	104.33	192.75	123.83	68.92	232.08	108.25	6.07	65.25
LCH21-9485	100.75	253.25	149.08	104.17	264.17	115.08	6.13	66.00
LCH20-2165	84.00	226.83	130.67	96.17	240.83	110.17	6.00	66.05
LCH21-9398	114.33	235.92	147.92	88.00	272.42	124.50	6.07	66.15
LCH20-2264	85.67	189.58	88.92	100.67	174.58	85.67	5.80	66.15
CO18042RA	86.75	229.25	133.92	95.33	247.58	113.67	6.00	66.10
CO18D297R	138.42	233.17	165.58	67.58	297.83	132.25	6.20	85.00
CO19D304R	98.75	230.33	136.92	93.42	251.67	114.75	6.07	67.70
CO200037R	101.83	250.33	157.58	92.75	287.33	129.75	6.13	67.85
KS14FHB0732M-4	119.83	226.42	148.00	78.42	271.17	123.17	6.13	66.00
KS160563S-3	104.67	280.25	157.50	122.75	258.33	100.83	6.20	66.10
KS160786S-6	93.25	215.25	139.50	75.75	254.08	114.58	6.13	66.05
KS170013D-19	137.33	233.08	154.42	78.67	268.92	114.50	6.27	66.20
KS22U7321.B2.B7	130.17	225.33	144.58	80.75	252.42	107.83	6.20	66.10
KS21U7269.C1.B8	113.25	227.75	139.00	88.75	250.17	111.17	6.13	66.05
OK19225	87.17	203.00	120.58	82.42	219.67	99.08	6.07	66.85
OK18205-19HRBulk	116.83	225.42	138.83	86.58	249.42	110.58	6.13	66.05
OK18217-19HR-4	126.83	224.67	146.17	78.50	255.83	109.67	6.27	66.05
OK20418-7C21	104.83	172.67	103.17	69.50	199.17	96.00	6.00	65.20
TX19A001030	98.75	270.25	156.25	114.00	261.58	105.33	6.20	66.00
TX15A001482-19AZ16	106.75	263.25	158.08	105.17	271.92	113.83	6.20	66.20
TX18DH129	99.00	280.67	143.00	137.67	242.08	99.08	6.07	66.10
TX18DH266	131.33	248.17	151.83	96.33	274.08	122.25	6.13	66.80
TX18DH287	106.42	246.92	147.92	99.00	256.75	108.83	6.20	66.05
TX18DH313	125.42	215.67	138.58	77.08	261.75	123.17	6.07	65.25
TX15M8456-19AZ435	124.92	248.67	162.67	86.00	287.92	125.25	6.27	66.05
TX15M8456-19AZ504	114.83	198.58	123.00	75.58	232.17	109.17	6.00	65.35
NHH19651	102.42	221.83	130.25	91.58	235.83	105.58	6.07	67.75
NE19619	106.50	223.75	135.50	88.25	246.25	110.75	6.13	85.80
NE19454	132.08	211.17	138.83	72.33	260.50	121.67	6.07	84.90
NE19412	134.25	240.42	154.17	86.25	275.67	121.50	6.20	66.05

	RVA							
	Stirring Number	Peak Viscosity	Trough Viscosity	Breakdown	Final Viscosity	Set back	Peak Time	Pasting Temp
Line	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(min)	(Deg. C)
NHH19668	119.50	214.33	136.25	78.08	251.92	115.67	6.07	86.50
22CP900076	85.17	219.58	128.67	90.92	230.92	102.25	6.13	65.20
22CP900085	117.92	228.58	148.50	80.08	260.83	112.33	6.27	64.35
TX19M3183	107.58	169.58	119.67	49.92	227.33	107.67	6.13	65.25
BASF 23-25	119.58	227.33	147.42	79.92	262.83	115.42	6.20	86.45

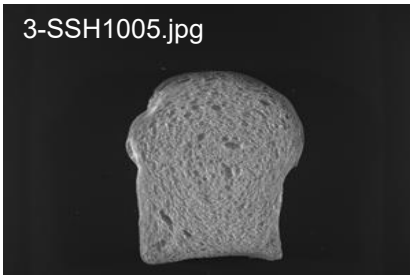
2023 SRPN Intraregional Production Zone

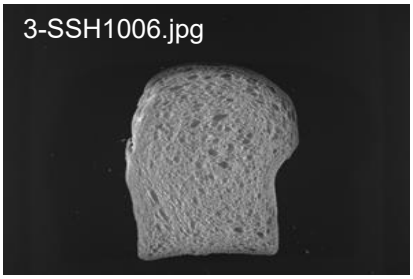
Southern High Plains

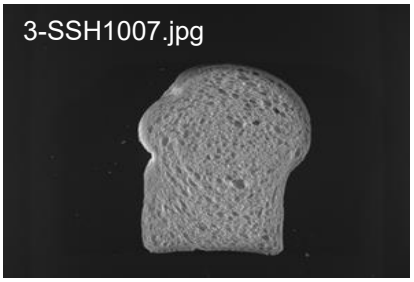
	Flour		Mix Time		Dough					
Line	Protein (%)	Water Abs. (%)	As-is (min)	Corrected (min)	Weight (g)	Proof Height (cm)	Crumb Grain	As-Rec'd. (cc)	Specific Volume (cc/g)	Loaf Volume Potential (cc/%)
Kharkof	11.2	62.6	5.00	4.51	172.9	7.7	4.5	880	5.9	70
Scout66	11.1	63.7	3.88	3.45	173.8	7.9	3.0	910	6.0	75
TAM-107	10.6	61.6	4.88	4.04	171.6	7.2	3.0	845	5.6	71
Jagalene	11.3	62.8	5.50	5.06	172.3	7.8	3.5	945	6.4	77
KS20HDW185	9.9	62.3	9.50	7.07	170.8	7.7	2.0	830	5.5	75
KS20H105	9.3	59.6	14.38	9.72	167.7	7.3	2.5	745	5.1	68
KS20H106	9.8	59.6	11.25	8.27	168.9	7.4	3.0	810	5.5	73
KS20H124	10.7	61.5	7.25	6.10	170.2	7.8	3.5	915	6.2	79
BASF-23-23	10.7	63.7	5.38	4.56	173.1	7.0	3.5	825	5.5	67
BASF-23-24	10.4	61.6	4.63	3.75	170.9	7.6	3.0	875	6.0	77
BASF-23-1	10.3	60.7	5.00	3.97	170.2	7.4	4.5	870	5.8	77
BASF-23-22	11.1	62.6	3.75	3.35	171.7	7.3	3.0	860	5.7	69
LCH21-9485	9.7	59.1	4.00	2.89	167.9	7.3	3.0	845	5.9	79
LCH20-2165	9.2	59.5	3.25	2.15	169.7	7.3	3.0	835	5.6	83
LCH21-9398	9.4	59.7	4.50	3.10	169.1	7.3	3.5	830	5.6	80
LCH20-2264	9.3	59.4	4.63	3.12	168.7	7.0	3.0	850	5.7	84
CO18042RA	9.7	60.5	7.13	5.15	169.0	7.4	3.5	860	5.8	82
CO18D297R	9.5	60.5	6.75	4.69	168.8	7.1	3.0	790	5.3	74
CO19D304R	9.5	58.4	7.75	5.38	167.0	7.3	3.0	830	5.7	80
CO200037R	10.3	61.5	7.75	6.21	170.3	7.3	4.0	880	5.8	78
KS14FHB0732M-4	9.7	60.2	5.00	3.64	168.8	7.4	3.0	865	5.9	82
KS160563S-3	11.3	63.5	7.63	7.01	172.8	7.1	3.0	890	5.9	71
KS160786S-6	10.6	61.4	5.50	4.56	170.6	7.4	3.0	880	5.9	76
KS170013D-19	10.8	63.4	5.50	4.69	172.6	7.1	3.0	790	5.3	62
KS22U7321.B2.B7	10.0	60.5	2.75	2.09	169.8	7.0	2.5	810	5.4	71
KS21U7269.C1.B8	10.1	60.4	5.00	3.85	169.7	7.0	3.0	820	5.6	72
OK19225	10.5	61.5	4.75	3.90	170.8	6.9	3.0	820	5.5	68
OK18205-19HRBulk	10.5	61.5	4.13	3.38	171.2	7.3	3.0	885	5.9	77
OK18217-19HR-4	11.5	62.4	4.25	3.97	171.9	7.9	2.5	915	6.2	73
OK20418-7C21	10.5	59.6	5.00	4.11	169.0	7.3	3.0	870	5.9	75
TX19A001030	9.7	59.6	5.00	3.64	168.4	7.5	3.5	845	5.9	79
TX15A001482-19AZ16	10.1	61.2	6.63	5.09	170.6	7.4	4.0	885	5.9	81
TX18DH129	9.6	59.6	7.38	5.21	168.1	7.3	3.5	820	5.6	77
TX18DH266	9.6	61.7	13.25	9.40	169.2	7.4	3.0	785	5.3	72
TX18DH287	9.2	59.3	6.88	4.60	169.1	7.1	2.0	800	5.4	77
TX18DH313	9.3	60.5	5.75	3.88	168.8	6.8	3.0	780	5.2	74
TX15M8456-19AZ435	10.2	62.8	5.88	4.60	171.6	7.1	3.5	840	5.6	74
TX15M8456-19AZ504	10.6	62.8	5.88	4.86	172.3	7.1	3.0	850	5.6	72
NHH19651	9.8	59.6	3.13	2.28	168.4	7.3	2.0	815	5.5	74
NE19619	9.4	59.7	5.88	4.06	168.1	7.6	4.0	880	5.9	88
NE19454	10.4	61.8	9.50	7.62	170.5	7.1	3.0	835	5.6	72

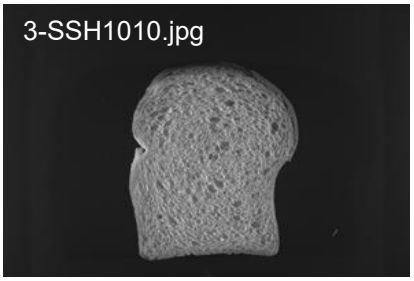
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
NE19412	10.6	61.7	5.25	4.36	170.8	7.0	3.0	825	5.6	68
NHH19668	10.5	58.9	3.13	2.58	168.1	7.3	3.0	855	5.8	73
22CP900076	10.6	62.7	3.88	3.22	172.2	7.3	3.5	870	5.8	74
22CP900085	11.0	63.3	5.38	4.74	172.4	7.5	4.5	925	6.2	78
TX19M3183	10.8	63.8	5.00	4.26	172.8	7.8	3.5	900	6.1	77
BASF 23-25	10.4	61.8	6.00	4.88	171.3	7.0	4.0	830	5.6	70

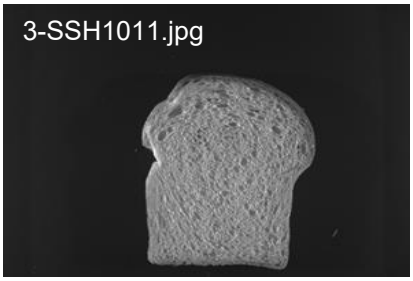
2023 SRPN Intraregional Production Zone
Southern High Plains



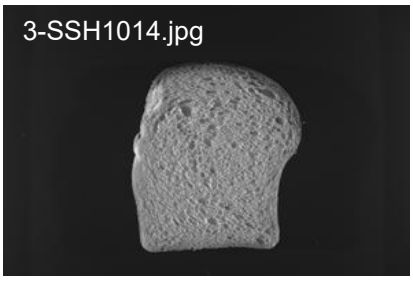


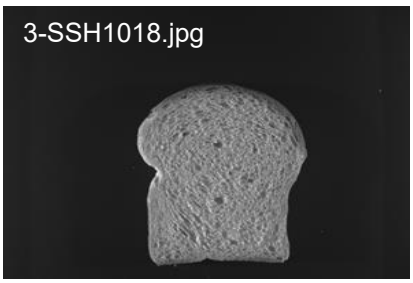


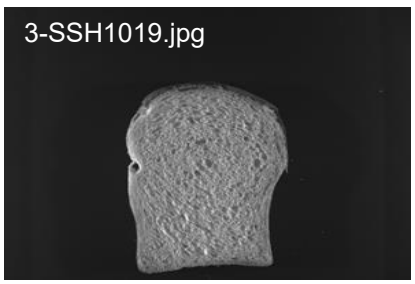


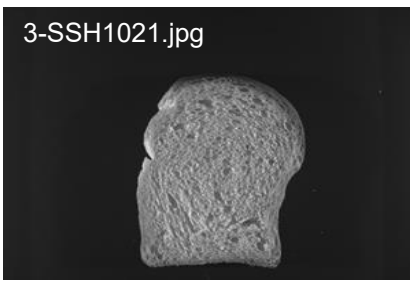


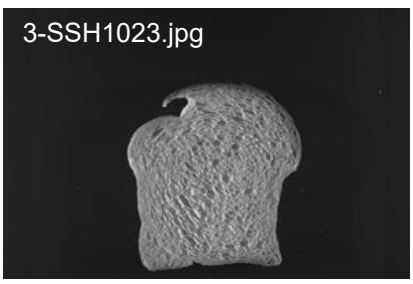
2023 SRPN Intraregional Production Zone
Southern High Plains

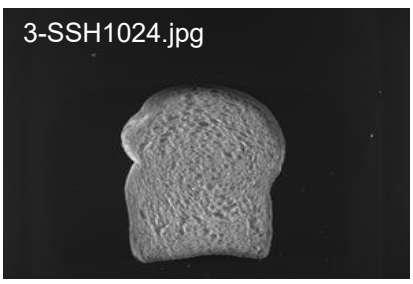




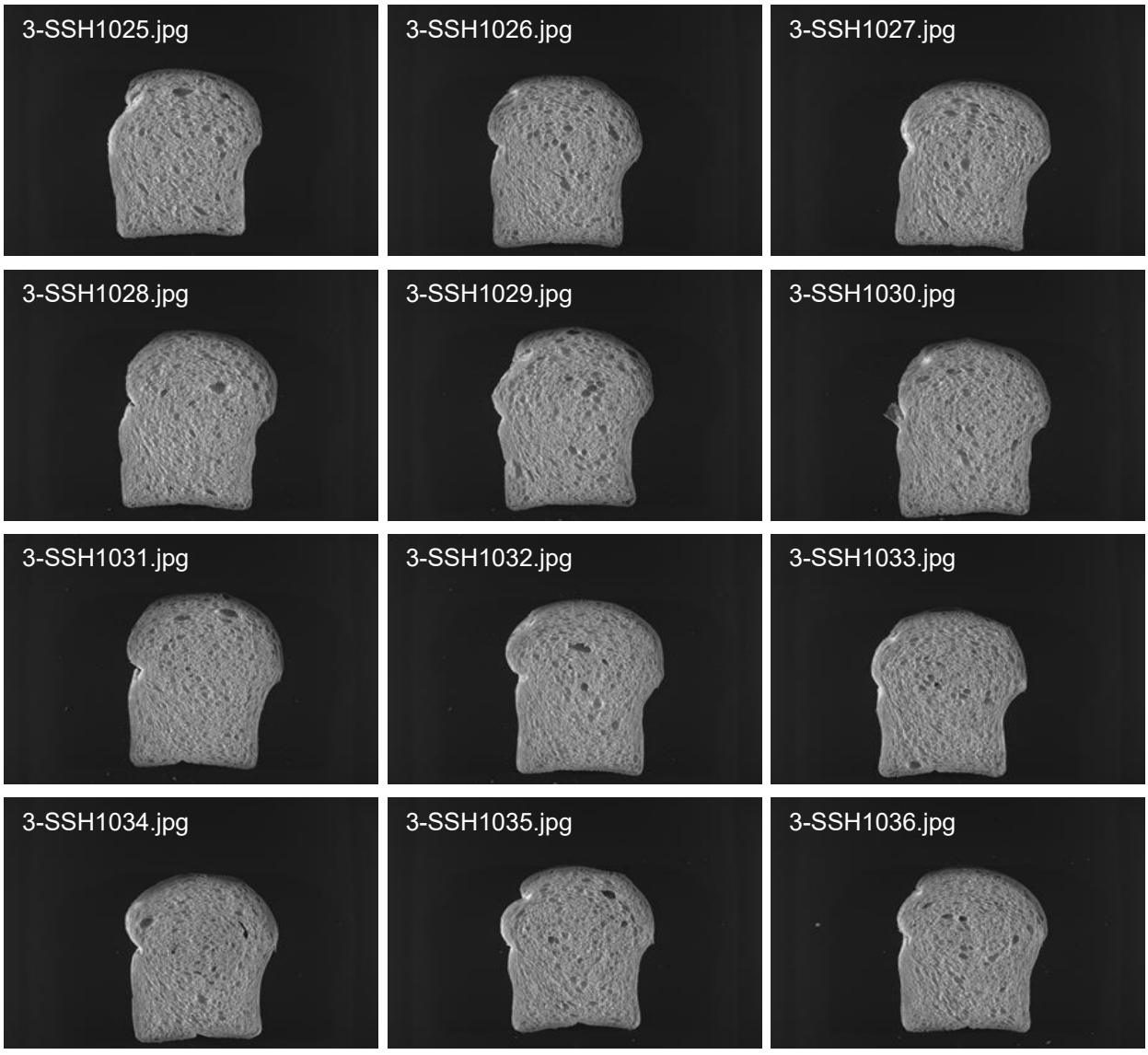








2023 SRPN Intraregional Production Zone
Southern High Plains



2023 SRPN Intraregional Production Zone
Southern High Plains

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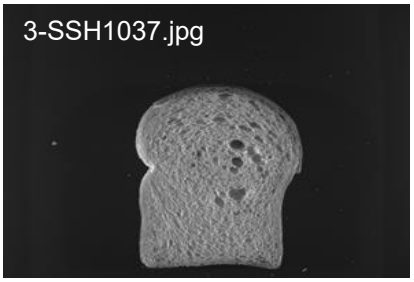

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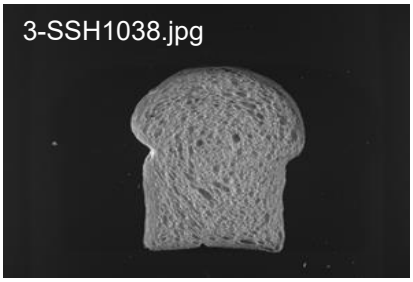

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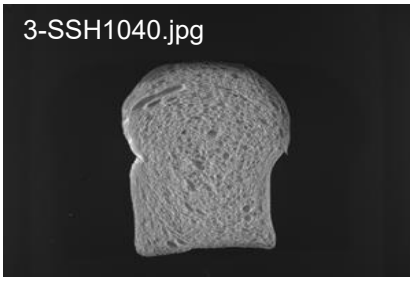

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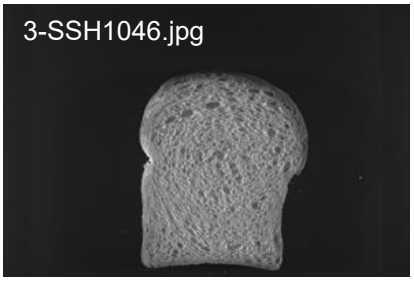

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RECOMMENDED* QUALITY TARGETS FOR HARD RED WINTER WHEAT

HWW Quality Targets Committee
Approved February, 2006

** "The purpose of Recommended Quality Targets (RQT) for Hard Red Winter Wheat (HRW) is to provide specific quality 'goals' for the breeding community, wheat producers, and marketing programs in order to assist and guide the decisions needed to maintain the consistency and end-use quality of the U.S. HRW market class. The RQT will be dynamic over time in direct response to the primary needs of the marketplace (domestic and foreign), and the needs of the U.S. industry to breed, produce and market wheats to meet market needs. The RQT should NOT be used as essential criteria for variety release decisions in breeding programs, or as marketing/grading standards for private companies or federal/state agencies. This* ***Statement of Purpose*** *must accompany all published forms of the RQT."* *HWWQT Committee, 2006*

Quality Parameter (End-Use: Pan Bread)	**Recommended Target Value**
Wheat	
Test Weight (lb/bu)	***> 60***
SKCS-Hardness Index (SK-HI)	***60 – 80***
SK-HI Standard Deviation	***< 17.0***
SKCS-Weight (SK-WT, mg)	***> 30.0***
SK-WT Standard Deviation	***< 8.0***
SKCS-Diameter (SK-SZ, mm)	***> 2.40***
SK-SZ Standard Deviation	***< 0.40***
Protein Content (%, 12% mb)	***> 12.0***
Ash Content (%, 12% mb)	***< 1.60***
Falling Number (sec)	***> 300***
Straight Grade Flour Yield (%)	***> 68***
Flour	
Flour Color L-Value (Minolta Colorimeter)	***> 90***
Gluten Index	***> 95***
Sedimentation Volume (cc)	***> 40***
Farinograph:	
Water Absorption (%, 14% mb)	***62+***
Peak Time (min)	***4.00 – 8.00***
Stability (min)	***10.00-16.00***
Mixograph:	
Water Absorption (%, 14% mb)	***62+***
Peak Time (min)	***3.00 – 6.00***
Mixing Tolerance (HWWQL Score, 0-6)	***3.0***
Straight Dough Pup Method:	
Water Absorption (%, 14% mb)	***62+***
Mix Time (min)	***3.00 – 5.00***
Loaf Volume (cc)	***> 850***
Crumb Score (HWWQL Score, 0-6)	***> 3.0***

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Thank you for reviewing this report on milling and baking data of 2023 Regional Performance Nursery samples. The report with data can be also viewed at https://www.ars.usda.gov/plains-area/lincoln-ne/wheat-sorghum-and-forage-research/docs/hard-winter-wheat-regional-nursery-program/research/. Please let me know if you have any comments on this report. I can be reached at (785) 776-2750 or by email, Richard.chen@usda.gov