2021 Hard Winter Wheat Regional Performance Nursery Quality Report

Hard Winter Wheat Quality Laboratory

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About the 2021 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

Northern Plains (NP)

Wichita, KS
St. Paul, MN

Northern High Plains (NHP)

Moccasin, MT
Minot, ND
Casselton, ND

Southern Regional Performance Nursery (SRPN)

North Central Plains (NCP)

Clay Center, NE
Brookings, SD
Dakota Lake, SD
Winner, SD

Northern High Plains (NHP)

Akron, CO
Burlington, CO
Ft. Collins, CO
Julesburg, CO
Colby, KS

South Central Plains (SCP)

Clay Center, NE
Wichita, KS
Tipton, OK
Lahoma, OK
Stillwater, OK
Bushland-irr, TX
Chillicothe, OK
Winfield, KS

Southern High Plains (SHP)

Garden City, KS

HWWQL Laboratory Analyses

About the HWWQL Quality Data ...

Milling, flour chemical, physical dough, breadmaking, noodlemaking properties and flour protein analysis of 2021 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.

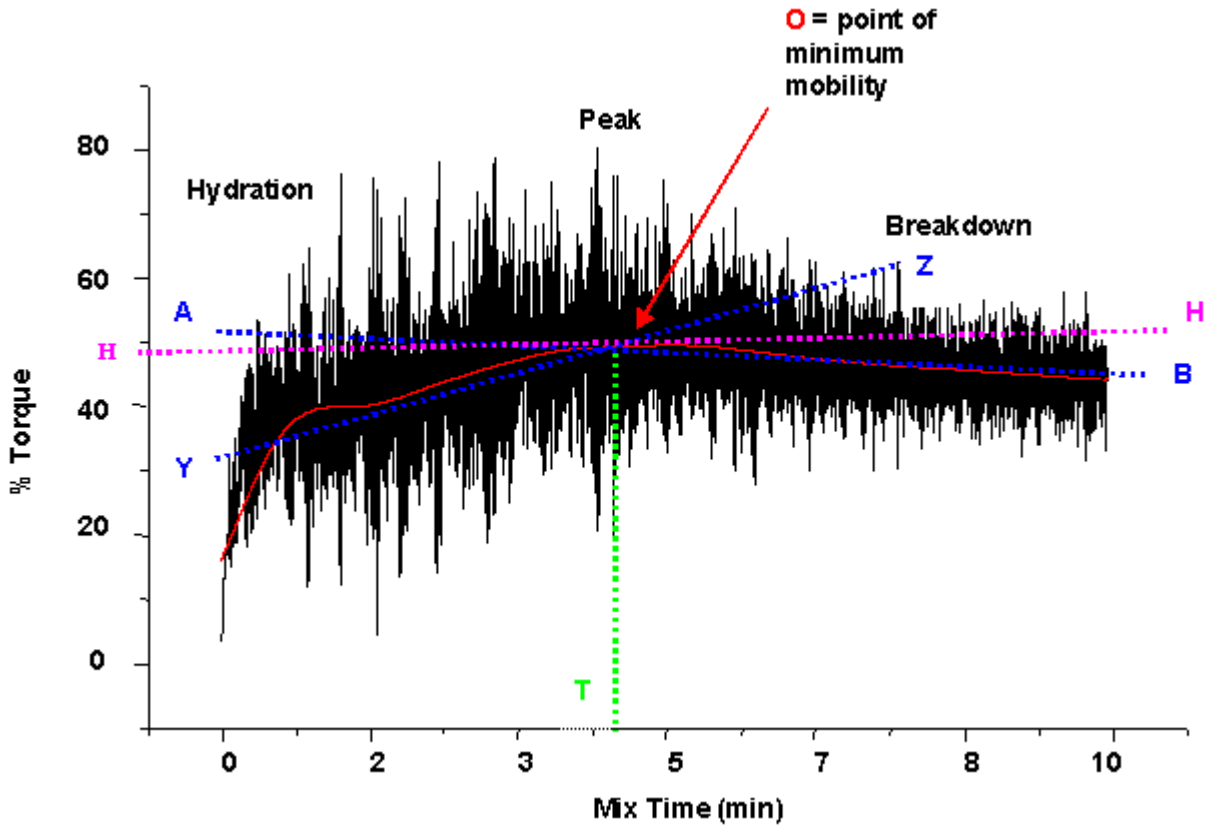
Wheat
- Protein (FP) = grain protein content (%) on 14% mb. (AACC Method 46-30 or 39-10)
- Flour % (FY) = flour yield (extraction) from milling (AACC Methods 26-10A, -50)

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

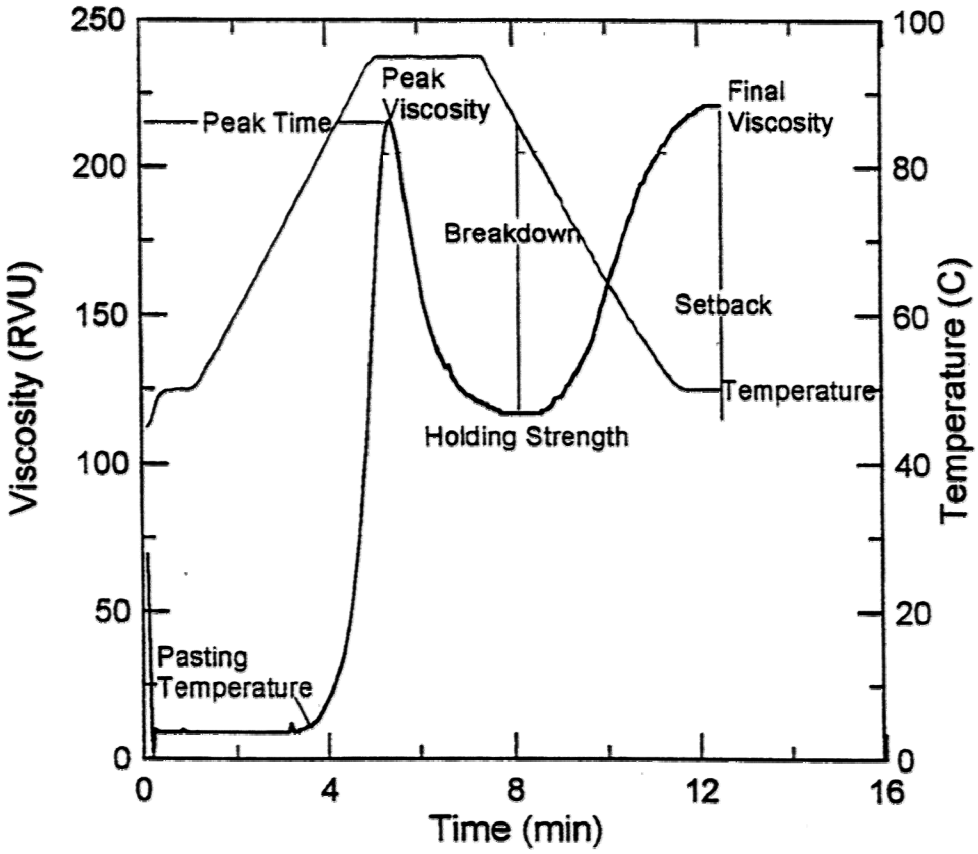


Rapid Visco Analyser (RVA) (AACC Method 61-02)

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: Kerri McConnell, M.S.

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: Brad Seabourn, Ph.D (HWWQL Director)

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

2021 NRPN Intraregional Production Zone

Entry	Selection No.	Pedigree	Source
1	Kharkof	Kharkof	check
2	Overland	Overland	check
3	Wesley	Wesley	check
4	Jagalene	Jagalene	check
5	Jerry	Jerry	check
6	NHH17612	Brawl_CL/NHH09655	UNL
7	NE17441	Hitch/NE07409	UNL
8	NE17443	NW07534/NE06545	UNL
9	NE17544	Pan3349/HV9W04-1594R//NE06607	UNL
10	PSB13NEDH-14-83	NW03681 / SD07W084	LCS/UNL
11	NE18573	TX07A001118/Freeman//NE09517	UNL
12	NE16468	NE09552/Alliance * KS96H10W10-3//NE06545	UNL
13	NW17620	N03Y2014/NW03681//NuHills 10005	UNL
14	NE17662	NE09684/Overland	UNL
15	20CP010051	SY MONUMENT/SY WOLF	AgriPro
16	20CP010053	SY MONUMENT/JAGALENE//SY WOLF	AgriPro
17	20CP010052	BC97ROM-13/BC03212-20//SY WOLF	AgriPro
18	20CP010056	B09-2950/SY WOLF//SY WOLF	AgriPro
19	20CP010066	SY Monument/SY Wolf	AgriPro
20	CO16SF027	Bearpaw/Antero//Antero	CSU
21	CO16SF032	Bearpaw/Antero//Antero	CSU
22	CO16SF067	Antero/Judee//Antero	CSU
23	CO16SF070	Antero/Judee//Antero	CSU
24	19Nord-117	Moats/LCH08-80	NDSU
25	19Nord-122	CM82036/Jerry//Gateway	NDSU
26	19Nord-123	Boomer/3/SD97088/KS920709-B-5-2//JAGALENE/WENDY	NDSU
27	19Nord-124	Crux/Nord1401	NDSU
28	19Nord-127	Klatt-10//Norstar-Fhb1/Jerry	NDSU
29	MT1855	05X438-aC71/Roughrider or 05X438aB30-2/MT0890	MT State Univ.
30	MTS18116	Loma*2/Warhorse	MT State Univ.
31	MTS18149	Loma*2/AAC Gateway	MT State Univ.
32	LCH18-1022		LCS
33	LCH17-4889		LCS
34	LCH17-3205		LCS
35	LCH17-5725		LCS
36	LCH17-3193		LCS
37	SD15004-2	Striker/SD03164-2//SD06069	SDSU
38	SD15007-11	Art/SD07184//Ideal	SDSU
39	SD15007-5	Art/SD07184//Ideal	SDSU
40	SD15035-2	NE05425/SD07184//SD07056	SDSU
41	SD16008-7	Camelot/Lyman	SDSU
42	SD17B032-1	Wendy/SD07084	SDSU
43	SD17B078-1	SD05266-1W-3/Jerry	SDSU
44	SD17B210-2	NI09715/SD07126//SD05W030	SDSU
45	SD17B371-3	NE06430/Expedition	SDSU
46	SD18B025-8	OK07719W/SD07W083-4//SD07W053/3/SD09161	SDSU
47	MT1872	MT0859//MT0840/MT0873	MT State Univ.

List of NRPN Sample ID

Entry	Line ID from Breeders	HWWQL ID		
		North Central Plains	Northern High Plains	Northern Plains
1	Kharkof	21-NNC1101	21-NNH1101	21-NNP1101
2	Overland	21-NNC1102	21-NNH1102	21-NNP1102
3	Wesley	21-NNC1103	21-NNH1103	21-NNP1103
4	Jagalene	21-NNC1104	21-NNH1104	21-NNP1104
5	Jerry	21-NNC1105	21-NNH1105	21-NNP1105
6	NHH17612	21-NNC1106	21-NNH1106	21-NNP1106
7	NE17441	21-NNC1107	21-NNH1107	21-NNP1107
8	NE17443	21-NNC1108	21-NNH1108	21-NNP1108
9	NE17544	21-NNC1109	21-NNH1109	21-NNP1109
10	PSB13NEDH-14-83	21-NNC1110	21-NNH1110	21-NNP1110
11	NE18573	21-NNC1111	21-NNH1111	21-NNP1111
12	NE16468	21-NNC1112	21-NNH1112	21-NNP1112
13	NW17620	21-NNC1113	21-NNH1113	21-NNP1113
14	NE17662	21-NNC1114	21-NNH1114	21-NNP1114
15	20CP010051	21-NNC1115	21-NNH1115	21-NNP1115
16	20CP010053	21-NNC1116	21-NNH1116	21-NNP1116
17	20CP010052	21-NNC1117	21-NNH1117	21-NNP1117
18	20CP010056	21-NNC1118	21-NNH1118	21-NNP1118
19	20CP010066	21-NNC1119	21-NNH1119	21-NNP1119
20	CO16SF027	21-NNC1120	21-NNH1120	21-NNP1120
21	CO16SF032	21-NNC1121	21-NNH1121	21-NNP1121
22	CO16SF067	21-NNC1122	21-NNH1122	21-NNP1122
23	CO16SF070	21-NNC1123	21-NNH1123	21-NNP1123
24	19Nord-117	21-NNC1124	21-NNH1124	21-NNP1124
25	19Nord-122	21-NNC1125	21-NNH1125	21-NNP1125
26	19Nord-123	21-NNC1126	21-NNH1126	21-NNP1126
27	19Nord-124	21-NNC1127	21-NNH1127	21-NNP1127
28	19Nord-127	21-NNC1128	21-NNH1128	21-NNP1128
29	MT1855	21-NNC1129	21-NNH1129	21-NNP1129
30	MTS18116	21-NNC1130	21-NNH1130	21-NNP1130
31	MTS18149	21-NNC1131	21-NNH1131	21-NNP1131
32	LCH18-1022	21-NNC1132	21-NNH1132	21-NNP1132
33	LCH17-4889	21-NNC1133	21-NNH1133	21-NNP1133
34	LCH17-3205	21-NNC1134	21-NNH1134	21-NNP1134
35	LCH17-5725	21-NNC1135	21-NNH1135	21-NNP1135
36	LCH17-3193	21-NNC1136	21-NNH1136	21-NNP1136
37	SD15004-2	21-NNC1137	21-NNH1137	21-NNP1137
38	SD15007-11	21-NNC1138	21-NNH1138	21-NNP1138
39	SD15007-5	21-NNC1139	21-NNH1139	21-NNP1139
40	SD15035-2	21-NNC1140	21-NNH1140	21-NNP1140
41	SD16008-7	21-NNC1141	21-NNH1141	21-NNP1141
42	SD17B032-1	21-NNC1142	21-NNH1142	21-NNP1142
43	SD17B078-1	21-NNC1143	21-NNH1143	21-NNP1143
44	SD17B210-2	21-NNC1144	21-NNH1144	21-NNP1144
45	SD17B371-3	21-NNC1145	21-NNH1145	21-NNP1145
46	SD18B025-8	21-NNC1146	21-NNH1146	21-NNP1146
47	MT1872	21-NNC1147	21-NNH1147	21-NNP1147

2021 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	61.3	10.3	0.7	31.4	10.6	2.63	0.30	34	19	SOFT	49-29-12-10-04
Overland	60.1	10.1	0.6	32.2	9.4	2.67	0.42	50	17	MIXED	16-26-33-25-03
Wesley	59.7	10.3	0.5	35.6	11.8	2.76	0.38	49	15	MIXED	14-32-31-23-03
Jagalene	62.1	10.1	0.6	32.4	10.5	2.71	0.38	62	17	HARD	04-14-24-58-01
Jerry	61.1	10.5	0.5	31.0	9.2	2.64	0.35	62	19	HARD	04-15-24-57-01
NHH17612	61.3	10.1	0.5	29.5	10.5	2.58	0.36	53	16	MIXED	11-22-31-36-03
NE17441	59.2	10.4	0.5	32.0	10.8	2.62	0.37	48	19	MIXED	21-26-26-27-03
NE17443	61.0	10.0	0.6	30.7	9.7	2.64	0.39	57	17	HARD	08-17-33-42-01
NE17544	60.9	10.2	0.6	33.3	9.9	2.70	0.32	48	17	MIXED	18-26-31-25-03
PSB13NEDH-14-83	59.5	10.4	0.5	31.5	9.3	2.61	0.34	42	18	MIXED	31-25-23-21-03
NE18573	62.4	10.3	0.5	33.6	10.7	2.64	0.38	51	17	MIXED	12-31-25-32-03
NE16468	59.2	10.4	0.6	28.1	9.7	2.47	0.37	37	17	SOFT	39-33-19-09-04
NW17620	62.7	10.2	0.6	31.3	9.6	2.70	0.34	69	17	HARD	01-06-21-72-01
NE17662	60.1	10.4	0.5	28.8	10.1	2.48	0.35	53	18	MIXED	11-25-31-33-03
20CP010051	60.3	10.7	0.4	29.4	10.0	2.51	0.38	59	19	HARD	07-17-27-49-01
20CP010053	60.6	10.6	0.5	26.9	9.3	2.46	0.36	61	19	HARD	07-15-28-50-01
20CP010052	60.6	10.5	0.6	33.8	9.8	2.64	0.37	65	19	HARD	05-11-24-60-01
20CP010056	60.7	10.5	0.7	29.8	9.4	2.52	0.35	63	18	HARD	04-16-23-57-01
20CP010066	60.7	10.7	0.5	30.1	9.4	2.51	0.37	60	18	HARD	05-17-26-52-01
CO16SF027	61.3	10.5	0.4	33.3	10.9	2.67	0.34	49	17	MIXED	19-24-30-27-03
CO16SF032	61.3	10.5	0.5	31.8	8.8	2.63	0.32	50	17	MIXED	14-29-31-26-03
CO16SF067	62.5	10.2	0.6	32.2	9.9	2.69	0.35	63	16	HARD	04-11-22-63-01
CO16SF070	58.7	10.3	0.6	29.5	10.3	2.54	0.39	39	17	MIXED	37-32-17-14-03
19Nord-117	58.1	10.1	0.5	33.0	11.1	2.62	0.37	43	17	MIXED	27-31-27-15-03
19Nord-122	62.0	9.6	0.7	29.2	10.0	2.61	0.33	56	17	MIXED	11-17-32-40-03
19Nord-123	60.0	9.9	0.6	31.1	9.9	2.65	0.35	58	18	HARD	08-16-27-49-01
19Nord-124	59.7	9.9	0.4	32.8	9.3	2.71	0.38	36	16	SOFT	45-31-15-09-04
19Nord-127	60.1	10.2	0.6	34.9	11.3	2.64	0.39	50	17	MIXED	17-24-29-30-03
MT1855	60.1	10.1	0.5	27.7	9.9	2.54	0.33	68	19	HARD	04-08-21-67-01
MTS18116	61.3	10.3	0.6	27.2	8.9	2.50	0.31	58	18	HARD	10-15-28-47-01
MTS18149	60.0	10.3	0.6	30.5	11.0	2.50	0.39	61	18	HARD	07-15-26-52-01
LCH18-1022	59.7	10.7	0.5	29.2	10.1	2.54	0.36	50	18	MIXED	17-26-27-30-03
LCH17-4889	60.2	10.8	0.6	28.7	9.4	2.54	0.38	52	17	MIXED	11-25-33-31-03
LCH17-3205	59.5	10.7	0.6	29.1	9.7	2.58	0.37	66	16	HARD	02-09-22-67-01
LCH17-5725	59.9	10.6	0.6	28.1	10.3	2.50	0.39	56	17	HARD	08-21-32-39-01
LCH17-3193	59.2	10.2	0.6	31.4	11.0	2.58	0.39	58	19	HARD	07-19-29-45-01
SD15004-2	61.1	10.4	0.6	33.9	9.9	2.67	0.37	51	16	MIXED	14-25-30-31-03
SD15007-11	61.3	10.2	0.5	33.3	11.1	2.60	0.29	46	18	MIXED	24-25-27-24-03
SD15007-5	61.7	10.2	0.7	32.4	10.5	2.64	0.35	51	17	MIXED	16-21-31-32-03
SD15035-2	61.4	10.2	0.6	35.0	10.7	2.71	0.36	51	17	MIXED	14-28-29-29-03
SD16008-7	59.8	10.4	0.6	32.2	8.8	2.70	0.33	53	15	HARD	08-24-31-37-01
SD17B032-1	61.2	10.2	0.5	34.0	11.5	2.65	0.38	54	18	MIXED	13-19-28-40-03
SD17B078-1	59.8	10.5	0.5	30.9	10.2	2.61	0.37	48	17	MIXED	18-27-28-27-03
SD17B210-2	59.1	10.0	0.6	34.9	10.4	2.70	0.34	46	16	MIXED	20-33-24-23-03

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
SD17B371-3	60.1	10.1	0.6	33.1	11.8	2.63	0.37	61	17	HARD	07-13-25-55-01
SD18B025-8	61.0	10.1	0.6	33.3	9.8	2.69	0.36	55	17	MIXED	11-21-30-38-03
MT1872	60.4	10.5	0.5	34.2	10.4	2.73	0.39	49	18	MIXED	20-25-28-27-03

2021 NRPN 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	13.5	62.6	0.34	12.0	0.100	79.64	-1.69	21.11	-7.41	1.02	1.92
Overland	11.7	69.3	0.38	10.9	0.127	79.69	-1.60	21.74	-7.82	1.05	0.78
Wesley	12.5	71.2	0.38	11.7	0.126	80.22	-1.87	21.39	-7.81	1.19	0.22
Jagalene	12.0	69.7	0.40	11.5	0.157	80.22	-1.59	21.54	-9.16	1.19	2.31
Jerry	12.2	68.8	0.39	11.3	0.138	79.76	-1.70	23.05	-7.90	1.11	1.48
NHH17612	12.2	68.9	0.35	11.1	0.152	79.62	-1.86	23.14	-7.33	1.31	1.19
NE17441	11.7	69.1	0.36	10.6	0.150	80.75	-1.82	22.43	-8.69	1.15	2.19
NE17443	11.8	68.8	0.36	11.0	0.163	79.54	-1.62	21.24	-7.72	1.24	0.98
NE17544	11.4	68.9	0.35	10.4	0.129	79.94	-1.73	22.40	-7.23	1.10	1.02
PSB13NEDH-14-83	11.4	69.7	0.39	10.2	0.157	81.07	-2.08	22.24	-9.22	1.06	3.65
NE18573	11.4	69.4	0.40	10.5	0.166	79.98	-2.02	23.15	-8.32	1.32	2.30
NE16468	11.5	69.2	0.34	10.2	0.147	80.57	-2.03	22.50	-8.72	1.15	2.50
NW17620	12.5	65.4	0.46	11.3	0.143	79.23	-1.86	23.13	-9.99	1.72	0.63
NE17662	11.2	69.8	0.42	9.9	0.129	79.68	-1.78	21.89	-7.90	1.34	0.83
20CP010051	11.5	70.0	0.39	10.5	0.140	80.51	-1.93	21.89	-8.76	1.22	2.35
20CP010053	11.2	69.6	0.41	10.3	0.161	79.98	-1.83	22.07	-8.78	1.35	1.09
20CP010052	11.0	66.9	0.38	10.2	0.153	78.70	-1.93	24.22	-9.67	1.57	0.68
20CP010056	12.6	67.0	0.42	11.9	0.203	77.59	-1.38	25.02	-9.50	1.27	-0.20
20CP010066	10.2	71.3	0.43	9.7	0.140	80.28	-1.94	21.58	-9.06	1.28	2.06
CO16SF027	11.4	70.3	0.38	10.2	0.118	80.10	-2.47	23.28	-8.32	1.48	0.15
CO16SF032	11.1	70.5	0.37	10.4	0.147	80.52	-2.28	22.07	-8.96	1.31	1.27
CO16SF067	11.2	67.5	0.41	10.7	0.184	79.90	-1.86	22.45	-10.83	1.32	1.35
CO16SF070	11.3	71.0	0.35	10.1	0.129	80.85	-1.76	21.14	-10.51	1.33	1.98
19Nord-117	11.6	69.2	0.40	10.9	0.152	80.56	-1.82	21.84	-9.26	1.51	0.92
19Nord-122	11.4	66.9	0.37	10.8	0.108	80.23	-1.20	19.63	-8.31	1.16	1.70
19Nord-123	12.3	67.8	0.40	11.1	0.152	79.38	-1.70	22.18	-8.79	1.42	1.38
19Nord-124	11.2	70.2	0.35	10.1	0.097	81.20	-2.01	21.89	-7.36	1.06	3.75
19Nord-127	10.9	69.5	0.42	10.2	0.120	80.89	-1.76	23.13	-6.85	1.07	3.36
MT1855	11.6	68.3	0.45	10.7	0.129	79.69	-1.97	24.31	-9.68	1.53	1.18
MTS18116	10.9	69.2	0.41	10.3	0.137	81.65	-1.90	21.34	-8.94	0.93	3.25
MTS18149	11.6	70.0	0.41	11.1	0.112	80.73	-1.71	23.03	-8.74	0.87	4.05
LCH18-1022	11.6	70.7	0.37	10.5	0.120	80.48	-1.74	21.70	-8.91	1.23	2.47
LCH17-4889	10.7	69.9	0.40	10.1	0.159	80.29	-2.05	22.59	-8.58	1.45	1.47
LCH17-3205	11.7	65.6	0.47	10.5	0.101	79.02	-2.26	25.43	-7.96	1.34	0.36
LCH17-5725	11.0	69.4	0.39	10.3	0.114	79.39	-2.01	25.03	-7.64	1.26	1.67
LCH17-3193	11.7	68.9	0.43	10.6	0.119	79.75	-1.71	21.52	-11.54	1.68	1.63
SD15004-2	11.2	68.1	0.39	10.8	0.151	80.59	-1.40	19.88	-9.73	1.12	4.81
SD15007-11	11.0	68.9	0.31	10.2	0.116	81.96	-1.55	18.99	-10.55	1.20	4.87
SD15007-5	11.2	68.9	0.30	10.2	0.122	81.57	-1.84	20.51	-8.66	1.13	3.28
SD15035-2	11.1	70.0	0.35	10.5	0.132	80.54	-1.59	20.12	-9.70	1.37	2.18
SD16008-7	12.3	68.6	0.36	11.2	0.145	79.59	-1.81	23.28	-8.55	1.38	1.65

	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	(%)	(%)	(%)	(%)							
SD17B032-1	11.5	70.9	0.38	10.7	0.178	80.74	-1.67	20.53	-9.71	1.28	2.39
SD17B078-1	12.0	68.5	0.40	10.8	0.150	79.87	-1.72	22.54	-9.68	1.68	1.91
SD17B210-2	11.7	67.4	0.37	10.4	0.159	80.47	-1.79	22.10	-10.84	1.65	2.23
SD17B371-3	12.1	69.2	0.41	11.1	0.118	80.04	-2.14	25.68	-9.48	1.64	2.04
SD18B025-8	11.4	67.5	0.37	10.6	0.151	80.70	-1.60	20.08	-10.20	1.07	2.95
MT1872	11.1	69.8	0.40	10.1	0.127	80.25	-1.87	22.95	-9.38	1.27	3.61

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		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	12.0	62.9	4.25	4.24	3
Overland	10.9	61.2	3.00	2.61	3
Wesley	11.7	62.4	5.63	5.39	5
Jagalene	11.5	62.9	5.63	5.27	4
Jerry	11.3	61.8	5.38	4.93	4
NHH17612	11.1	61.5	6.25	5.59	4
NE17441	10.6	61.6	5.38	4.48	5
NE17443	11.0	62.1	3.75	3.30	3
NE17544	10.4	60.7	4.00	3.21	4
PSB13NEDH-14-83	10.2	60.8	6.50	5.07	4
NE18573	10.5	61.5	5.50	4.52	4
NE16468	10.2	60.9	7.88	6.15	5
NW17620	11.3	63.3	4.00	3.67	4
NE17662	9.9	60.5	5.13	3.86	4
20CP010051	10.5	60.9	7.50	6.11	6
20CP010053	10.3	61.1	5.00	3.99	4
20CP010052	10.2	58.3	3.75	2.92	2
20CP010056	11.9	62.7	3.88	3.82	1
20CP010066	9.7	60.1	6.13	4.44	3
CO16SF027	10.2	60.0	3.50	2.76	1
CO16SF032	10.4	60.3	3.75	3.05	2
CO16SF067	10.7	61.2	5.25	4.40	4
CO16SF070	10.1	59.3	5.13	3.97	3
19Nord-117	10.9	62.7	5.13	4.48	4
19Nord-122	10.8	61.9	4.00	3.41	4
19Nord-123	11.1	62.0	3.38	3.03	2
19Nord-124	10.1	60.2	5.00	3.84	3
19Nord-127	10.2	58.5	3.75	2.96	1
MT1855	10.7	60.8	3.75	3.17	2
MTS18116	10.3	60.0	9.63	7.64	6
MTS18149	11.1	62.9	7.75	6.90	5
LCH18-1022	10.5	61.3	6.25	5.09	4
LCH17-4889	10.1	59.7	5.50	4.24	3
LCH17-3205	10.5	58.4	1.75	1.43	1
LCH17-5725	10.3	58.9	4.00	3.17	1
LCH17-3193	10.6	61.6	3.00	2.49	3
SD15004-2	10.8	61.5	7.50	6.42	6
SD15007-11	10.2	61.4	7.88	6.15	6
SD15007-5	10.2	62.0	7.50	5.89	6
SD15035-2	10.5	61.5	5.50	4.54	4

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
SD16008-7	11.2	62.6	5.00	4.52	2
SD17B032-1	10.7	62.2	4.00	3.36	4
SD17B078-1	10.8	58.9	4.50	3.83	1
SD17B210-2	10.4	58.3	4.50	3.66	1
SD17B371-3	11.1	62.9	6.00	5.32	5
SD18B025-8	10.6	62.2	6.50	5.42	5
MT1872	10.1	59.8	4.00	3.10	1

2021 NRPN Intraregional Production Zone
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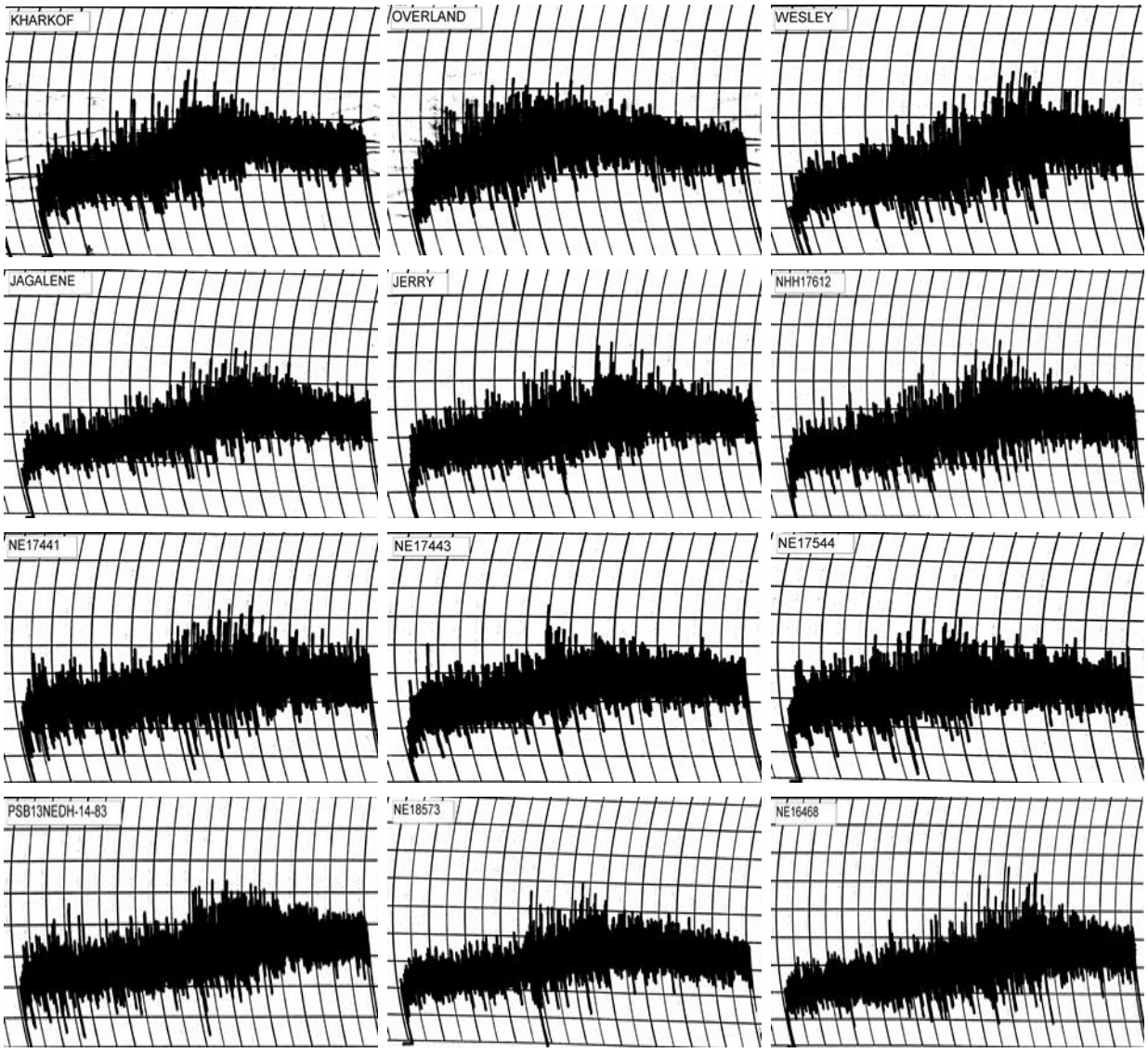
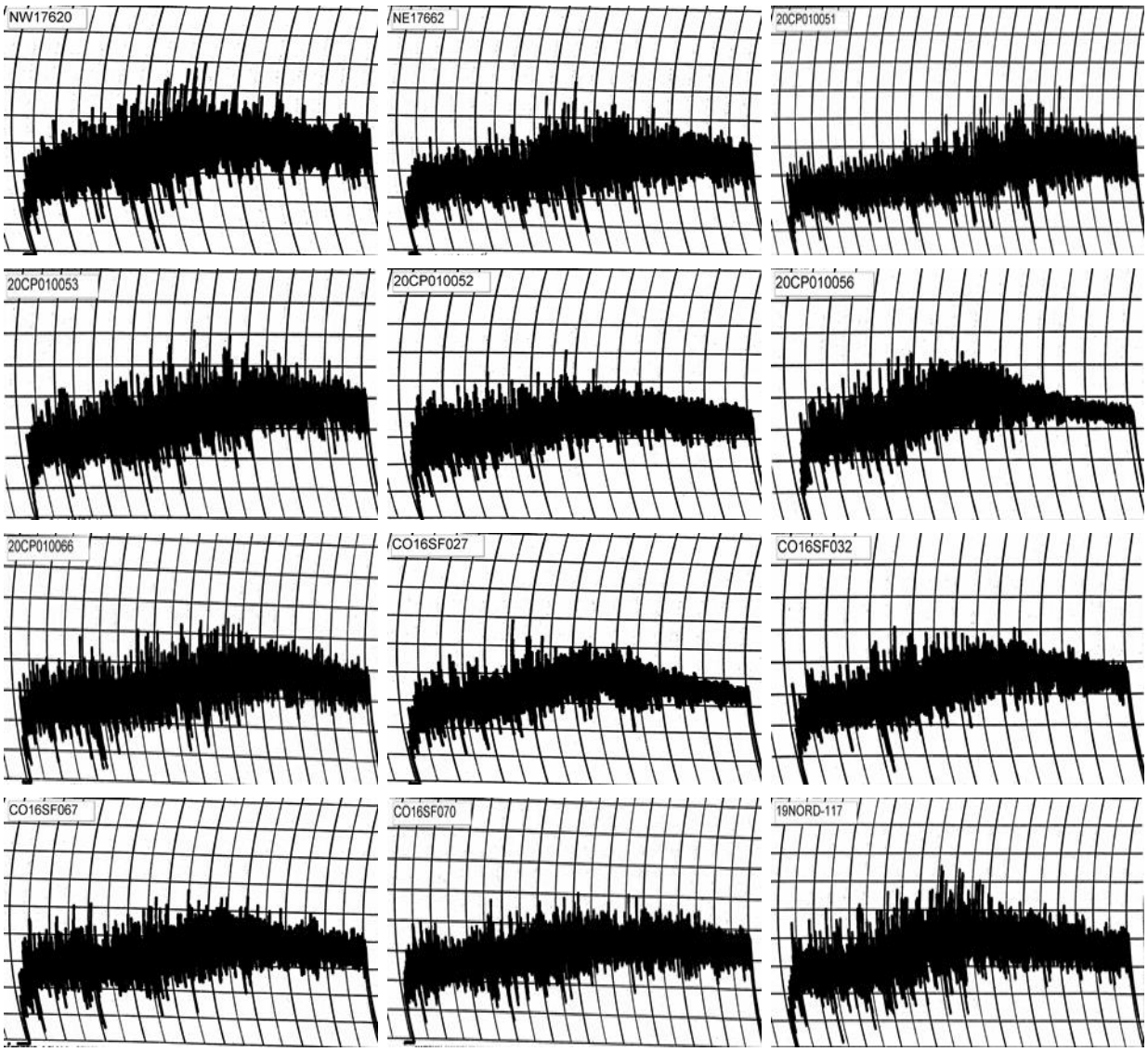
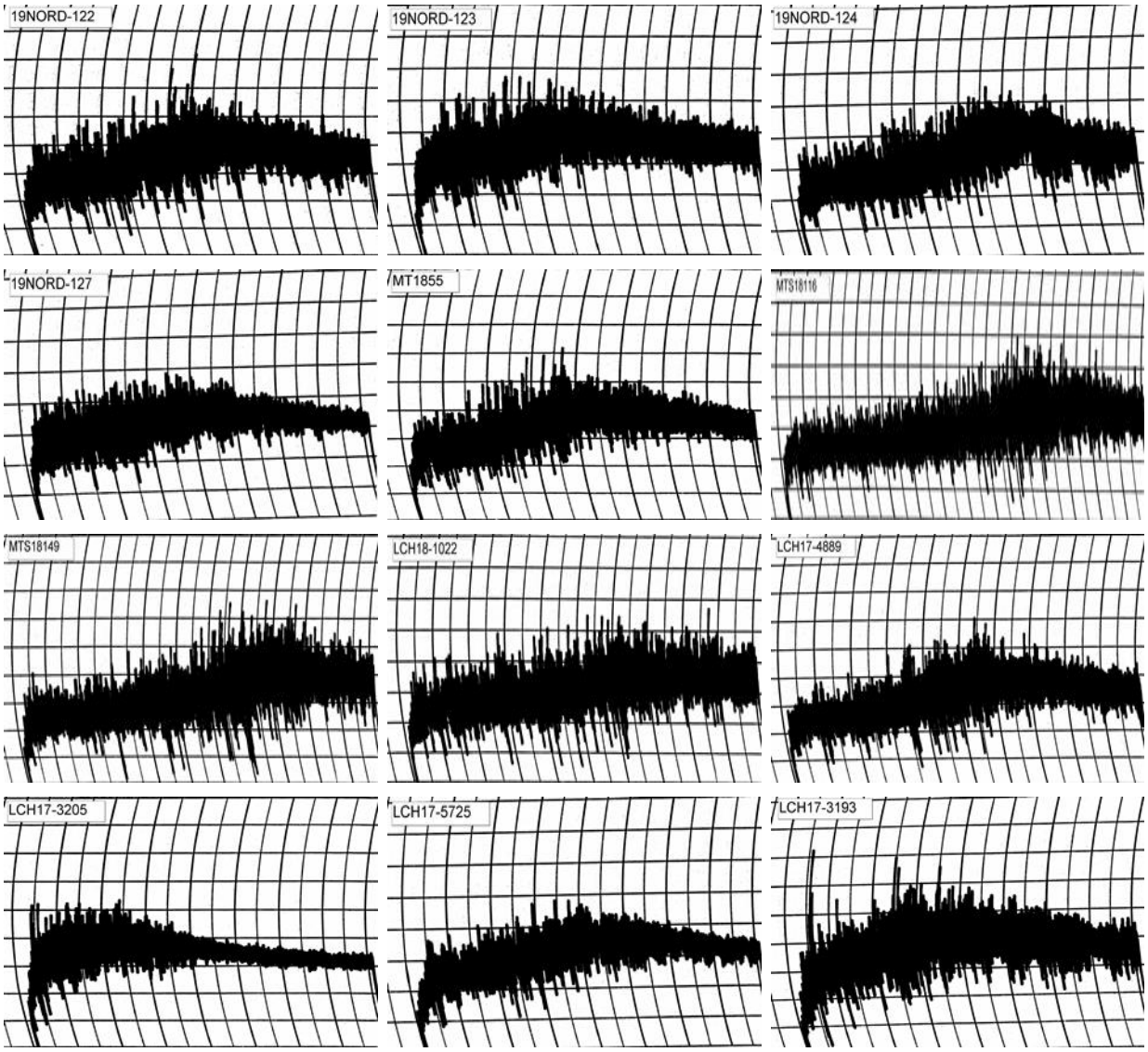


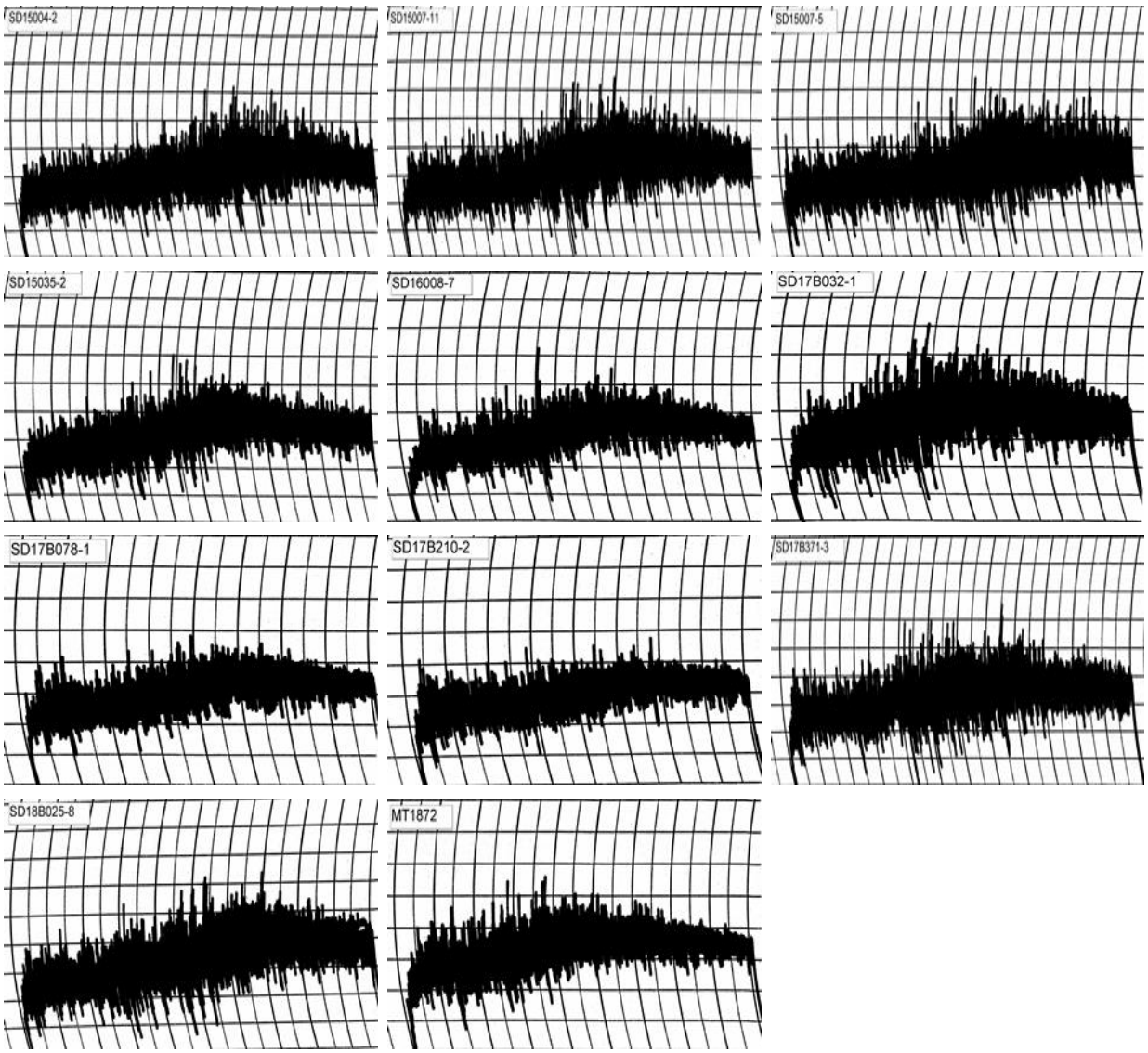
2021 NRPN Intraregional Production Zone
North Central Plains



2021 NRPN Intraregional Production Zone
North Central Plains



2021 NRPN Intraregional Production Zone
North Central Plains



2021 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	149.92							
Overland	142.83							
Wesley	125.00							
Jagalene	119.58							
Jerry	138.00							
NHH17612	125.08							
NE17441	96.92							
NE17443	128.58							
NE17544	153.83							
PSB13NEDH-14-	132.33							
NE18573	125.83							
NE16468	95.00							
NW17620	144.67							
NE17662	123.67							
20CP010051	112.83							
20CP010053	130.58							
20CP010052	90.33							
20CP010056	132.50							
20CP010066	117.42							
CO16SF027	120.25							
CO16SF032	138.42							
CO16SF067	125.92							
CO16SF070	104.92							
19Nord-117	157.25							
19Nord-122	115.00							
19Nord-123	150.83							
19Nord-124	138.25							
19Nord-127	118.58							
MT1855	116.42							
MTS18116	112.42							
MTS18149	106.33							
LCH18-1022	103.25							
LCH17-4889	117.50							
LCH17-3205	142.75							
LCH17-5725	134.08							
LCH17-3193	136.67							
SD15004-2	119.33							
SD15007-11	105.42							
SD15007-5	92.50							
SD15035-2	135.83							
SD16008-7	110.58							
SD17B032-1	134.17							
SD17B078-1	127.83							
SD17B210-2	136.58							
SD17B371-3	145.17							

	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)
SD18B025-8	128.25							
MT1872	139.58							

NR-Data not ready

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	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	12.0	63.2	5.25	5.24	172.1	7.7	3.0	910	6.1	68
Overland	10.9	61.4	3.50	3.05	170.6	7.7	3.0	885	6.0	73
Wesley	11.7	62.3	7.00	6.71	171.6	7.5	3.5	1005	6.8	81
Jagalene	11.5	63.1	6.50	6.08	172.2	7.4	4.0	920	6.2	73
Jerry	11.3	62.2	6.00	5.50	170.7	7.4	3.5	880	6.0	70
NHH17612	11.1	61.3	7.00	6.26	170.1	7.2	4.0	885	6.0	72
NE17441	10.6	61.2	6.50	5.41	169.7	7.0	4.0	875	6.0	75
NE17443	11.0	62.3	4.50	3.95	171.9	7.1	3.0	815	5.6	64
NE17544	10.4	60.4	4.00	3.21	170.2	7.2	4.0	835	5.6	72
PSB13NEDH-14-83	10.2	60.8	7.25	5.66	169.0	7.1	3.5	840	5.8	74
NE18573	10.5	61.3	7.00	5.75	169.9	7.1	3.0	820	5.6	68
NE16468	10.2	61.9	9.00	7.02	170.8	7.1	3.5	845	5.7	75
NW17620	11.3	62.9	4.50	4.13	171.9	7.6	3.5	965	6.6	80
NE17662	9.9	60.1	6.00	4.51	169.1	7.2	3.5	870	5.9	81
20CP010051	10.5	61.0	8.00	6.52	169.5	7.4	4.0	945	6.4	85
20CP010053	10.3	60.9	5.50	4.38	170.6	7.1	3.5	820	5.5	70
20CP010052	10.2	58.0	4.13	3.22	166.6	7.2	2.0	835	5.7	73
20CP010056	11.9	63.0	4.00	3.94	172.3	7.7	2.5	905	6.1	68
20CP010066	9.7	59.9	6.13	4.44	168.7	7.3	3.0	820	5.6	76
CO16SF027	10.2	60.0	3.50	2.76	169.1	7.3	3.5	840	5.7	74
CO16SF032	10.4	60.1	4.25	3.45	169.8	7.3	2.0	835	5.7	71
CO16SF067	10.7	60.9	5.50	4.61	169.6	7.3	2.5	870	6.0	74
CO16SF070	10.1	59.1	5.25	4.07	168.1	7.2	3.0	855	5.9	77
19Nord-117	10.9	63.1	6.50	5.67	172.5	7.3	2.5	925	6.3	78
19Nord-122	10.8	62.0	4.25	3.63	172.5	7.0	3.0	880	6.0	74
19Nord-123	11.1	61.8	3.75	3.36	170.6	7.3	3.0	860	6.0	68
19Nord-124	10.1	60.0	5.00	3.84	169.7	7.5	4.0	875	6.0	80
19Nord-127	10.2	58.1	3.75	2.96	167.7	6.9	2.0	795	5.4	67
MT1855	10.7	61.1	4.25	3.59	170.4	7.4	4.0	855	5.8	71
MTS18116	10.3	60.0	9.50	7.54	168.3	7.2	4.0	855	5.9	75
MTS18149	11.1	63.1	10.50	9.35	172.0	7.2	4.5	965	6.5	82
LCH18-1022	10.5	60.9	7.75	6.31	170.8	6.9	4.0	840	5.6	72
LCH17-4889	10.1	60.1	5.50	4.24	169.1	7.1	4.0	900	6.1	83
LCH17-3205	10.5	58.0	2.50	2.04	168.0	7.2	1.5	795	5.4	66
LCH17-5725	10.3	59.1	3.75	2.97	168.1	7.3	2.5	830	5.6	72
LCH17-3193	10.6	61.6	3.50	2.90	171.1	7.3	2.5	840	5.7	71
SD15004-2	10.8	61.5	8.00	6.85	170.4	7.3	4.0	875	6.0	73
SD15007-11	10.2	62.0	11.00	8.58	170.0	7.2	3.0	840	5.7	74
SD15007-5	10.2	62.2	11.00	8.64	170.4	6.8	3.5	800	5.4	68
SD15035-2	10.5	61.5	5.50	4.54	170.7	7.5	4.5	910	6.3	80
SD16008-7	11.2	62.9	4.75	4.29	172.1	7.3	3.5	870	5.9	69
SD17B032-1	10.7	62.1	4.75	3.99	171.5	7.1	3.0	820	5.5	67
SD17B078-1	10.8	59.0	4.25	3.62	168.6	7.2	2.5	835	5.7	68

	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/%)
SD17B210-2	10.4	58.0	4.25	3.45	167.7	7.4	2.0	870	6.0	76
SD17B371-3	11.1	63.0	8.00	7.10	171.8	7.3	3.5	920	6.1	76
SD18B025-8	10.6	62.1	7.75	6.47	171.6	7.6	5.0	935	6.3	82
MT1872	10.1	60.1	4.00	3.10	169.2	7.4	3.5	840	5.7	75

2021 NRPN Intraregional Production Zone
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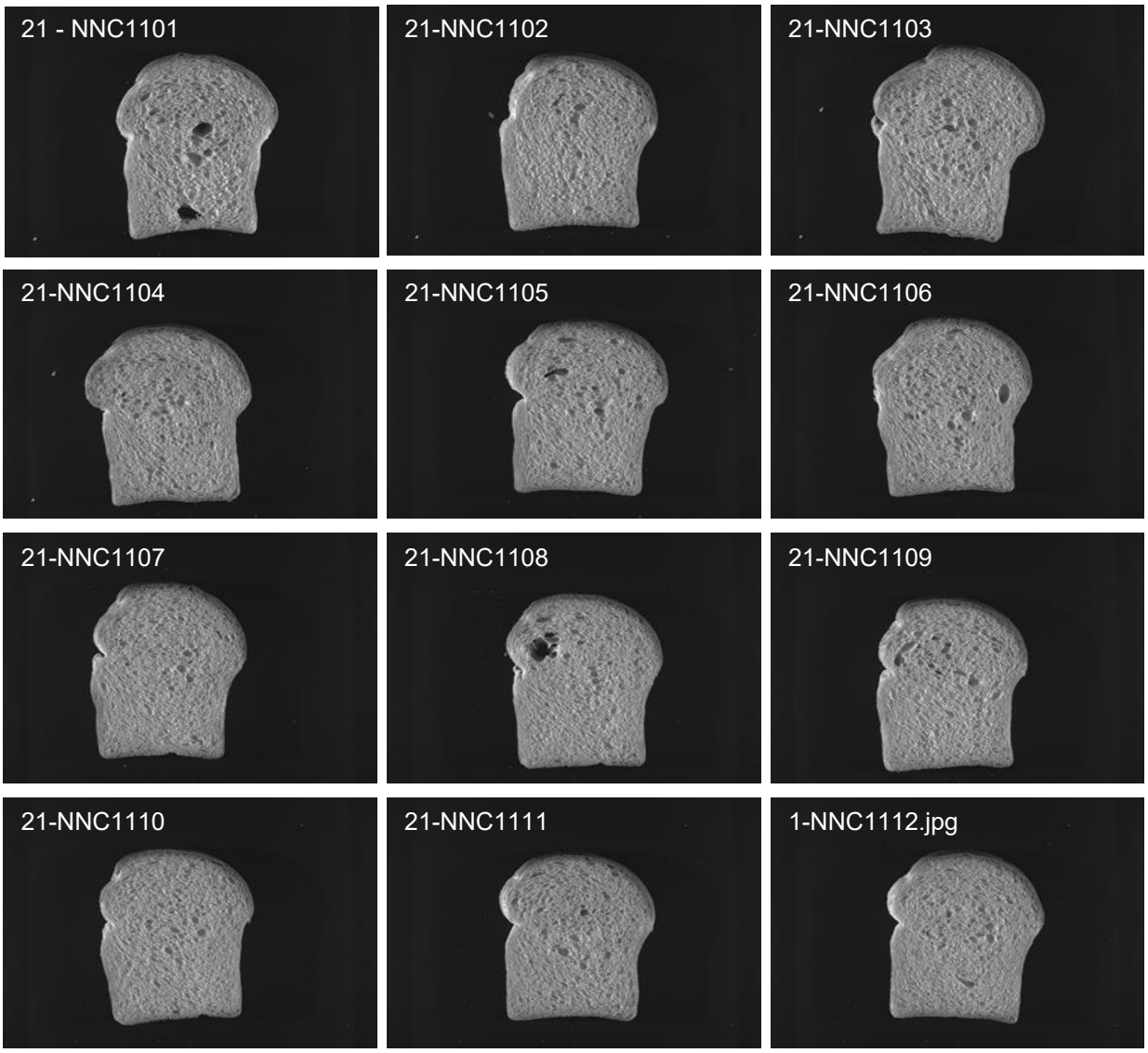
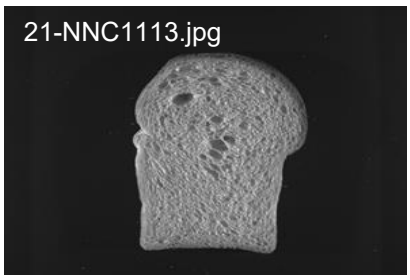
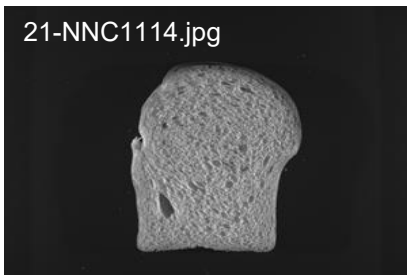
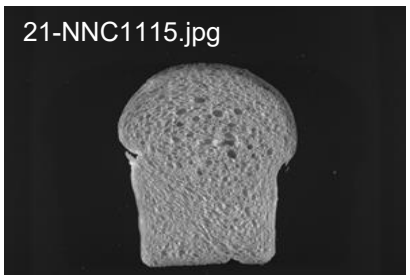
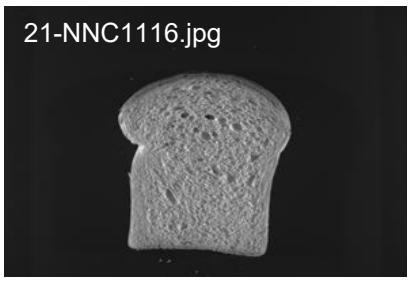


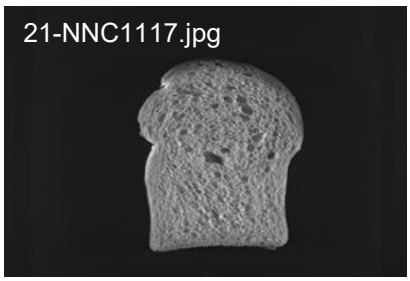
2021 NRPN Intraregional Production Zone
North Central Plains

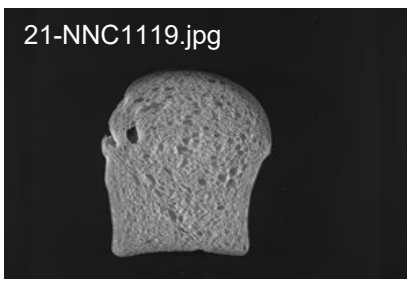


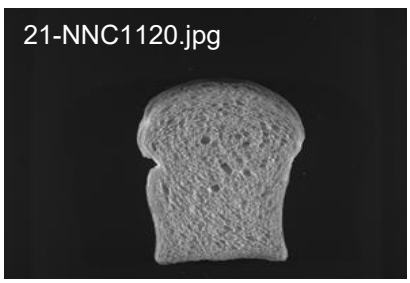


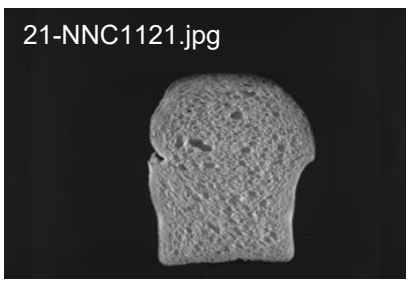


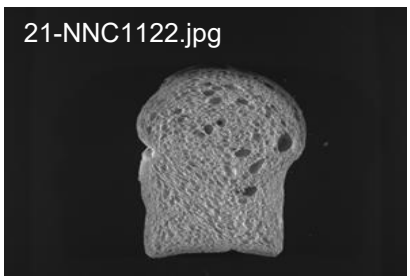


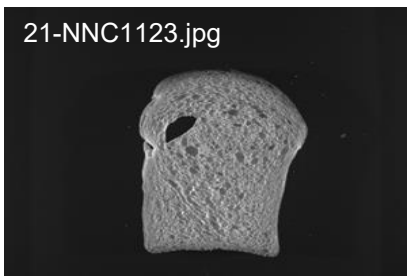


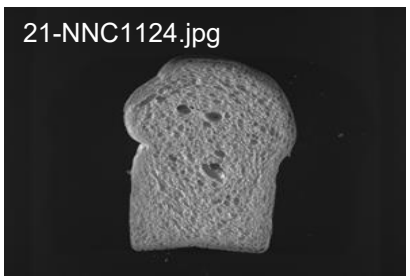












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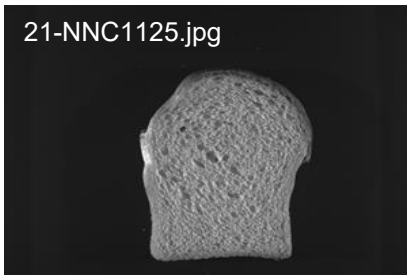

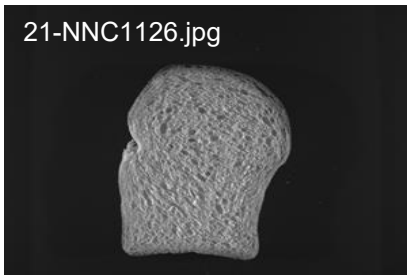

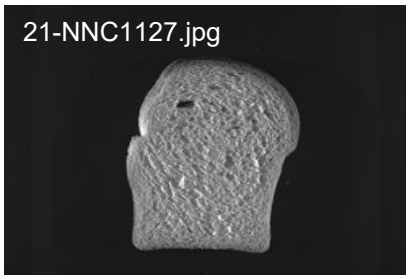

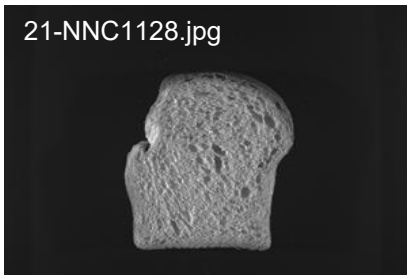

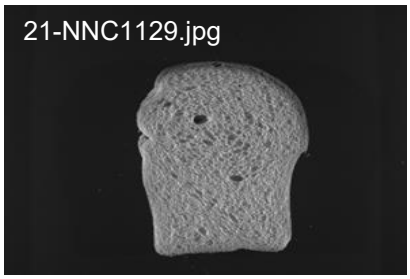

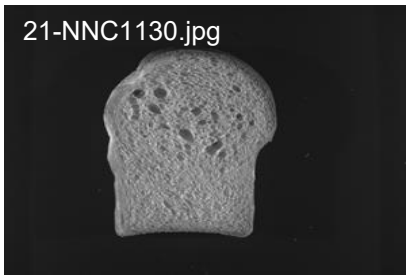

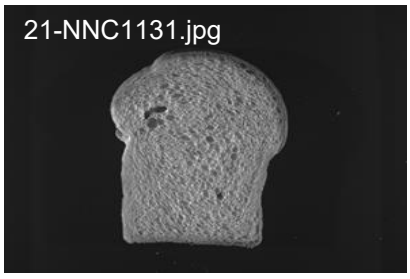

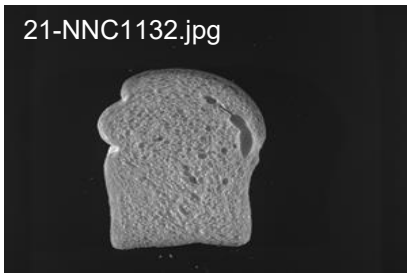

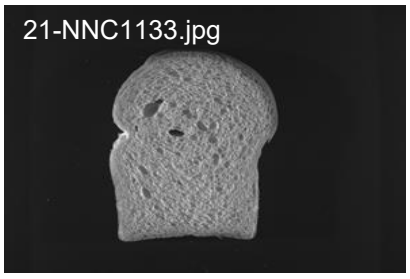

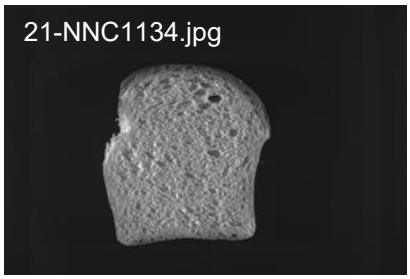

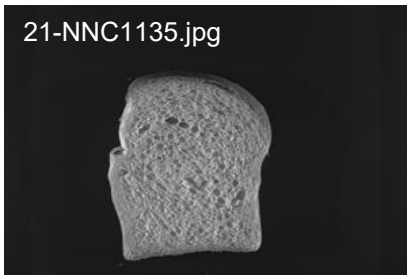

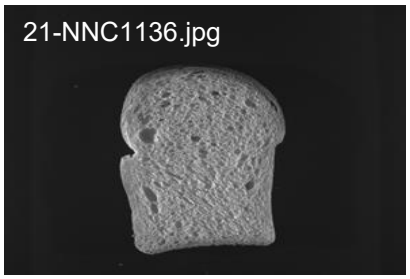

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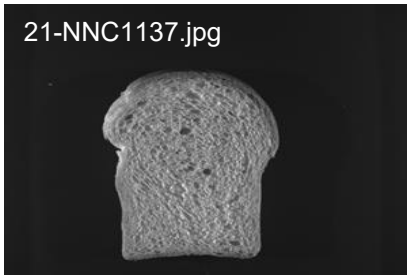

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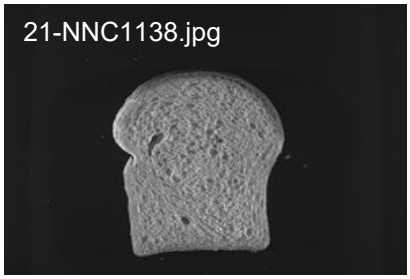

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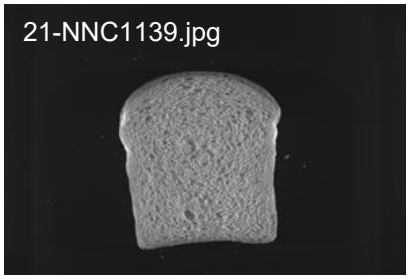

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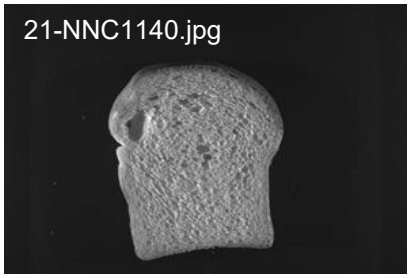

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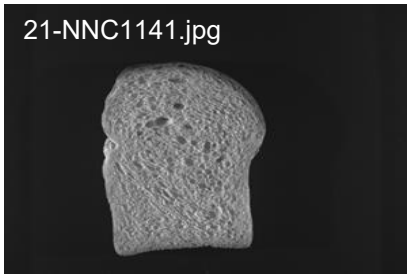

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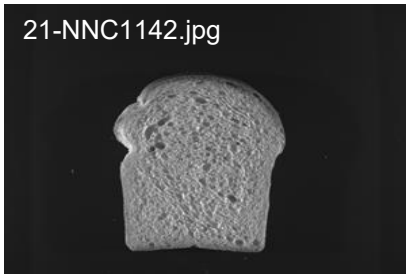

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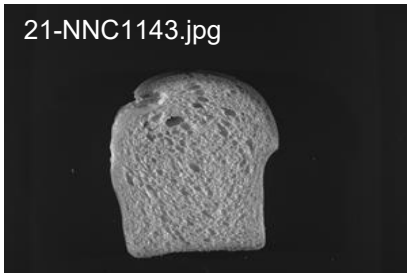

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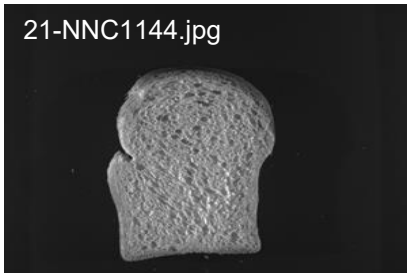

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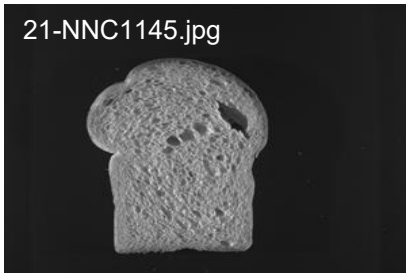

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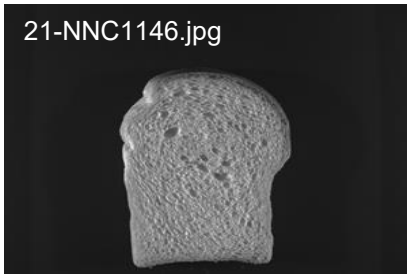

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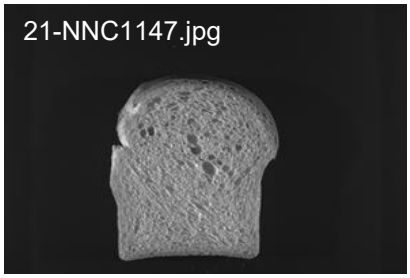

2021 NRPN Intraregional Production Zone

Northern High Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	62.1	13.6	0.7	34.1	11.9	2.63	0.35	53	19	MIXED	12-27-29-32-03
Overland	61.5	13.1	0.6	35.0	11.2	2.74	0.35	75	15	HARD	00-03-13-84-01
Wesley	60.8	13.1	0.7	38.2	13.0	2.75	0.37	70	16	HARD	01-07-18-74-01
Jagalene	63.2	12.6	0.8	35.3	11.2	2.74	0.34	80	16	HARD	01-03-07-89-01
Jerry	62.1	12.1	1.1	36.1	13.2	2.72	0.39	77	18	HARD	01-04-09-86-01
NHH17612	62.8	12.7	0.7	31.7	11.9	2.61	0.36	77	16	HARD	01-03-11-85-01
NE17441	61.1	13.0	0.7	34.3	10.8	2.71	0.37	71	15	HARD	01-05-15-79-01
NE17443	61.8	12.4	0.8	33.1	10.7	2.65	0.35	73	14	HARD	00-05-11-84-01
NE17544	62.3	12.2	0.9	36.7	11.3	2.74	0.36	69	15	HARD	01-06-19-74-01
PSB13NEDH-14-83	62.1	12.7	0.8	35.9	10.3	2.75	0.33	64	16	HARD	03-12-22-63-01
NE18573	62.7	12.8	0.8	37.0	13.3	2.73	0.40	72	17	HARD	02-05-16-77-01
NE16468	60.9	12.9	0.8	32.3	12.4	2.54	0.38	63	17	HARD	03-11-28-58-01
NW17620	63.2	11.9	1.3	33.7	12.3	2.66	0.39	84	17	HARD	00-02-05-93-01
NE17662	62.2	12.3	1.1	32.8	13.7	2.52	0.40	75	18	HARD	01-03-15-81-01
20CP010051	61.1	13.0	0.9	31.1	10.8	2.55	0.39	80	17	HARD	00-01-10-89-01
20CP010053	62.6	12.6	0.8	29.9	11.1	2.52	0.34	85	17	HARD	01-01-05-93-01
20CP010052	60.8	12.7	0.8	34.7	12.2	2.58	0.41	82	17	HARD	00-03-08-89-01
20CP010056	61.8	12.9	0.7	30.9	10.4	2.48	0.35	83	15	HARD	00-01-07-92-01
20CP010066	61.3	12.6	0.9	31.7	11.9	2.53	0.38	81	16	HARD	01-01-09-89-01
CO16SF027	62.5	12.6	0.8	35.6	13.6	2.63	0.35	72	17	HARD	01-06-17-76-01
CO16SF032	62.1	13.4	0.9	35.4	11.6	2.67	0.36	76	15	HARD	00-03-12-85-01
CO16SF067	61.9	12.6	0.7	34.8	14.3	2.64	0.39	78	17	HARD	01-03-11-85-01
CO16SF070	61.5	13.0	0.7	34.3	10.7	2.67	0.36	69	16	HARD	01-08-17-74-01
19Nord-117	60.7	12.2	0.9	36.3	14.0	2.65	0.38	64	16	HARD	03-11-24-62-01
19Nord-122	62.5	12.3	0.9	34.0	12.8	2.64	0.35	73	17	HARD	01-05-13-81-01
19Nord-123	61.6	12.3	0.9	33.2	11.4	2.66	0.38	76	16	HARD	00-03-09-88-01
19Nord-124	62.6	12.1	0.9	35.1	10.8	2.73	0.36	72	15	HARD	01-02-17-80-01
19Nord-127	61.2	12.4	0.8	37.8	11.9	2.73	0.39	71	14	HARD	01-04-14-81-01
MT1855	61.1	12.2	0.9	30.0	13.5	2.54	0.40	83	17	HARD	00-02-06-92-01
MTS18116	60.8	12.6	0.9	27.0	10.9	2.36	0.37	80	18	HARD	01-03-12-84-01
MTS18149	61.4	12.9	1.4	34.4	12.9	2.60	0.37	78	16	HARD	01-04-08-87-01
LCH18-1022	62.1	12.8	1.2	33.3	11.0	2.62	0.35	76	14	HARD	00-02-10-88-01
LCH17-4889	63.2	12.6	1.2	33.5	10.8	2.67	0.36	77	15	HARD	01-03-08-88-01
LCH17-3205	61.6	12.6	1.2	31.3	10.9	2.61	0.36	94	17	HARD	00-01-03-96-01
LCH17-5725	61.6	12.4	1.1	30.2	11.4	2.49	0.36	79	18	HARD	01-05-07-87-01
LCH17-3193	61.5	12.8	1.1	32.7	10.9	2.57	0.38	90	16	HARD	00-01-03-96-01
SD15004-2	62.4	12.5	1.1	35.9	11.8	2.68	0.36	70	15	HARD	01-05-16-78-01
SD15007-11	62.6	12.5	1.2	33.0	11.8	2.54	0.38	73	16	HARD	01-06-13-80-01
SD15007-5	63.1	12.6	1.0	35.0	13.1	2.64	0.39	74	17	HARD	01-07-13-79-01
SD15035-2	62.9	12.0	1.2	36.7	12.8	2.71	0.38	70	15	HARD	01-10-13-76-01
SD16008-7	62.5	12.5	1.2	36.9	11.6	2.79	0.38	76	14	HARD	00-02-10-88-01
SD17B032-1	61.6	12.3	1.3	34.0	12.7	2.59	0.37	75	17	HARD	01-04-12-83-01
SD17B078-1	62.2	12.5	1.1	35.9	10.2	2.78	0.36	73	15	HARD	02-03-13-82-01
SD17B210-2	61.0	12.1	1.2	35.6	11.6	2.67	0.36	72	15	HARD	01-05-13-81-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
SD17B371-3	61.0	12.1	1.3	36.2	13.1	2.70	0.36	81	15	HARD	00-01-07-92-01
SD18B025-8	62.2	11.5	1.5	35.1	12.3	2.65	0.39	76	17	HARD	01-04-09-86-01
MT1872	60.3	12.5	1.6	29.4	11.2	2.40	0.39	77	17	HARD	01-03-13-83-01

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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	13.8	62.0	0.42	12.7	0.103	81.32	-1.67	21.89	-9.40	1.22	2.47
Overland	12.5	67.4	0.45	12.1	0.131	79.54	-1.47	23.27	-9.04	1.44	1.63
Wesley	13.6	67.6	0.42	13.4	0.159	80.66	-1.28	21.55	-9.94	1.33	1.82
Jagalene	12.5	66.3	0.43	12.0	0.136	80.10	-1.45	23.60	-9.04	1.33	1.98
Jerry	13.0	66.0	0.41	12.3	0.167	79.99	-1.53	23.97	-8.48	1.52	1.84
NHH17612	13.4	66.5	0.40	12.9	0.187	79.94	-1.13	22.84	-10.31	1.40	2.93
NE17441	12.2	66.1	0.36	11.7	0.160	82.18	-1.67	22.44	-10.02	1.53	4.89
NE17443	14.2	67.1	0.40	13.1	0.138	79.36	-1.07	21.85	-9.96	1.60	2.20
NE17544	13.9	65.5	0.40	12.7	0.136	79.14	-1.06	23.14	-8.89	1.43	1.81
PSB13NEDH-14-83	12.1	65.8	0.39	11.5	0.144	80.83	-1.75	23.44	-9.32	1.32	3.21
NE18573	12.6	66.4	0.42	11.5	0.160	81.03	-1.70	22.93	-9.82	1.33	3.50
NE16468	12.6	66.2	0.43	11.9	0.127	80.50	-1.54	23.68	-10.82	1.34	2.82
NW17620	14.0	63.8	0.46	13.1	0.138	79.70	-1.41	22.94	-12.23	1.87	2.32
NE17662	12.7	68.1	0.41	11.8	0.151	80.17	-1.37	22.99	-10.25	1.41	1.28
20CP010051	12.5	67.4	0.41	11.8	0.128	80.53	-1.60	23.55	-10.79	1.36	3.81
20CP010053	11.9	67.8	0.43	11.3	0.167	80.08	-1.49	23.55	-10.44	1.46	1.99
20CP010052	12.0	64.9	0.39	11.2	0.157	78.45	-1.52	25.28	-10.52	1.83	2.00
20CP010056	13.7	66.0	0.42	13.2	0.178	78.23	-1.28	25.18	-11.07	1.68	2.34
20CP010066	11.5	68.4	0.43	11.1	0.144	80.24	-1.70	23.54	-9.94	1.47	2.43
CO16SF027	12.7	67.9	0.41	11.9	0.130	80.21	-1.98	23.79	-10.68	1.43	2.27
CO16SF032	12.0	68.2	0.40	11.5	0.116	79.95	-1.94	24.13	-10.71	1.57	1.54
CO16SF067	13.0	64.8	0.44	12.1	0.159	79.67	-1.42	23.22	-11.09	1.54	2.28
CO16SF070	12.4	68.5	0.40	11.7	0.146	80.93	-1.51	21.96	-11.77	1.40	3.22
19Nord-117	12.8	67.4	0.41	12.5	0.136	80.11	-1.26	21.39	-10.93	1.36	2.98
19Nord-122	12.7	66.0	0.36	12.3	0.112	80.37	-0.96	20.62	-10.36	1.26	2.47
19Nord-123	13.7	65.7	0.38	13.0	0.132	79.48	-1.24	22.93	-10.16	1.43	2.34
19Nord-124	12.6	69.5	0.33	11.7	0.100	80.77	-1.64	24.13	-8.54	1.23	3.82
19Nord-127	12.5	68.4	0.42	11.6	0.164	79.51	-1.31	25.33	-6.36	1.16	2.93
MT1855	13.1	67.0	0.47	12.6	0.191	78.70	-1.44	25.72	-10.25	1.58	1.09
MTS18116	12.9	67.1	0.43	11.8	0.148	80.49	-1.46	22.83	-9.88	1.07	3.59
MTS18149	12.3	67.1	0.43	11.7	0.136	80.86	-1.66	24.87	-9.56	1.16	4.06
LCH18-1022	13.1	67.6	0.40	12.1	0.136	80.23	-1.25	22.71	-10.24	1.33	3.42
LCH17-4889	12.0	67.1	0.42	11.7	0.141	80.52	-1.80	23.92	-8.94	1.38	1.67
LCH17-3205	13.5	63.1	0.51	12.4	0.131	77.98	-1.52	26.68	-9.52	1.48	1.28
LCH17-5725	12.5	67.1	0.44	12.0	0.129	78.74	-1.45	27.15	-9.21	1.60	1.18
LCH17-3193	12.5	66.0	0.48	11.6	0.142	79.20	-1.39	23.29	-11.80	1.90	2.32
SD15004-2	13.3	64.7	0.39	12.7	0.134	80.95	-1.40	22.82	-9.79	1.14	3.32
SD15007-11	12.7	67.0	0.38	11.7	0.134	80.45	-1.38	22.06	-10.23	1.31	3.04
SD15007-5	12.2	67.2	0.35	11.5	0.157	81.44	-1.44	21.13	-10.87	1.26	4.02
SD15035-2	12.9	68.0	0.42	12.3	0.135	80.25	-1.31	21.64	-10.21	1.44	2.49
SD16008-7	14.4	66.0	0.44	13.6	0.134	78.47	-1.23	23.96	-9.69	1.42	1.65

	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	(%)	(%)	(%)	(%)							
SD17B032-1	13.4	66.8	0.43	12.3	0.158	79.64	-1.07	21.36	-10.95	1.50	3.04
SD17B078-1	14.6	65.5	0.40	13.4	0.165	79.09	-1.13	22.62	-10.74	1.79	1.63
SD17B210-2	13.3	63.9	0.47	12.3	0.166	79.82	-1.46	24.21	-11.52	1.85	1.79
SD17B371-3	13.3	65.7	0.49	12.5	0.149	79.97	-1.56	24.42	-11.97	1.92	4.01
SD18B025-8	13.2	65.5	0.40	12.9	0.149	80.63	-1.19	21.07	-12.67	1.49	3.46
MT1872	12.8	69.2	0.46	12.2	0.131	80.59	-1.43	24.73	-10.86	1.23	4.67

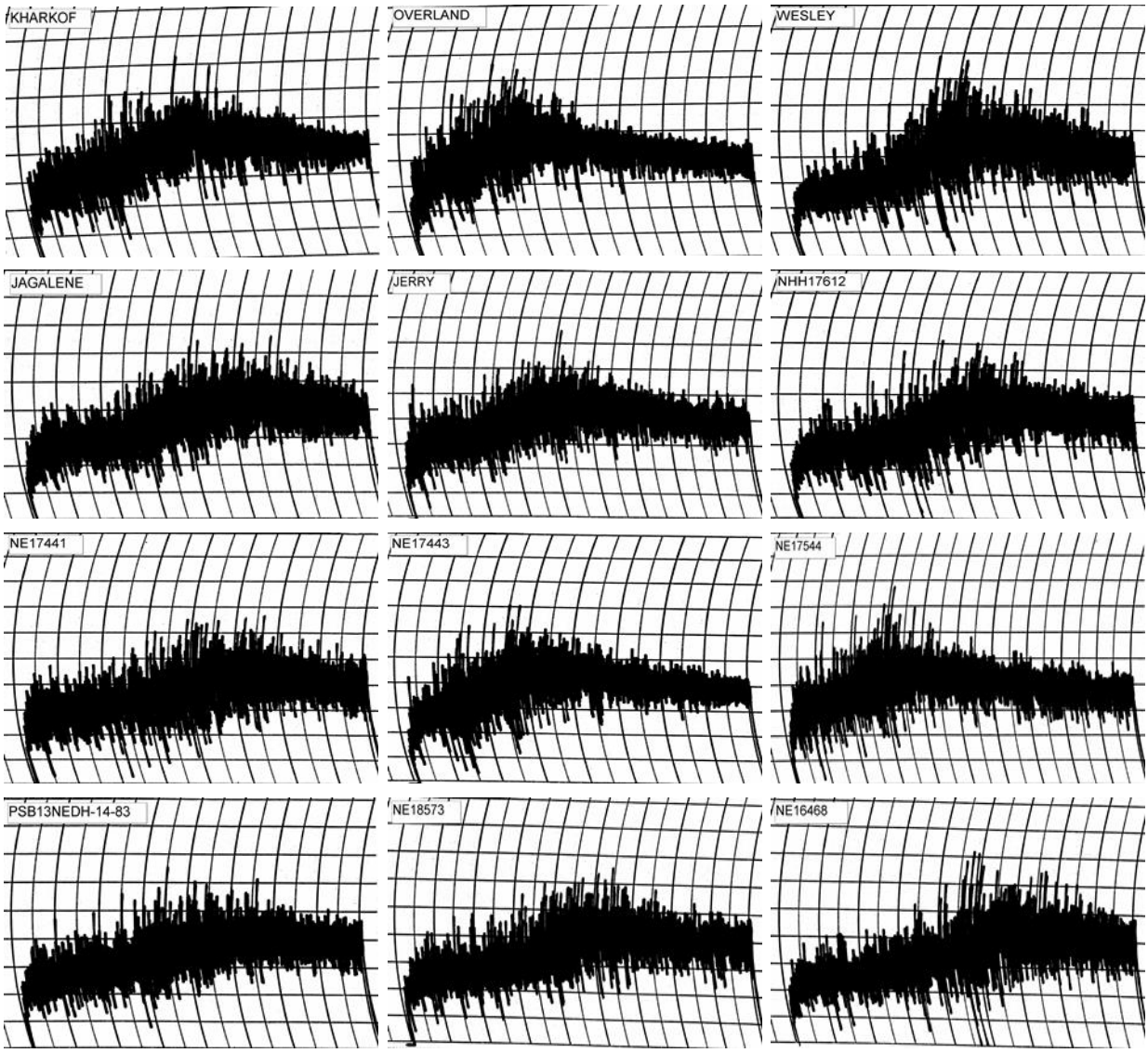
2021 NRPN Intraregional Production Zone

Northern High Plains

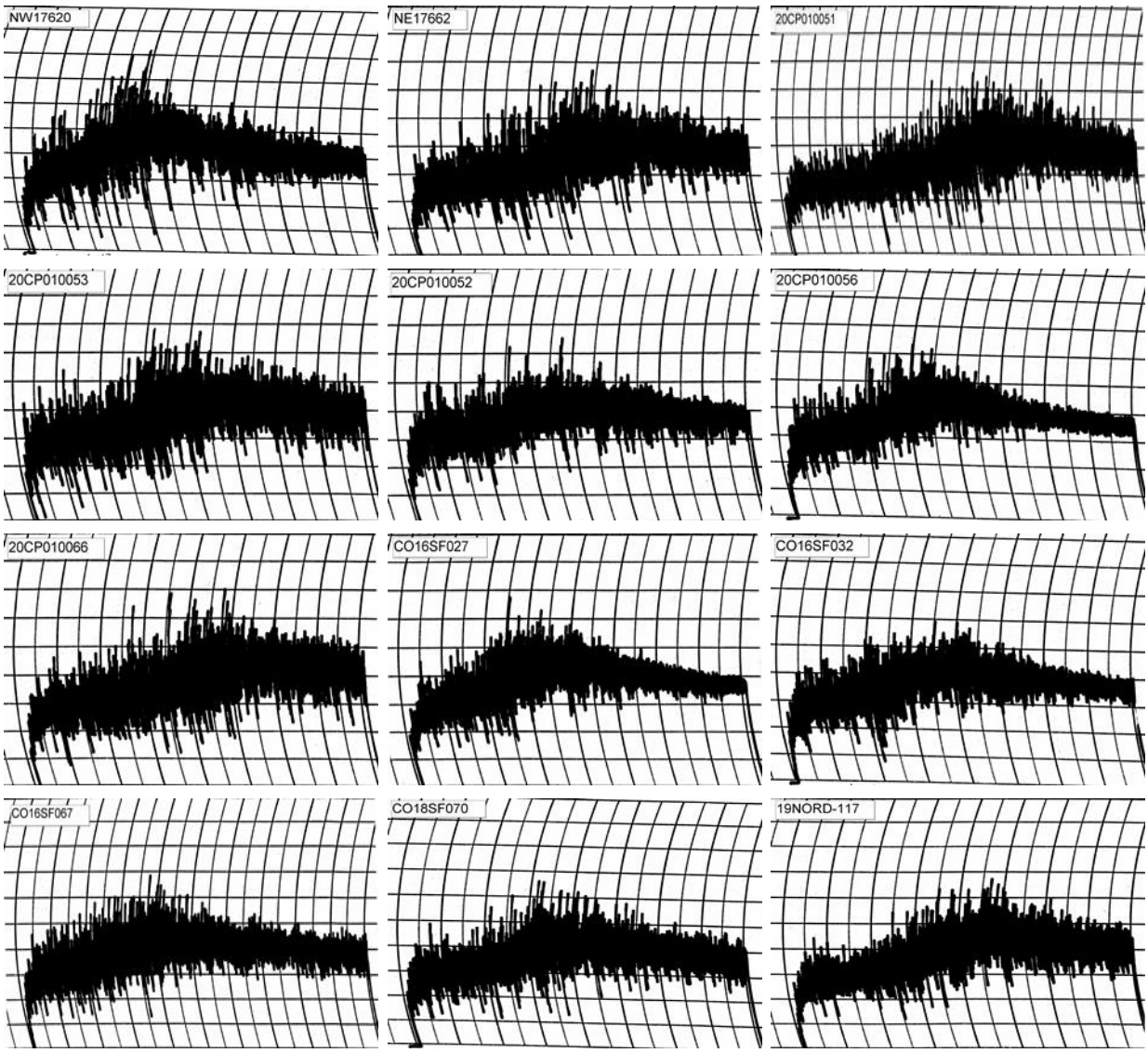
		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	12.7	64.6	3.75	3.75	3
Overland	12.1	64.1	2.85	2.85	2
Wesley	13.4	66.7	4.13	4.13	4
Jagalene	12.0	64.9	4.75	4.74	4
Jerry	12.3	64.5	4.25	4.25	3
NHH17612	12.9	66.5	4.50	4.50	5
NE17441	11.7	64.4	4.63	4.44	5
NE17443	13.1	65.9	2.75	2.75	2
NE17544	12.7	65.1	3.13	3.13	3
PSB13NEDH-14-83	11.5	63.1	4.63	4.35	4
NE18573	11.5	63.0	5.13	4.80	4
NE16468	11.9	64.7	5.88	5.78	5
NW17620	13.1	66.8	2.88	2.88	3
NE17662	11.8	64.0	4.38	4.25	4
20CP010051	11.8	65.0	6.38	6.20	6
20CP010053	11.3	63.2	4.00	3.64	4
20CP010052	11.2	62.1	3.75	3.39	2
20CP010056	13.2	65.5	3.25	3.25	1
20CP010066	11.1	62.4	4.88	4.32	5
CO16SF027	11.9	63.7	3.25	3.21	1
CO16SF032	11.5	62.6	3.75	3.51	1
CO16SF067	12.1	64.0	4.00	4.00	4
CO16SF070	11.7	63.9	3.25	3.13	3
19Nord-117	12.5	65.2	4.63	4.63	4
19Nord-122	12.3	64.5	2.75	2.75	1
19Nord-123	13.0	66.1	2.13	2.13	2
19Nord-124	11.7	64.0	3.25	3.14	3
19Nord-127	11.6	59.8	3.13	2.99	1
MT1855	12.6	64.9	3.25	3.25	1
MTS18116	11.8	64.1	6.88	6.71	5
MTS18149	11.7	63.4	4.75	4.57	4
LCH18-1022	12.1	65.2	4.75	4.75	5
LCH17-4889	11.7	63.5	3.63	3.52	2
LCH17-3205	12.4	61.7	1.50	1.50	1
LCH17-5725	12.0	60.9	2.75	2.75	2
LCH17-3193	11.6	64.2	2.38	2.26	3
SD15004-2	12.7	67.2	5.75	5.75	5
SD15007-11	11.7	65.0	6.25	6.05	5
SD15007-5	11.5	65.0	6.25	5.84	5
SD15035-2	12.3	64.5	3.88	3.88	4
SD16008-7	13.6	65.1	2.75	2.75	1

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
SD17B032-1	12.3	65.4	3.63	3.63	4
SD17B078-1	13.4	62.2	2.00	2.00	1
SD17B210-2	12.3	60.5	2.38	2.38	1
SD17B371-3	12.5	66.8	5.00	5.00	5
SD18B025-8	12.9	67.5	4.00	4.00	5
MT1872	12.2	65.8	6.88	6.88	6

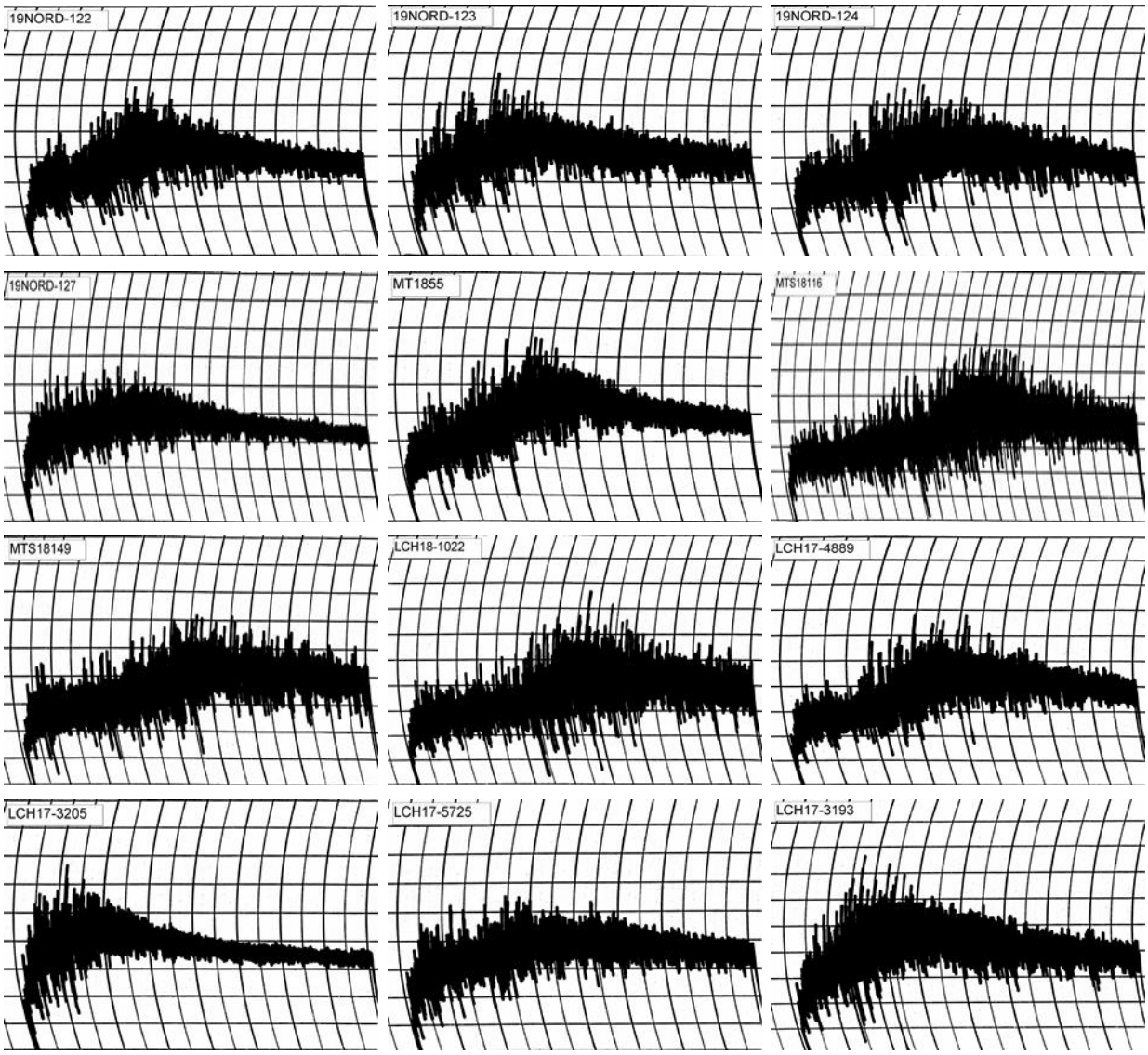
2021 NRPN Intraregional Production Zone
Northern High Plains



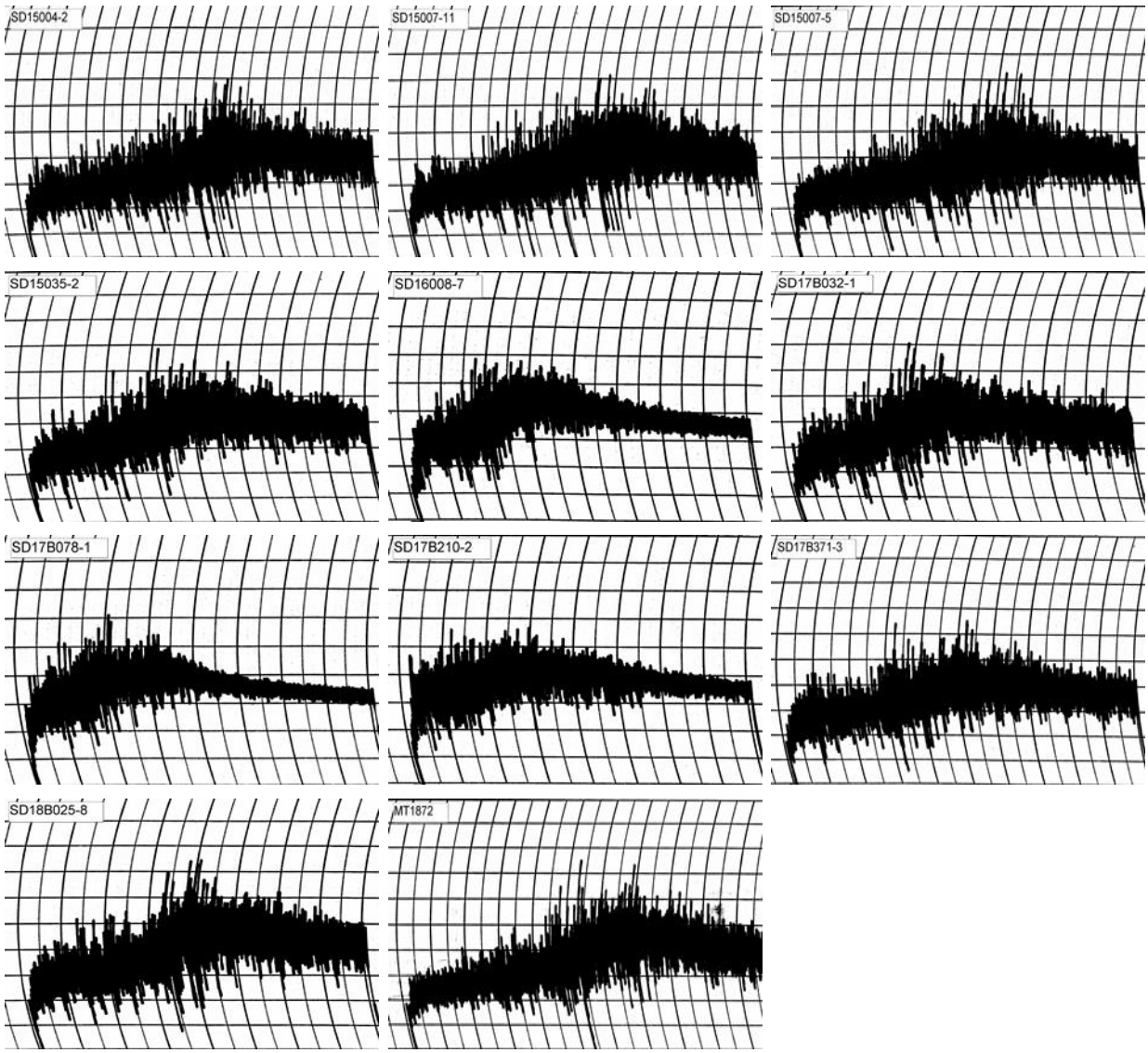
2021 NRPN Intraregional Production Zone
Northern High Plains



2021 NRPN Intraregional Production Zone
Northern High Plains



2021 NRPN Intraregional Production Zone
Northern High Plains



2021 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	155.42							
Overland	147.83							
Wesley	134.50							
Jagalene	141.83							
Jerry	144.25							
NHH17612	147.50							
NE17441	137.58							
NE17443	155.58							
NE17544	178.25							
PSB13NEDH-14-	133.67							
NE18573	127.58							
NE16468	119.17							
NW17620	155.00							
NE17662	128.83							
20CP010051	123.50							
20CP010053	111.58							
20CP010052	91.67							
20CP010056	133.75							
20CP010066	100.33							
CO16SF027	119.33							
CO16SF032	128.75							
CO16SF067	145.42							
CO16SF070	130.42							
19Nord-117	150.75							
19Nord-122	112.50							
19Nord-123	159.33							
19Nord-124	140.67							
19Nord-127	127.50							
MT1855	110.00							
MTS18116	110.17							
MTS18149	114.92							
LCH18-1022	134.42							
LCH17-4889	129.42							
LCH17-3205	139.58							
LCH17-5725	141.00							
LCH17-3193	145.83							
SD15004-2	146.08							
SD15007-11	136.33							
SD15007-5	133.83							
SD15035-2	143.08							
SD16008-7	136.17							
SD17B032-1	163.17							
SD17B078-1	149.92							
SD17B210-2	143.17							
SD17B371-3	159.67							

	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)
SD18B025-8	160.00							
MT1872	105.42							

NR-Data not ready

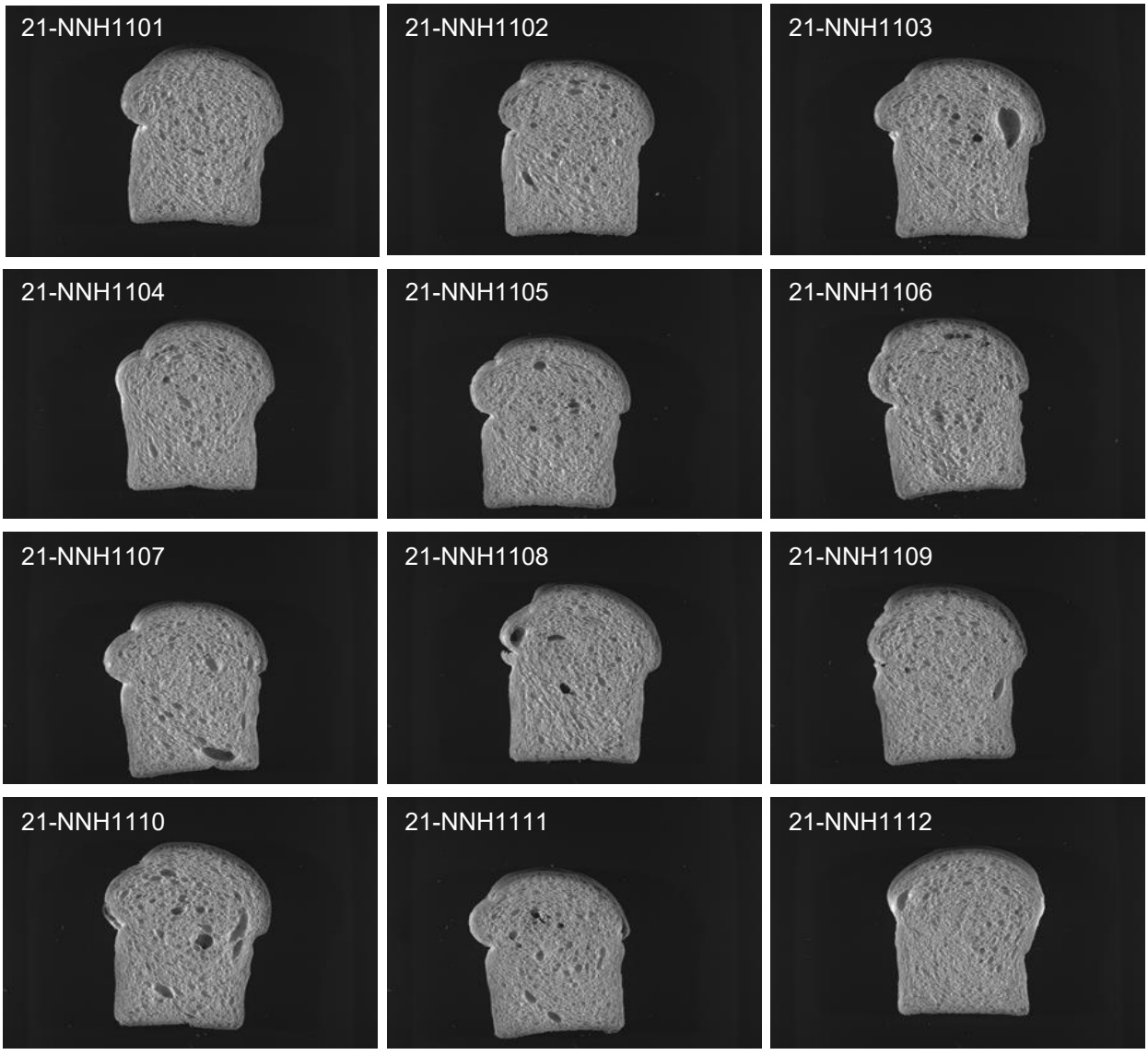
2021 NRPN Intraregional Production Zone

Northern High Plains

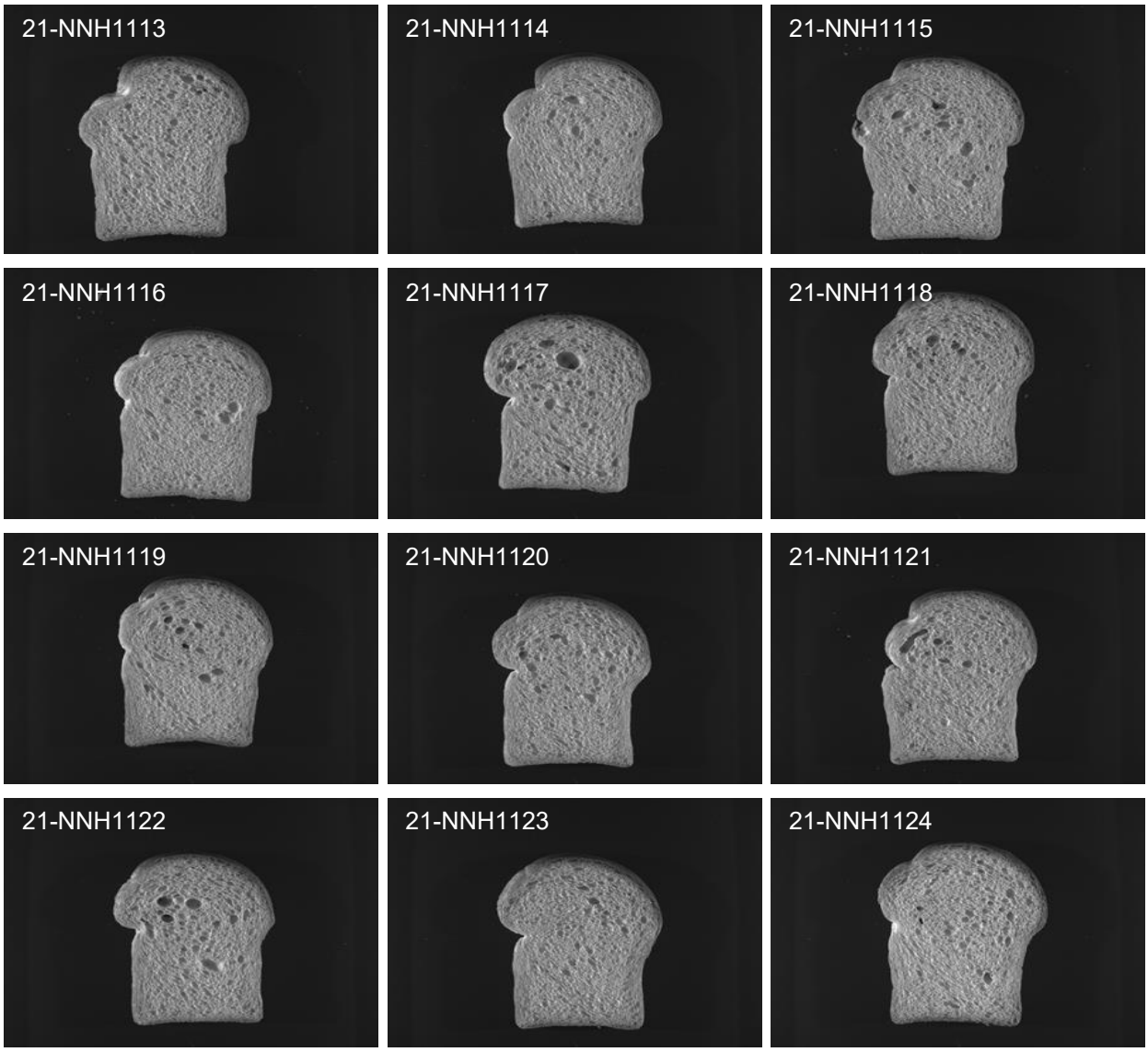
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
Kharkof	12.7	64.6	4.50	4.50	174.2	7.8	3.0	920	6.2	64
Overland	12.1	63.9	3.00	3.00	173.1	7.4	3.0	875	5.9	63
Wesley	13.4	67.1	7.50	7.50	176.9	7.5	3.5	920	6.1	60
Jagalene	12.0	65.1	5.25	5.24	174.0	7.2	3.5	895	5.9	66
Jerry	12.3	64.9	5.00	5.00	175.3	7.3	3.0	875	5.8	62
NHH17612	12.9	66.9	6.00	6.00	176.3	7.5	3.0	910	6.0	61
NE17441	11.7	64.8	6.00	5.75	173.9	6.8	3.5	890	5.8	68
NE17443	13.1	66.0	4.00	4.00	176.4	7.4	3.5	920	6.1	61
NE17544	12.7	65.0	4.00	4.00	174.6	7.5	3.0	885	5.9	61
PSB13NEDH-14-83	11.5	63.1	5.50	5.17	173.3	7.3	3.5	920	6.2	73
NE18573	11.5	62.9	6.13	5.74	172.4	7.3	3.0	850	5.7	65
NE16468	11.9	64.3	8.00	7.87	173.4	7.3	3.5	875	5.8	65
NW17620	13.1	66.4	3.88	3.88	174.5	7.6	3.0	990	6.7	68
NE17662	11.8	64.3	5.50	5.34	174.0	7.5	4.0	890	5.9	67
20CP010051	11.8	65.0	8.50	8.26	174.2	7.5	4.0	975	6.4	77
20CP010053	11.3	63.6	4.75	4.33	173.5	7.3	3.5	865	5.7	68
20CP010052	11.2	62.4	4.00	3.61	172.1	7.4	2.0	885	5.9	71
20CP010056	13.2	65.6	3.63	3.63	175.5	7.3	3.0	950	6.3	64
20CP010066	11.1	62.4	5.38	4.77	172.3	7.3	3.5	850	5.7	68
CO16SF027	11.9	63.4	3.50	3.46	173.4	7.3	2.5	895	5.9	67
CO16SF032	11.5	61.4	3.38	3.16	171.4	7.1	3.0	875	5.8	68
CO16SF067	12.1	64.0	4.25	4.25	174.0	7.3	2.0	895	6.0	66
CO16SF070	11.7	63.9	4.75	4.57	174.2	7.3	4.0	905	6.1	70
19Nord-117	12.5	65.4	5.00	5.00	174.9	7.5	4.0	965	6.6	70
19Nord-122	12.3	64.5	3.75	3.75	174.3	7.2	3.5	905	6.1	65
19Nord-123	13.0	66.4	3.25	3.25	176.0	7.5	3.5	910	6.0	61
19Nord-124	11.7	63.6	4.00	3.87	173.9	7.6	4.0	900	6.0	69
19Nord-127	11.6	59.4	3.13	2.99	169.7	7.1	2.0	805	5.5	58
MT1855	12.6	64.9	4.00	4.00	175.2	7.5	3.0	875	5.8	60
MTS18116	11.8	64.4	9.25	9.02	173.7	7.6	4.5	965	6.4	76
MTS18149	11.7	63.7	6.13	5.89	173.6	7.3	4.0	900	6.0	69
LCH18-1022	12.1	65.2	6.75	6.75	174.7	7.1	4.0	905	6.0	66
LCH17-4889	11.7	63.6	4.25	4.12	173.3	6.9	3.0	885	5.8	67
LCH17-3205	12.4	61.4	2.00	2.00	170.9	7.3	1.5	815	5.5	55
LCH17-5725	12.0	60.6	3.63	3.63	170.0	7.3	2.0	840	5.7	60
LCH17-3193	11.6	64.4	3.00	2.85	173.7	7.3	2.5	815	5.4	60
SD15004-2	12.7	66.8	7.00	7.00	175.7	7.3	3.5	965	6.3	68
SD15007-11	11.7	65.4	8.50	8.22	173.8	7.3	3.5	870	5.8	65
SD15007-5	11.5	65.0	8.25	7.71	173.6	7.1	3.5	855	5.7	65
SD15035-2	12.3	64.3	5.25	5.25	174.0	7.5	4.0	940	6.2	69
SD16008-7	13.6	65.5	3.00	3.00	175.3	7.9	2.5	950	6.3	61
SD17B032-1	12.3	65.4	4.00	4.00	175.1	7.3	4.0	880	5.8	63
SD17B078-1	13.4	62.5	2.63	2.63	172.0	7.7	2.5	885	6.0	57

	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/%)
SD17B210-2	12.3	60.5	3.13	3.13	170.0	7.3	2.0	895	6.1	64
SD17B371-3	12.5	66.8	6.00	6.00	176.0	7.3	4.5	910	6.1	64
SD18B025-8	12.9	67.6	6.00	6.00	176.6	7.6	3.0	1000	6.6	71
MT1872	12.2	65.6	10.00	10.00	174.4	7.4	4.0	1020	6.7	78

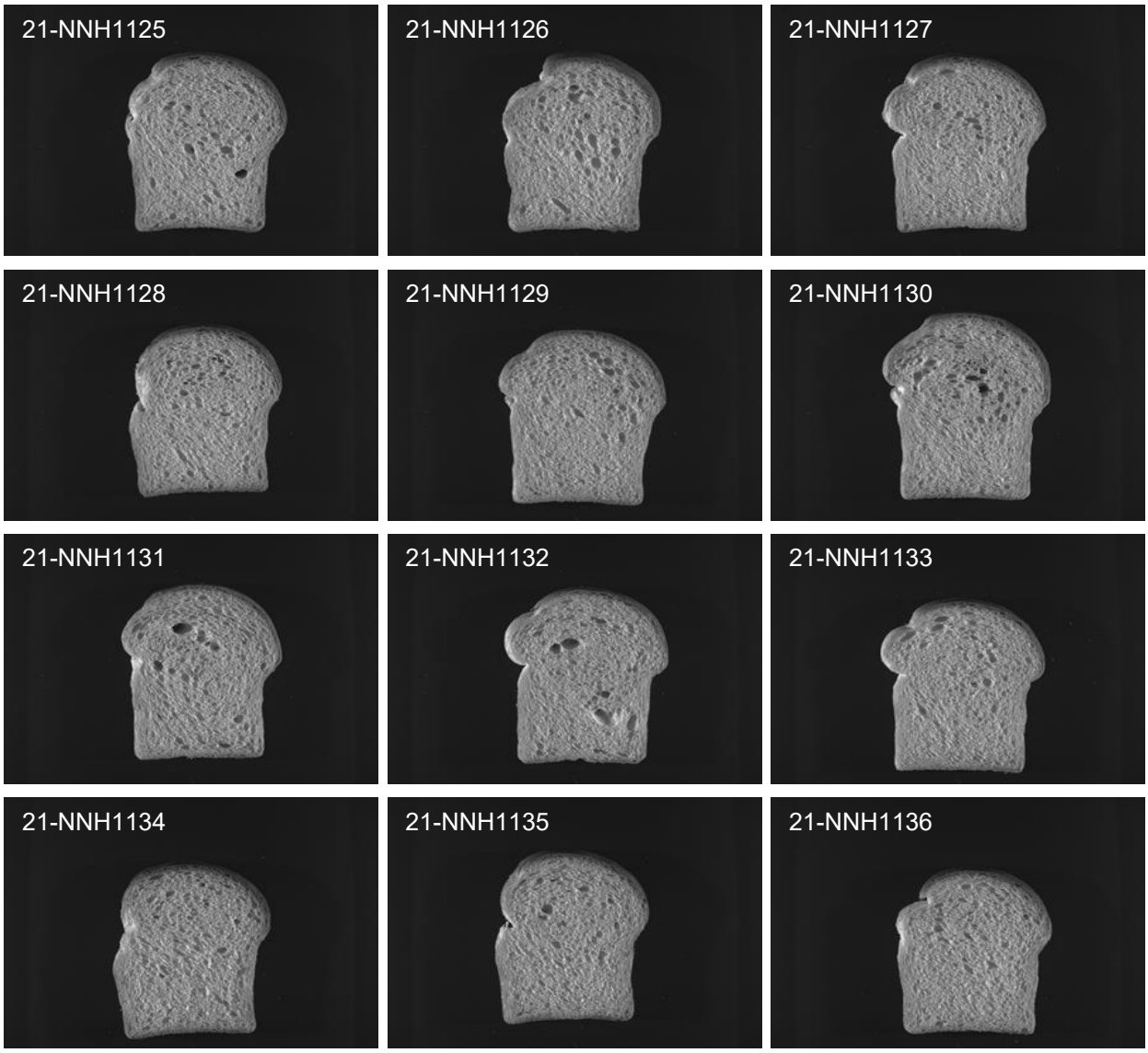
2021 NRPN Intraregional Production Zone
Northern High Plains



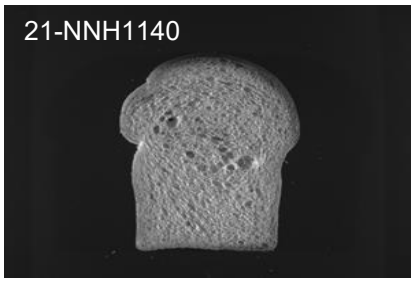
2021 NRPN Intraregional Production Zone
Northern High Plains

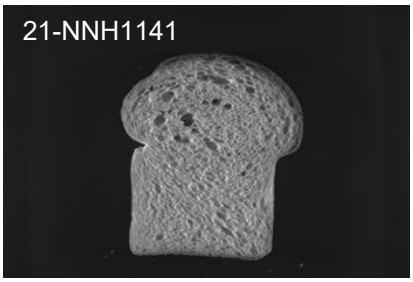


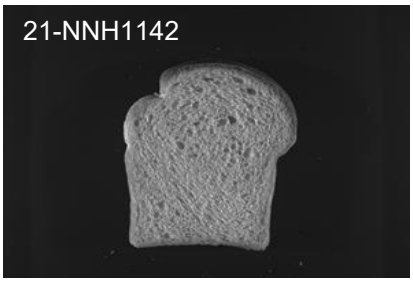
2021 NRPN Intraregional Production Zone
Northern High Plains

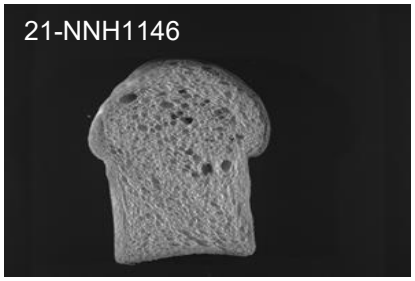


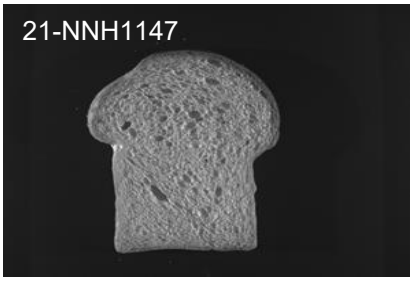
2021 NRPN Intraregional Production Zone
Northern High Plains











2021 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	57.7	13.2	0.6	27.7	10.4	2.41	0.32	38	19	MIXED	42-27-19-12-03
Overland	54.0	13.2	0.7	27.3	10.1	2.48	0.38	58	18	HARD	06-23-29-42-01
Wesley	55.1	12.9	0.5	27.9	10.8	2.49	0.39	56	19	MIXED	11-17-30-42-03
Jagalene	57.9	13.2	0.4	29.9	11.7	2.57	0.38	62	20	HARD	07-16-22-55-01
Jerry	56.7	12.9	0.5	28.7	11.5	2.46	0.39	65	19	HARD	05-12-21-62-01
NHH17612	57.1	12.8	0.5	24.8	9.9	2.37	0.35	59	18	HARD	08-14-30-48-01
NE17441	55.2	13.5	0.5	28.1	9.7	2.54	0.38	53	18	MIXED	15-24-27-34-03
NE17443	56.3	13.9	0.7	28.0	11.2	2.47	0.39	62	19	HARD	06-14-27-53-01
NE17544	57.4	13.9	0.6	28.4	12.0	2.48	0.37	55	18	MIXED	11-21-28-40-03
PSB13NEDH-14-83	56.1	13.0	0.6	28.5	11.1	2.47	0.41	44	17	MIXED	26-35-22-17-03
NE18573	57.7	12.9	0.7	29.2	10.9	2.49	0.38	58	19	HARD	09-20-27-44-01
NE16468	54.7	12.6	0.5	25.6	11.0	2.31	0.40	41	21	MIXED	34-25-21-20-03
NW17620	59.8	12.5	0.7	28.2	11.2	2.51	0.37	78	20	HARD	02-04-12-82-01
NE17662	56.7	12.3	0.6	26.1	11.9	2.26	0.38	53	19	MIXED	14-26-24-36-03
20CP010051	55.0	12.6	0.6	25.9	10.4	2.39	0.41	62	20	HARD	06-18-23-53-01
20CP010053	57.4	12.8	0.4	26.5	10.7	2.39	0.38	64	20	HARD	06-15-22-57-01
20CP010052	57.1	12.9	0.5	30.6	11.7	2.49	0.41	62	18	HARD	05-15-27-53-01
20CP010056	57.9	13.2	0.5	28.2	10.5	2.41	0.40	61	19	HARD	07-17-24-52-01
20CP010066	57.3	13.9	0.4	27.3	10.5	2.40	0.37	70	20	HARD	02-09-18-71-01
CO16SF027	57.3	13.1	0.6	27.7	10.8	2.45	0.39	56	20	HARD	09-24-28-39-01
CO16SF032	57.3	13.2	0.7	28.6	12.1	2.46	0.39	60	20	HARD	09-15-28-48-01
CO16SF067	57.8	13.4	0.5	28.2	11.3	2.43	0.38	68	18	HARD	02-09-20-69-01
CO16SF070	56.1	13.5	0.7	27.0	11.9	2.43	0.40	52	20	MIXED	18-24-27-31-03
19Nord-117	54.1	13.6	0.5	26.5	10.9	2.31	0.37	54	19	MIXED	12-22-29-37-03
19Nord-122	57.2	12.9	0.5	29.4	11.7	2.52	0.36	56	18	HARD	10-21-26-43-01
19Nord-123	56.5	13.6	0.5	27.2	10.7	2.47	0.33	70	18	HARD	03-07-17-73-01
19Nord-124	55.6	13.5	0.4	26.5	9.7	2.47	0.39	54	18	MIXED	14-20-28-38-03
19Nord-127	55.3	12.5	0.7	28.8	10.7	2.47	0.36	56	20	MIXED	13-21-26-40-03
MT1855	56.9	12.4	0.7	25.3	10.0	2.41	0.34	74	19	HARD	02-08-11-79-01
MTS18116	57.4	12.2	0.5	25.6	11.3	2.37	0.34	66	20	HARD	05-11-24-60-01
MTS18149	56.7	12.5	0.6	29.0	10.2	2.55	0.39	61	19	HARD	04-18-28-50-01
LCH18-1022	56.5	12.4	0.7	27.6	11.0	2.45	0.38	51	19	MIXED	16-24-28-32-03
LCH17-4889	56.1	13.0	0.4	25.9	9.7	2.38	0.35	60	20	HARD	10-12-29-49-01
LCH17-3205	55.1	13.3	0.4	24.4	9.6	2.35	0.37	71	19	HARD	03-07-15-75-01
LCH17-5725	56.7	13.4	0.6	24.8	9.9	2.36	0.35	64	17	HARD	04-11-23-62-01
LCH17-3193	54.9	13.2	0.6	28.7	11.2	2.43	0.40	59	18	HARD	07-15-27-51-01
SD15004-2	56.1	13.2	0.5	31.2	11.8	2.58	0.42	57	18	HARD	08-17-32-43-01
SD15007-11	57.1	13.1	0.5	27.4	10.8	2.41	0.35	57	17	HARD	08-20-28-44-01
SD15007-5	57.1	13.5	0.6	30.7	12.7	2.48	0.35	54	19	MIXED	14-21-24-41-03
SD15035-2	57.5	13.4	0.5	30.4	11.9	2.47	0.42	53	20	MIXED	15-26-27-32-03
SD16008-7	56.3	13.6	0.7	29.6	12.0	2.55	0.39	57	18	HARD	10-16-28-46-01
SD17B032-1	56.5	13.2	0.6	27.5	11.3	2.36	0.37	58	18	HARD	08-18-29-45-01
SD17B078-1	57.2	13.4	0.7	27.9	10.0	2.51	0.34	58	18	HARD	09-19-25-47-01
SD17B210-2	55.2	12.9	0.6	29.7	11.0	2.51	0.36	49	19	MIXED	23-25-26-26-03

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
SD17B371-3	55.8	12.7	0.6	27.6	10.0	2.42	0.32	68	18	HARD	03-10-19-68-01
SD18B025-8	57.0	12.3	0.7	28.2	10.3	2.51	0.33	65	18	HARD	03-12-25-60-01
MT1872	56.7	12.8	0.4	27.8	12.1	2.37	0.38	65	18	HARD	04-14-21-61-01

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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	12.8	60.9	0.43	12.0	0.121	79.60	-1.90	24.33	-8.42	1.21	1.95
Overland	11.4	64.5	0.46	10.6	0.177	79.35	-1.55	23.63	-9.29	1.30	2.04
Wesley	11.7	65.9	0.43	10.8	0.158	80.25	-1.66	22.99	-8.09	1.32	2.52
Jagalene	11.8	64.5	0.51	10.9	0.177	79.58	-1.64	24.27	-7.99	1.34	2.67
Jerry	11.6	64.8	0.43	11.0	0.164	79.84	-1.75	24.62	-7.73	1.26	2.57
NHH17612	12.0	65.0	0.43	11.3	0.175	79.22	-1.68	24.77	-8.35	1.36	2.77
NE17441	9.8	64.6	0.40	9.3	0.184	81.39	-2.04	23.80	-7.99	1.22	3.67
NE17443	11.5	64.6	0.45	10.7	0.179	79.90	-1.52	22.98	-8.33	1.45	3.15
NE17544	10.7	63.4	0.41	10.1	0.163	80.13	-1.50	23.38	-7.71	1.20	3.70
PSB13NEDH-14-83	10.2	63.6	0.43	9.3	0.165	81.38	-1.89	22.47	-8.22	0.89	5.36
NE18573	11.0	63.2	0.45	10.2	0.200	80.49	-2.02	24.97	-8.51	1.29	3.26
NE16468	12.4	62.5	0.40	11.7	0.150	79.86	-1.38	23.22	-10.72	1.30	4.26
NW17620	11.9	61.5	0.53	11.0	0.181	79.52	-1.79	24.89	-9.32	1.62	2.48
NE17662	10.9	65.7	0.49	10.0	0.152	79.82	-1.53	23.51	-8.77	1.34	2.64
20CP010051	10.8	64.1	0.48	10.2	0.128	80.89	-1.67	22.39	-9.94	1.05	5.89
20CP010053	10.5	65.6	0.46	10.1	0.161	79.76	-1.60	22.76	-9.86	1.34	3.77
20CP010052	11.2	64.0	0.44	9.8	0.176	78.54	-1.93	25.77	-9.10	1.80	1.96
20CP010056	10.8	65.7	0.45	10.7	0.221	78.12	-1.91	25.77	-10.42	2.10	1.63
20CP010066	10.8	66.8	0.46	10.0	0.119	78.96	-1.77	24.50	-8.09	1.50	2.19
CO16SF027	11.1	65.4	0.41	10.4	0.131	79.59	-2.20	25.28	-8.41	2.26	1.88
CO16SF032	11.5	65.3	0.44	10.7	0.115	78.58	-2.03	25.81	-8.05	1.52	1.37
CO16SF067	12.3	62.6	0.49	11.4	0.198	77.66	-1.29	24.20	-10.16	1.63	1.97
CO16SF070	11.2	65.5	0.41	10.3	0.151	79.25	-1.69	23.73	-8.35	1.42	1.88
19Nord-117	12.4	63.3	0.47	11.7	0.164	78.62	-1.34	24.58	-8.97	1.59	2.62
19Nord-122	12.3	62.2	0.43	11.6	0.108	77.91	-0.94	22.15	-7.63	1.33	1.33
19Nord-123	12.4	64.0	0.44	11.7	0.118	77.82	-1.46	25.28	-7.46	1.52	1.84
19Nord-124	12.5	66.1	0.41	11.2	0.094	79.42	-1.89	26.90	-6.49	1.12	3.58
19Nord-127	11.1	65.9	0.50	9.9	0.130	79.36	-1.95	26.63	-5.85	1.10	3.46
MT1855	12.0	63.6	0.50	10.7	0.158	78.28	-1.52	27.22	-8.69	1.35	2.13
MTS18116	11.7	66.8	0.49	10.9	0.145	79.63	-1.53	24.20	-8.96	1.18	2.96
MTS18149	11.5	65.5	0.48	10.4	0.135	80.12	-1.68	25.01	-10.09	1.37	4.06
LCH18-1022	10.6	66.8	0.44	9.7	0.166	80.35	-1.91	24.35	-8.28	1.17	2.60
LCH17-4889	10.8	65.3	0.48	10.5	0.166	79.76	-1.85	24.69	-8.69	1.42	2.02
LCH17-3205	11.6	62.8	0.53	10.6	0.127	78.50	-2.09	28.42	-7.99	1.39	1.56
LCH17-5725	11.2	66.0	0.47	10.5	0.147	78.90	-1.63	27.18	-7.83	1.09	2.20
LCH17-3193	11.2	65.6	0.47	9.9	0.127	79.33	-1.76	24.31	-10.28	1.71	2.52
SD15004-2	11.5	65.2	0.44	10.8	0.165	79.90	-1.72	25.55	-8.88	1.27	3.33
SD15007-11	11.3	64.8	0.44	10.8	0.126	80.92	-1.43	21.24	-9.85	1.08	5.09
SD15007-5	11.3	64.7	0.45	10.6	0.132	80.46	-1.53	22.28	-9.43	1.28	4.66
SD15035-2	11.5	66.0	0.48	10.6	0.175	78.97	-1.35	23.31	-8.04	1.30	2.10
SD16008-7	11.8	63.9	0.48	11.0	0.165	78.77	-1.67	24.56	-9.05	1.44	3.01
SD17B032-1	11.9	65.6	0.46	11.1	0.172	78.80	-1.28	23.59	-8.81	1.21	1.97

	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	(%)	(%)	(%)	(%)							
SD17B078-1	12.5	64.2	0.45	10.7	0.156	79.50	-1.40	23.00	-9.70	1.47	3.40
SD17B210-2	10.8	62.4	0.46	10.4	0.212	79.55	-1.79	24.90	-9.30	1.48	2.27
SD17B371-3	12.2	62.6	0.49	11.5	0.119	79.81	-1.81	26.20	-9.10	1.30	3.64
SD18B025-8	11.6	62.6	0.48	11.1	0.170	79.36	-1.20	22.57	-10.01	1.14	3.23
MT1872	11.6	67.0	0.46	11.0	0.119	79.19	-1.76	26.92	-8.72	1.23	2.39

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		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	12.0	63.4	4.75	4.74	4
Overland	10.6	61.6	4.25	3.54	4
Wesley	10.8	61.4	6.00	5.14	5
Jagalene	10.9	63.1	7.25	6.33	6
Jerry	11.0	61.7	5.00	4.38	5
NHH17612	11.3	62.8	6.63	6.07	6
NE17441	9.3	59.0	7.50	5.10	2
NE17443	10.7	61.2	5.38	4.53	4
NE17544	10.1	60.2	5.25	4.02	3
PSB13NEDH-14-83	9.3	58.9	9.50	6.40	3
NE18573	10.2	61.0	6.88	5.43	4
NE16468	11.7	63.9	8.75	8.39	6
NW17620	11.0	63.8	5.63	4.97	5
NE17662	10.0	61.1	5.63	4.29	5
20CP010051	10.2	62.0	0.13	7.99	6
20CP010053	10.1	60.7	5.00	3.84	5
20CP010052	9.8	59.2	5.13	3.76	3
20CP010056	10.7	60.7	4.63	3.89	2
20CP010066	10.0	60.1	6.38	4.87	5
CO16SF027	10.4	60.3	3.75	3.05	3
CO16SF032	10.7	60.8	4.50	3.80	3
CO16SF067	11.4	62.9	4.63	4.28	4
CO16SF070	10.3	60.1	6.00	4.74	4
19Nord-117	11.7	63.9	6.25	6.03	5
19Nord-122	11.6	63.2	4.13	3.92	3
19Nord-123	11.7	63.9	4.00	3.87	4
19Nord-124	11.2	62.5	4.75	4.27	4
19Nord-127	9.9	57.4	4.38	3.27	2
MT1855	10.7	61.7	4.13	3.48	4
MTS18116	10.9	62.1	8.25	7.14	6
MTS18149	10.4	61.3	4.50	3.63	3
LCH18-1022	9.7	60.0	7.88	5.68	3
LCH17-4889	10.5	60.4	5.63	4.62	4
LCH17-3205	10.6	58.6	2.25	1.88	2
LCH17-5725	10.5	58.4	3.88	3.19	3
LCH17-3193	9.9	60.4	4.25	3.17	3
SD15004-2	10.8	62.8	9.50	8.10	6
SD15007-11	10.8	62.9	0.88	9.29	6
SD15007-5	10.6	62.6	2.13	0.14	6
SD15035-2	10.6	61.1	6.25	5.19	4
SD16008-7	11.0	61.3	4.88	4.29	4

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
SD17B032-1	11.1	63.9	6.00	5.32	5
SD17B078-1	10.7	58.2	3.25	2.74	2
SD17B210-2	10.4	57.2	5.00	4.03	2
SD17B371-3	11.5	64.0	6.88	6.43	6
SD18B025-8	11.1	62.4	6.88	6.10	5
MT1872	11.0	62.8	6.50	5.71	6

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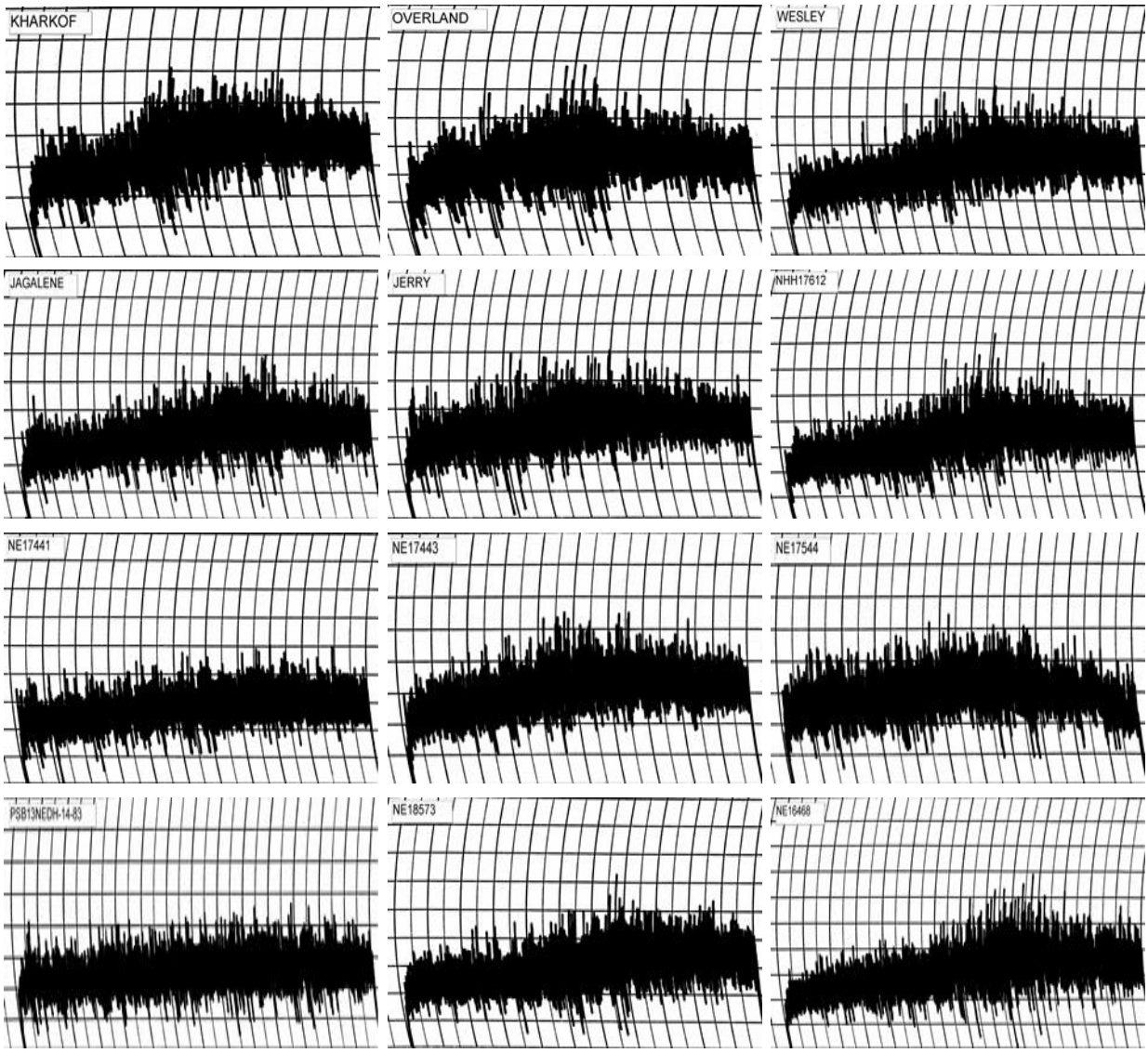
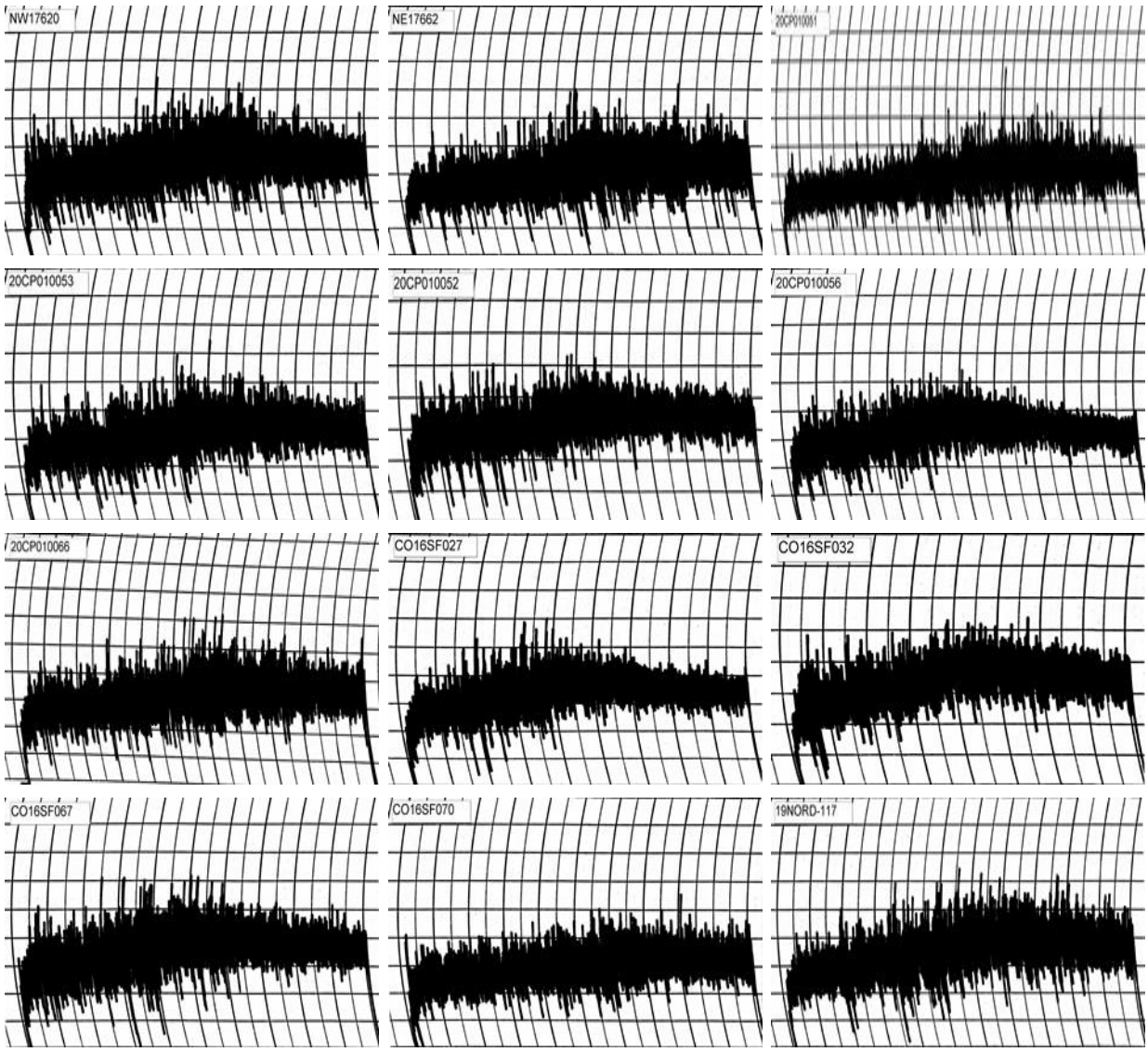
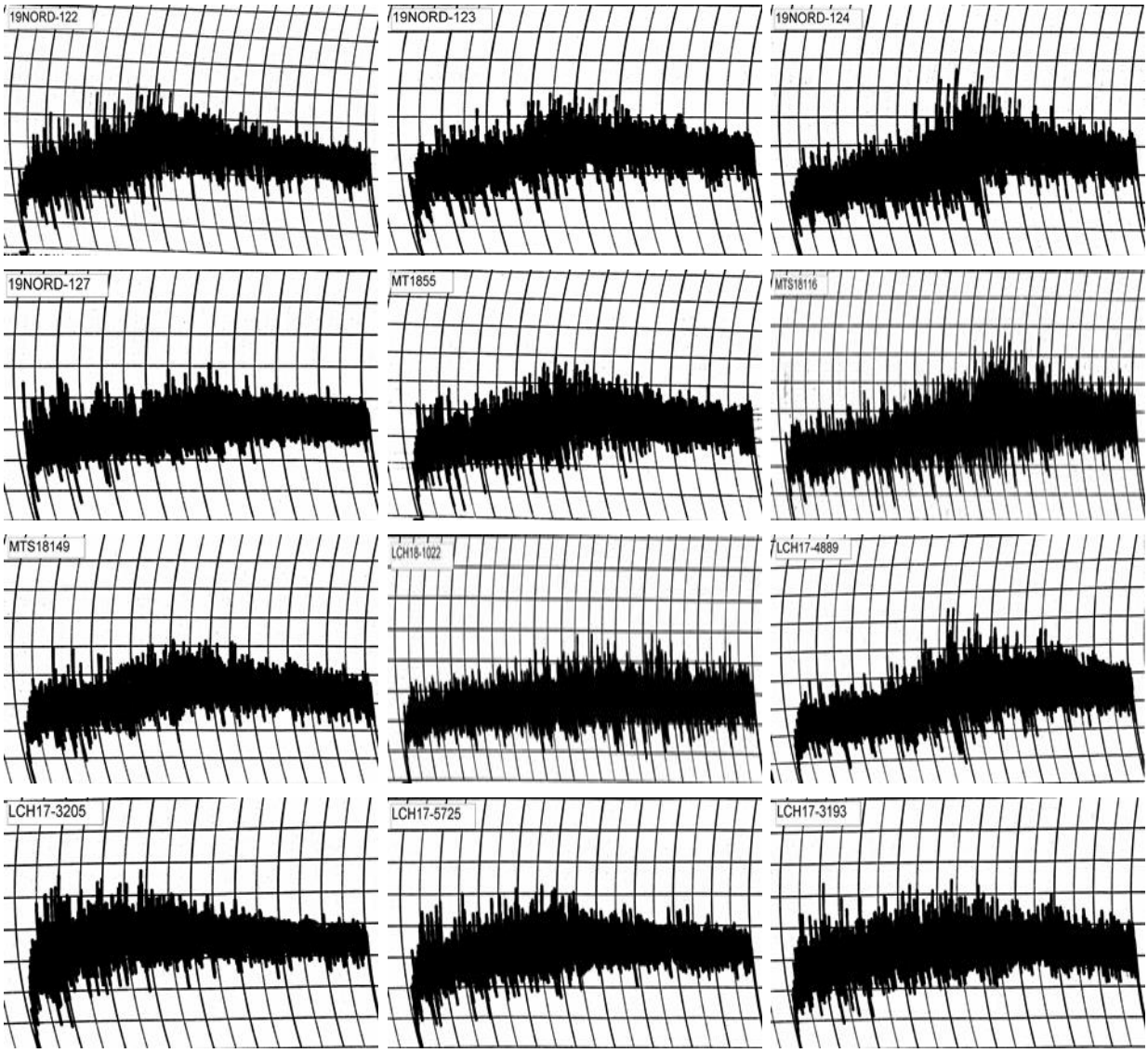


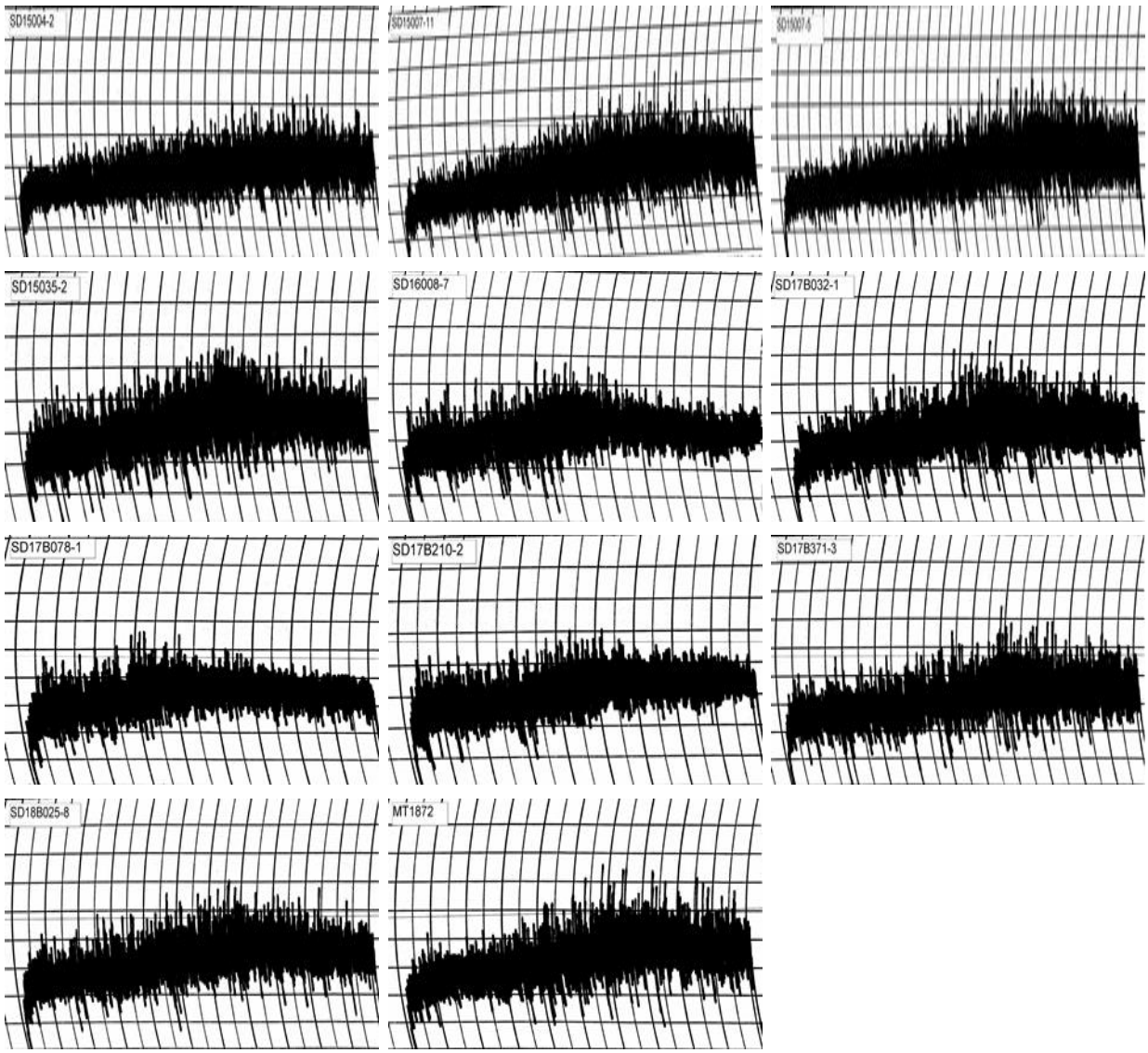
2021 NRPN Intraregional Production Zone
Northern Plains



2021 NRPN Intraregional Production Zone
Northern Plains



2021 NRPN Intraregional Production Zone
Northern 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	160.58							
Overland	133.25							
Wesley	129.33							
Jagalene	135.83							
Jerry	132.67							
NHH17612	122.33							
NE17441	132.58							
NE17443	132.92							
NE17544	166.50							
PSB13NEDH-14-	103.75							
NE18573	121.25							
NE16468	127.42							
NW17620	141.17							
NE17662	86.92							
20CP010051	117.50							
20CP010053	126.42							
20CP010052	90.75							
20CP010056	125.08							
20CP010066	125.50							
CO16SF027	131.58							
CO16SF032	126.50							
CO16SF067	132.25							
CO16SF070	97.33							
19Nord-117	158.33							
19Nord-122	157.75							
19Nord-123	151.50							
19Nord-124	112.00							
19Nord-127	135.83							
MT1855	99.17							
MTS18116	123.92							
MTS18149	108.67							
LCH18-1022	135.08							
LCH17-4889	112.33							
LCH17-3205	150.00							
LCH17-5725	141.33							
LCH17-3193	138.42							
SD15004-2	137.42							
SD15007-11	123.25							
SD15007-5	142.42							
SD15035-2	141.67							
SD16008-7	149.25							
SD17B032-1	162.50							
SD17B078-1	145.58							
SD17B210-2	153.67							
SD17B371-3	158.92							

	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)
SD18B025-8	126.83							
MT1872	108.25							

NR-Data not ready

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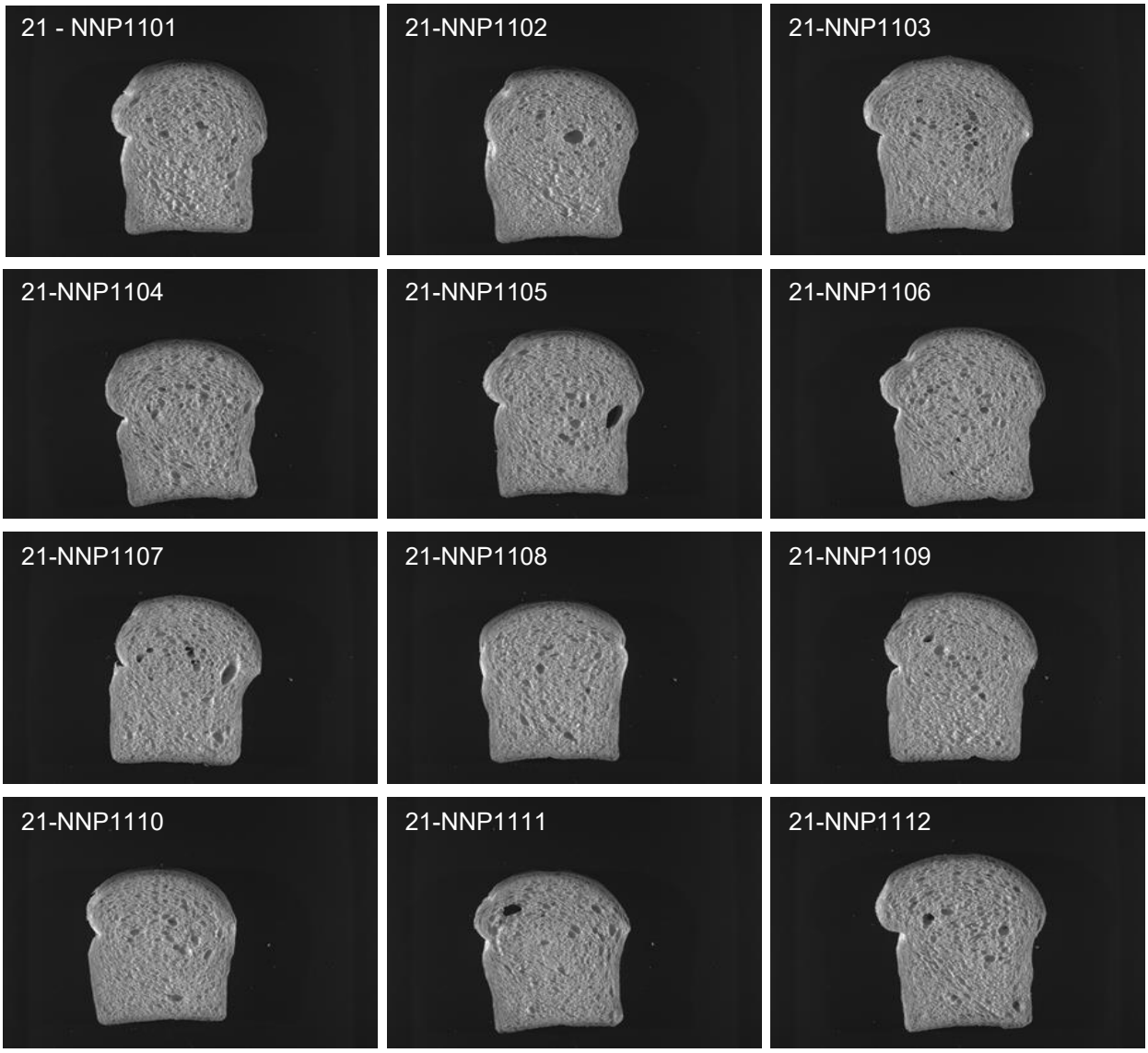
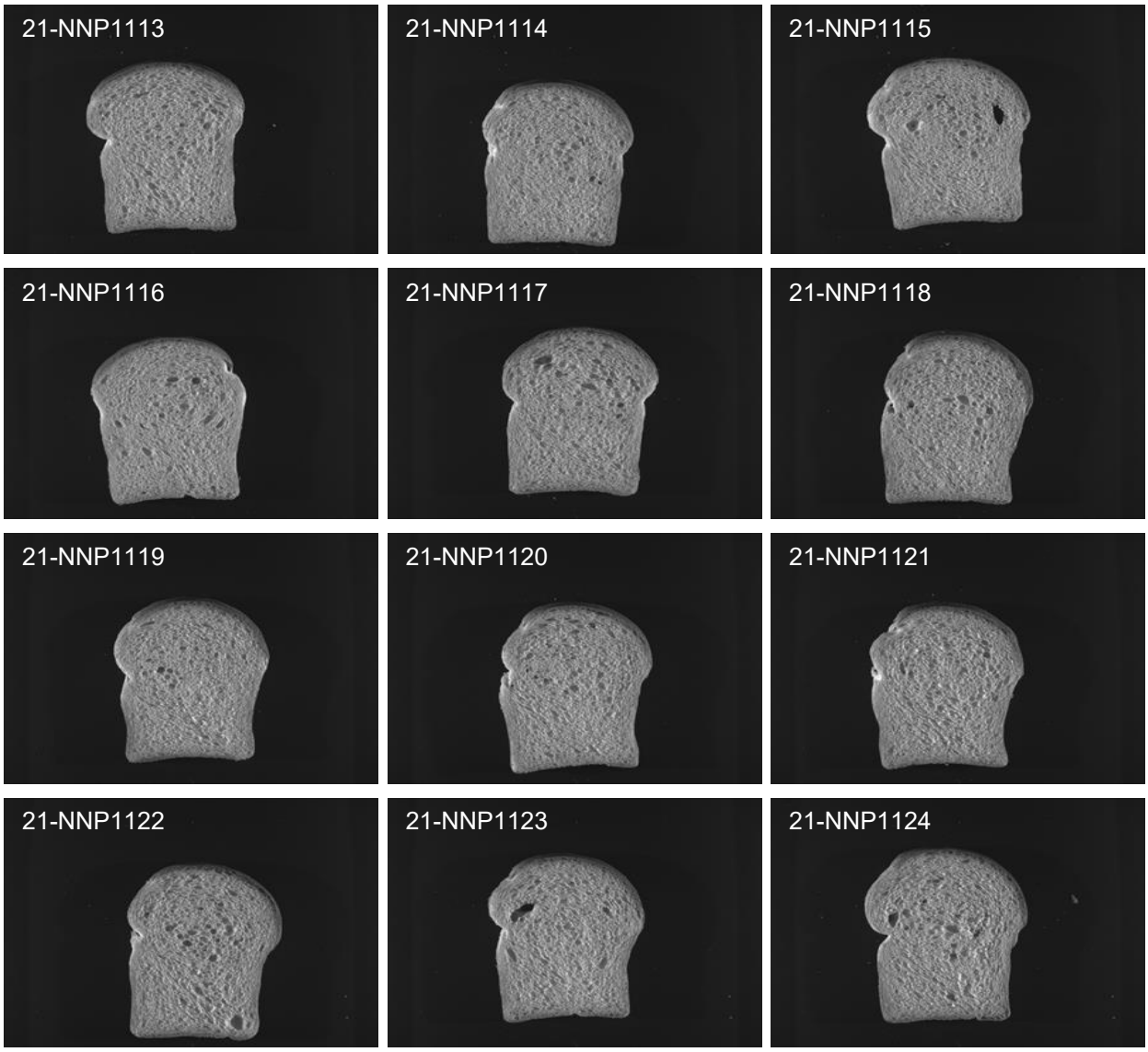
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
Kharkof	12.0	63.7	6.00	5.99	172.2	7.5	3.5	845	5.7	61
Overland	10.6	61.9	5.25	4.37	171.1	7.1	3.5	815	5.5	67
Wesley	10.8	61.2	7.50	6.43	170.0	7.0	3.5	850	5.8	70
Jagalene	10.9	62.9	8.38	7.31	171.6	6.8	2.5	815	5.5	64
Jerry	11.0	61.7	6.50	5.70	170.7	6.9	3.0	840	5.7	67
NHH17612	11.3	63.1	9.00	8.23	171.5	6.9	3.5	890	6.0	71
NE17441	9.3	59.2	7.50	5.10	168.1	6.6	2.5	765	5.2	71
NE17443	10.7	61.3	6.25	5.27	170.1	6.7	1.5	775	5.3	61
NE17544	10.1	60.1	6.50	4.98	168.8	6.9	3.0	795	5.4	69
PSB13NEDH-14-83	9.3	59.1	10.00	6.74	166.3	6.6	2.5	715	4.9	64
NE18573	10.2	61.1	9.00	7.10	169.4	6.6	2.5	765	5.2	63
NE16468	11.7	63.6	10.00	9.59	171.8	7.1	3.5	905	6.1	70
NW17620	11.0	63.7	7.00	6.19	172.4	7.0	3.0	875	5.9	71
NE17662	10.0	60.7	8.00	6.10	169.6	6.9	3.5	800	5.4	70
20CP010051	10.2	61.9	11.00	8.68	169.8	6.8	4.0	840	5.7	73
20CP010053	10.1	60.9	6.50	4.99	169.5	6.8	3.0	780	5.2	67
20CP010052	9.8	58.8	5.63	4.12	167.0	7.0	2.0	800	5.5	72
20CP010056	10.7	60.8	5.13	4.31	169.8	7.4	2.5	850	5.8	71
20CP010066	10.0	59.8	6.75	5.15	168.2	7.0	2.5	795	5.4	69
CO16SF027	10.4	60.0	3.75	3.05	169.1	6.9	2.5	820	5.5	69
CO16SF032	10.7	60.9	4.25	3.59	170.0	6.9	2.5	820	5.6	67
CO16SF067	11.4	62.8	6.63	6.13	171.9	7.1	3.0	840	5.7	64
CO16SF070	10.3	60.0	6.50	5.14	169.1	6.9	2.5	805	5.5	69
19Nord-117	11.7	63.6	7.50	7.23	173.1	7.1	3.5	905	6.0	69
19Nord-122	11.6	62.8	4.13	3.92	172.2	7.2	3.5	915	6.1	72
19Nord-123	11.7	63.7	4.13	3.99	173.5	7.2	2.5	875	5.9	66
19Nord-124	11.2	62.9	6.25	5.61	172.2	7.2	3.5	840	5.7	66
19Nord-127	9.9	57.8	4.75	3.54	166.6	6.7	2.5	755	5.2	65
MT1855	10.7	61.9	4.38	3.69	171.7	7.0	2.5	810	5.5	66
MTS18116	10.9	61.7	9.00	7.79	169.5	7.0	3.0	860	5.8	71
MTS18149	10.4	61.7	4.63	3.74	170.2	7.0	3.5	815	5.5	69
LCH18-1022	9.7	60.0	7.75	5.58	168.6	6.4	2.5	760	5.1	67
LCH17-4889	10.5	60.8	6.50	5.34	169.5	6.9	3.5	850	5.7	72
LCH17-3205	10.6	58.9	3.00	2.50	168.1	6.8	1.5	765	5.2	60
LCH17-5725	10.5	58.8	4.25	3.50	167.8	6.7	2.5	765	5.3	61
LCH17-3193	9.9	60.6	4.50	3.36	169.7	6.6	2.5	715	4.8	59
SD15004-2	10.8	62.9	9.25	7.88	171.0	6.7	3.0	795	5.3	63
SD15007-11	10.8	62.8	12.75	10.88	170.3	6.7	2.5	760	5.1	59
SD15007-5	10.6	62.8	14.50	12.12	170.2	6.4	2.5	755	5.1	59
SD15035-2	10.6	61.0	6.25	5.19	169.5	6.7	3.5	815	5.5	67
SD16008-7	11.0	60.9	5.00	4.39	170.0	6.9	3.0	825	5.6	65
SD17B032-1	11.1	63.9	6.75	5.99	171.9	6.8	3.0	790	5.3	60
SD17B078-1	10.7	58.8	4.00	3.37	168.6	7.0	3.5	810	5.5	66

	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/%)
SD17B210-2	10.4	56.9	4.75	3.83	166.2	6.7	3.0	825	5.7	70
SD17B371-3	11.5	63.8	9.00	8.42	171.9	7.0	3.5	860	5.8	66
SD18B025-8	11.1	62.7	7.50	6.65	171.9	6.9	4.5	905	6.1	75
MT1872	11.0	62.9	7.50	6.59	171.5	6.9	3.0	920	6.2	77

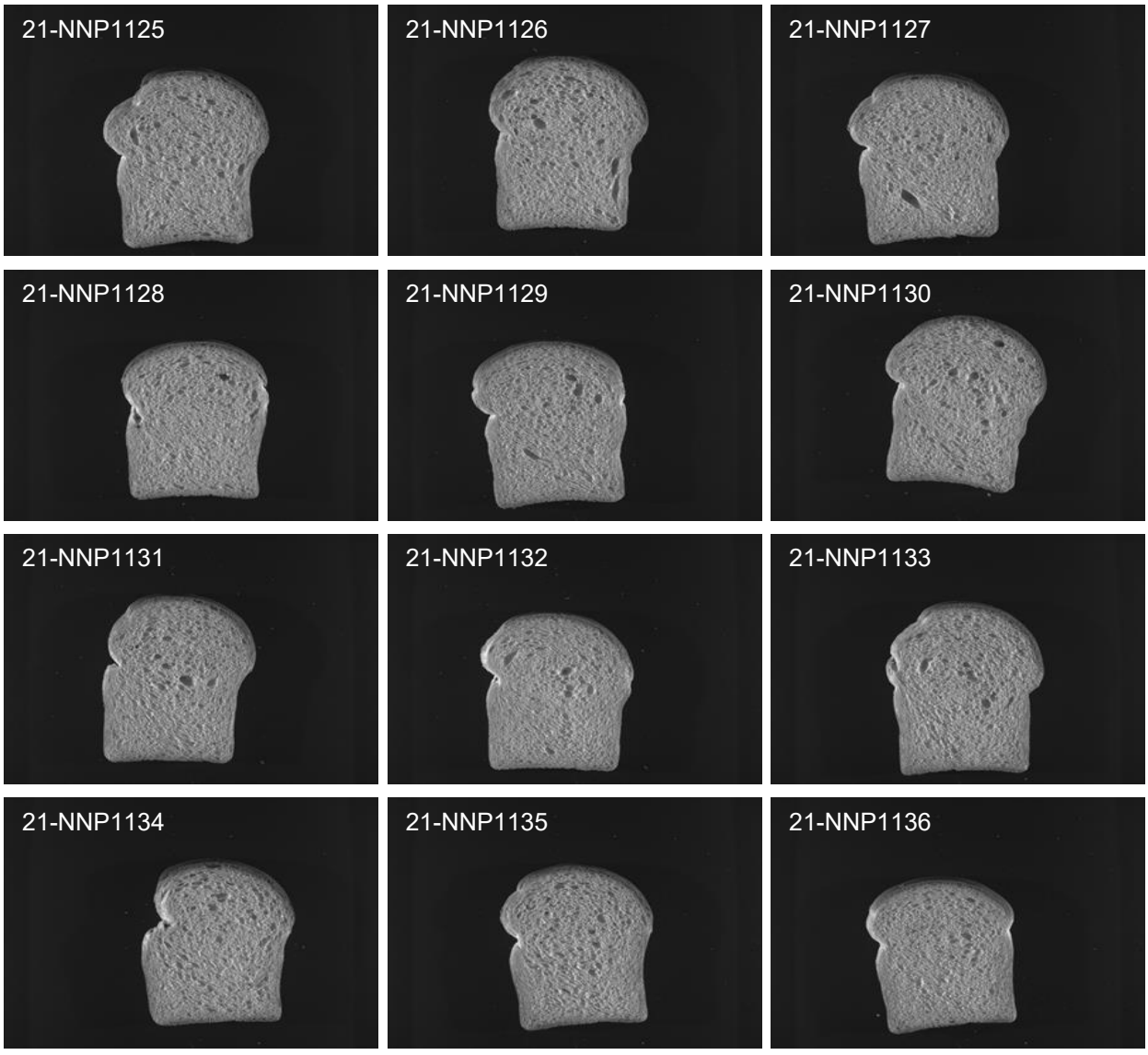
2021 NRPN Intraregional Production Zone
Northern Plains



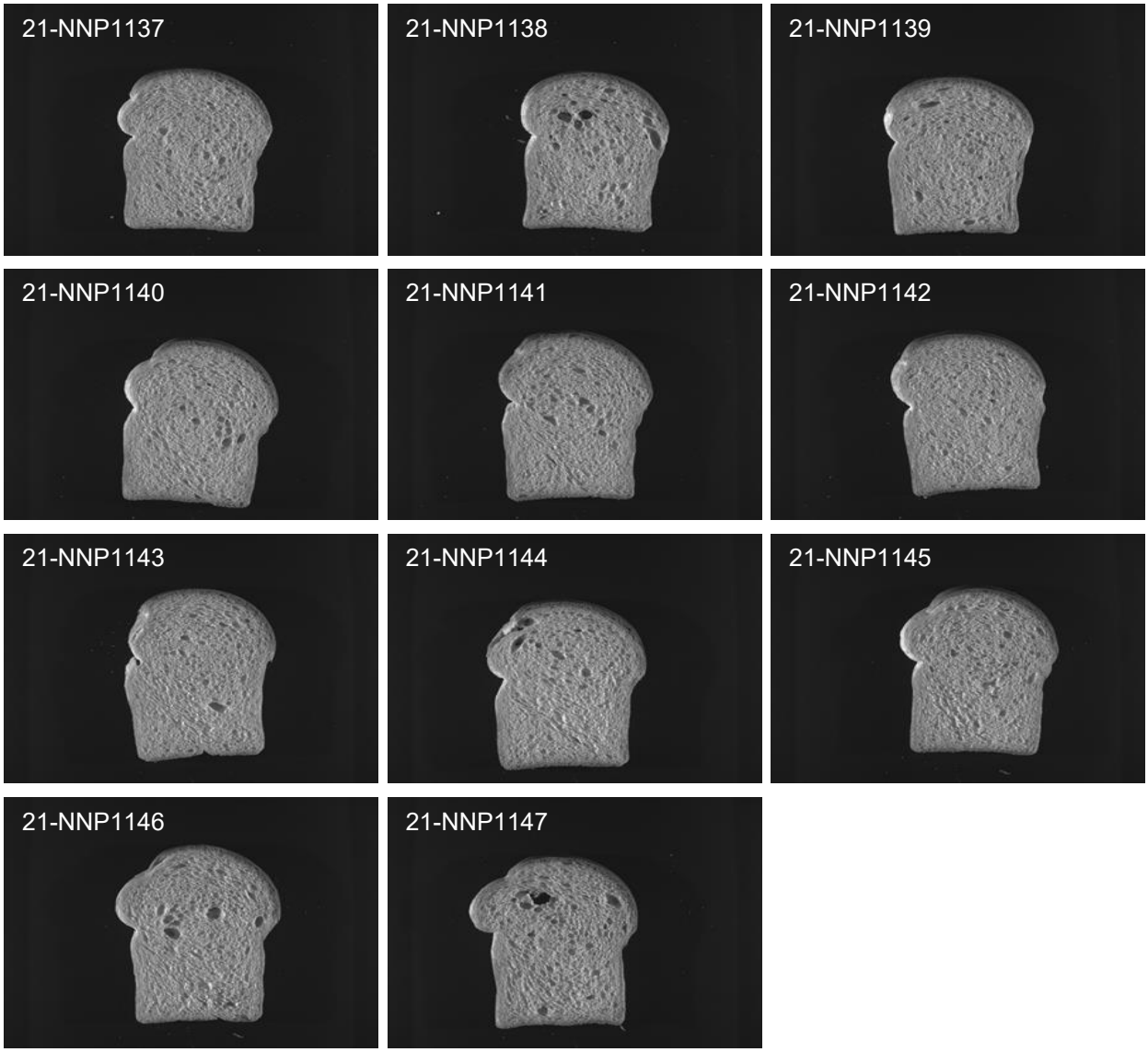
2021 NRPN Intraregional Production Zone
Northern Plains



2021 NRPN Intraregional Production Zone
Northern Plains



2021 NRPN Intraregional Production Zone
Northern Plains



Southern
Regional Performance Nursery

2021 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	TXAMPSY 473-18AZ816	TAM 111*2/CIMMYT E95syn4152-27	TAMU-AMA
6	TX13CSDHTAMTIA23 1-12		TAMU-Hays, CS
7	TX08CSDHHT202-24		TAMU-Hays, CS
8	TX16M9216	X09A440S [=TX07A001482/TAM 401]/Duster	TAMU-CS
9	TX17A001181	X10A569S [=TX07A001279/Pete]/TAM 114	TAMU-AMA
10	TX17A001247	TX10A001016/TAM 114	TAMU-AMA
11	TX17A001295	X10A566S [=Hitch/TX05V7259]/TX09A001186	TAMU-AMA
12	TX17M1572	Armour/OK05526	TAMU-CS
13	TX16M9155	TAM 203/Hitch	TAMU-CS
14	NHH17450	Brawl_CL/NHH09655	UNL
15	NE17433	NI10720W/NW03666	UNL
16	NHH17612	Brawl_CL/NHH09655	UNL
17	NE18455	TX07A001505/NE06430	UNL
18	20CP010069	SY MONUMENT/SY RUGGED	AgriPro
19	20CP010063	SY FLINT/09BC450#128	AgriPro
20	20CP010061	APH09T9506/KS061406-LN-32	AgriPro
21	20CP010072	D03-9048/JACKPOT//Billings	AgriPro
22	KS18H110-3	KS11HW15/TX10A001006	KSU-Hays
23	KS18H111-3	KS11HW15/TX10A001006	KSU-Hays
24	KS18H19-6	BRAWL CL+//KS11HW3-3 CL+/KS12HW4 CL	KSU-Hays
25	KS14HD286	KS10HW78/KanMark	KSU-Hays
26	CO13007-F6R	KS05HW122-5/Byrd	CSU
27	CO16D1487	CO11D346/Antero	CSU
28	CO16SF027	Bearpaw/Antero//Antero	CSU
29	CO16SF032	Bearpaw/Antero//Antero	CSU
30	CO16SF067	Antero/Judee//Antero	CSU
31	CO16D402W	CO07W722-F5/Antero//CO12D950	CSU
32	NF99117	Custer/Coker 9803//Custer/NF4	NRI
33	ON13P016	OK93P656H3299-99/OK03522	NRI
34	BASF 7	NA	BASF
35	BASF 13	NA	BASF
36	OK12716W Composite I	W99-194/OK02518W	OSU
37	OK15MASBx7 ARS 8-20	Gallagher*3/ Snowmass	OSU
38	OK15MASBx7 ARS 8-29	Gallagher*3/ Snowmass	OSU
39	OK15DMASBx7 ARS 6-8	OK10130*3/ Snowmass	OSU
40	OKP17D101A350	HV9W07-1031/OK07214 //OK09429	OSU
41	OK18510	TCI982345/OK05526-Hf//OK10415	OSU

Entry	Selection No.	Pedigree	Source
42	LCH17-3193		LCS
43	LCH17-1390		LCS
44	LCH17-3956		LCS
45	LCH18-9005		LCS
46	DH15HRW-65-142		LCS
47	KS13DH0041-35	KS060634K-8/KS040640K-1	KSU-Manhattan
48	NUSAKA15-3		KSU-Manhattan
49	XD4401		Bayer
50	XD4101		Bayer

List of SRPN Sample ID

Entry	Breeder ID	HWWQL ID			
		North Central Plains	Northern High Plains	South Central Plains	Southern High Plains
1	Kharkof	21-SNC1001	21-SNH1001	21-SSC1001	21-SSH1001
2	Scout66	21-SNC1002	21-SNH1002	21-SSC1002	21-SSH1002
3	TAM-107	21-SNC1003	21-SNH1003	21-SSC1003	21-SSH1003
4	Jagalene	21-SNC1004	21-SNH1004	21-SSC1004	21-SSH1004
5	TXAMPSY 473-18AZ816	21-SNC1005	21-SNH1005	21-SSC1005	21-SSH1005
6	TX13CSDHTAMTIA231-12	21-SNC1006	21-SNH1006	21-SSC1006	21-SSH1006
7	TX08CSDHHT202-24	21-SNC1007	21-SNH1007	21-SSC1007	21-SSH1007
8	TX16M9216	21-SNC1008	21-SNH1008	21-SSC1008	21-SSH1008
9	TX17A001181	21-SNC1009	21-SNH1009	21-SSC1009	21-SSH1009
10	TX17A001247	21-SNC1010	21-SNH1010	21-SSC1010	21-SSH1010
11	TX17A001295	21-SNC1011	21-SNH1011	21-SSC1011	21-SSH1011
12	TX17M1572	21-SNC1012	21-SNH1012	21-SSC1012	21-SSH1012
13	TX16M9155	21-SNC1013	21-SNH1013	21-SSC1013	21-SSH1013
14	NHH17450	21-SNC1014	21-SNH1014	21-SSC1014	21-SSH1014
15	NE17433	21-SNC1015	21-SNH1015	21-SSC1015	21-SSH1015
16	NHH17612	21-SNC1016	21-SNH1016	21-SSC1016	21-SSH1016
17	NE18455	21-SNC1017	21-SNH1017	21-SSC1017	21-SSH1017
18	20CP010069	21-SNC1018	21-SNH1018	21-SSC1018	21-SSH1018
19	20CP010063	21-SNC1019	21-SNH1019	21-SSC1019	21-SSH1019
20	20CP010061	21-SNC1020	21-SNH1020	21-SSC1020	21-SSH1020
21	20CP010072	21-SNC1021	21-SNH1021	21-SSC1021	21-SSH1021
22	KS18H110-3	21-SNC1022	21-SNH1022	21-SSC1022	21-SSH1022
23	KS18H111-3	21-SNC1023	21-SNH1023	21-SSC1023	21-SSH1023
24	KS18H19-6	21-SNC1024	21-SNH1024	21-SSC1024	21-SSH1024
25	KS14HD286	21-SNC1025	21-SNH1025	21-SSC1025	21-SSH1025
26	CO13007-F6R	21-SNC1026	21-SNH1026	21-SSC1026	21-SSH1026
27	CO16D1487	21-SNC1027	21-SNH1027	21-SSC1027	21-SSH1027
28	CO16SF027	21-SNC1028	21-SNH1028	21-SSC1028	21-SSH1028
29	CO16SF032	21-SNC1029	21-SNH1029	21-SSC1029	21-SSH1029
30	CO16SF067	21-SNC1030	21-SNH1030	21-SSC1030	21-SSH1030
31	CO16D402W	21-SNC1031	21-SNH1031	21-SSC1031	21-SSH1031
32	NF99117	21-SNC1032	21-SNH1032	21-SSC1032	21-SSH1032
33	ON13P016	21-SNC1033	21-SNH1033	21-SSC1033	21-SSH1033
34	BASF 7	21-SNC1034	21-SNH1034	21-SSC1034	21-SSH1034
35	BASF 13	21-SNC1035	21-SNH1035	21-SSC1035	21-SSH1035
36	OK12716W Composite I	21-SNC1036	21-SNH1036	21-SSC1036	21-SSH1036
37	OK15MASBx7 ARS 8-20	21-SNC1037	21-SNH1037	21-SSC1037	21-SSH1037
38	OK15MASBx7 ARS 8-29	21-SNC1038	21-SNH1038	21-SSC1038	21-SSH1038
39	OK15DMASBx7 ARS 6-8	21-SNC1039	21-SNH1039	21-SSC1039	21-SSH1039
40	OKP17D101A350	21-SNC1040	21-SNH1040	21-SSC1040	21-SSH1040
41	OK18510	21-SNC1041	21-SNH1041	21-SSC1041	21-SSH1041
42	LCH17-3193	21-SNC1042	21-SNH1042	21-SSC1042	21-SSH1042
43	LCH17-1390	21-SNC1043	21-SNH1043	21-SSC1043	21-SSH1043
44	LCH17-3956	21-SNC1044	21-SNH1044	21-SSC1044	21-SSH1044
45	LCH18-9005	21-SNC1045	21-SNH1045	21-SSC1045	21-SSH1045
46	DH15HRW-65-142	21-SNC1046	21-SNH1046	21-SSC1046	21-SSH1046
47	KS13DH0041-35	21-SNC1047	21-SNH1047	21-SSC1047	21-SSH1047
48	NUSAKA15-3	21-SNC1048	21-SNH1048	21-SSC1048	21-SSH1048
49	XD4401	21-SNC1049	21-SNH1049	21-SSC1049	21-SSH1049
50	XD4101	21-SNC1050	21-SNH1050	21-SSC1050	21-SSH1050

2021 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	60.6	12.5	0.7	31.6	10.0	2.59	0.32	38	19	MIXED	36-30-22-12-03
Scout66	60.9	12.7	0.7	33.8	9.0	2.71	0.34	53	17	MIXED	12-20-28-40-03
TAM-107	59.4	13.0	0.6	34.0	10.8	2.66	0.40	53	17	MIXED	14-25-27-34-03
Jagalene	60.8	13.1	0.7	33.1	12.2	2.70	0.41	63	17	HARD	02-17-23-58-01
TXAMPSY 473-18AZ816	60.4	12.6	0.7	31.0	11.4	2.52	0.42	63	20	HARD	06-17-23-54-01
TX13CSDHTAMTIA231-12	57.2	12.5	0.5	30.5	9.2	2.61	0.34	64	16	HARD	03-08-34-55-01
TX08CSDHHT202-24	61.1	12.8	0.6	36.1	13.1	2.77	0.38	77	17	HARD	01-04-11-84-01
TX16M9216	60.5	12.7	0.6	31.9	10.8	2.65	0.36	68	16	HARD	01-10-21-68-01
TX17A001181	61.3	13.0	0.7	35.5	11.0	2.65	0.36	54	17	MIXED	11-24-28-37-03
TX17A001247	61.5	12.5	0.7	33.2	10.0	2.64	0.35	57	15	HARD	07-18-33-42-01
TX17A001295	61.2	12.2	0.8	33.1	9.5	2.68	0.39	70	18	HARD	02-08-20-70-01
TX17M1572	58.8	12.3	0.7	30.6	9.9	2.54	0.36	48	17	MIXED	20-27-28-25-03
TX16M9155	59.1	11.9	0.8	30.3	10.7	2.58	0.37	73	19	HARD	01-07-17-75-01
NHH17450	60.1	12.1	0.7	30.5	9.3	2.61	0.33	52	18	MIXED	15-23-31-31-03
NE17433	60.6	12.2	0.6	33.3	9.7	2.68	0.33	57	17	HARD	08-20-29-43-01
NHH17612	60.4	11.7	0.8	30.1	10.4	2.60	0.30	54	17	MIXED	11-21-34-34-03
NE18455	59.5	12.1	0.8	29.9	10.6	2.51	0.34	48	18	MIXED	18-29-29-24-03
20CP010069	57.4	12.6	0.6	29.1	9.7	2.60	0.41	61	18	HARD	05-15-28-52-01
20CP010063	58.8	12.8	0.4	31.2	11.3	2.57	0.42	68	19	HARD	02-09-27-62-01
20CP010061	59.0	13.0	0.6	32.9	12.0	2.67	0.40	76	20	HARD	01-06-14-79-01
20CP010072	59.5	12.3	0.7	34.5	9.9	2.62	0.35	74	16	HARD	01-03-12-84-01
KS18H110-3	60.9	12.4	0.7	33.2	10.7	2.66	0.38	66	17	HARD	02-06-27-65-01
KS18H111-3	59.8	12.7	0.7	32.6	10.7	2.74	0.41	66	18	HARD	02-12-25-61-01
KS18H19-6	61.0	12.7	0.6	35.2	9.2	2.83	0.34	59	15	HARD	06-17-28-49-01
KS14HD286	60.3	12.7	0.5	30.4	11.5	2.57	0.41	69	19	HARD	03-11-14-72-01
CO13007-F6R	60.8	12.6	0.7	34.0	12.2	2.71	0.40	63	18	HARD	02-15-29-54-01
CO16D1487	61.7	12.4	0.8	34.2	11.9	2.63	0.39	61	18	HARD	07-17-22-54-01
CO16SF027	59.3	12.1	0.6	30.2	9.9	2.58	0.35	54	17	MIXED	12-21-32-35-03
CO16SF032	60.1	12.3	0.8	31.0	11.3	2.56	0.39	53	18	MIXED	14-22-28-36-03
CO16SF067	61.5	12.4	0.7	30.6	10.3	2.59	0.35	67	16	HARD	02-10-20-68-01
CO16D402W	59.7	12.6	0.7	31.2	10.8	2.62	0.39	58	18	HARD	08-17-33-42-01
NF99117	58.8	12.3	0.6	32.4	9.8	2.66	0.30	53	15	HARD	09-24-33-34-01
ON13P016	61.5	12.3	0.6	35.5	11.1	2.76	0.32	71	16	HARD	02-05-13-80-01
BASF 7	59.4	12.7	0.7	35.9	10.5	2.71	0.39	48	17	MIXED	17-29-29-25-03
BASF 13	59.9	12.2	0.7	35.3	10.1	2.77	0.31	54	17	MIXED	11-22-30-37-03
OK12716W Composite I	59.9	13.0	0.5	33.0	10.0	2.64	0.36	61	16	HARD	05-13-28-54-01
OK15MASBx7 ARS 8-20	60.5	13.1	0.6	34.0	10.9	2.72	0.36	73	16	HARD	01-04-15-80-01
OK15MASBx7 ARS 8-29	59.9	12.6	0.6	35.0	10.6	2.78	0.32	72	16	HARD	01-04-18-77-01
OK15DMASBx7 ARS 6-8	61.7	11.7	0.8	32.1	10.6	2.72	0.38	59	17	HARD	08-12-34-46-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
OKP17D101A350	61.5	11.6	0.7	30.1	9.9	2.56	0.35	61	15	HARD	04-11-36-49-01
OK18510	61.5	11.8	0.8	33.1	10.3	2.76	0.39	49	17	MIXED	20-27-25-28-03
LCH17-3193	59.2	12.0	0.7	30.1	11.1	2.52	0.41	63	19	HARD	04-13-33-50-01
LCH17-1390	61.1	12.1	0.8	27.6	9.5	2.50	0.35	66	19	HARD	03-12-23-62-01
LCH17-3956	60.0	12.5	0.6	30.1	9.7	2.59	0.38	59	17	HARD	05-14-31-50-01
LCH18-9005	62.1	12.0	0.7	32.0	11.7	2.55	0.38	62	17	HARD	04-13-30-53-01
DH15HRW-65-142	59.4	11.9	0.8	30.2	10.6	2.56	0.37	66	20	HARD	05-08-21-66-01
KS13DH0041-35	59.4	12.3	0.7	31.3	9.8	2.57	0.40	60	16	HARD	03-16-29-52-01
NUSAKA15-3	59.8	12.2	0.9	30.8	9.8	2.61	0.39	57	16	HARD	06-19-34-41-01
XD4401	59.2	12.3	0.7	27.5	9.5	2.47	0.37	55	18	HARD	09-20-32-39-01
XD4101	59.1	12.4	0.7	33.5	11.3	2.51	0.43	61	17	HARD	05-15-29-51-01

2021 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	13.7	62.0	0.39	12.2	0.095	80.06	-1.76	21.93	-7.94	1.07	1.86
Scout66	12.5	70.2	0.37	11.3	0.156	79.72	-1.61	21.53	-7.48	1.26	1.10
TAM-107	12.2	68.4	0.39	10.9	0.167	79.62	-1.66	22.62	-8.25	1.31	1.42
Jagalene	11.7	68.8	0.46	10.9	0.180	80.20	-1.66	21.79	-8.43	1.16	2.64
TXAMPSY 473-18AZ816	11.5	67.3	0.43	10.1	0.149	80.97	-1.79	22.08	-9.50	1.34	3.07
TX13CSDHTAMTIA231-12	11.5	65.9	0.38	10.7	0.126	80.78	-1.68	22.09	-7.04	0.81	4.19
TX08CSDHHT202-24	12.2	62.5	0.53	11.5	0.134	79.54	-1.63	21.89	-9.18	1.49	2.70
TX16M9216	12.8	68.2	0.44	11.4	0.116	79.26	-1.25	21.70	-7.91	1.30	1.55
TX17A001181	11.7	68.0	0.37	11.2	0.125	80.51	-1.56	22.17	-8.36	1.11	3.13
TX17A001247	12.2	66.3	0.37	11.2	0.152	79.99	-1.58	22.90	-8.02	1.10	2.57
TX17A001295	12.3	65.1	0.38	10.8	0.156	79.38	-1.35	20.75	-9.04	1.26	2.13
TX17M1572	12.2	69.1	0.38	11.2	0.118	81.50	-1.78	20.51	-9.44	1.13	2.87
TX16M9155	12.2	64.4	0.44	11.3	0.136	78.99	-1.54	23.00	-10.26	1.57	2.36
NHH17450	12.1	69.6	0.40	11.1	0.147	79.24	-1.97	23.83	-8.59	1.64	1.47
NE17433	12.0	68.0	0.35	11.3	0.138	80.02	-1.29	19.74	-10.31	1.39	3.07
NHH17612	11.8	68.5	0.38	11.0	0.154	80.13	-1.40	20.18	-10.14	1.11	4.49
NE18455	11.5	69.2	0.35	10.5	0.151	80.00	-1.62	21.41	-8.85	1.05	3.80
20CP010069	11.3	69.8	0.45	9.9	0.115	79.24	-1.44	20.97	-10.28	1.40	2.79
20CP010063	12.1	70.7	0.45	11.1	0.150	79.22	-0.77	19.42	-10.63	1.30	3.02
20CP010061	11.3	66.1	0.36	10.6	0.083	81.00	-1.86	21.39	-8.49	1.20	5.36
20CP010072	11.9	64.3	0.42	11.0	0.116	79.15	-1.11	20.56	-11.21	1.22	3.04
KS18H110-3	12.7	68.6	0.47	11.9	0.119	78.56	-1.28	22.60	-9.45	1.29	2.06
KS18H111-3	11.7	68.4	0.39	10.7	0.138	78.97	-1.73	23.76	-8.65	1.13	2.66
KS18H19-6	12.4	69.0	0.41	11.9	0.127	79.67	-1.88	23.51	-7.91	1.15	1.52
KS14HD286	11.9	68.9	0.40	10.8	0.092	79.61	-1.58	22.01	-10.13	1.58	1.70
CO13007-F6R	11.3	72.1	0.42	10.6	0.116	79.46	-1.93	22.86	-8.11	1.42	0.50
CO16D1487	11.1	69.9	0.47	10.1	0.141	80.23	-1.76	20.94	-8.92	1.39	2.63
CO16SF027	12.0	70.3	0.49	10.7	0.124	79.44	-2.29	23.73	-9.49	1.52	0.68
CO16SF032	11.9	70.2	0.47	10.7	0.112	78.62	-2.26	23.87	-7.83	1.58	-0.52
CO16SF067	12.2	67.9	0.45	11.2	0.149	78.15	-1.72	23.23	-9.19	1.60	0.44
CO16D402W	10.6	69.7	0.40	9.6	0.176	80.30	-2.04	22.77	-9.54	1.73	2.20
NF99117	13.1	65.7	0.42	12.3	0.180	78.63	-1.38	23.58	-9.16	1.38	0.66
ON13P016	12.7	69.4	0.41	11.6	0.079	79.42	-1.66	23.49	-7.19	1.48	2.95
BASF 7	12.1	69.7	0.48	11.1	0.142	79.75	-2.00	23.67	-7.99	1.42	2.70
BASF 13	15.6	67.6	0.46	14.6	0.104	78.58	-1.13	21.87	-8.41	1.39	1.76
OK12716W Composite I	11.2	70.7	0.41	10.7	0.135	80.12	-1.83	22.72	-8.65	1.48	1.76
OK15MASBx7 ARS 8-20	11.8	67.1	0.39	11.2	0.125	81.07	-1.75	21.37	-8.16	0.87	4.67
OK15MASBx7 ARS 8-29	11.6	66.5	0.37	11.2	0.068	80.66	-1.61	21.71	-8.01	0.91	5.66
OK15DMASBx7 ARS 6-8	12.3	67.8	0.41	11.5	0.118	79.39	-1.49	21.87	-9.07	1.29	2.17
OKP17D101A350	12.7	70.3	0.44	11.8	0.116	78.27	-1.79	24.44	-8.30	1.64	0.90

	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	(%)	(%)	(%)	(%)							
OK18510	12.4	69.7	0.41	11.1	0.143	79.43	-2.16	24.73	-7.97	1.29	1.10
LCH17-3193	12.1	69.3	0.45	10.6	0.117	78.43	-1.98	23.49	-9.86	1.84	-0.04
LCH17-1390	11.6	67.2	0.42	10.6	0.136	78.82	-1.66	24.42	-8.37	1.33	0.54
LCH17-3956	11.4	67.4	0.41	10.7	0.133	81.29	-2.17	22.05	-7.80	1.79	1.58
LCH18-9005	10.7	69.1	0.41	9.9	0.103	80.23	-2.32	22.92	-7.73	1.79	1.35
DH15HRW-65-142	11.2	69.7	0.44	10.5	0.151	79.45	-1.74	22.53	-9.66	1.52	1.14
KS13DH0041-35	11.8	68.9	0.44	11.0	0.077	79.52	-2.04	25.37	-5.90	1.23	1.87
NUSAKA15-3	11.7	71.8	0.41	10.6	0.094	79.03	-2.32	24.93	-6.37	1.54	0.70
XD4401	11.6	68.2	0.44	10.7	0.094	79.70	-1.88	23.06	-7.33	1.55	1.22
XD4101	11.6	66.9	0.39	10.7	0.117	79.30	-1.99	24.82	-7.58	1.31	1.70

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		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	12.2	63.3	4.88	4.88	4
Scout66	11.3	64.2	2.88	2.64	3
TAM-107	10.9	61.1	4.38	3.80	4
Jagalene	10.9	61.6	5.13	4.47	4
TXAMPSY 473-18AZ816	10.1	62.6	8.38	6.42	6
TX13CSDHTAMTIA231-12	10.7	62.2	5.13	4.31	5
TX08CSDHHT202-24	11.5	63.1	4.75	4.48	4
TX16M9216	11.4	62.9	5.25	4.86	5
TX17A001181	11.2	62.7	9.25	8.40	6
TX17A001247	11.2	64.6	5.63	5.06	5
TX17A001295	10.8	63.0	6.88	5.90	6
TX17M1572	11.2	63.2	5.88	5.34	5
TX16M9155	11.3	62.7	5.25	4.78	4
NHH17450	11.1	62.5	3.75	3.36	3
NE17433	11.3	62.7	7.00	6.38	6
NHH17612	11.0	62.3	6.38	5.62	6
NE18455	10.5	61.5	7.25	5.97	6
20CP010069	9.9	60.4	5.63	4.20	4
20CP010063	11.1	62.4	6.13	5.46	5
20CP010061	10.6	61.6	4.50	3.76	3
20CP010072	11.0	62.3	3.88	3.43	3
KS18H110-3	11.9	63.7	2.50	2.46	3
KS18H111-3	10.7	61.7	4.50	3.77	4
KS18H19-6	11.9	63.7	4.25	4.17	3
KS14HD286	10.8	62.0	5.88	5.06	4
CO13007-F6R	10.6	61.6	7.50	6.22	6
CO16D1487	10.1	61.3	5.63	4.35	4
CO16SF027	10.7	60.8	4.00	3.39	2
CO16SF032	10.7	58.8	2.75	2.32	2
CO16SF067	11.2	62.0	6.00	5.41	3
CO16D402W	9.6	59.5	7.00	5.00	5
NF99117	12.3	63.4	2.88	2.88	2
ON13P016	11.6	66.4	4.38	4.18	4
BASF 7	11.1	62.4	5.75	5.13	5
BASF 13	14.6	69.2	4.63	4.63	4
OK12716W Composite I	10.7	63.2	4.63	3.89	4
OK15MASBx7 ARS 8-20	11.2	65.5	4.13	2.72	6

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
OK15MASBx7 ARS 8-29	11.2	66.1	4.63	3.19	6
OK15DMASBx7 ARS 6-8	11.5	65.1	8.50	7.97	6
OKP17D101A350	11.8	62.6	3.50	3.40	2
OK18510	11.1	62.9	3.88	3.47	3
LCH17-3193	10.6	61.5	3.50	2.89	3
LCH17-1390	10.6	61.6	3.00	2.49	2
LCH17-3956	10.7	61.8	5.25	4.43	3
LCH18-9005	9.9	60.4	3.63	2.72	3
DH15HRW-65-142	10.5	61.5	5.25	4.30	3
KS13DH0041-35	11.0	60.7	5.00	4.37	3
NUSAKA15-3	10.6	60.5	3.50	2.89	2
XD4401	10.7	61.8	2.75	2.33	3
XD4101	10.7	62.3	4.38	3.70	3

2021 SRPN Intraregional Production Zone
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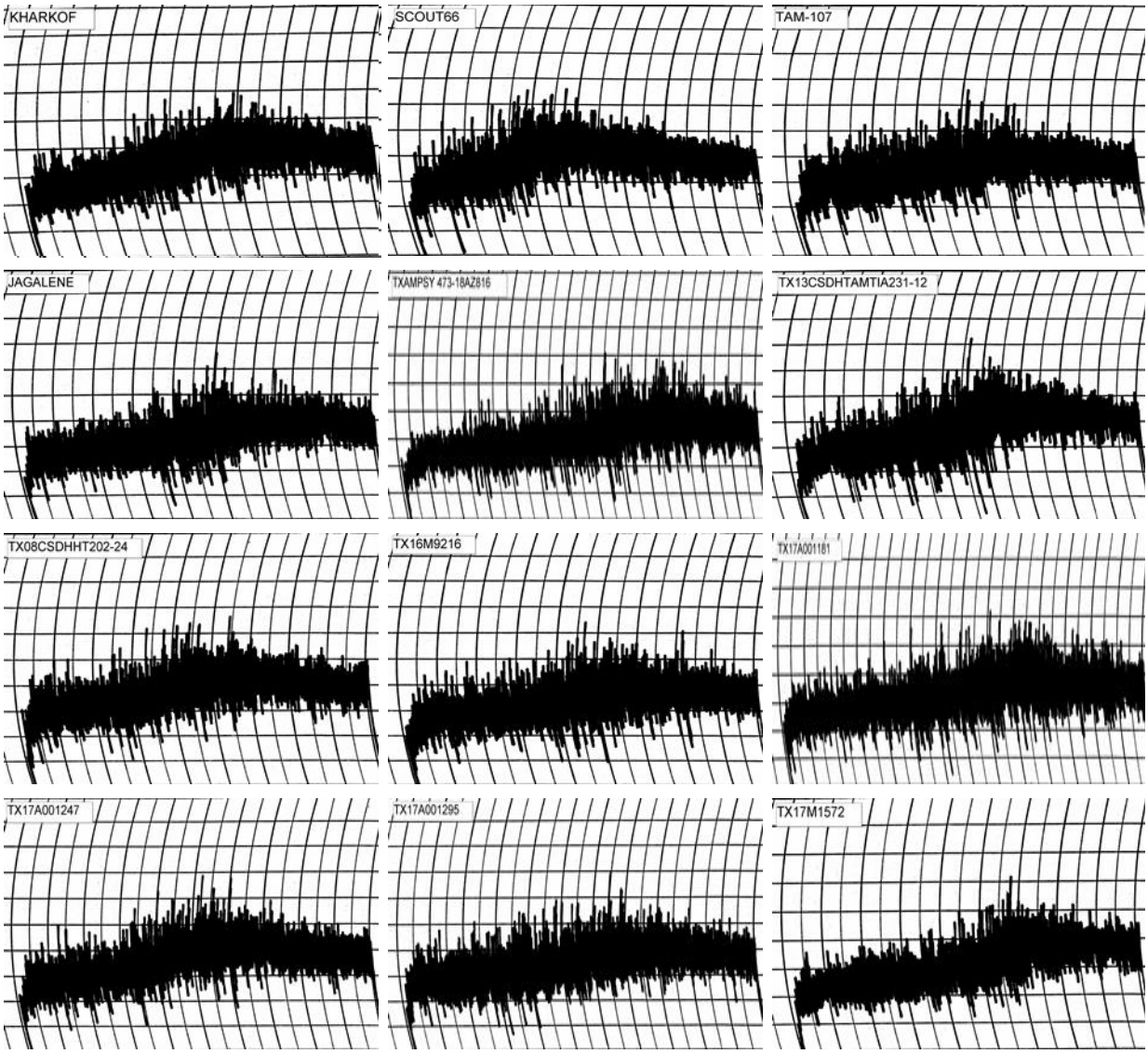
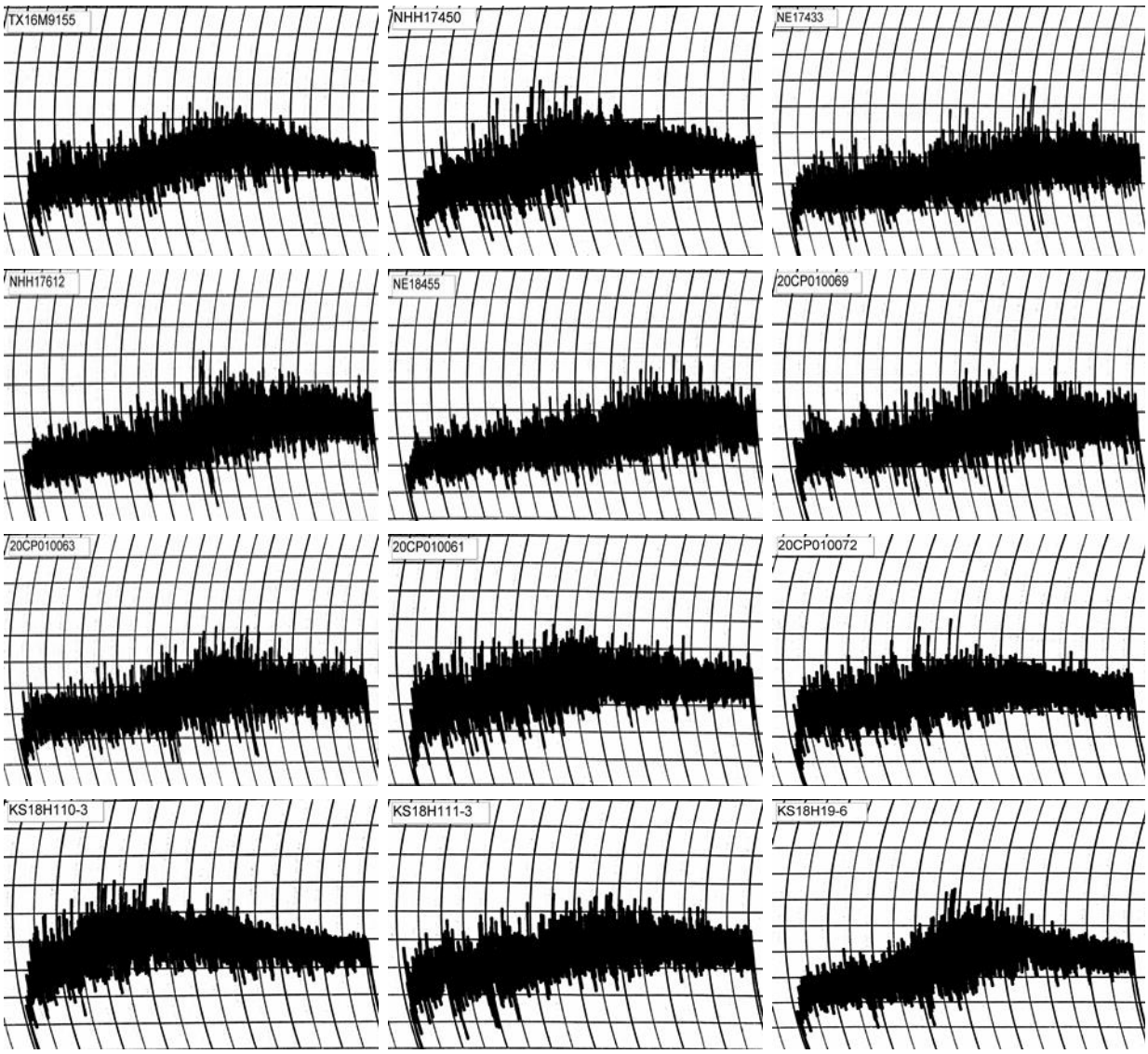
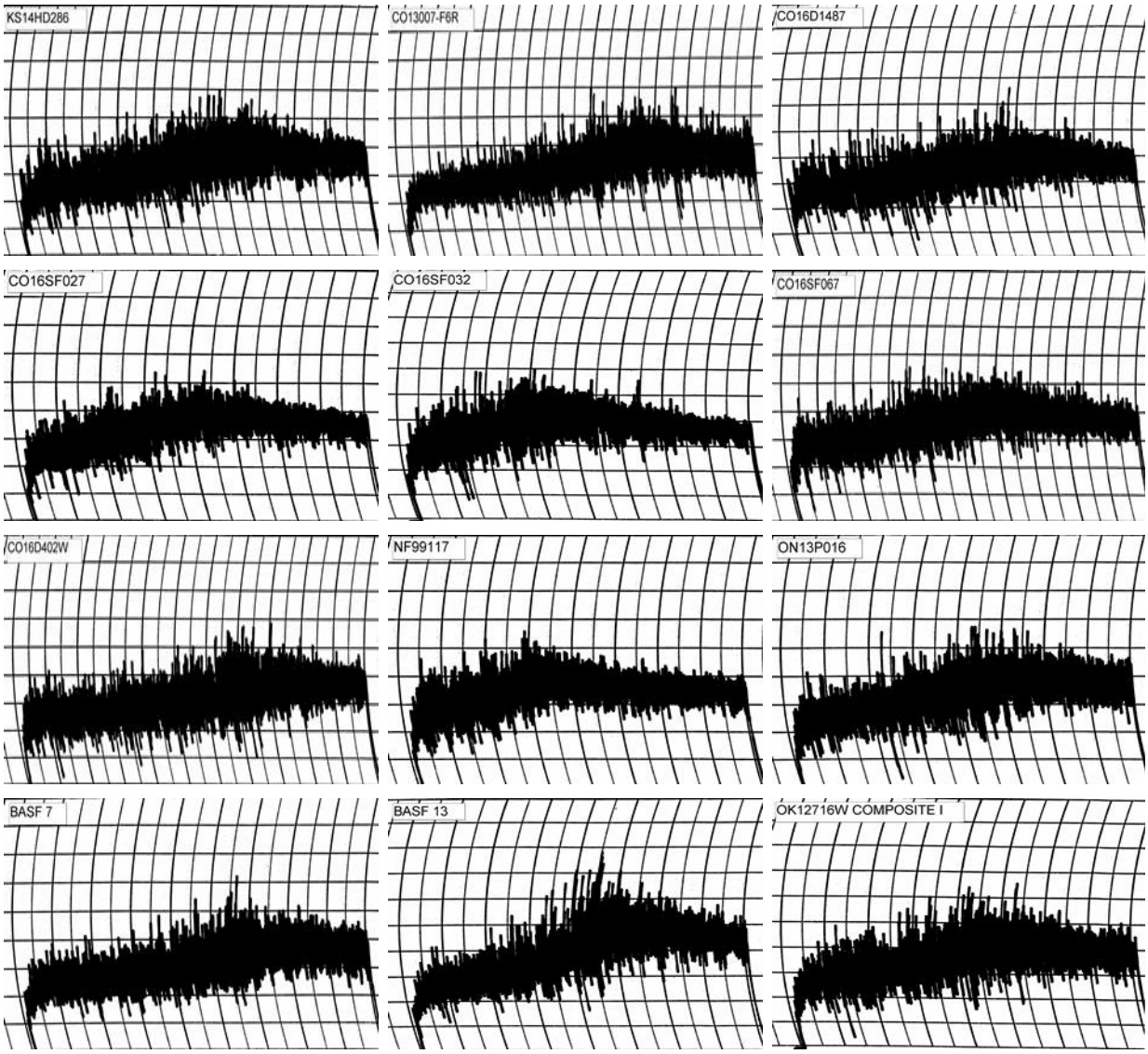


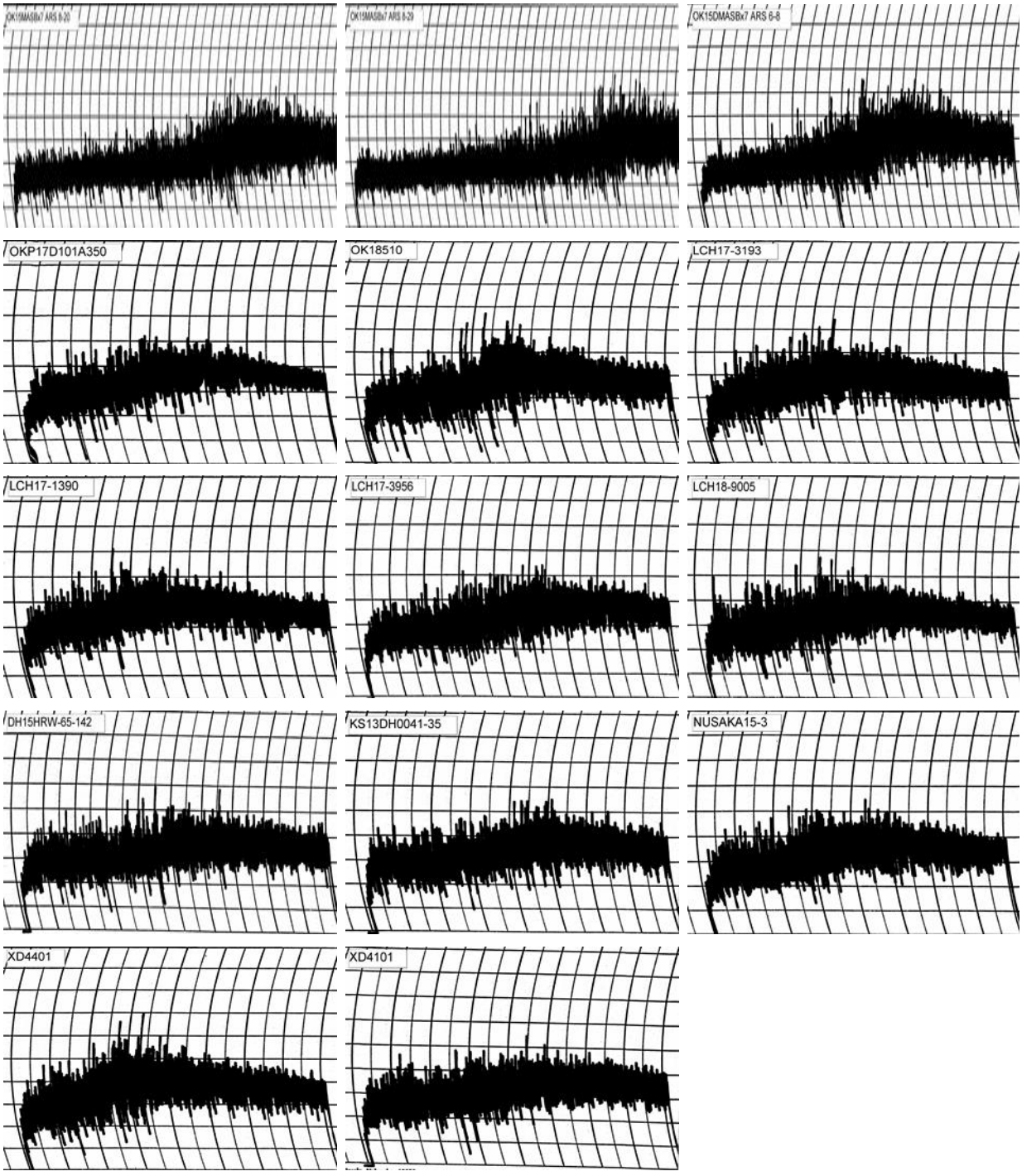
2021 SRPN Intraregional Production Zone
North Central Plains



2021 SRPN Intraregional Production Zone
North Central Plains



2021 SRPN Intraregional Production Zone
North Central Plains



2021 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	157.42							
Scout66	122.42							
TAM-107	122.67							
Jagalene	127.08							
TXAMPSY 473-18AZ816	113.83							
TX13CSDHTAMTIA231-12	126.75							
TX08CSDHHT202-24	141.25							
TX16M9216	130.50							
TX17A001181	128.83							
TX17A001247	157.42							
TX17A001295	123.00							
TX17M1572	74.75							
TX16M9155	150.92							
NHH17450	120.00							
NE17433	86.25							
NHH17612	81.75							
NE18455	116.75							
20CP010069	122.92							
20CP010063	123.33							
20CP010061	134.75							
20CP010072	113.50							
KS18H110-3	137.33							
KS18H111-3	123.25							
KS18H19-6	119.42							
KS14HD286	120.67							
CO13007-F6R	111.67							
CO16D1487	126.58							
CO16SF027	135.00							
CO16SF032	117.08							
CO16SF067	117.42							
CO16D402W	116.00							
NF99117	111.67							
ON13P016	126.92							
BASF 7	146.75							
BASF 13	123.42							
OK12716W Composite I	83.67							
OK15MASBx7 ARS 8-20	145.83							
OK15MASBx7 ARS 8-29	138.17							
OK15DMASBx7 ARS 6-8	112.08							

	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)
OKP17D101A350	138.08							
OK18510	112.17							
LCH17-3193	129.92							
LCH17-1390	101.00							
LCH17-3956	100.17							
LCH18-9005	133.50							
DH15HRW-65-142	132.00							
KS13DH0041-35	137.67							
NUSAKA15-3	118.17							
XD4401	133.33							
XD4101	119.67							

NR-Data not ready

2021 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	12.2	63.2	5.25	5.25	172.5	7.8	3.5	900	6.1	65
Scout66	11.3	64.4	4.13	3.78	174.3	7.6	4.0	905	6.0	73
TAM-107	10.9	61.5	4.75	4.12	170.9	7.5	3.0	915	6.1	77
Jagalene	10.9	61.4	6.38	5.55	170.2	7.4	2.5	915	6.3	77
TXAMPSY 473-18AZ816	10.1	62.2	11.25	8.62	170.5	6.8	3.0	775	5.2	66
TX13CSDHTAMTIA231-12	10.7	62.5	6.50	5.45	172.0	7.2	3.5	835	5.6	69
TX08CSDHHT202-24	11.5	63.5	6.00	5.66	173.1	7.2	3.5	895	6.0	70
TX16M9216	11.4	62.9	5.50	5.09	172.3	7.1	3.5	890	6.0	70
TX17A001181	11.2	64.3	11.00	9.98	173.3	7.2	3.0	855	5.6	67
TX17A001247	11.2	64.4	6.00	5.40	174.5	7.2	3.5	870	5.8	70
TX17A001295	10.8	64.7	7.25	6.21	174.3	7.4	4.0	900	5.9	76
TX17M1572	11.2	63.5	7.00	6.35	172.6	7.7	2.5	925	6.3	76
TX16M9155	11.3	62.7	5.25	4.78	172.4	7.1	3.0	850	5.7	66
NHH17450	11.1	62.6	4.50	4.04	172.2	7.3	4.0	895	6.0	73
NE17433	11.3	63.0	7.00	6.38	171.7	7.4	4.0	905	6.1	73
NHH17612	11.0	61.9	8.00	7.05	171.3	7.1	4.0	860	5.8	69
NE18455	10.5	61.7	9.25	7.62	173.3	6.9	4.0	825	5.4	69
20CP010069	9.9	60.7	6.00	4.47	169.7	7.6	4.0	885	6.0	83
20CP010063	11.1	62.7	8.00	7.13	172.5	7.3	3.5	925	6.3	77
20CP010061	10.6	61.6	5.00	4.18	171.1	7.5	2.5	840	5.7	70
20CP010072	11.0	61.9	4.00	3.53	171.4	7.2	2.0	855	5.8	69
KS18H110-3	11.9	63.9	3.00	2.95	173.8	6.9	2.0	835	5.5	60
KS18H111-3	10.7	61.9	5.00	4.19	171.3	7.5	3.5	915	6.2	80
KS18H19-6	11.9	63.8	5.00	4.91	173.1	6.9	2.5	900	6.1	68
KS14HD286	10.8	61.7	6.50	5.60	170.2	7.1	4.0	885	6.1	74
CO13007-F6R	10.6	61.8	8.75	7.26	171.2	6.9	2.5	840	5.6	70
CO16D1487	10.1	61.6	5.75	4.45	170.7	6.9	3.0	805	5.5	70
CO16SF027	10.7	60.6	4.00	3.39	170.2	7.4	3.0	875	6.0	74
CO16SF032	10.7	58.7	3.50	2.95	168.8	7.3	2.5	850	5.9	71
CO16SF067	11.2	62.5	5.88	5.30	171.7	7.5	3.0	905	6.0	74
CO16D402W	9.6	59.5	8.00	5.72	168.8	7.0	2.5	800	5.4	73
NF99117	12.3	63.6	3.63	3.63	173.8	7.5	3.5	905	6.0	65
ON13P016	11.6	66.7	5.50	5.25	175.8	7.5	4.0	905	5.9	70
BASF 7	11.1	62.5	6.50	5.80	171.9	7.3	4.0	890	6.0	72
BASF 13	14.6	69.5	5.50	5.50	178.7	8.2	3.5	1130	7.5	72
OK12716W Composite I	10.7	63.2	5.25	4.41	173.0	7.3	3.0	895	6.0	77
OK15MASBx7 ARS 8-20	11.2	65.7	15.00	13.51	173.1	7.4	3.0	875	5.8	70
OK15MASBx7 ARS 8-29	11.2	66.1	17.25	15.55	174.0	7.3	2.5	815	5.4	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/%)
OK15DMASBx7 ARS 6-8	11.5	64.7	8.75	8.20	173.7	7.6	4.0	935	6.2	75
OKP17D101A350	11.8	62.8	4.00	3.88	172.5	7.2	2.0	835	5.6	61
OK18510	11.1	62.5	5.00	4.48	172.8	7.1	4.0	870	5.8	70
LCH17-3193	10.6	61.7	3.50	2.89	172.5	7.3	2.5	825	5.6	69
LCH17-1390	10.6	59.7	3.13	2.60	170.0	6.9	2.5	905	6.1	79
LCH17-3956	10.7	61.9	5.25	4.43	171.6	7.1	4.5	920	6.3	80
LCH18-9005	9.9	60.6	4.00	3.00	170.7	6.9	3.0	785	5.3	69
DH15HRW-65-142	10.5	61.7	5.25	4.30	171.6	7.0	4.0	875	5.8	76
KS13DH0041-35	11.0	60.7	5.00	4.37	169.9	7.4	3.0	860	5.8	70
NUSAKA15-3	10.6	60.8	3.63	3.00	170.9	7.2	3.5	850	5.7	72
XD4401	10.7	62.7	4.75	4.02	174.3	7.3	3.0	800	5.3	64
XD4101	10.7	62.0	4.50	3.80	171.2	7.1	2.5	865	5.8	73

2021 SRPN Intraregional Production Zone
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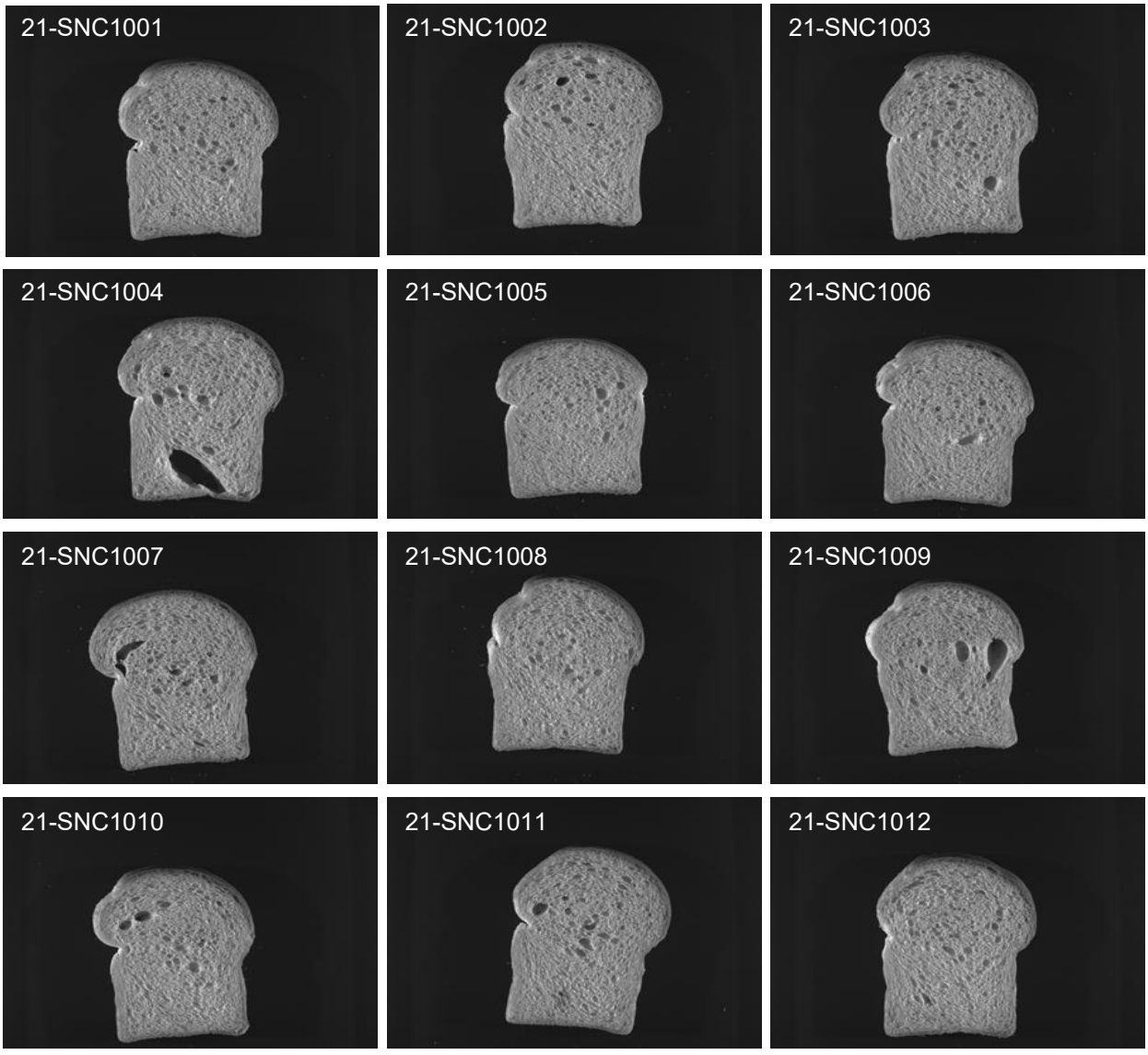
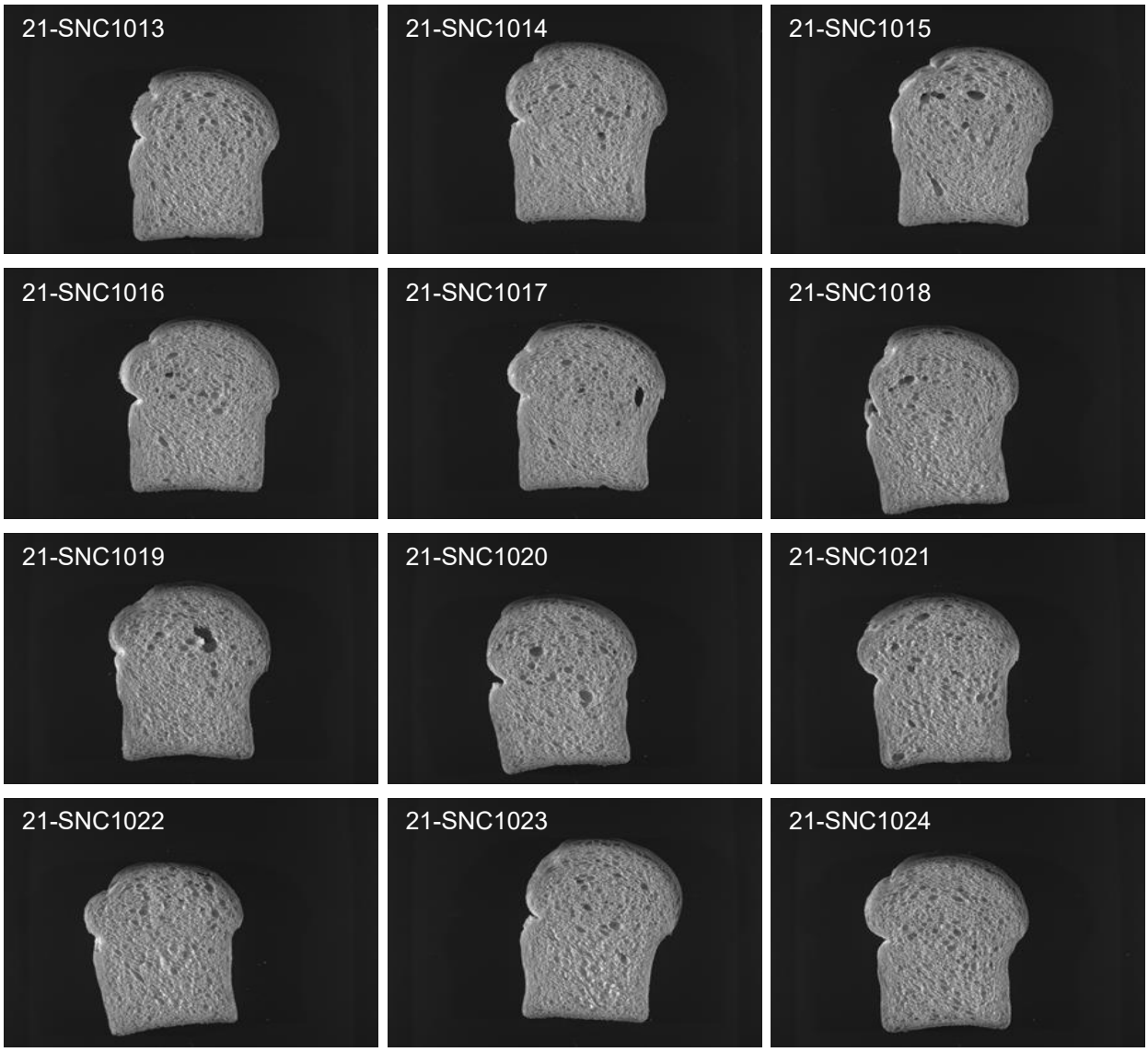
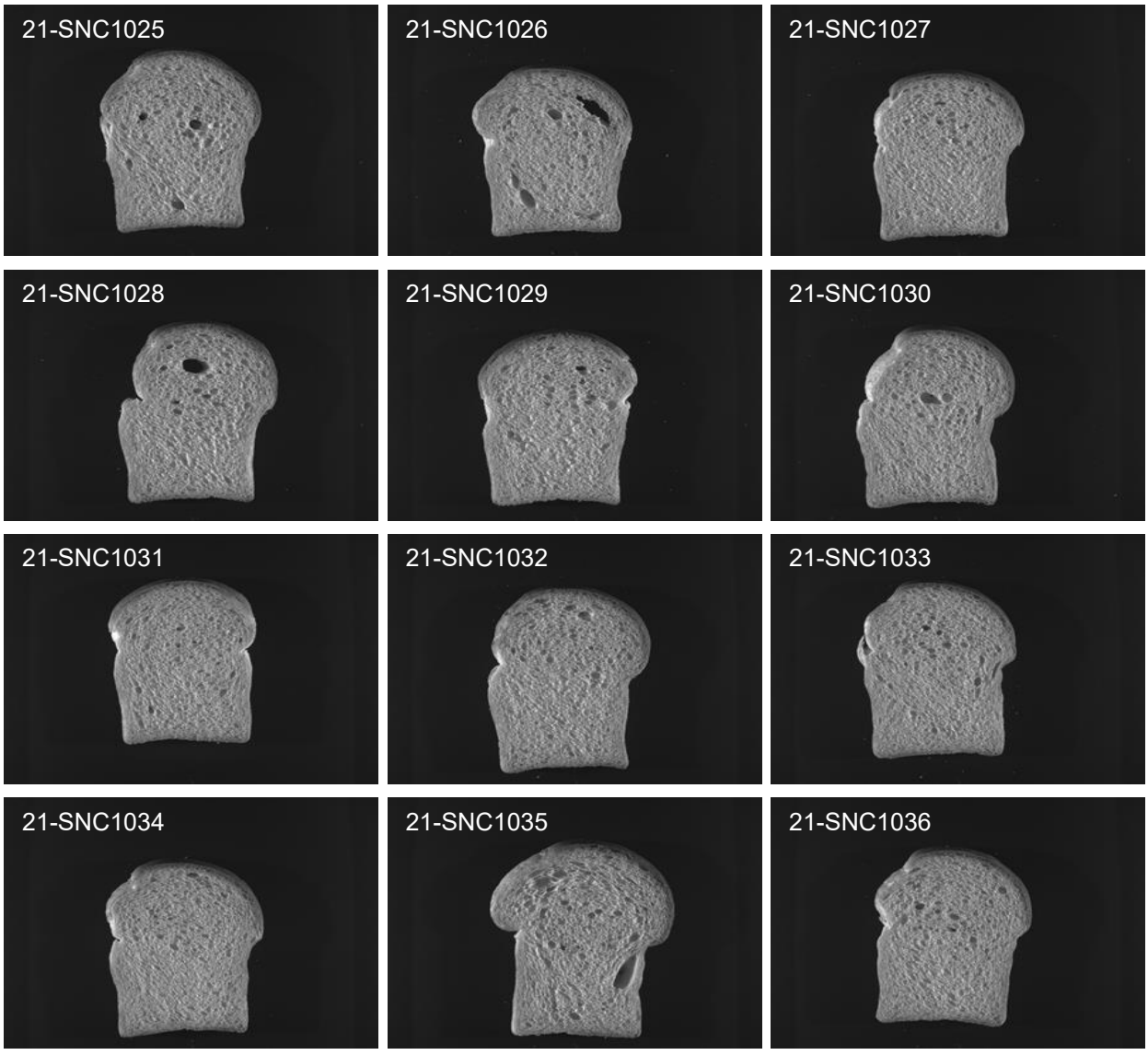


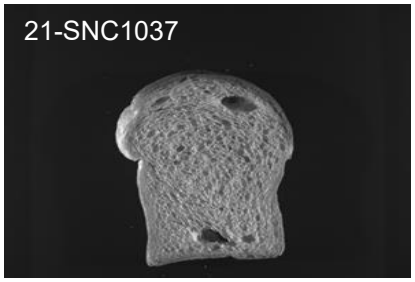
2021 SRPN Intraregional Production Zone
North Central Plains

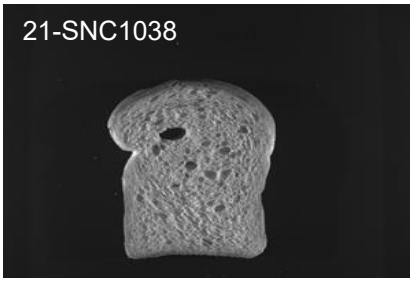


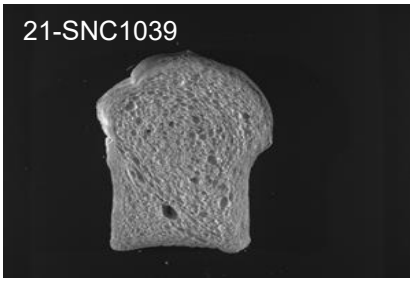
2021 SRPN Intraregional Production Zone
North Central Plains

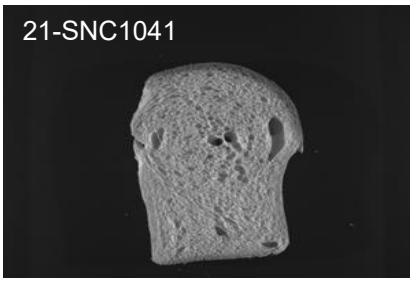


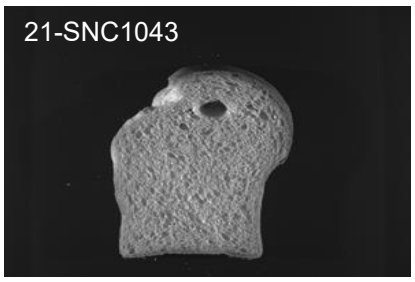
2021 SRPN Intraregional Production Zone
North Central Plains

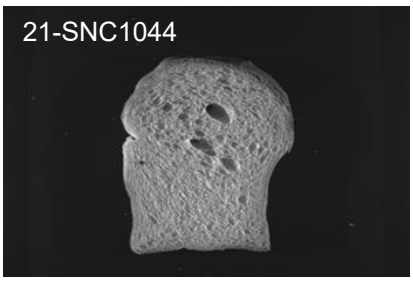


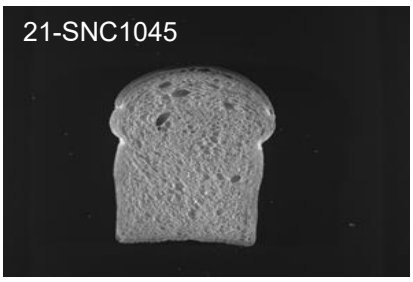


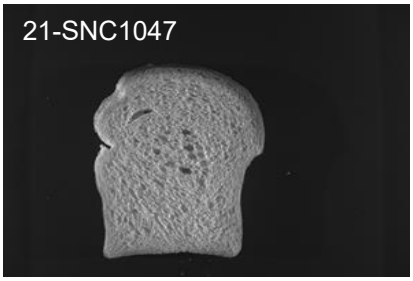


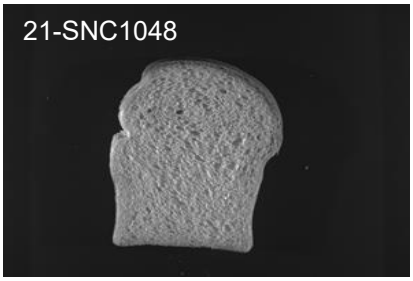


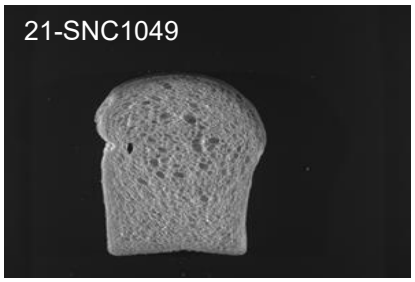












2021 SRPN Intraregional Production Zone

Northern High Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	59.5	13.6	0.5	28.3	9.7	2.44	0.34	49	20	MIXED	20-28-24-28-03
Scout66	60.1	13.2	0.4	31.6	9.7	2.57	0.33	60	17	HARD	07-14-25-54-01
TAM-107	58.1	13.3	0.4	30.7	11.8	2.53	0.40	68	19	HARD	03-12-20-65-01
Jagalene	59.0	13.3	0.4	30.7	12.0	2.56	0.42	75	20	HARD	02-05-16-77-01
TXAMPSY 473-18AZ816	57.1	13.5	0.4	27.5	9.7	2.38	0.38	71	20	HARD	04-08-17-71-01
TX13CSDHTAMTIA231-12	55.7	13.3	0.4	27.6	10.0	2.44	0.33	80	18	HARD	01-04-09-86-01
TX08CSDHHT202-24	60.7	12.9	0.4	35.0	12.0	2.73	0.35	81	17	HARD	00-02-09-89-01
TX16M9216	59.0	12.9	0.4	28.1	10.7	2.46	0.36	81	20	HARD	01-04-11-84-01
TX17A001181	58.1	12.9	0.4	30.2	10.4	2.46	0.34	59	20	MIXED	12-15-19-54-03
TX17A001247	59.6	12.9	0.4	28.6	9.5	2.45	0.33	74	19	HARD	02-06-13-79-01
TX17A001295	58.6	13.3	0.5	28.9	10.2	2.45	0.39	74	17	HARD	03-03-13-81-01
TX17M1572	57.5	13.2	0.4	27.8	10.8	2.39	0.36	62	18	HARD	07-12-24-57-01
TX16M9155	58.0	13.0	0.5	27.1	8.7	2.50	0.38	90	18	HARD	01-01-05-93-01
NHH17450	58.4	13.2	0.5	28.4	11.0	2.48	0.37	67	19	HARD	05-09-17-69-01
NE17433	58.9	13.4	0.6	28.9	12.0	2.46	0.37	68	19	HARD	03-10-21-66-01
NHH17612	59.0	12.9	0.4	25.6	10.2	2.38	0.32	72	19	HARD	02-09-13-76-01
NE18455	58.1	13.2	0.5	27.8	11.3	2.39	0.39	65	20	HARD	07-12-19-62-01
20CP010069	55.9	13.2	0.4	27.2	10.5	2.47	0.40	80	18	HARD	00-04-11-85-01
20CP010063	56.5	13.3	0.5	29.2	9.3	2.51	0.34	83	18	HARD	02-02-07-89-01
20CP010061	56.5	13.6	0.4	28.7	9.7	2.48	0.33	95	20	HARD	00-00-05-95-01
20CP010072	57.2	13.1	0.5	31.9	10.9	2.49	0.36	78	16	HARD	01-02-09-88-01
KS18H110-3	58.0	13.6	0.4	30.8	10.3	2.56	0.37	75	17	HARD	01-05-14-80-01
KS18H111-3	56.7	12.9	0.4	29.6	10.1	2.58	0.38	72	20	HARD	03-10-11-76-01
KS18H19-6	59.4	13.0	0.4	31.0	8.2	2.65	0.30	72	16	HARD	01-07-14-78-01
KS14HD286	59.7	13.0	0.4	28.5	10.5	2.48	0.37	84	19	HARD	01-03-07-89-01
CO13007-F6R	59.4	13.1	0.5	30.5	10.0	2.56	0.35	72	17	HARD	01-05-19-75-01
CO16D1487	60.4	13.1	0.4	32.1	12.0	2.54	0.39	68	18	HARD	03-10-19-68-01
CO16SF027	58.9	12.6	0.3	29.0	10.0	2.45	0.32	67	21	HARD	06-09-22-63-01
CO16SF032	59.0	12.7	0.4	27.9	9.1	2.42	0.32	69	19	HARD	04-09-15-72-01
CO16SF067	59.2	12.7	0.4	28.1	10.5	2.44	0.37	74	20	HARD	02-08-11-79-01
CO16D402W	58.2	12.7	0.4	28.4	10.2	2.48	0.37	69	19	HARD	04-09-17-70-01
NF99117	58.9	12.9	0.5	30.4	9.8	2.57	0.29	65	16	HARD	04-08-22-66-01
ON13P016	58.6	13.4	0.5	30.4	10.2	2.56	0.33	79	19	HARD	01-04-09-86-01
BASF 7	59.2	13.3	0.5	36.0	10.5	2.73	0.35	60	18	HARD	07-16-21-56-01
BASF 13	59.2	12.9	0.4	31.5	9.8	2.60	0.35	63	17	HARD	04-10-29-57-01
OK12716W Composite I	57.6	13.7	0.4	28.6	11.1	2.44	0.40	72	19	HARD	02-09-16-73-01
OK15MASBx7 ARS 8-20	59.1	13.6	0.4	29.7	9.4	2.55	0.32	88	19	HARD	01-01-05-93-01
OK15MASBx7 ARS 8-29	58.4	13.4	0.4	30.2	12.1	2.52	0.35	84	20	HARD	01-04-07-88-01
OK15DMASBx7 ARS 6-8	59.1	13.2	0.4	28.0	10.2	2.52	0.36	71	18	HARD	02-07-18-73-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
OKP17D101A350	60.3	13.6	0.4	24.6	8.9	2.32	0.34	76	19	HARD	02-05-14-79-01
OK18510	59.6	13.6	0.4	29.5	9.4	2.58	0.36	66	19	HARD	03-15-20-62-01
LCH17-3193	58.1	13.9	0.4	28.7	10.5	2.42	0.35	81	19	HARD	01-02-10-87-01
LCH17-1390	59.4	13.1	0.4	26.7	8.8	2.45	0.35	74	18	HARD	01-07-12-80-01
LCH17-3956	57.6	13.3	0.3	28.0	9.7	2.51	0.33	71	18	HARD	02-07-18-73-01
LCH18-9005	61.2	12.9	0.4	29.4	10.1	2.45	0.35	76	19	HARD	02-07-11-80-01
DH15HRW-65-142	57.5	12.9	0.4	29.7	12.2	2.46	0.39	69	21	HARD	05-08-19-68-01
KS13DH0041-35	48.6	13.0	0.3	30.2	10.8	2.47	0.38	71	18	HARD	02-06-15-77-01
NUSAKA15-3	59.9	12.8	0.4	28.6	9.1	2.49	0.34	69	18	HARD	02-10-22-66-01
XD4401	58.2	12.7	0.4	27.4	9.1	2.49	0.34	67	18	HARD	03-09-21-67-01
XD4101	56.9	13.0	0.4	32.6	10.1	2.50	0.37	75	19	HARD	01-07-14-78-01

2021 SRPN Intraregional Production Zone

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	14.8	61.7	0.44	13.7	0.112	78.00	-1.55	24.12	-10.48	1.74	1.13
Scout66	14.0	68.2	0.41	12.9	0.177	79.10	-1.59	23.43	-9.69	1.76	0.40
TAM-107	13.5	66.8	0.42	12.8	0.192	77.79	-1.33	24.46	-11.13	1.82	0.53
Jagalene	13.8	66.8	0.50	12.8	0.170	77.65	-1.27	25.42	-10.45	1.78	-0.47
TXAMPSY 473-18AZ816	13.5	64.3	0.48	12.3	0.199	77.97	-1.09	24.82	-12.99	2.04	0.34
TX13CSDHTAMTIA231-12	13.8	65.3	0.47	13.0	0.117	77.30	-1.04	26.11	-8.77	1.64	0.76
TX08CSDHHT202-24	13.9	63.5	0.53	13.0	0.144	77.46	-1.26	25.26	-10.75	1.82	-0.63
TX16M9216	13.8	66.3	0.46	12.5	0.168	77.61	-0.95	23.86	-11.46	1.97	1.30
TX17A001181	13.5	68.3	0.40	12.1	0.192	78.69	-1.41	25.28	-9.92	1.70	1.56
TX17A001247	13.4	66.7	0.42	12.4	0.175	78.22	-1.53	24.94	-11.37	1.80	1.27
TX17A001295	13.6	64.5	0.41	12.3	0.190	78.05	-1.27	23.24	-12.07	2.03	0.69
TX17M1572	14.1	67.8	0.43	13.3	0.174	78.79	-1.55	23.28	-12.49	1.96	0.12
TX16M9155	13.8	61.2	0.50	13.1	0.174	78.32	-1.75	25.92	-10.35	2.27	-0.27
NHH17450	13.5	66.8	0.45	12.6	0.171	76.02	-1.24	25.78	-10.93	2.10	-0.60
NE17433	13.4	68.0	0.42	12.6	0.185	78.00	-1.30	24.15	-11.03	1.94	0.08
NHH17612	13.5	66.4	0.44	12.6	0.195	77.99	-1.48	24.95	-10.53	1.88	0.34
NE18455	13.0	65.3	0.43	12.0	0.180	78.55	-1.70	25.04	-9.12	1.68	-0.20
20CP010069	12.9	65.9	0.42	11.9	0.155	77.21	-1.39	24.66	-10.66	1.79	-1.55
20CP010063	13.3	66.0	0.51	12.7	0.141	76.77	-0.72	23.84	-10.70	1.69	-1.08
20CP010061	12.8	59.5	0.55	12.0	0.093	78.46	-1.60	26.61	-9.61	1.75	0.77
20CP010072	13.7	62.4	0.47	12.8	0.148	76.38	-0.88	24.72	-11.93	1.45	-1.64
KS18H110-3	13.5	64.5	0.45	13.3	0.151	77.26	-1.17	26.06	-9.89	1.58	-1.38
KS18H111-3	13.6	64.7	0.46	12.8	0.134	76.90	-1.35	27.02	-10.50	1.71	-0.79
KS18H19-6	13.5	65.4	0.41	13.4	0.146	79.05	-1.66	25.39	-8.34	1.58	0.24
KS14HD286	12.8	64.8	0.51	12.3	0.096	77.85	-1.26	23.95	-12.00	2.08	-0.79
CO13007-F6R	12.8	67.6	0.43	11.9	0.114	79.17	-1.65	24.69	-9.26	1.57	-0.34
CO16D1487	12.6	66.8	0.38	11.3	0.168	79.31	-1.28	22.68	-9.67	1.58	1.55
CO16SF027	13.4	67.5	0.37	12.1	0.161	77.58	-1.76	25.67	-11.40	1.86	-0.85
CO16SF032	13.1	67.2	0.42	12.2	0.132	78.12	-1.78	25.72	-11.04	1.73	-0.47
CO16SF067	13.5	64.0	0.44	12.6	0.187	77.33	-1.24	24.92	-13.06	1.67	-0.66
CO16D402W	12.5	67.0	0.45	11.5	0.207	79.43	-1.65	24.93	-11.52	2.08	2.03
NF99117	13.1	64.4	0.40	12.7	0.181	79.10	-1.62	25.05	-9.54	1.55	-0.45
ON13P016	13.6	65.7	0.42	12.7	0.107	78.74	-1.17	25.19	-7.39	1.15	2.07
BASF 7	14.8	66.1	0.37	13.6	0.140	79.43	-1.30	23.90	-9.94	1.71	1.52
BASF 13	16.5	65.3	0.42	15.7	0.128	77.64	-0.73	23.49	-10.64	1.84	1.36
OK12716W Composite I	12.9	67.0	0.46	12.5	0.149	79.18	-1.32	24.96	-11.10	1.81	0.84
OK15MASBx7 ARS 8-20	13.9	62.8	0.43	12.5	0.116	79.39	-1.09	23.73	-9.06	1.40	4.64
OK15MASBx7 ARS 8-29	13.3	61.6	0.45	12.7	0.067	79.62	-1.11	24.26	-8.86	1.18	5.01
OK15DMASBx7 ARS 6-8	14.0	64.4	0.42	12.8	0.118	78.15	-1.20	24.73	-9.60	1.32	0.65
OKP17D101A350	14.0	65.6	0.48	12.6	0.142	77.37	-1.35	25.68	-10.02	1.65	-0.08

	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	(%)	(%)	(%)	(%)							
OK18510	13.5	64.9	0.42	12.0	0.154	78.16	-1.72	25.75	-8.40	1.40	0.45
LCH17-3193	13.1	65.8	0.42	12.0	0.145	77.22	-1.39	24.17	-11.98	2.19	0.67
LCH17-1390	12.6	63.4	0.38	11.6	0.129	78.99	-1.77	25.41	-8.88	1.62	-0.07
LCH17-3956	13.2	63.7	0.43	12.4	0.152	81.11	-1.66	23.19	-9.73	1.45	1.12
LCH18-9005	11.8	65.0	0.42	11.3	0.101	79.79	-2.03	24.46	-7.94	1.75	0.13
DH15HRW-65-142	13.6	67.4	0.43	12.5	0.134	78.04	-1.33	22.78	-11.99	1.71	0.02
KS13DH0041-35	13.4	64.4	0.45	12.4	0.092	79.08	-1.66	26.99	-6.02	1.14	0.23
NUSAKA15-3	12.6	69.2	0.40	11.9	0.113	79.54	-1.85	25.49	-7.66	1.40	1.13
XD4401	13.4	63.9	0.41	12.7	0.105	78.50	-1.22	23.44	-9.46	1.53	-0.13
XD4101	12.8	62.3	0.43	12.2	0.129	79.40	-1.48	26.21	-8.67	1.46	2.19

NR-Data not ready

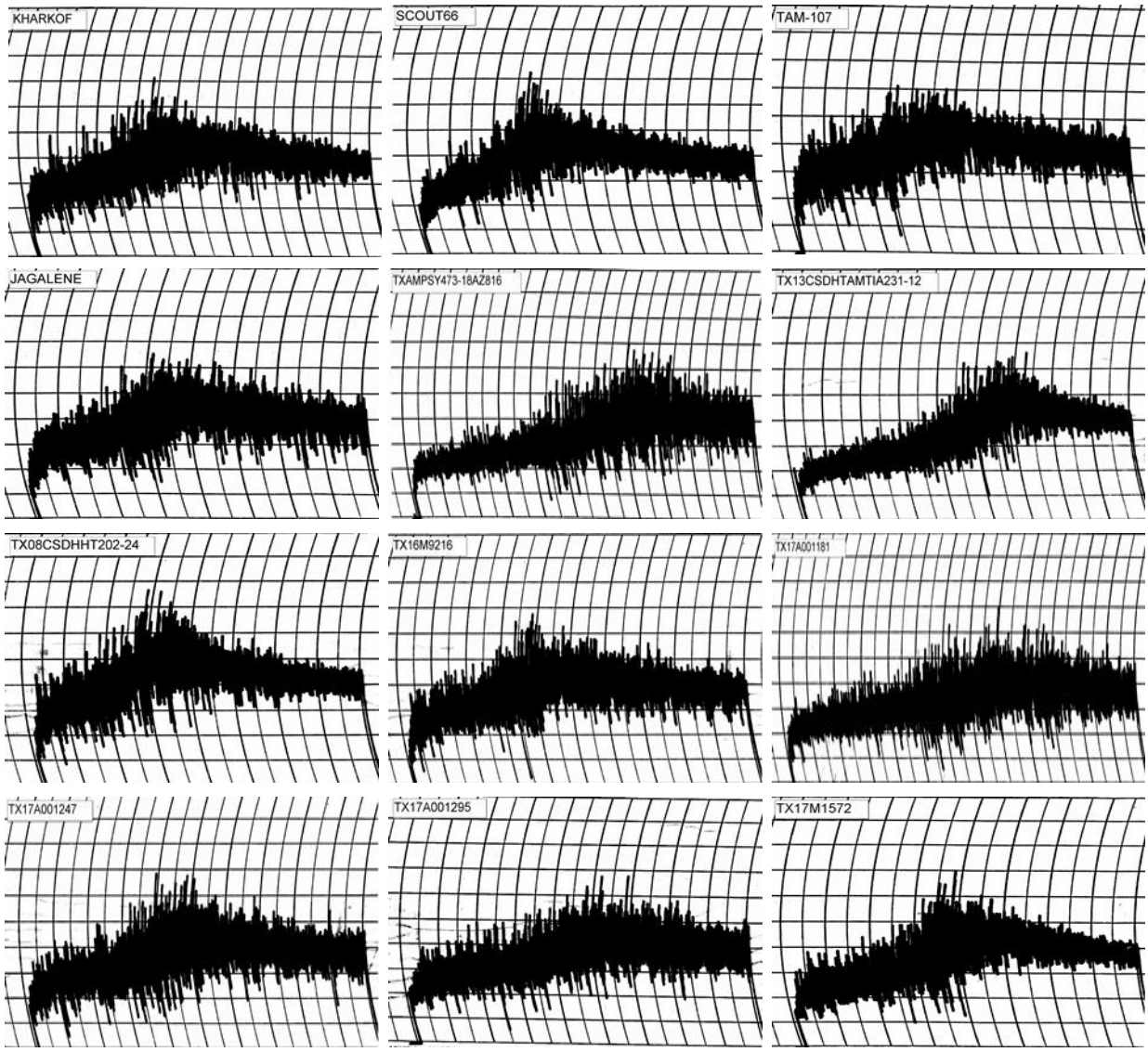
2021 SRPN Intraregional Production Zone

Northern High Plains

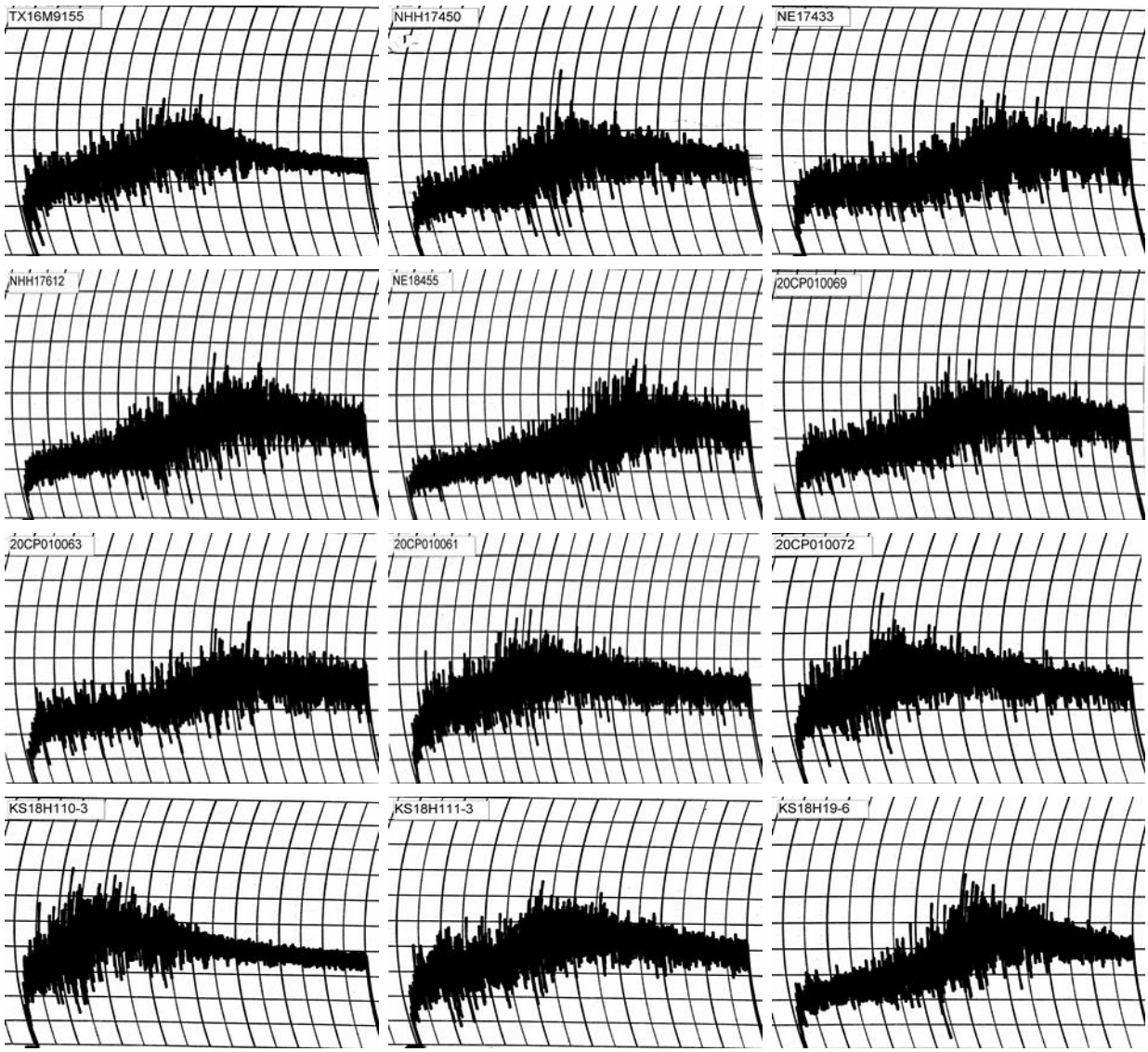
		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	13.7	65.8	3.88	3.88	3
Scout66	12.9	68.5	2.88	2.88	3
TAM-107	12.8	64.2	3.50	3.50	3
Jagalene	12.8	65.8	3.63	3.63	3
TXAMPSY 473-18AZ816	12.3	68.4	7.75	7.75	6
TX13CSDHTAMTIA231-12	13.0	68.0	5.75	5.75	4
TX08CSDHHT202-24	13.0	68.1	3.50	3.50	3
TX16M9216	12.5	66.7	4.00	4.00	4
TX17A001181	12.1	66.2	7.88	7.88	6
TX17A001247	12.4	67.6	4.75	4.75	4
TX17A001295	12.3	67.4	5.13	5.13	5
TX17M1572	13.3	66.1	3.88	3.88	3
TX16M9155	13.1	64.7	3.75	3.75	2
NHH17450	12.6	66.9	4.00	4.00	3
NE17433	12.6	66.9	5.00	5.00	5
NHH17612	12.6	67.0	6.13	6.13	6
NE18455	12.0	66.6	6.63	6.62	6
20CP010069	11.9	65.2	4.88	4.79	4
20CP010063	12.7	66.6	5.63	5.63	4
20CP010061	12.0	66.0	3.75	3.75	3
20CP010072	12.8	66.7	2.50	2.50	3
KS18H110-3	13.3	66.1	2.00	2.00	1
KS18H111-3	12.8	65.7	3.50	3.50	3
KS18H19-6	13.4	67.3	4.50	4.50	3
KS14HD286	12.3	65.4	4.25	4.25	4
CO13007-F6R	11.9	63.3	5.50	5.42	5
CO16D1487	11.3	63.8	5.50	5.05	5
CO16SF027	12.1	62.7	3.13	3.13	1
CO16SF032	12.2	61.4	3.00	3.00	2
CO16SF067	12.6	64.9	4.00	4.00	4
CO16D402W	11.5	63.6	7.00	6.61	6
NF99117	12.7	63.6	2.75	2.75	2
ON13P016	12.7	68.1	3.75	3.75	4
BASF 7	13.6	67.1	4.38	4.38	5
BASF 13	15.7	70.1	3.75	3.75	3
OK12716W Composite I	12.5	66.2	3.63	3.63	3
OK15MASBx7 ARS 8-20	12.5	69.9	1.00	1.00	6

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
OK15MASBx7 ARS 8-29	12.7	69.6	3.25	3.25	6
OK15DMASBx7 ARS 6-8	12.8	68.3	8.00	8.00	6
OKP17D101A350	12.6	61.9	3.50	3.50	1
OK18510	12.0	64.5	3.50	3.50	2
LCH17-3193	12.0	64.5	3.00	3.00	3
LCH17-1390	11.6	63.8	2.50	2.39	3
LCH17-3956	12.4	65.1	4.00	4.00	3
LCH18-9005	11.3	63.3	3.00	2.74	3
DH15HRW-65-142	12.5	65.3	3.63	3.63	3
KS13DH0041-35	12.4	64.0	3.50	3.50	3
NUSAKA15-3	11.9	62.7	3.13	3.08	2
XD4401	12.7	66.1	2.50	2.50	1
XD4101	12.2	65.2	3.50	3.50	3

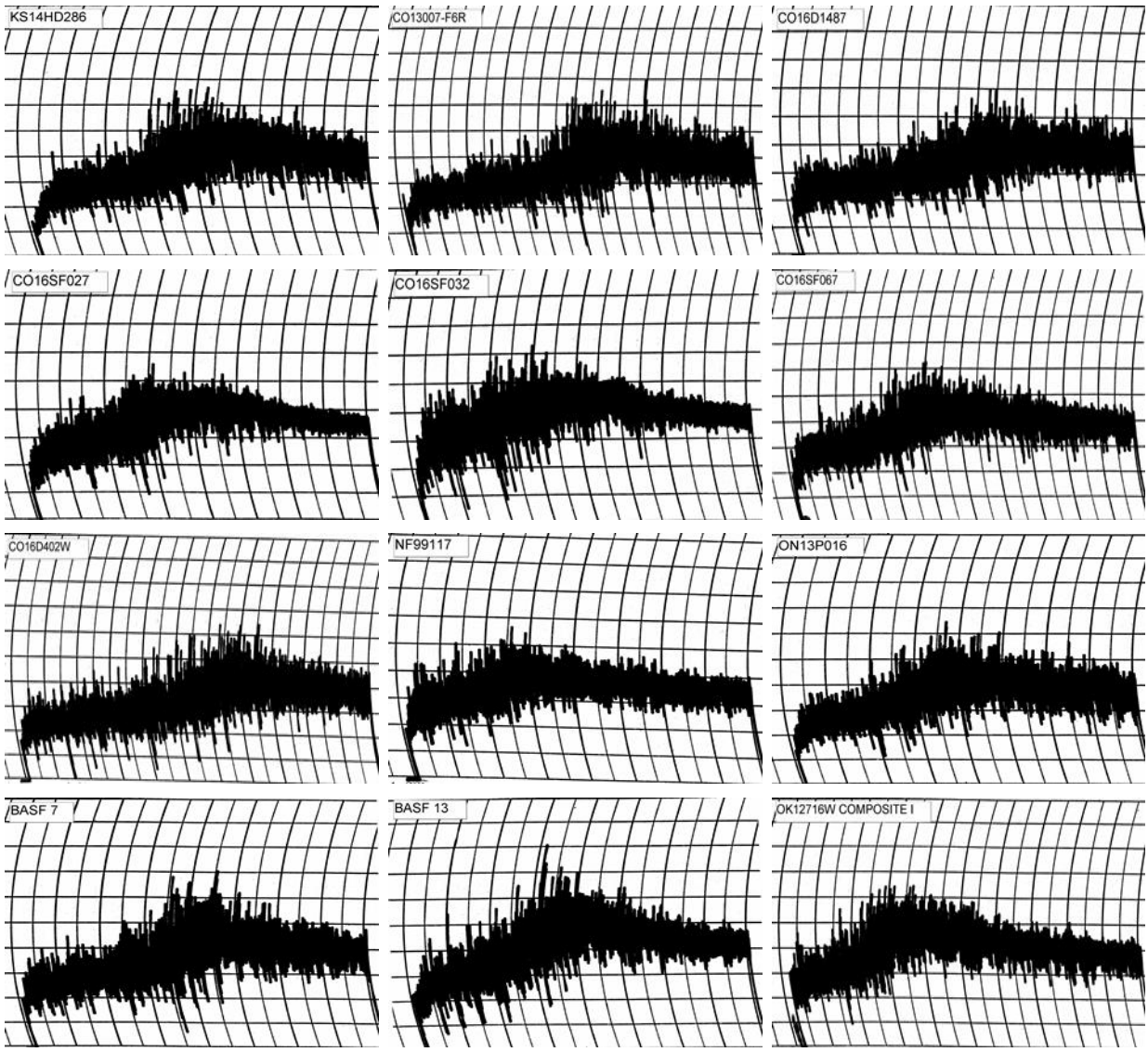
2021 SRPN Intraregional Production Zone
Northern High Plains



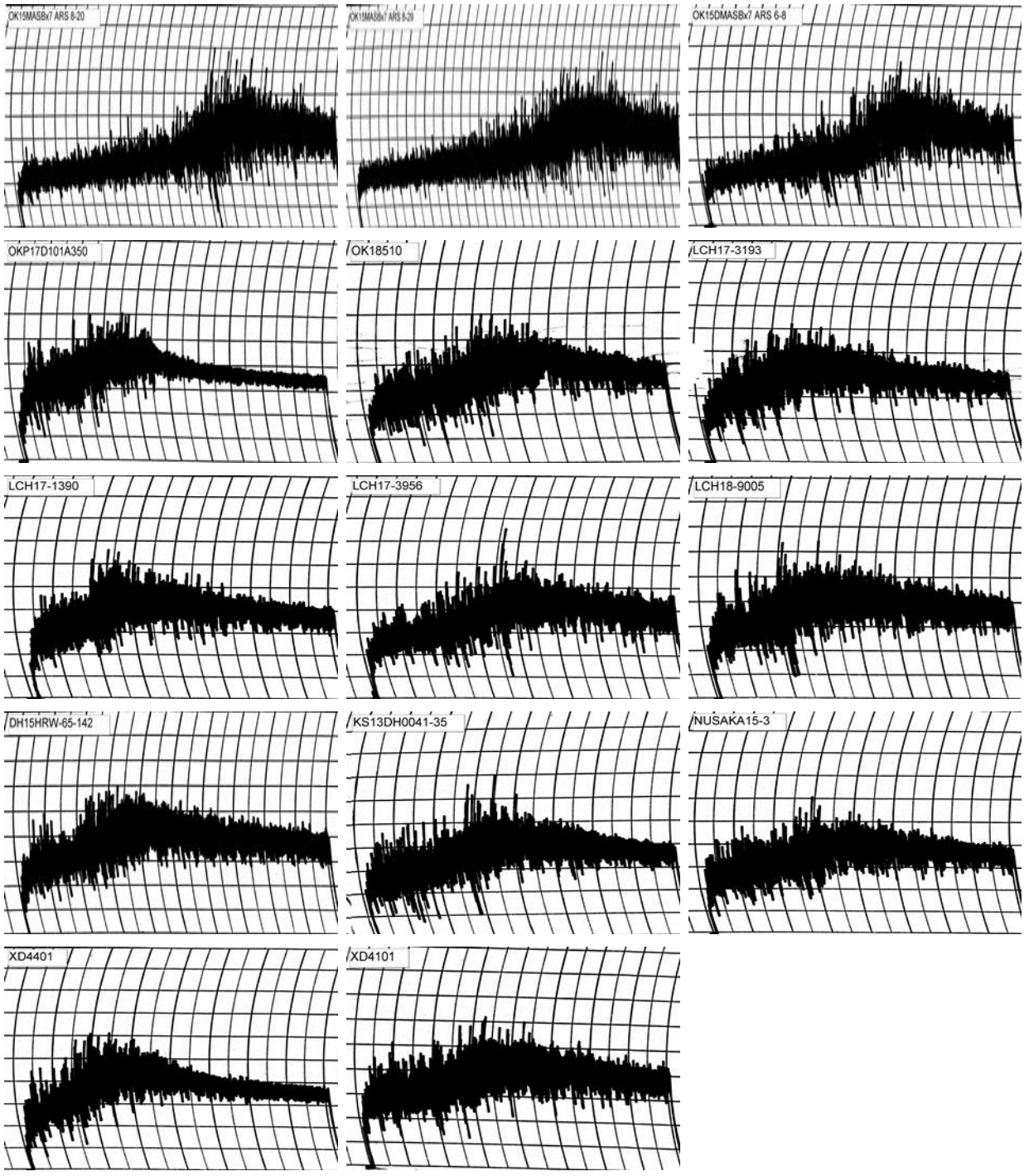
2021 SRPN Intraregional Production Zone
Northern High Plains



2021 SRPN Intraregional Production Zone
Northern High Plains



2021 SRPN Intraregional Production Zone
Northern High Plains



2021 SRPN 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	157.50							
Scout66	126.75							
TAM-107	142.58							
Jagalene	120.83							
TXAMPSY 473-18AZ816	113.75							
TX13CSDHTAMTIA231-12	137.08							
TX08CSDHHT202-24	144.00							
TX16M9216	150.00							
TX17A001181	133.67							
TX17A001247	152.25							
TX17A001295	154.83							
TX17M1572	102.42							
TX16M9155	154.17							
NHH17450	125.50							
NE17433	124.08							
NHH17612	132.67							
NE18455	126.92							
20CP010069	125.00							
20CP010063	120.67							
20CP010061	127.25							
20CP010072	135.25							
KS18H110-3	118.08							
KS18H111-3	125.33							
KS18H19-6	116.00							
KS14HD286	124.42							
CO13007-F6R	126.25							
CO16D1487	123.08							
CO16SF027	128.42							
CO16SF032	120.58							
CO16SF067	112.58							
CO16D402W	116.50							
NF99117	133.58							
ON13P016	144.58							
BASF 7	154.92							
BASF 13	144.92							
OK12716W Composite I	117.83							
OK15MASBx7 ARS 8-20	140.67							
OK15MASBx7 ARS 8-29	152.75							
OK15DMASBx7 ARS 6-8	141.83							

	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)
OKP17D101A350	157.00							
OK18510	147.58							
LCH17-3193	120.08							
LCH17-1390	116.58							
LCH17-3956	119.00							
LCH18-9005	129.92							
DH15HRW-65-142	135.50							
KS13DH0041-35	146.67							
NUSAKA15-3	146.67							
XD4401	154.58							
XD4101	145.50							

NR-Data not ready

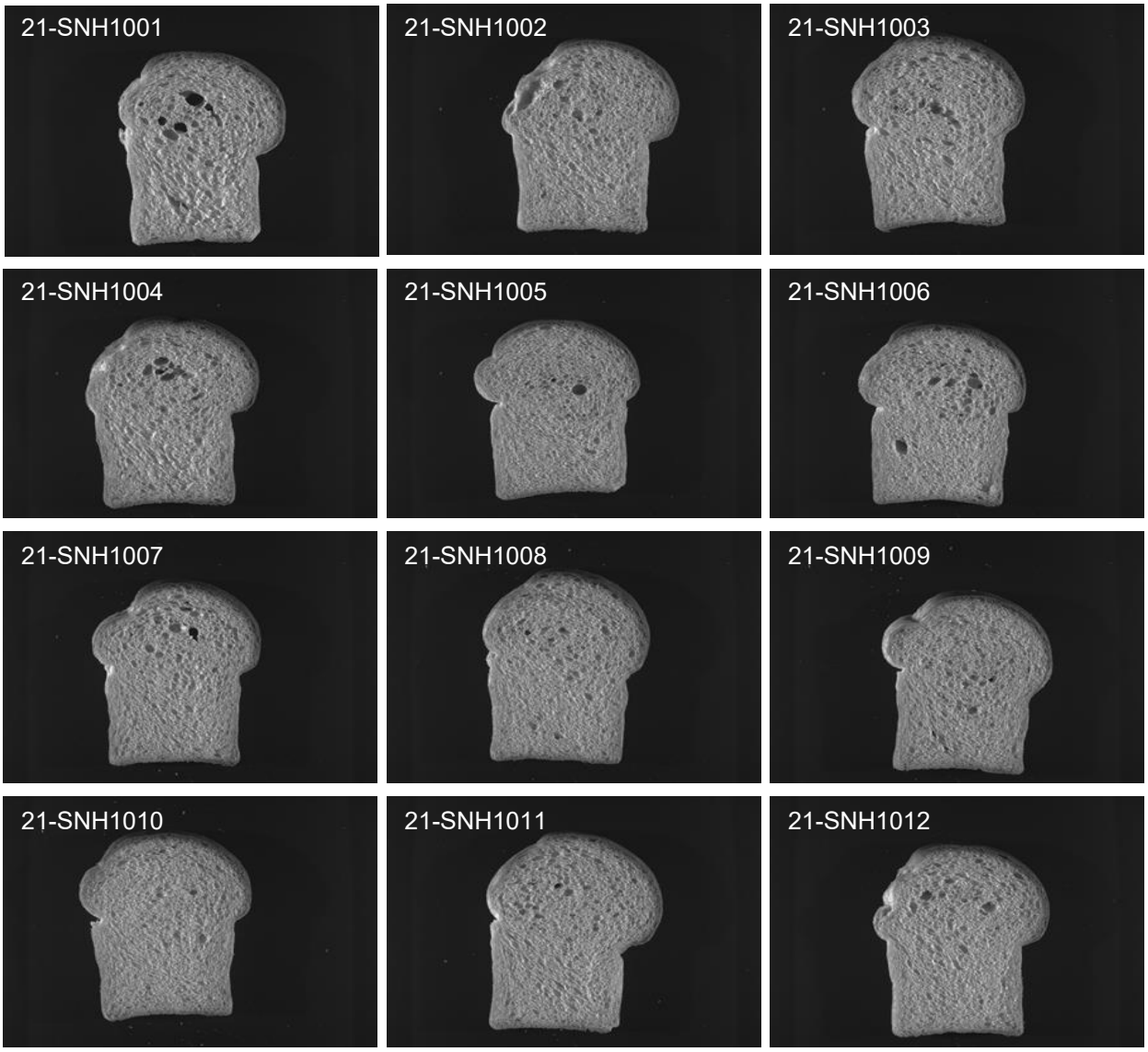
2021 SRPN Intraregional Production Zone

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	13.7	65.8	4.25	4.25	175.1	8.4	3.0	980	6.5	63
Scout66	12.9	68.6	3.75	3.75	178.4	8.1	3.5	1005	6.5	71
TAM-107	12.8	64.4	4.00	4.00	174.3	8.1	3.0	1030	6.9	75
Jagalene	12.8	65.4	4.75	4.75	174.9	8.1	3.5	1020	6.8	73
TXAMPSY 473-18AZ816	12.3	68.4	10.00	10.00	177.3	7.7	4.0	895	5.9	64
TX13CSDHTAMTIA231-12	13.0	67.6	6.75	6.75	177.3	7.3	3.0	1000	6.5	70
TX08CSDHHT202-24	13.0	67.7	4.38	4.38	177.4	7.8	2.5	975	6.4	68
TX16M9216	12.5	66.6	4.63	4.63	176.8	7.9	4.0	1000	6.5	74
TX17A001181	12.1	66.2	10.50	10.50	175.1	7.5	3.5	965	6.4	73
TX17A001247	12.4	67.5	5.50	5.50	176.7	8.0	4.0	995	6.6	74
TX17A001295	12.3	67.5	6.75	6.75	176.6	8.2	4.5	1040	6.8	80
TX17M1572	13.3	65.7	5.00	5.00	175.5	8.3	3.0	1025	6.8	70
TX16M9155	13.1	64.8	4.13	4.13	174.4	7.9	3.5	960	6.4	66
NHH17450	12.6	66.8	4.38	4.38	176.7	7.9	4.0	970	6.3	70
NE17433	12.6	67.1	6.00	6.00	176.9	8.1	3.0	1000	6.6	73
NHH17612	12.6	67.1	7.50	7.50	176.2	7.8	4.0	960	6.2	68
NE18455	12.0	66.2	9.00	8.99	174.8	7.7	4.0	980	6.5	76
20CP010069	11.9	65.2	5.38	5.28	174.5	8.3	2.5	990	6.6	78
20CP010063	12.7	66.3	6.00	6.00	175.8	8.2	2.5	1100	7.4	82
20CP010061	12.0	66.4	4.00	4.00	176.1	8.1	2.0	940	6.2	71
20CP010072	12.8	66.4	3.13	3.13	176.1	8.1	2.5	950	6.2	67
KS18H110-3	13.3	66.1	2.50	2.50	176.0	7.6	2.0	870	5.7	55
KS18H111-3	12.8	66.1	3.75	3.75	175.6	8.3	3.5	970	6.4	69
KS18H19-6	13.4	67.4	5.25	5.25	177.1	7.7	3.0	1000	6.5	67
KS14HD286	12.3	65.3	5.25	5.25	175.9	7.8	3.5	995	6.6	75
CO13007-F6R	11.9	63.5	8.50	8.38	173.5	8.1	3.5	1020	6.9	81
CO16D1487	11.3	64.1	6.25	5.74	173.8	7.6	3.0	900	6.0	72
CO16SF027	12.1	63.1	3.50	3.50	173.4	7.8	2.5	950	6.4	71
CO16SF032	12.2	61.2	3.38	3.38	171.2	7.8	3.5	950	6.5	70
CO16SF067	12.6	65.1	5.00	5.00	174.5	8.1	2.5	1005	6.7	74
CO16D402W	11.5	63.9	9.00	8.49	173.1	7.5	3.0	930	6.2	74
NF99117	12.7	63.6	3.25	3.25	174.3	7.8	3.0	930	6.2	65
ON13P016	12.7	68.0	4.75	4.75	177.8	7.8	4.0	975	6.3	70
BASF 7	13.6	66.9	5.25	5.25	175.7	8.1	4.0	1000	6.6	66
BASF 13	15.7	69.7	4.50	4.50	179.2	8.6	3.5	1130	7.4	66
OK12716W Composite I	12.5	65.9	4.00	4.00	175.5	7.9	4.0	995	6.6	74
OK15MASBx7 ARS 8-20	12.5	70.0	13.00	13.00	177.8	7.9	2.5	945	6.1	68
OK15MASBx7 ARS 8-29	12.7	69.6	16.00	16.00	177.8	7.8	2.0	905	5.9	63

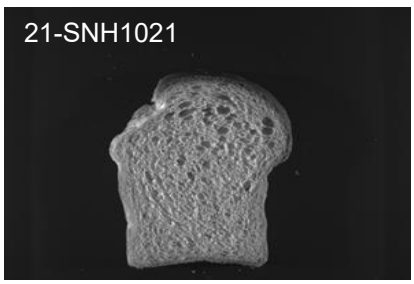
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
OK15DMASBx7 ARS 6-8	12.8	68.1	9.63	9.63	177.3	8.0	4.5	1010	6.6	72
OKP17D101A350	12.6	61.9	3.50	3.50	171.6	7.9	2.0	925	6.2	65
OK18510	12.0	64.6	4.00	4.00	174.4	7.9	3.5	935	6.2	70
LCH17-3193	12.0	64.4	3.00	3.00	175.0	7.8	3.5	895	5.9	66
LCH17-1390	11.6	63.5	2.75	2.62	173.6	7.6	2.0	960	6.4	76
LCH17-3956	12.4	65.1	4.25	4.25	175.1	7.6	2.5	990	6.6	74
LCH18-9005	11.3	63.5	3.50	3.20	174.1	7.4	4.0	905	6.0	73
DH15HRW-65-142	12.5	65.4	4.00	4.00	175.3	7.8	3.5	985	6.6	72
KS13DH0041-35	12.4	63.7	4.25	4.25	173.8	8.1	3.0	960	6.4	71
NUSAKA15-3	11.9	62.4	3.50	3.44	172.5	7.8	3.0	940	6.3	72
XD4401	12.7	66.5	3.00	3.00	176.5	8.3	3.5	960	6.2	68
XD4101	12.2	65.2	4.00	4.00	175.5	7.4	3.0	925	6.1	68

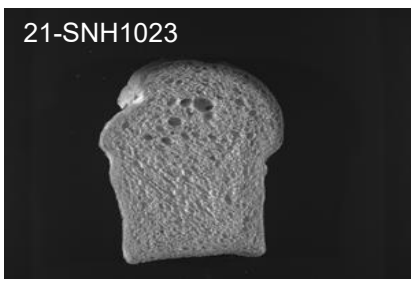
2021 SRPN Intraregional Production Zone
Northern High Plains

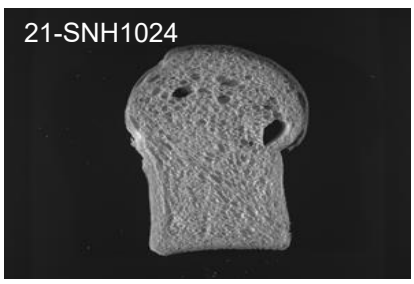


2021 SRPN Intraregional Production Zone

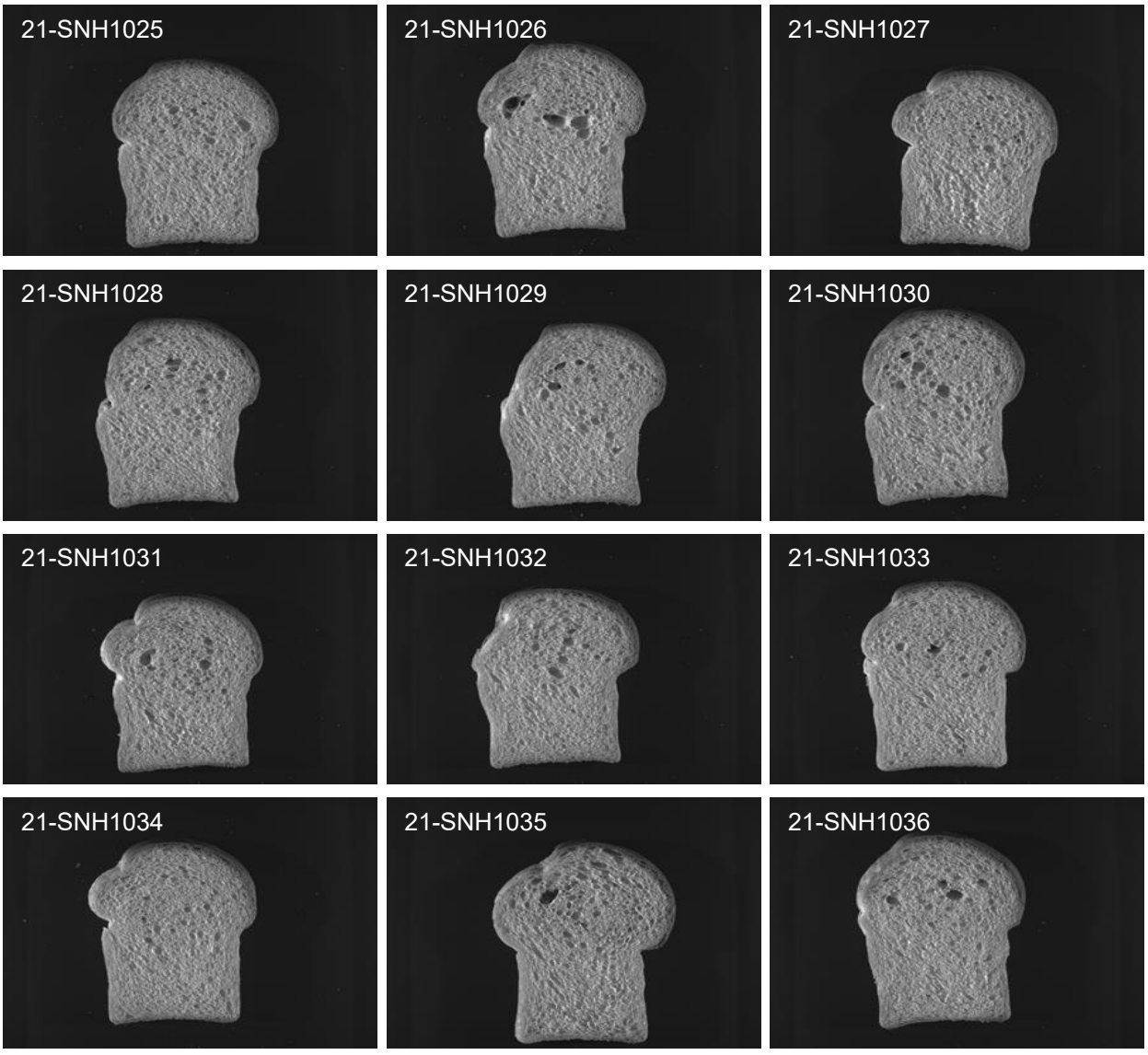
Northern High Plains



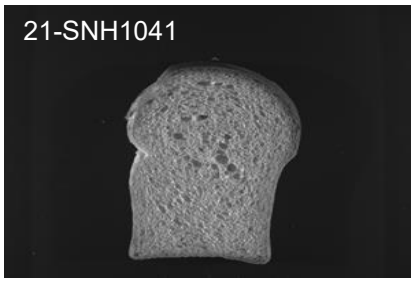


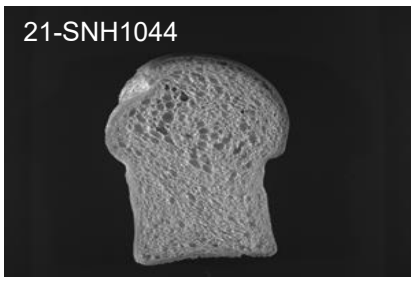


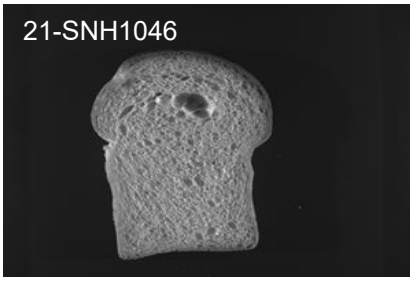
2021 SRPN Intraregional Production Zone
Northern High Plains

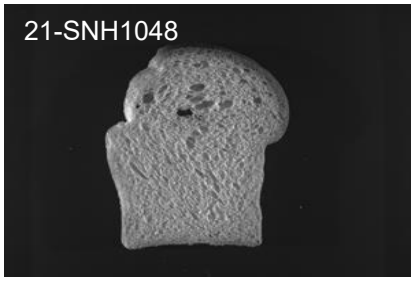


2021 SRPN Intraregional Production Zone
Northern High Plains









2021 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	59.6	13.2	0.6	30.0	9.5	2.55	0.30	45	19	MIXED	26-27-26-21-03
Scout66	60.4	13.0	0.6	33.6	9.8	2.69	0.36	64	16	HARD	05-06-26-63-01
TAM-107	58.0	13.0	0.6	33.3	11.6	2.69	0.38	64	19	HARD	07-12-18-63-01
Jagalene	59.8	12.9	0.5	32.6	10.0	2.75	0.37	71	17	HARD	01-07-20-72-01
TXAMPSY 473-18AZ816	58.2	13.3	0.6	32.9	11.7	2.62	0.36	72	17	HARD	02-05-15-78-01
TX13CSDHTAMTIA231-12	57.5	12.9	0.6	30.3	8.8	2.65	0.33	77	17	HARD	00-02-14-84-01
TX08CSDHHT202-24	59.6	13.1	0.6	36.4	12.5	2.80	0.33	81	18	HARD	00-04-07-89-01
TX16M9216	60.0	12.7	0.5	32.9	10.5	2.69	0.33	78	17	HARD	01-04-11-84-01
TX17A001181	60.2	12.9	0.5	35.9	10.3	2.73	0.39	61	16	HARD	04-14-32-50-01
TX17A001247	62.0	12.8	0.5	35.5	9.6	2.78	0.34	64	16	HARD	03-09-26-62-01
TX17A001295	58.3	12.8	0.6	32.0	10.0	2.64	0.38	78	16	HARD	00-02-09-89-01
TX17M1572	59.1	13.0	0.5	32.7	10.5	2.64	0.38	63	17	HARD	03-16-25-56-01
TX16M9155	58.5	12.5	0.6	31.8	10.6	2.70	0.35	84	17	HARD	00-02-06-92-01
NHH17450	58.6	12.8	0.5	30.9	9.8	2.63	0.33	65	19	HARD	05-12-23-60-01
NE17433	61.0	12.9	0.4	33.5	9.6	2.75	0.35	69	16	HARD	01-08-20-71-01
NHH17612	58.9	13.0	0.4	29.1	10.7	2.59	0.32	70	18	HARD	03-06-18-73-01
NE18455	57.8	12.9	0.5	32.0	11.9	2.63	0.35	65	19	HARD	05-10-24-61-01
20CP010069	57.1	13.0	0.5	28.6	9.8	2.61	0.42	74	18	HARD	02-04-17-77-01
20CP010063	57.7	13.1	0.5	31.9	10.1	2.64	0.35	82	18	HARD	00-04-07-89-01
20CP010061	59.2	13.3	0.5	35.2	10.1	2.81	0.40	88	19	HARD	00-01-05-94-01
20CP010072	59.4	13.5	0.6	38.0	11.1	2.76	0.38	82	16	HARD	01-01-07-91-01
KS18H110-3	59.4	13.2	0.6	33.8	10.4	2.72	0.39	73	17	HARD	02-05-13-80-01
KS18H111-3	58.9	12.9	0.6	33.3	10.8	2.79	0.40	76	18	HARD	01-03-14-82-01
KS18H19-6	59.5	13.0	0.5	34.8	10.6	2.82	0.36	69	16	HARD	01-06-22-71-01
KS14HD286	59.7	12.8	0.5	30.1	10.6	2.61	0.37	82	18	HARD	01-02-09-88-01
CO13007-F6R	60.1	12.6	0.6	36.1	10.3	2.80	0.34	68	18	HARD	01-10-20-69-01
CO16D1487	58.6	13.0	0.6	34.3	10.9	2.67	0.36	68	17	HARD	03-09-20-68-01
CO16SF027	57.8	12.5	0.6	29.6	9.3	2.59	0.34	66	19	HARD	04-11-24-61-01
CO16SF032	57.3	12.6	0.5	30.8	10.8	2.58	0.39	65	19	HARD	03-14-24-59-01
CO16SF067	59.4	12.6	0.5	30.5	12.3	2.58	0.34	77	17	HARD	01-05-12-82-01
CO16D402W	57.4	12.6	0.5	32.1	11.1	2.66	0.40	68	18	HARD	03-09-20-68-01
NF99117	59.7	12.6	0.5	35.8	9.0	2.82	0.31	61	16	HARD	04-13-29-54-01
ON13P016	60.3	13.0	0.4	33.7	10.9	2.73	0.35	79	18	HARD	02-03-09-86-01
BASF 7	58.4	12.9	0.5	36.7	11.6	2.81	0.39	55	17	HARD	09-23-30-38-01
BASF 13	58.5	12.5	0.6	36.0	8.6	2.84	0.34	57	16	HARD	05-22-29-44-01
OK12716W Composite I	58.6	13.0	0.5	33.1	10.7	2.68	0.37	72	18	HARD	01-08-17-74-01
OK15MASBx7 ARS 8-20	60.3	13.0	0.4	34.0	10.0	2.78	0.37	85	17	HARD	00-02-05-93-01
OK15MASBx7 ARS 8-29	59.4	13.0	0.5	33.4	9.9	2.75	0.36	84	18	HARD	01-01-09-89-01
OK15DMASBx7 ARS 6-8	60.6	12.5	0.6	32.3	9.6	2.80	0.37	70	17	HARD	01-07-19-73-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
OKP17D101A350	61.1	12.5	0.6	30.3	8.9	2.66	0.36	71	18	HARD	03-05-19-73-01
OK18510	61.1	12.3	0.5	34.5	8.6	2.86	0.32	62	16	HARD	02-16-29-53-01
LCH17-3193	58.3	12.8	0.5	30.0	9.7	2.56	0.40	77	21	HARD	03-03-13-81-01
LCH17-1390	59.1	12.4	0.6	27.8	10.2	2.53	0.38	75	18	HARD	02-04-11-83-01
LCH17-3956	59.1	12.4	0.5	32.7	11.0	2.73	0.36	68	17	HARD	03-09-17-71-01
LCH18-9005	59.2	12.1	0.5	29.3	10.6	2.51	0.37	76	20	HARD	03-05-10-82-01
DH15HRW-65-142	57.0	12.3	0.5	31.3	11.1	2.59	0.35	74	19	HARD	02-06-14-78-01
KS13DH0041-35	56.7	12.5	0.5	32.9	11.5	2.64	0.37	64	18	HARD	04-11-24-61-01
NUSAKA15-3	59.3	12.3	0.7	31.2	10.5	2.64	0.37	66	19	HARD	04-12-20-64-01
XD4401	58.6	12.1	0.7	29.2	9.8	2.58	0.38	64	18	HARD	05-08-26-61-01
XD4101	58.6	12.3	0.6	39.6	10.6	2.76	0.38	67	17	HARD	03-11-17-69-01

2021 SRPN Intraregional Production Zone

South 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	13.7	65.8	0.45	12.2	0.107	79.18	-1.57	23.37	-9.88	1.27	2.34
Scout66	12.3	70.3	0.46	11.3	0.125	77.93	-1.30	23.54	-9.00	1.31	1.34
TAM-107	12.4	67.8	0.43	11.2	0.154	76.90	-1.12	24.29	-9.77	1.48	2.69
Jagalene	12.2	68.8	0.53	10.8	0.197	76.70	-1.03	24.09	-9.88	1.45	0.57
TXAMPSY 473-18AZ816	11.6	66.7	0.51	10.1	0.160	76.40	-0.59	20.99	-13.28	2.18	3.53
TX13CSDHTAMTIA231-12	11.7	65.0	0.45	11.0	0.100	77.40	-1.10	23.96	-8.19	1.25	2.96
TX08CSDHHT202-24	12.8	62.4	0.57	11.7	0.108	76.85	-0.97	22.73	-11.04	1.60	1.47
TX16M9216	12.5	67.1	0.48	11.2	0.173	76.81	-0.81	22.62	-10.02	1.55	1.39
TX17A001181	11.9	67.8	0.41	10.7	0.137	79.56	-1.16	21.58	-9.34	1.13	4.19
TX17A001247	12.4	65.3	0.40	11.7	0.156	79.24	-1.22	21.79	-9.98	1.12	4.60
TX17A001295	11.8	63.5	0.51	10.9	0.132	77.93	-1.22	21.78	-10.53	1.52	2.24
TX17M1572	12.5	68.2	0.49	11.3	0.155	78.33	-1.46	23.02	-9.00	1.47	1.44
TX16M9155	11.8	63.3	0.51	11.0	0.143	76.83	-1.42	24.52	-9.17	1.62	1.78
NHH17450	11.7	67.6	0.45	10.8	0.139	77.75	-1.56	24.60	-9.04	1.60	1.27
NE17433	12.2	69.1	0.44	11.1	0.136	78.00	-1.23	21.48	-10.05	1.49	3.07
NHH17612	12.3	67.3	0.43	11.1	0.152	77.91	-1.26	24.20	-9.38	1.43	2.32
NE18455	11.3	65.9	0.45	10.3	0.200	75.25	-0.46	23.35	-9.19	1.25	0.22
20CP010069	11.6	67.1	0.47	10.5	0.115	75.98	-0.82	23.36	-9.37	1.28	0.16
20CP010063	11.9	66.8	0.47	10.9	0.117	76.16	-0.65	22.20	-10.32	1.41	0.17
20CP010061	11.5	63.1	0.52	10.4	0.061	79.42	-1.83	23.64	-8.42	1.71	4.40
20CP010072	12.7	63.8	0.45	11.1	0.093	77.11	-0.95	22.84	-9.36	1.24	1.65
KS18H110-3	12.7	65.5	0.42	11.4	0.102	75.99	-0.90	24.87	-8.24	1.46	-0.29
KS18H111-3	11.4	66.0	0.45	10.4	0.118	74.26	-0.62	24.57	-9.82	1.47	-0.30
KS18H19-6	12.6	66.4	0.40	11.7	0.143	76.90	-1.19	24.35	-8.91	1.43	0.47
KS14HD286	11.9	65.6	0.49	11.2	0.107	76.26	-0.82	23.80	-10.19	1.86	-0.03
CO13007-F6R	11.0	70.4	0.48	10.4	0.121	77.10	-1.22	23.76	-8.83	1.31	0.72
CO16D1487	10.6	69.6	0.49	9.7	0.158	77.40	-0.64	19.25	-12.47	1.80	3.78
CO16SF027	11.5	68.9	0.45	10.3	0.130	76.45	-1.56	25.16	-8.76	1.54	-0.46
CO16SF032	11.8	68.1	0.46	10.5	0.136	73.52	-0.38	24.03	-11.05	1.04	-2.76
CO16SF067	12.3	64.6	0.50	11.5	0.150	76.46	-1.16	24.19	-10.86	1.53	-0.50
CO16D402W	10.5	66.1	0.40	9.6	0.187	78.31	-1.72	22.44	-11.19	1.94	2.13
NF99117	12.1	64.9	0.37	11.3	0.163	77.76	-1.43	23.82	-8.38	1.29	0.42
ON13P016	12.3	67.3	0.42	11.3	0.119	78.61	-1.44	24.07	-6.88	1.19	2.11
BASF 7	12.3	67.3	0.43	11.1	0.150	75.66	-0.51	22.54	-10.09	1.46	1.40
BASF 13	14.7	65.0	0.39	13.4	0.107	75.02	-0.49	21.50	-9.26	1.82	1.45
OK12716W Composite I	11.7	67.2	0.41	10.7	0.151	76.02	-0.98	23.13	-9.39	1.58	0.58
OK15MASBx7 ARS 8-20	11.8	64.9	0.43	10.7	0.106	79.10	-1.56	22.98	-8.80	1.22	4.06
OK15MASBx7 ARS 8-29	11.2	64.2	0.49	10.8	0.090	77.95	-1.34	23.40	-8.31	1.42	3.86
OK15DMASBx7 ARS 6-8	12.5	65.9	0.40	11.2	0.105	78.31	-1.43	23.31	-8.02	1.28	1.63
OKP17D101A350	12.2	68.4	0.47	11.1	0.123	77.28	-1.64	25.66	-7.88	1.53	-0.05

	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	(%)	(%)	(%)	(%)							
OK18510	11.9	67.6	0.56	10.6	0.155	77.73	-1.96	25.50	-7.06	1.44	-0.30
LCH17-3193	11.7	66.9	0.46	10.5	0.116	75.89	-1.42	24.82	-9.39	1.97	-0.68
LCH17-1390	11.4	63.7	0.45	10.5	0.160	76.92	-1.30	25.27	-7.52	1.67	0.17
LCH17-3956	11.6	65.1	0.49	10.9	0.140	78.26	-1.49	23.22	-6.86	1.56	-0.14
LCH18-9005	10.7	66.5	0.51	9.6	0.141	75.64	-0.58	22.56	-10.06	1.74	0.01
DH15HRW-65-142	11.6	67.1	0.50	10.6	0.130	76.19	-0.89	22.20	-10.34	1.73	-0.31
KS13DH0041-35	11.7	65.2	0.49	10.4	0.139	72.83	-0.05	24.37	-6.21	1.93	0.64
NUSAKA15-3	11.6	66.7	0.45	10.6	0.083	77.55	-1.54	24.92	-6.83	1.57	0.54
XD4401	11.7	65.4	0.50	10.7	0.077	76.91	-1.27	23.50	-6.72	1.48	0.66
XD4101	11.8	63.7	0.42	11.0	0.104	77.60	-1.48	24.65	-8.18	1.38	1.93

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		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	12.2	63.8	4.00	4.00	4
Scout66	11.3	65.2	2.75	2.50	3
TAM-107	11.2	63.1	4.00	3.60	4
Jagalene	10.8	62.0	4.75	4.09	4
TXAMPSY 473-18AZ816	10.1	64.3	9.88	7.64	6
TX13CSDHTAMTIA231-12	11.0	64.7	5.38	4.72	5
TX08CSDHHT202-24	11.7	63.9	3.63	3.49	3
TX16M9216	11.2	64.1	5.13	4.66	4
TX17A001181	10.7	64.2	9.00	7.59	6
TX17A001247	11.7	66.0	6.13	5.93	5
TX17A001295	10.9	65.2	6.63	5.78	5
TX17M1572	11.3	63.4	4.63	4.26	4
TX16M9155	11.0	60.7	4.25	3.71	2
NHH17450	10.8	62.5	3.88	3.34	3
NE17433	11.1	64.0	6.13	5.50	5
NHH17612	11.1	63.9	6.25	5.58	6
NE18455	10.3	63.1	6.13	4.89	5
20CP010069	10.5	63.0	4.75	3.90	4
20CP010063	10.9	62.0	6.75	5.83	6
20CP010061	10.4	63.7	4.00	3.21	4
20CP010072	11.1	64.0	3.25	2.90	4
KS18H110-3	11.4	64.0	3.00	2.80	3
KS18H111-3	10.4	61.8	4.00	3.23	4
KS18H19-6	11.7	63.9	5.25	5.07	4
KS14HD286	11.2	63.0	5.13	4.61	4
CO13007-F6R	10.4	61.7	7.13	5.74	6
CO16D1487	9.7	61.1	5.88	4.25	4
CO16SF027	10.3	60.1	3.00	2.40	3
CO16SF032	10.5	59.0	2.88	2.38	1
CO16SF067	11.5	63.7	4.75	4.48	4
CO16D402W	9.6	61.0	6.38	4.57	5
NF99117	11.3	61.8	3.00	2.76	3
ON13P016	11.3	65.8	4.88	4.46	4
BASF 7	11.1	63.0	4.75	4.25	4
BASF 13	13.4	67.2	5.38	5.38	5
OK12716W Composite I	10.7	63.2	3.63	3.04	4
OK15MASBx7 ARS 8-20	10.7	66.9	1.50	9.75	6

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
OK15MASBx7 ARS 8-29	10.8	66.9	3.50	1.54	6
OK15DMASBx7 ARS 6-8	11.2	66.2	8.13	7.38	6
OKP17D101A350	11.1	60.4	3.50	3.11	3
OK18510	10.6	62.1	4.50	3.75	4
LCH17-3193	10.5	62.4	2.50	2.04	3
LCH17-1390	10.5	62.4	3.25	2.67	3
LCH17-3956	10.9	62.5	4.13	3.56	4
LCH18-9005	9.6	60.5	4.00	2.86	1
DH15HRW-65-142	10.6	62.1	5.50	4.58	5
KS13DH0041-35	10.4	60.3	3.75	3.04	3
NUSAKA15-3	10.6	60.1	3.75	3.14	3
XD4401	10.7	62.8	3.00	2.52	3
XD4101	11.0	62.7	3.63	3.18	4

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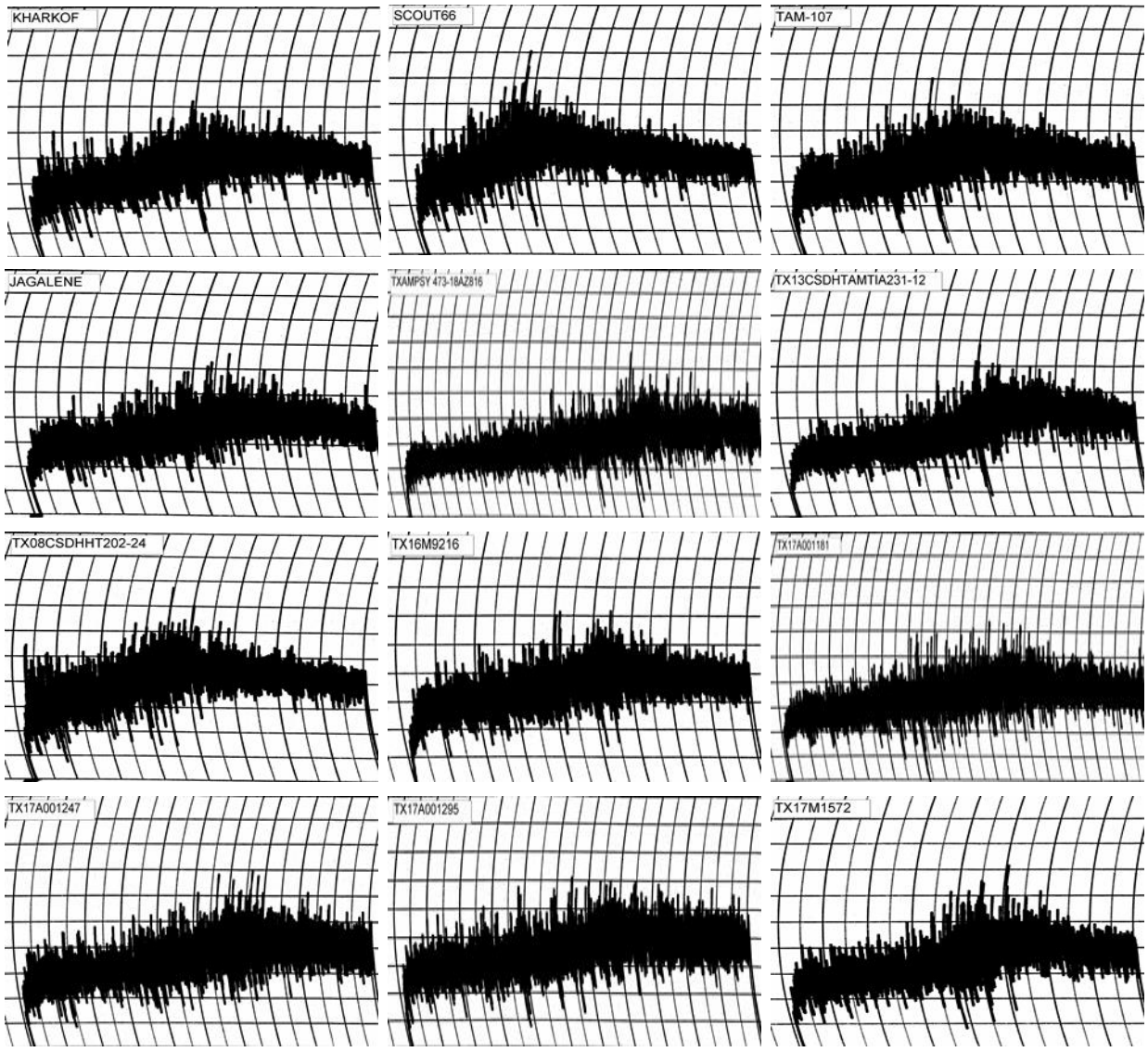

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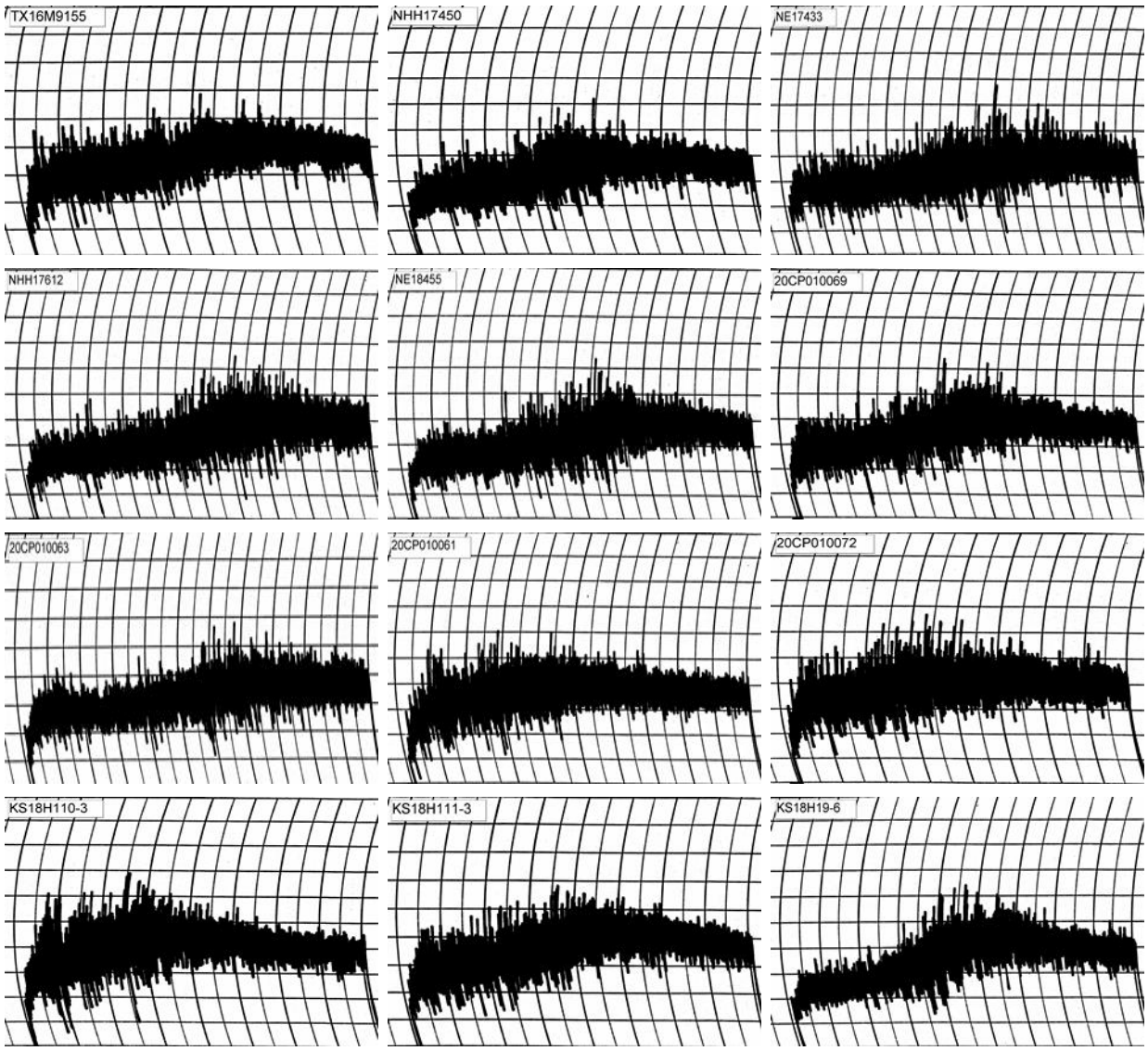
South Central Plains



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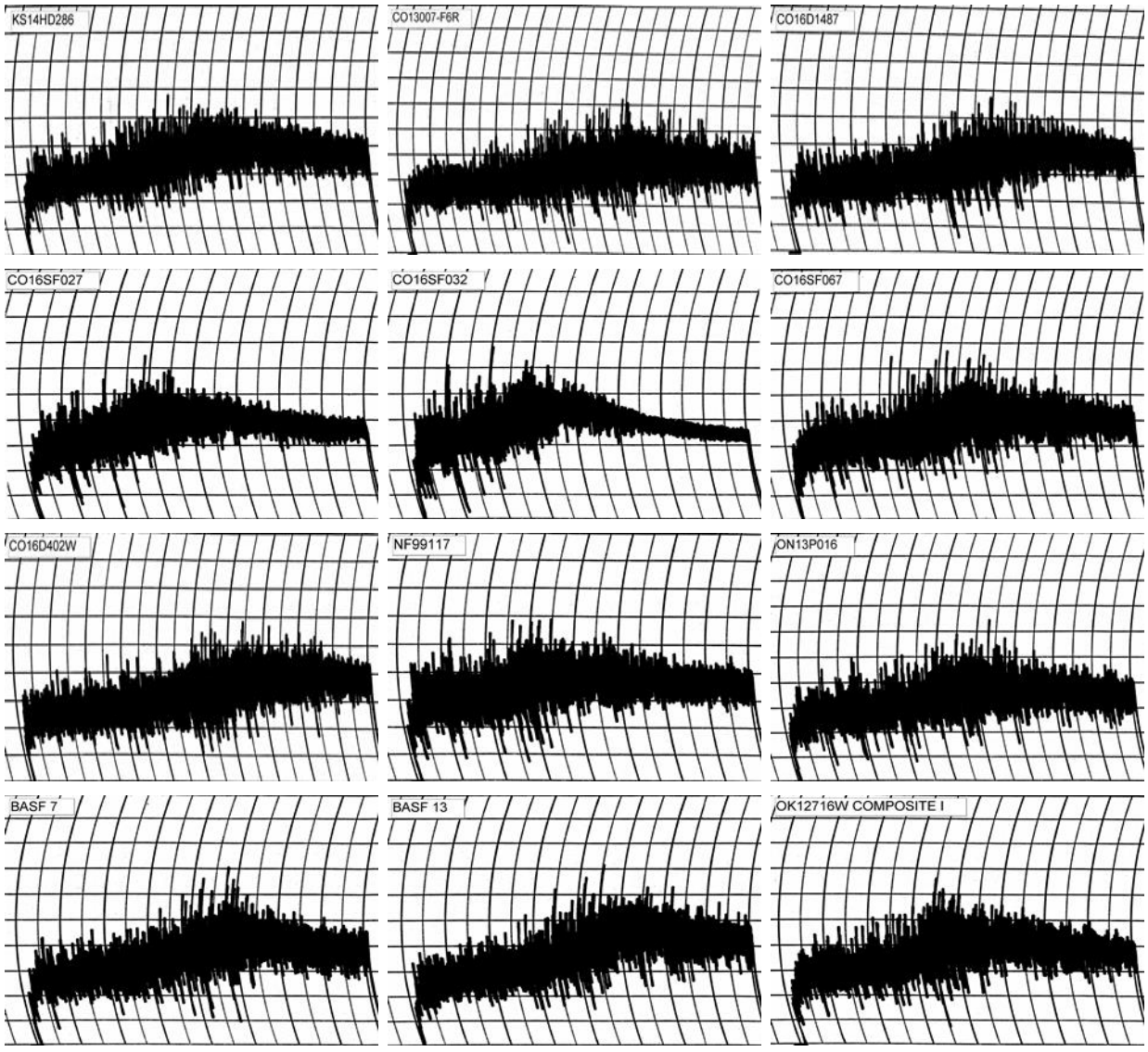
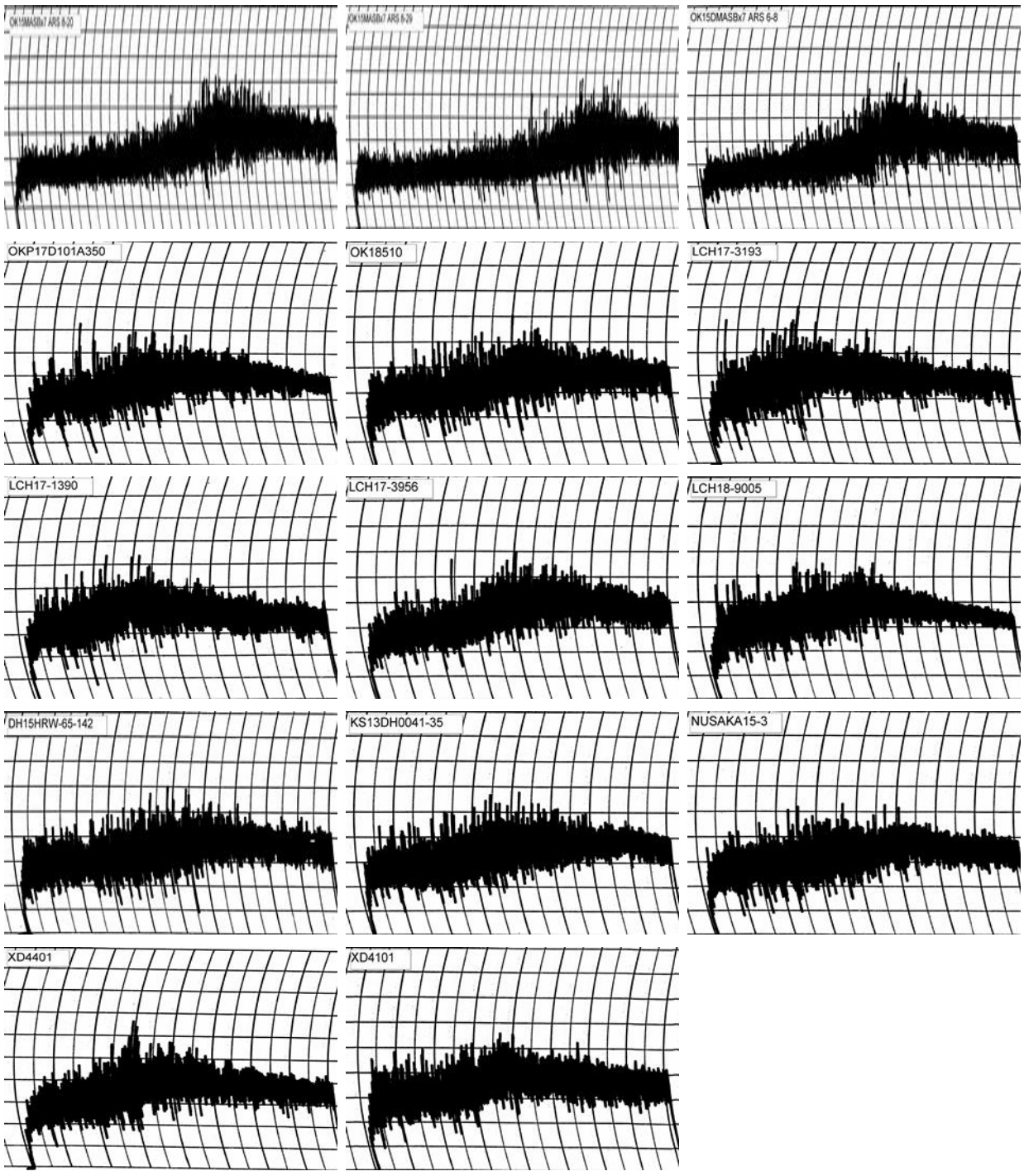
South Central Plains



2021 SRPN Intraregional Production Zone
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	146.75							
Scout66	97.17							
TAM-107	68.33							
Jagalene	94.67							
TXAMPSY 473-18AZ816	101.83							
TX13CSDHTAMTIA231-12	79.50							
TX08CSDHHT202-24	61.67							
TX16M9216	59.08							
TX17A001181	94.83							
TX17A001247	142.58							
TX17A001295	92.17							
TX17M1572	57.58							
TX16M9155	139.33							
NHH17450	70.75							
NE17433	111.50							
NHH17612	87.92							
NE18455	97.50							
20CP010069	119.17							
20CP010063	17.25							
20CP010061	75.33							
20CP010072	100.25							
KS18H110-3	125.00							
KS18H111-3	126.67							
KS18H19-6	63.92							
KS14HD286	103.83							
CO13007-F6R	100.33							
CO16D1487	58.92							
CO16SF027	95.42							
CO16SF032	89.75							
CO16SF067	95.25							
CO16D402W	27.17							
NF99117	19.50							
ON13P016	28.50							
BASF 7	94.92							
BASF 13	72.33							
OK12716W Composite I	46.75							
OK15MASBx7 ARS 8-20	44.17							
OK15MASBx7 ARS 8-29	43.08							
OK15DMASBx7 ARS 6-8	79.42							

	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)
OKP17D101A350	49.67							
OK18510	45.67							
LCH17-3193	58.75							
LCH17-1390	106.58							
LCH17-3956	43.75							
LCH18-9005	55.67							
DH15HRW-65-142	111.58							
KS13DH0041-35	119.25							
NUSAKA15-3	125.08							
XD4401	121.33							
XD4101	39.25							

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	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	12.2	63.4	5.00	5.00	173.2	7.7	3.0	885	5.9	63
Scout66	11.3	65.5	4.00	3.64	175.7	7.7	2.5	925	6.0	75
TAM-107	11.2	63.5	5.00	4.50	173.3	7.4	3.5	940	6.3	78
Jagalene	10.8	62.0	5.50	4.73	171.7	7.6	3.5	930	6.3	80
TXAMPSY 473-18AZ816	10.1	62.5	11.00	8.51	171.8	7.3	3.0	790	5.2	68
TX13CSDHTAMTIA231-12	11.0	64.6	6.25	5.48	174.6	7.5	2.5	890	5.8	74
TX08CSDHHT202-24	11.7	65.6	4.25	4.08	175.6	7.5	4.0	965	6.3	77
TX16M9216	11.2	64.5	5.25	4.77	174.7	7.2	4.0	930	6.1	76
TX17A001181	10.7	64.5	9.75	8.22	173.5	7.2	3.5	880	5.8	75
TX17A001247	11.7	66.0	7.00	6.77	174.8	7.1	3.5	905	6.0	69
TX17A001295	10.9	65.5	8.00	6.97	175.1	7.5	4.0	935	6.2	80
TX17M1572	11.3	63.5	5.75	5.29	172.8	7.9	4.0	975	6.6	81
TX16M9155	11.0	60.6	4.25	3.71	170.7	6.9	2.5	840	5.6	67
NHH17450	10.8	62.7	4.50	3.87	172.8	7.4	3.5	900	6.0	76
NE17433	11.1	63.7	7.00	6.28	173.3	7.3	3.5	905	6.0	74
NHH17612	11.1	63.6	7.50	6.70	173.7	7.2	2.5	870	5.7	70
NE18455	10.3	62.8	8.00	6.39	172.4	7.4	4.0	880	5.9	78
20CP010069	10.5	62.8	5.63	4.62	172.5	7.9	4.0	935	6.3	84
20CP010063	10.9	62.7	8.50	7.34	172.1	7.2	2.5	955	6.5	83
20CP010061	10.4	66.0	4.50	3.61	175.5	7.3	2.0	825	5.4	70
20CP010072	11.1	64.0	4.00	3.56	173.9	7.4	3.0	885	5.8	72
KS18H110-3	11.4	64.3	3.00	2.80	174.2	7.3	2.5	885	5.9	69
KS18H111-3	10.4	61.9	4.00	3.23	171.0	7.6	3.5	910	6.2	81
KS18H19-6	11.7	62.8	5.25	5.07	172.8	7.2	4.0	960	6.4	76
KS14HD286	11.2	62.8	5.50	4.94	173.1	7.5	3.0	945	6.3	79
CO13007-F6R	10.4	61.7	7.75	6.23	170.3	7.1	3.0	875	6.0	77
CO16D1487	9.7	60.9	6.25	4.52	170.5	7.1	3.5	825	5.6	76
CO16SF027	10.3	59.9	3.50	2.80	169.8	7.2	2.0	845	5.7	73
CO16SF032	10.5	59.0	3.00	2.47	168.7	7.5	2.0	875	6.0	75
CO16SF067	11.5	64.0	4.75	4.48	173.3	7.6	2.5	935	6.2	74
CO16D402W	9.6	61.0	7.25	5.19	170.6	7.4	2.5	870	5.9	84
NF99117	11.3	62.2	4.00	3.67	172.6	7.5	3.5	920	6.1	74
ON13P016	11.3	66.0	5.25	4.80	175.2	7.3	3.0	925	6.0	75
BASF 7	11.1	62.9	5.25	4.70	172.8	7.8	3.5	920	6.1	76
BASF 13	13.4	66.2	5.25	5.25	174.9	8.3	3.0	1100	7.4	77
OK12716W Composite I	10.7	62.2	4.25	3.56	171.7	7.5	3.0	925	6.2	81
OK15MASBx7 ARS 8-20	10.7	67.1	14.50	12.29	174.4	7.4	2.0	815	5.4	66
OK15MASBx7 ARS 8-29	10.8	67.0	16.75	14.32	175.0	7.3	2.0	815	5.3	66

	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/%)
OK15DMASBx7 ARS 6-8	11.2	66.3	8.50	7.71	174.3	7.7	3.5	985	6.6	83
OKP17D101A350	11.1	59.3	3.75	3.33	168.7	7.3	2.5	865	6.0	70
OK18510	10.6	62.1	4.50	3.75	171.7	7.5	4.0	915	6.1	80
LCH17-3193	10.5	61.2	3.38	2.75	171.5	7.6	2.5	860	5.8	74
LCH17-1390	10.5	61.2	3.25	2.67	170.6	7.2	3.0	915	6.2	81
LCH17-3956	10.9	62.2	4.75	4.09	171.9	7.5	2.5	970	6.6	85
LCH18-9005	9.6	60.1	4.38	3.13	170.0	7.5	3.5	850	5.8	81
DH15HRW-65-142	10.6	62.1	5.50	4.58	171.5	7.5	3.0	930	6.3	82
KS13DH0041-35	10.4	60.4	4.75	3.85	170.0	7.9	3.0	930	6.4	84
NUSAKA15-3	10.6	59.2	4.00	3.35	168.8	7.4	3.5	885	6.1	76
XD4401	10.7	62.4	3.38	2.84	172.5	7.6	3.5	885	6.0	76
XD4101	11.0	62.4	4.00	3.50	172.4	7.5	2.5	880	5.9	72

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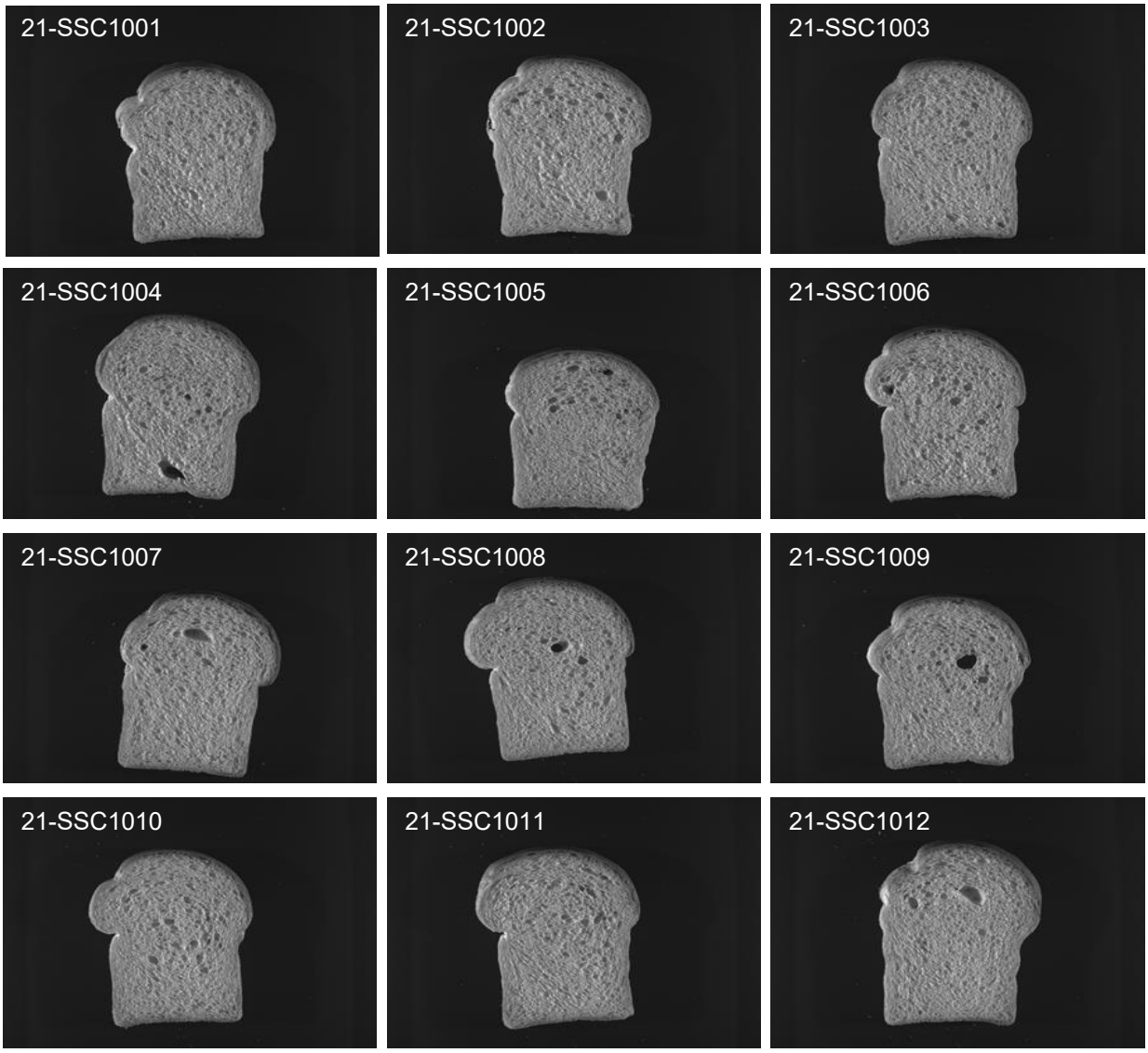
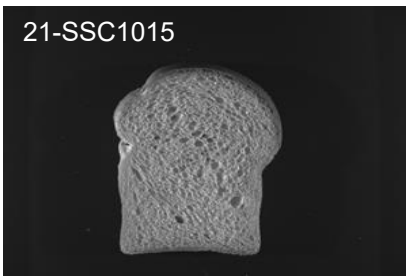
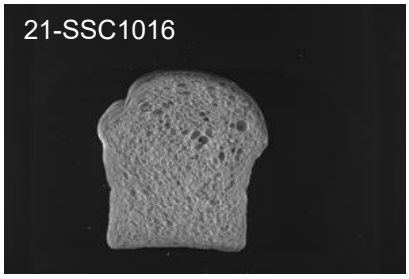
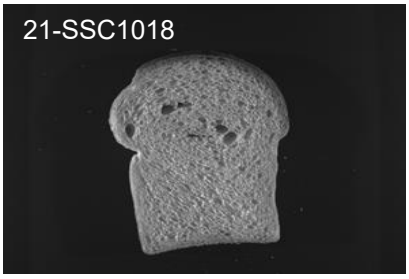
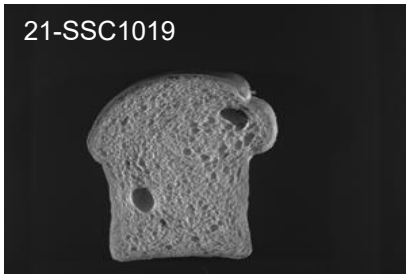


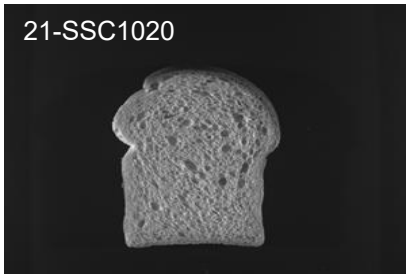
2021 SRPN Intraregional Production Zone
South Central Plains

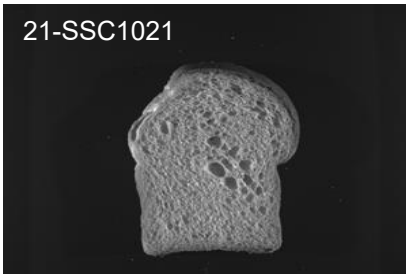


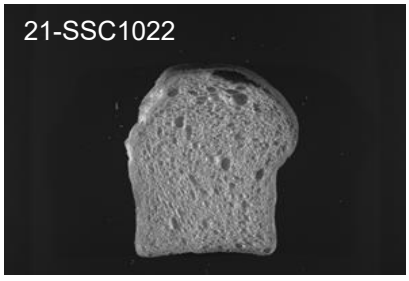


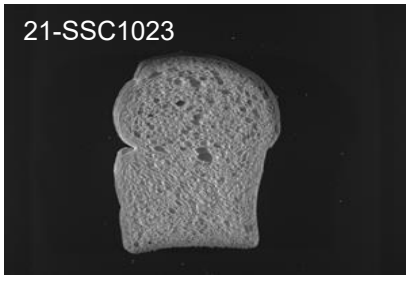


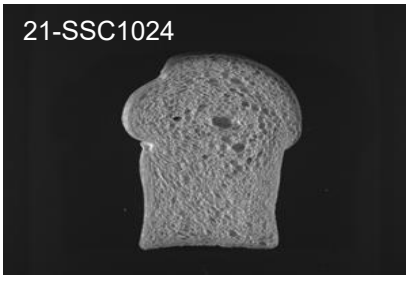




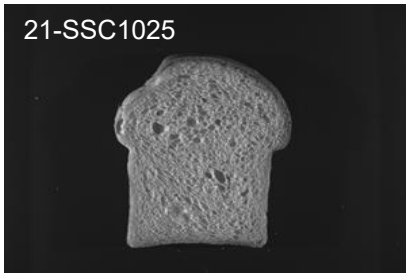


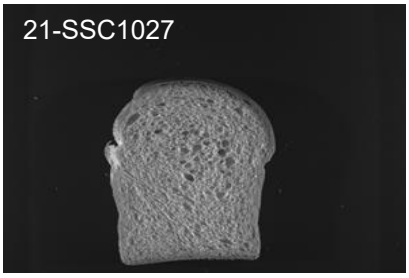


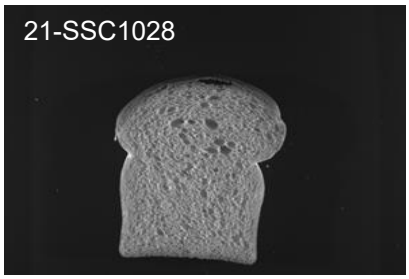


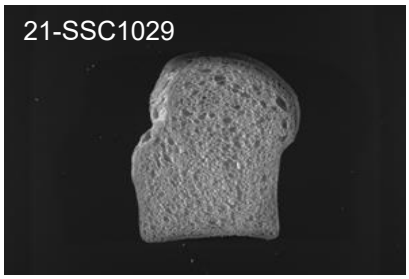


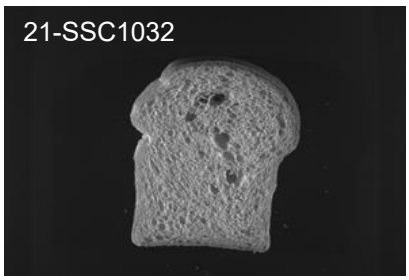
2021 SRPN Intraregional Production Zone
South Central Plains



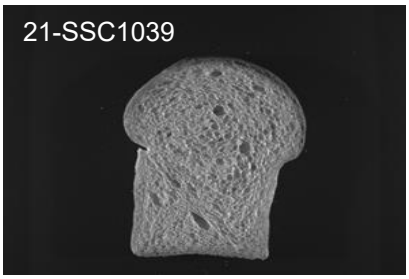


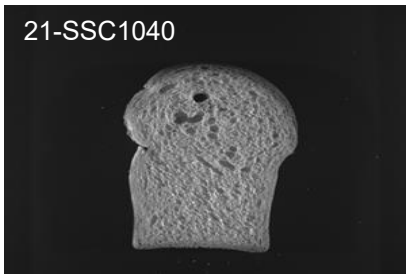


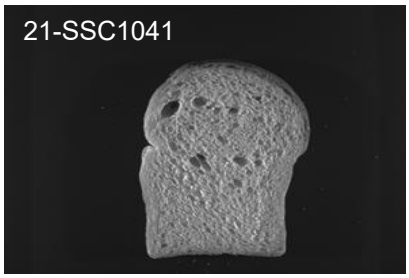


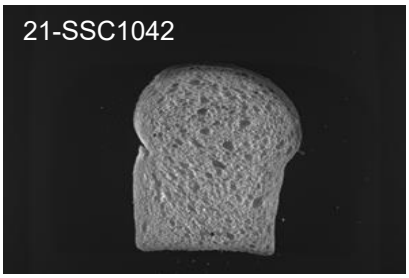


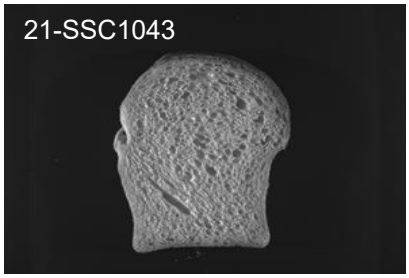
2021 SRPN Intraregional Production Zone
South Central Plains

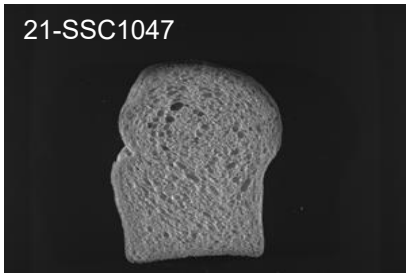


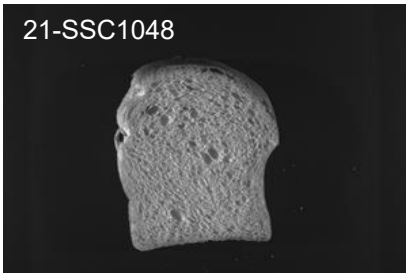


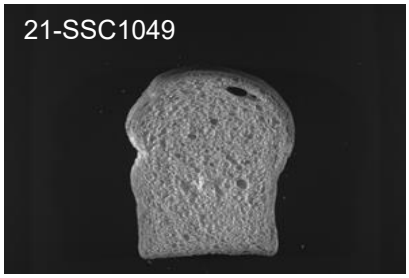












2021 SRPN Intraregional Production Zone

Southern High Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	55.1	14.2	0.4	27.5	10.1	2.38	0.34	43	18	MIXED	31-26-25-18-03
Scout66	55.8	14.3	0.3	35.1	9.4	2.72	0.33	63	16	HARD	03-11-28-58-01
TAM-107	56.3	14.4	0.3	30.9	9.5	2.57	0.37	61	17	HARD	05-16-26-53-01
Jagalene	56.7	14.7	0.3	29.3	10.9	2.57	0.34	64	17	HARD	03-11-23-63-01
TXAMPSY 473-18AZ816	56.1	14.6	0.3	30.3	9.5	2.50	0.35	71	15	HARD	01-07-14-78-01
TX13CSDHTAMTIA231-12	52.1	13.8	0.3	25.0	9.3	2.34	0.35	70	17	HARD	02-05-19-74-01
TX08CSDHHT202-24	58.3	14.0	0.3	30.2	10.2	2.59	0.35	80	18	HARD	01-03-11-85-01
TX16M9216	57.6	13.8	0.3	29.2	8.2	2.59	0.35	73	15	HARD	01-04-15-80-01
TX17A001181	57.8	13.4	0.2	32.6	11.1	2.54	0.37	60	15	HARD	04-14-30-52-01
TX17A001247	59.9	13.3	0.3	33.3	9.3	2.62	0.33	63	15	HARD	03-09-28-60-01
TX17A001295	54.1	14.0	0.3	27.1	9.7	2.42	0.37	72	17	HARD	01-08-16-75-01
TX17M1572	56.8	13.9	0.3	30.0	9.6	2.49	0.32	59	16	HARD	04-17-32-47-01
TX16M9155	56.4	13.9	0.3	28.3	8.7	2.53	0.31	87	17	HARD	01-01-06-92-01
NHH17450	57.3	13.8	0.3	29.4	9.1	2.58	0.31	64	16	HARD	02-12-25-61-01
NE17433	58.6	13.8	0.3	29.6	9.2	2.54	0.33	65	16	HARD	02-11-22-65-01
NHH17612	57.7	14.2	0.3	25.8	8.6	2.42	0.31	67	18	HARD	02-08-22-68-01
NE18455	57.3	14.3	0.3	28.0	8.8	2.48	0.33	56	16	HARD	08-21-31-40-01
20CP010069	52.6	14.5	0.3	23.5	8.6	2.38	0.39	74	17	HARD	01-05-12-82-01
20CP010063	56.6	14.0	0.3	29.4	8.7	2.53	0.35	78	17	HARD	00-04-08-88-01
20CP010061	55.0	14.1	0.3	28.8	9.6	2.53	0.37	93	19	HARD	01-01-02-96-01
20CP010072	56.4	14.0	0.3	34.1	10.7	2.60	0.34	83	15	HARD	00-01-04-95-01
KS18H110-3	57.5	13.4	0.3	29.2	9.5	2.56	0.38	71	16	HARD	01-05-15-79-01
KS18H111-3	55.8	13.6	0.3	28.5	9.4	2.58	0.36	72	16	HARD	00-06-16-78-01
KS18H19-6	58.4	13.5	0.3	33.0	9.6	2.75	0.35	70	15	HARD	01-04-18-77-01
KS14HD286	56.6	12.4	0.3	27.0	10.7	2.42	0.37	76	18	HARD	01-05-13-81-01
CO13007-F6R	58.3	14.0	0.3	31.8	9.0	2.64	0.35	68	15	HARD	01-09-20-70-01
CO16D1487	56.5	14.4	0.3	30.9	9.5	2.51	0.31	61	15	HARD	04-14-31-51-01
CO16SF027	56.3	14.1	0.3	28.0	10.5	2.48	0.34	65	16	HARD	02-12-23-63-01
CO16SF032	56.6	14.3	0.3	27.6	10.7	2.45	0.37	65	17	HARD	05-09-21-65-01
CO16SF067	54.5	14.9	0.5	24.6	10.1	2.34	0.34	78	19	HARD	01-05-13-81-01
CO16D402W	55.8	14.7	0.3	28.1	9.7	2.44	0.33	64	17	HARD	03-11-28-58-01
NF99117	57.7	13.9	0.4	34.4	9.4	2.75	0.32	56	15	HARD	06-19-38-37-01
ON13P016	57.7	14.1	0.3	32.4	10.5	2.68	0.35	71	20	HARD	04-06-12-78-01
BASF 7	55.7	14.1	0.3	33.0	10.1	2.62	0.35	52	18	MIXED	15-22-32-31-03
BASF 13	58.6	13.2	0.3	35.2	9.7	2.71	0.35	54	15	HARD	10-22-31-37-01
OK12716W Composite I	57.8	13.7	0.3	31.6	9.9	2.62	0.32	70	16	HARD	01-06-20-73-01
OK15MASBx7 ARS 8-20	58.3	13.7	0.3	33.0	9.5	2.72	0.33	80	17	HARD	01-02-09-88-01
OK15MASBx7 ARS 8-29	58.2	13.9	0.3	33.0	10.8	2.71	0.34	76	16	HARD	01-03-11-85-01
OK15DMASBx7 ARS 6-8	60.7	13.7	0.3	31.0	8.6	2.74	0.34	69	15	HARD	01-05-21-73-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
OKP17D101A350	59.0	13.3	0.3	27.4	9.5	2.48	0.36	63	16	HARD	02-10-27-61-01
OK18510	60.1	13.8	0.3	32.6	9.1	2.78	0.34	56	16	HARD	07-21-31-41-01
LCH17-3193	56.6	13.9	0.3	29.0	11.5	2.46	0.40	68	17	HARD	03-07-20-70-01
LCH17-1390	58.1	13.7	0.3	26.8	10.6	2.44	0.37	69	16	HARD	02-06-20-72-01
LCH17-3956	58.1	14.2	0.3	29.8	8.9	2.60	0.38	66	16	HARD	01-07-30-62-01
LCH18-9005	57.5	13.8	0.3	25.6	10.2	2.32	0.34	71	19	HARD	04-09-16-71-01
DH15HRW-65-142	53.6	13.7	0.3	26.4	10.2	2.36	0.35	68	18	HARD	05-07-18-70-01
KS13DH0041-35	56.2	13.7	0.2	30.7	9.4	2.51	0.32	63	14	HARD	02-11-26-61-01
NUSAKA15-3	56.8	13.8	0.3	27.0	8.6	2.43	0.34	68	16	HARD	02-07-22-69-01
XD4401	57.3	13.5	0.3	25.8	8.4	2.42	0.36	62	15	HARD	03-11-28-58-01
XD4101	56.5	13.6	0.3	33.7	10.9	2.49	0.38	67	14	HARD	02-07-22-69-01

2021 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	14.5	61.4	0.44	13.7	0.102	77.40	-1.54	25.72	-7.53	1.60	-1.25
Scout66	12.9	70.7	0.41	12.0	0.162	78.21	-1.66	24.74	-9.43	1.81	-1.86
TAM-107	12.1	68.8	0.43	11.1	0.175	78.07	-1.86	26.35	-9.10	1.74	-1.16
Jagalene	12.3	68.9	0.47	11.1	0.154	78.75	-2.06	27.19	-8.78	1.56	-1.75
TXAMPSY 473-18AZ816	11.7	66.4	0.52	10.9	0.161	77.94	-1.41	25.30	-11.45	1.69	-0.40
TX13CSDHTAMTIA231-12	11.5	67.1	0.47	11.4	0.086	78.35	-1.73	27.84	-6.69	1.32	0.26
TX08CSDHHT202-24	12.4	64.5	0.58	11.5	0.117	78.09	-1.75	26.69	-10.05	1.68	-1.51
TX16M9216	12.2	68.1	0.48	11.4	0.140	77.88	-1.54	25.96	-7.66	1.57	-0.79
TX17A001181	11.8	68.9	0.40	11.2	0.131	79.06	-1.57	25.52	-8.91	1.44	2.09
TX17A001247	12.1	68.7	0.40	11.3	0.124	78.95	-1.87	26.19	-8.69	1.48	0.94
TX17A001295	11.9	65.8	0.46	11.1	0.155	77.98	-1.57	23.91	-11.07	1.46	-0.40
TX17M1572	12.5	69.7	0.49	11.8	0.141	78.83	-2.11	24.41	-10.30	1.73	-1.07
TX16M9155	12.3	65.7	0.45	11.5	0.154	77.18	-1.93	28.07	-8.96	1.66	-1.74
NHH17450	12.4	68.4	0.44	11.6	0.130	78.65	-2.06	27.51	-7.00	2.02	-1.26
NE17433	12.6	68.9	0.41	11.4	0.131	79.01	-1.65	24.77	-8.85	1.54	0.08
NHH17612	12.6	67.5	0.46	11.5	0.151	78.45	-1.90	26.45	-8.89	1.61	-0.05
NE18455	11.6	68.6	0.41	10.7	0.173	77.54	-1.87	26.64	-6.41	1.21	-0.45
20CP010069	11.4	67.3	0.50	10.7	0.134	76.76	-1.12	24.68	-8.38	0.74	-0.66
20CP010063	12.3	68.7	0.49	11.4	0.118	77.00	-1.20	23.67	-10.54	1.22	-1.01
20CP010061	12.1	62.8	0.56	11.2	0.063	79.01	-1.80	26.88	-8.97	1.44	3.19
20CP010072	12.8	63.6	0.49	11.9	0.121	76.51	-1.10	24.96	-11.31	1.53	-1.38
KS18H110-3	12.2	67.6	0.43	12.0	0.137	77.75	-1.82	26.87	-8.37	1.76	-0.77
KS18H111-3	12.0	66.2	0.49	11.4	0.121	77.35	-1.88	28.31	-9.72	1.71	-1.41
KS18H19-6	13.1	68.0	0.44	12.4	0.130	78.12	-1.75	26.85	-7.92	1.44	-0.78
KS14HD286	13.0	67.1	0.54	12.5	0.120	76.63	-1.22	26.19	-11.18	1.81	-1.65
CO13007-F6R	12.0	71.1	0.47	11.3	0.097	78.23	-1.84	25.82	-8.58	1.55	-1.24
CO16D1487	11.1	69.4	0.46	10.1	0.134	79.20	-1.74	23.55	-9.16	1.79	0.75
CO16SF027	12.0	68.5	0.42	11.1	0.123	78.20	-2.44	27.05	-9.22	1.93	-2.78
CO16SF032	12.0	69.1	0.42	11.1	0.104	77.82	-2.41	27.47	-9.79	1.73	-3.29
CO16SF067	14.2	63.2	0.51	13.2	0.185	76.04	-1.63	25.49	-13.39	1.75	-3.35
CO16D402W	11.5	68.0	0.45	10.6	0.166	79.16	-2.17	26.33	-10.20	2.08	-0.54
NF99117	12.6	66.4	0.42	11.9	0.184	78.54	-2.02	26.03	-8.75	1.64	-1.77
ON13P016	12.7	66.9	0.45	11.6	0.098	78.60	-1.68	26.31	-6.03	1.44	0.27
BASF 7	12.8	68.0	0.42	11.5	0.109	79.51	-2.08	26.96	-8.15	1.57	-0.91
BASF 13	13.7	68.2	0.39	12.9	0.081	79.04	-1.69	24.51	-7.77	1.61	-0.24
OK12716W Composite I	12.1	69.7	0.45	11.4	0.101	79.33	-2.19	26.78	-9.01	1.91	-1.06
OK15MASBx7 ARS 8-20	12.3	66.5	0.43	11.6	0.068	78.72	-1.83	26.99	-7.11	1.03	1.47
OK15MASBx7 ARS 8-29	12.4	66.1	0.47	11.5	0.059	79.25	-1.85	26.79	-6.66	0.96	2.49
OK15DMASBx7 ARS 6-8	12.6	68.1	0.40	11.6	0.111	78.35	-1.84	25.04	-9.52	1.50	-1.25
OKP17D101A350	12.3	68.3	0.50	12.0	0.094	77.63	-2.21	27.93	-9.26	1.84	-2.65

	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	(%)	(%)	(%)	(%)							
OK18510	12.0	69.2	0.41	11.2	0.155	78.47	-2.50	27.55	-8.00	1.76	-2.42
LCH17-3193	11.8	69.8	0.50	10.7	0.103	77.61	-1.91	26.36	-11.38	1.94	-1.98
LCH17-1390	11.4	73.3	0.42	10.6	0.112	77.88	-2.24	27.82	-9.20	1.75	-2.58
LCH17-3956	11.4	67.7	0.51	10.8	0.118	80.42	-2.38	24.64	-8.24	1.65	-0.92
LCH18-9005	10.6	67.8	0.50	9.9	0.082	79.36	-2.60	26.04	-7.40	1.85	-1.06
DH15HRW-65-142	12.5	68.9	0.47	12.0	0.103	77.98	-1.73	24.47	-9.76	1.64	-0.93
KS13DH0041-35	12.0	67.5	0.44	11.1	0.163	79.15	-2.10	29.02	-6.41	1.11	-0.26
NUSAKA15-3	11.6	70.5	0.42	10.9	0.078	79.01	-2.22	27.54	-7.20	1.38	-0.13
XD4401	12.1	66.3	0.50	11.2	0.115	78.45	-1.79	26.65	-7.80	1.30	-2.02
XD4101	12.1	65.1	0.50	11.4	0.088	78.43	-2.05	28.34	-7.96	1.36	0.25

NR-Data not ready

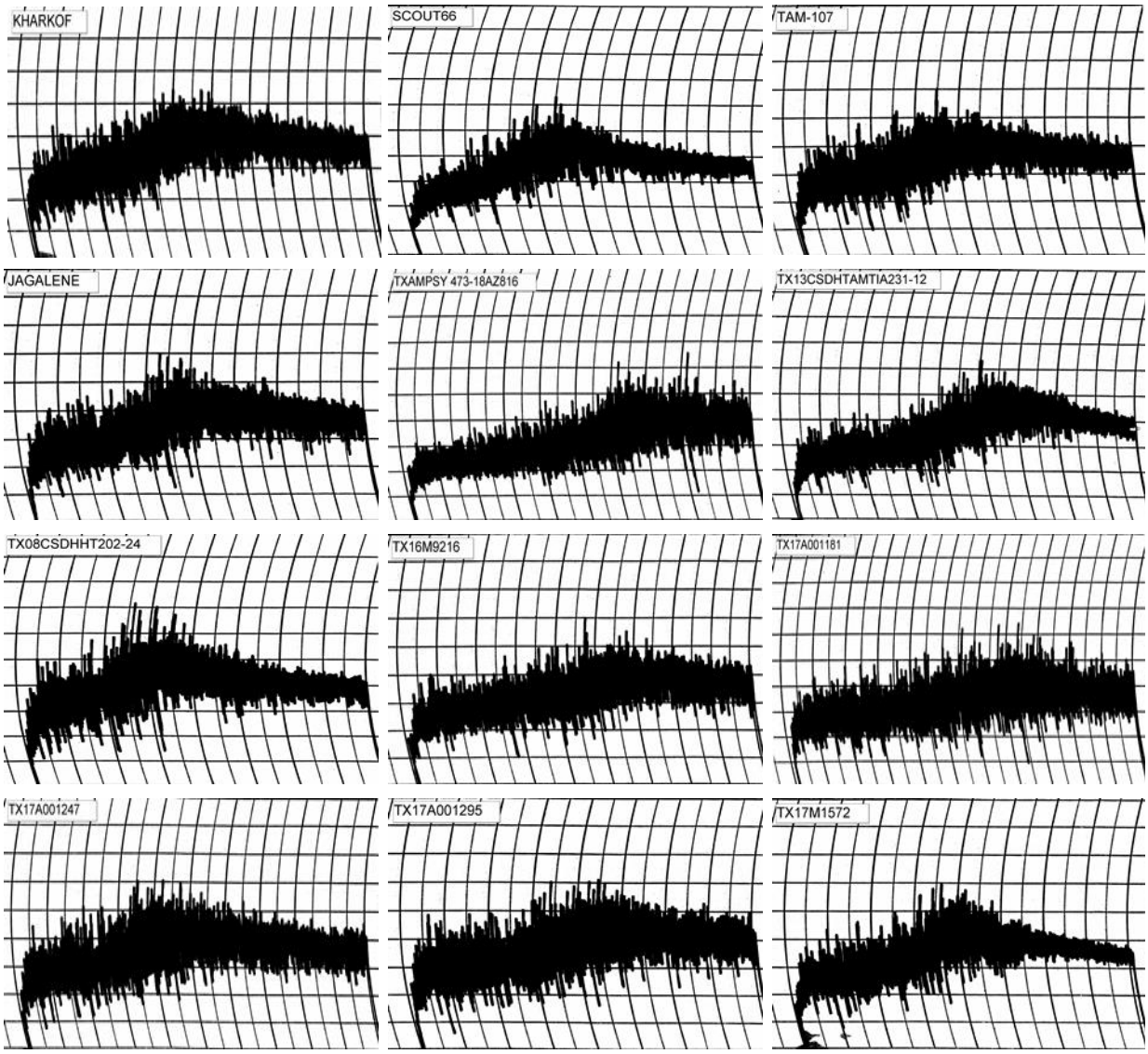
2021 SRPN Intraregional Production Zone

Southern High Plains

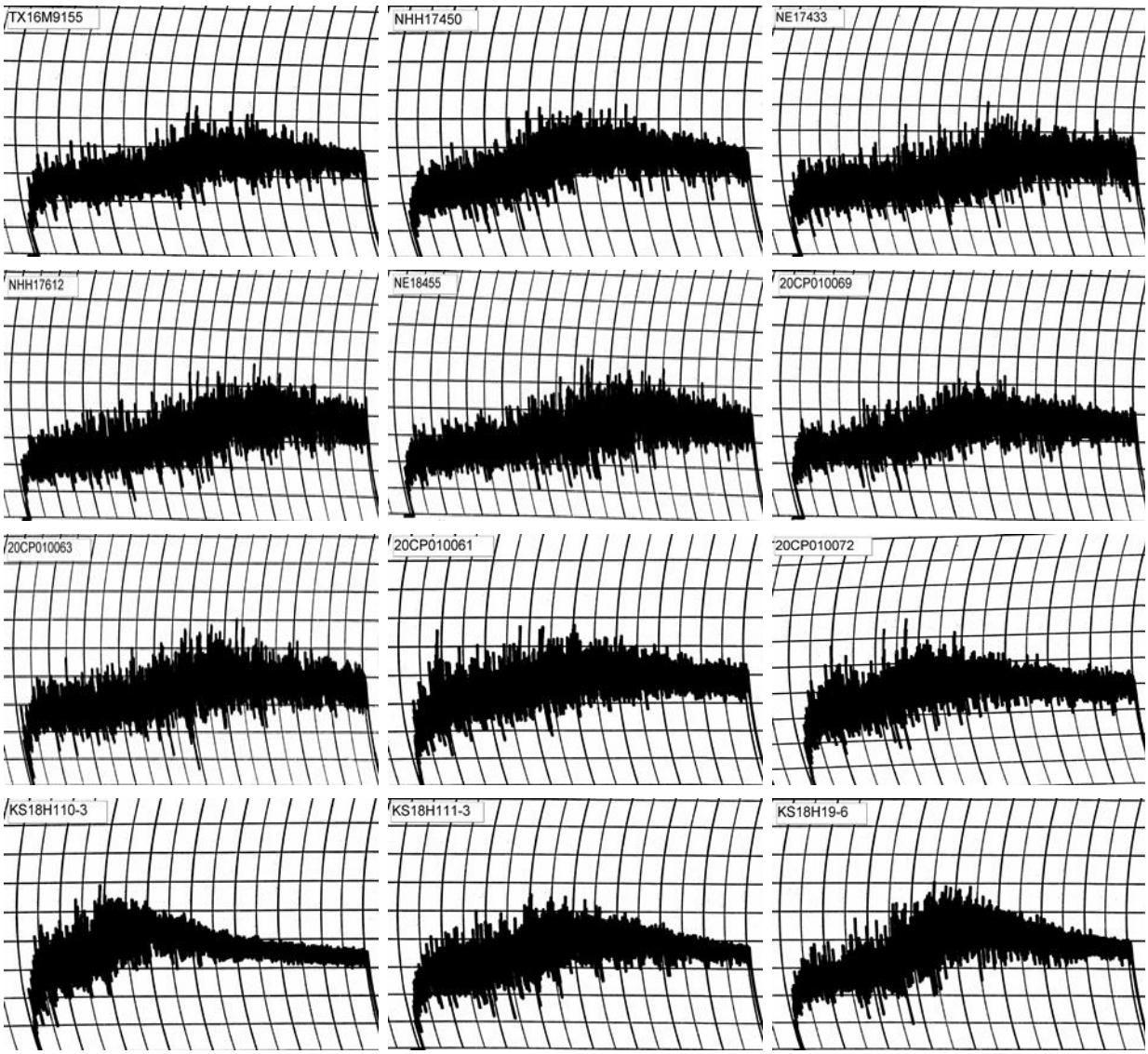
		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	13.7	63.8	4.25	4.25	2
Scout66	12.0	65.4	3.50	3.49	2
TAM-107	11.1	62.9	3.63	3.23	3
Jagalene	11.1	62.4	3.75	3.35	3
TXAMPSY 473-18AZ816	10.9	64.0	6.50	5.61	6
TX13CSDHTAMTIA231-12	11.4	63.9	5.13	4.75	3
TX08CSDHHT202-24	11.5	64.2	3.13	2.95	3
TX16M9216	11.4	62.9	5.38	4.98	4
TX17A001181	11.2	63.5	7.13	6.41	6
TX17A001247	11.3	64.2	4.13	3.77	4
TX17A001295	11.1	62.8	4.50	3.99	4
TX17M1572	11.8	62.5	4.00	3.89	2
TX16M9155	11.5	62.1	4.13	3.88	3
NHH17450	11.6	62.8	4.00	3.81	3
NE17433	11.4	62.5	5.75	5.36	5
NHH17612	11.5	62.6	6.88	6.46	6
NE18455	10.7	61.2	6.25	5.28	5
20CP010069	10.7	60.3	5.00	4.23	4
20CP010063	11.4	62.5	5.75	5.36	4
20CP010061	11.2	63.0	4.00	3.61	3
20CP010072	11.9	63.3	3.25	3.23	3
KS18H110-3	12.0	63.3	2.13	2.12	1
KS18H111-3	11.4	62.5	3.50	3.26	2
KS18H19-6	12.4	64.0	3.88	3.88	2
KS14HD286	12.5	65.3	4.38	4.38	4
CO13007-F6R	11.3	61.7	5.63	5.14	4
CO16D1487	10.1	60.8	4.88	3.77	4
CO16SF027	11.1	60.9	3.38	2.99	1
CO16SF032	11.1	59.4	3.13	2.79	1
CO16SF067	13.2	65.5	4.13	4.13	3
CO16D402W	10.6	61.6	6.13	5.09	5
NF99117	11.9	62.3	2.75	2.71	1
ON13P016	11.6	64.8	3.63	3.47	3
BASF 7	11.5	62.6	4.75	4.48	4
BASF 13	12.9	65.4	4.50	4.50	3
OK12716W Composite I	11.4	63.4	3.25	3.02	3
OK15MASBx7 ARS 8-20	11.6	66.9	8.75	8.37	6

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
OK15MASBx7 ARS 8-29	11.5	66.7	9.25	8.74	6
OK15DMASBx7 ARS 6-8	11.6	64.3	6.13	5.83	5
OKP17D101A350	12.0	59.9	3.50	3.50	1
OK18510	11.2	60.6	2.75	2.48	1
LCH17-3193	10.7	62.7	2.88	2.43	2
LCH17-1390	10.6	61.6	2.63	2.19	1
LCH17-3956	10.8	61.5	3.50	3.00	2
LCH18-9005	9.9	59.9	3.50	2.61	2
DH15HRW-65-142	12.0	63.9	4.50	4.47	4
KS13DH0041-35	11.1	60.0	4.63	4.15	2
NUSAKA15-3	10.9	60.0	3.75	3.24	3
XD4401	11.2	62.1	2.63	2.36	1
XD4101	11.4	62.0	3.38	3.15	2

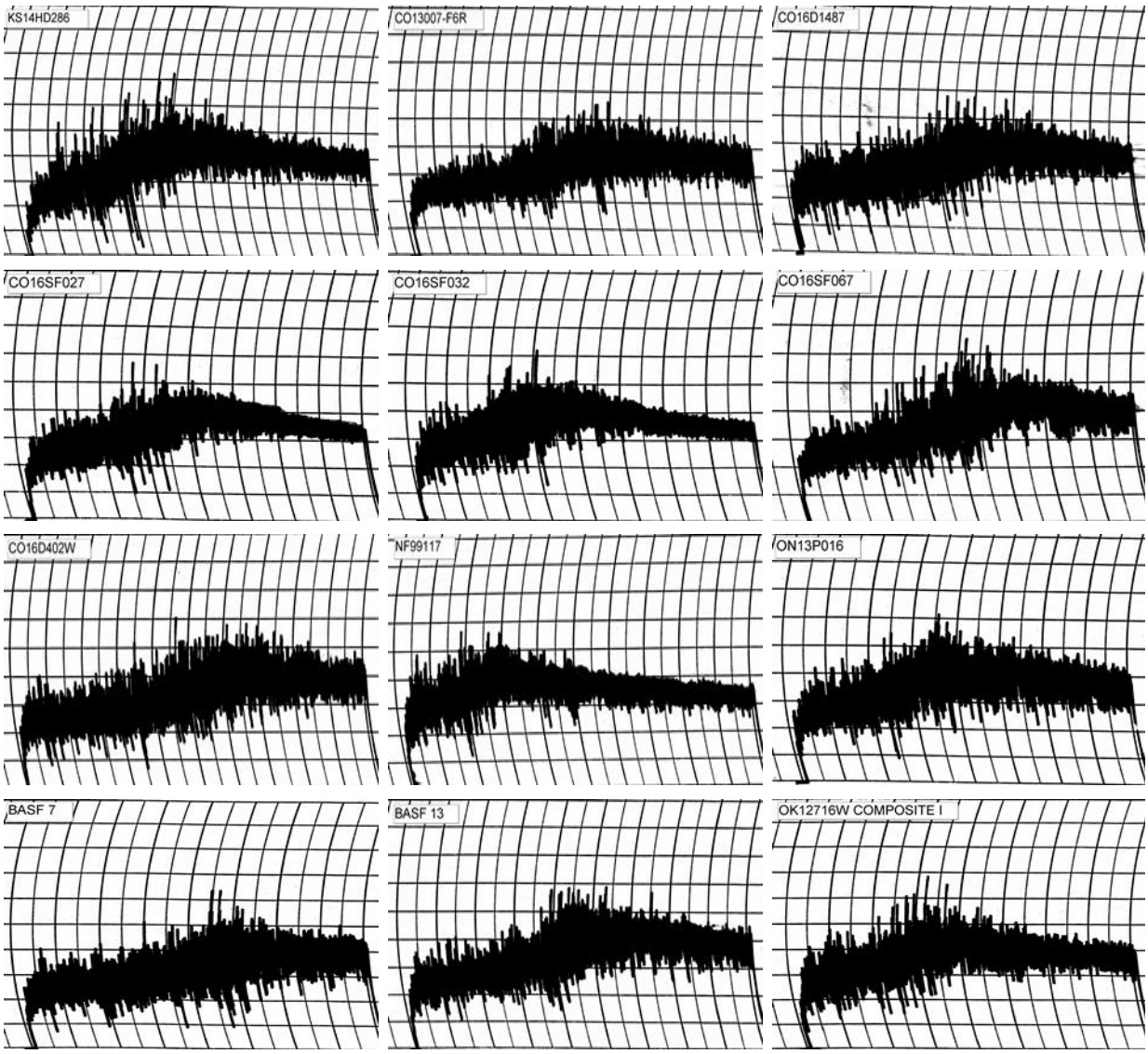
2021 SRPN Intraregional Production Zone
Southern High Plains



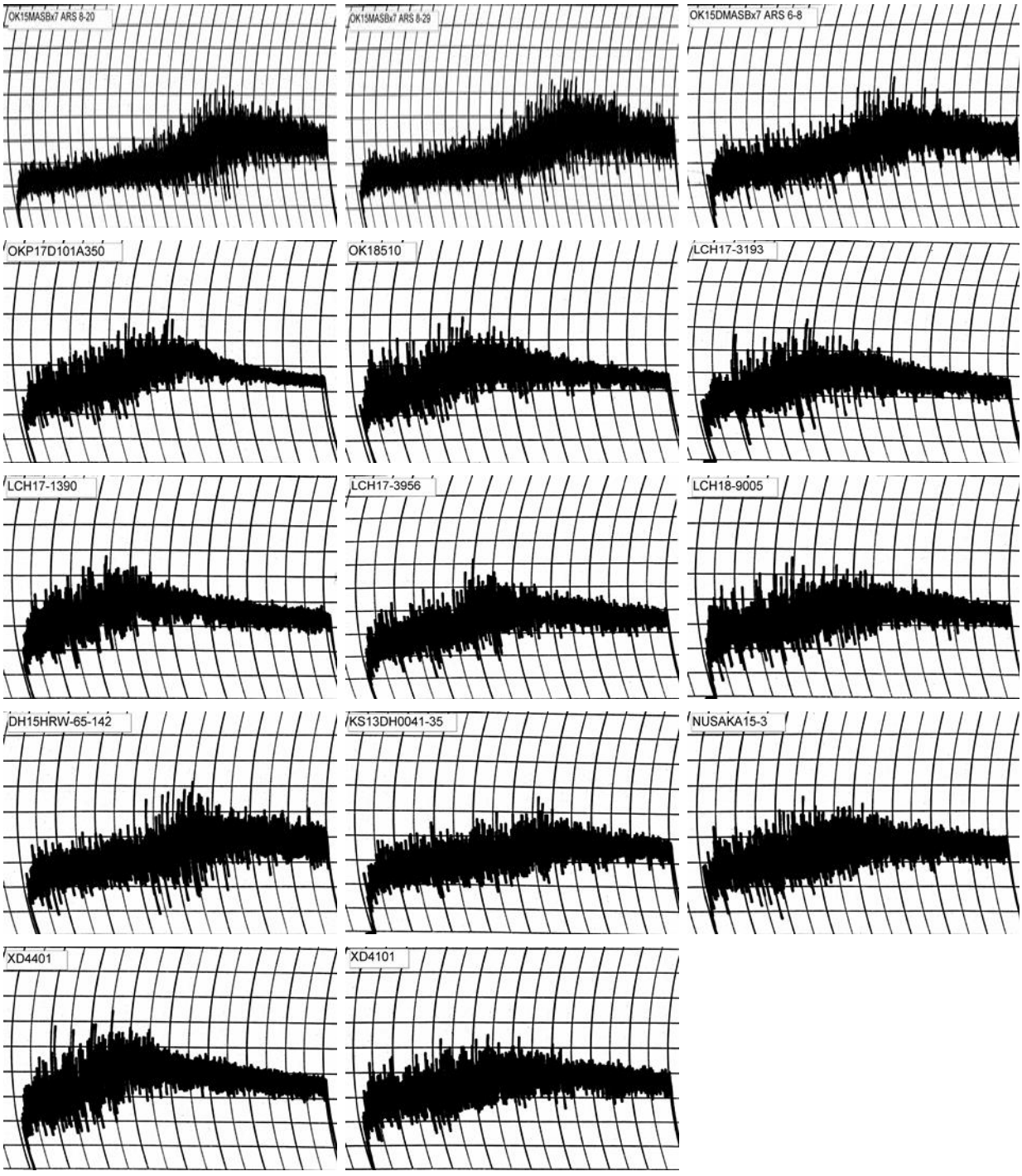
2021 SRPN Intraregional Production Zone
Southern High Plains



2021 SRPN Intraregional Production Zone
Southern High Plains



2021 SRPN Intraregional Production Zone
Southern High Plains



2021 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	169.42							
Scout66	152.00							
TAM-107	120.33							
Jagalene	137.25							
TXAMPSY 473-18AZ816	151.58							
TX13CSDHTAMTIA231-12	142.58							
TX08CSDHHT202-24	150.92							
TX16M9216	159.42							
TX17A001181	108.83							
TX17A001247	134.58							
TX17A001295	154.50							
TX17M1572	126.00							
TX16M9155	162.08							
NHH17450	126.75							
NE17433	98.58							
NHH17612	131.33							
NE18455	137.92							
20CP010069	145.92							
20CP010063	139.25							
20CP010061	159.42							
20CP010072	142.50							
KS18H110-3	125.92							
KS18H111-3	138.83							
KS18H19-6	124.92							
KS14HD286	138.58							
CO13007-F6R	121.58							
CO16D1487	127.92							
CO16SF027	155.42							
CO16SF032	144.00							
CO16SF067	143.00							
CO16D402W	120.50							
NF99117	124.42							
ON13P016	134.08							
BASF 7	161.17							
BASF 13	130.08							
OK12716W Composite I	135.58							
OK15MASBx7 ARS 8-20	140.75							
OK15MASBx7 ARS 8-29	167.83							
OK15DMASBx7 ARS 6-8	149.67							

	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)
OKP17D101A350	165.67							
OK18510	128.75							
LCH17-3193	146.08							
LCH17-1390	125.92							
LCH17-3956	112.50							
LCH18-9005	120.17							
DH15HRW-65-142	150.25							
KS13DH0041-35	160.67							
NUSAKA15-3	129.58							
XD4401	140.75							
XD4101	130.50							

NR-Data not ready

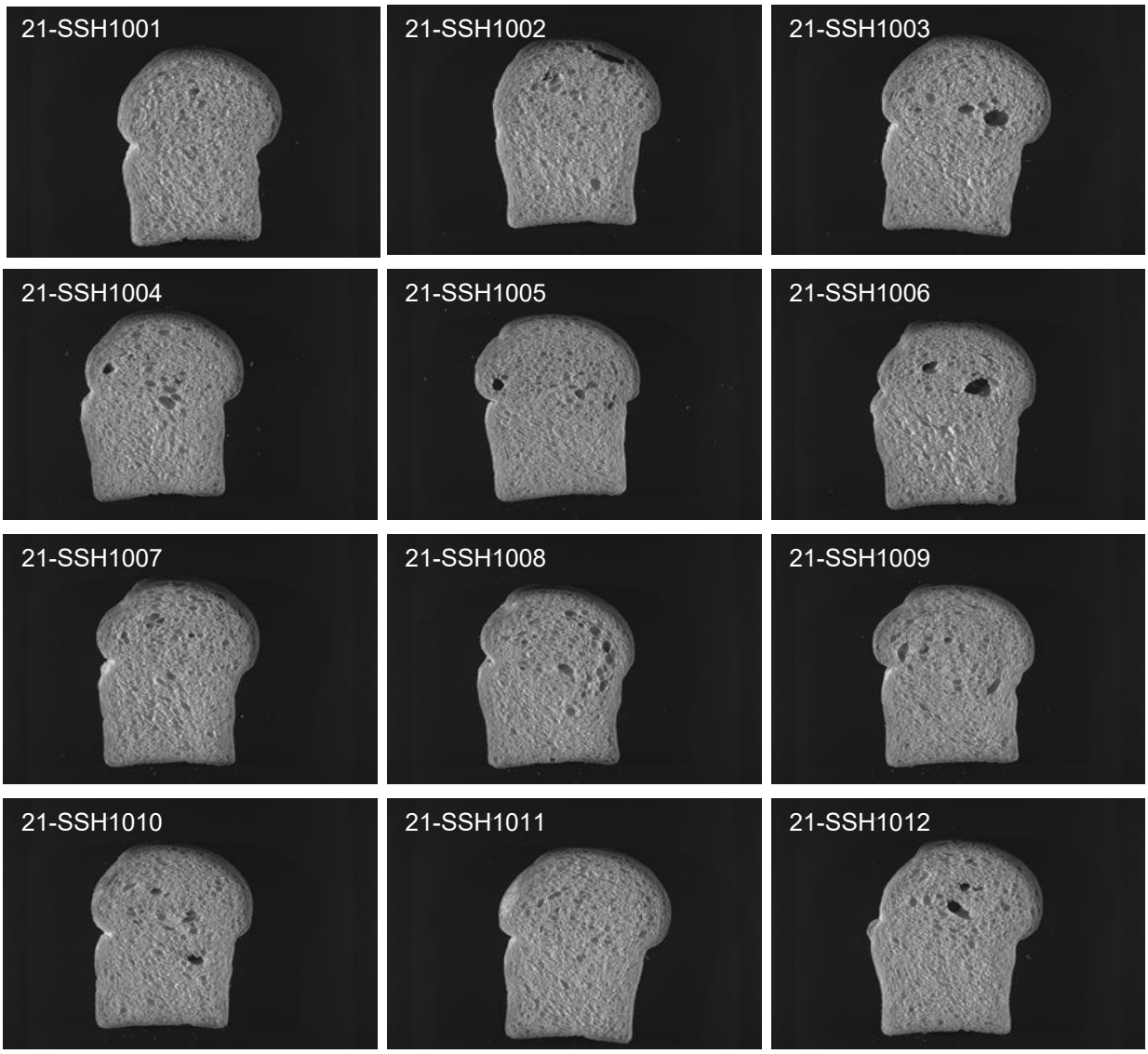
2021 SRPN Intraregional Production Zone

Southern High Plains

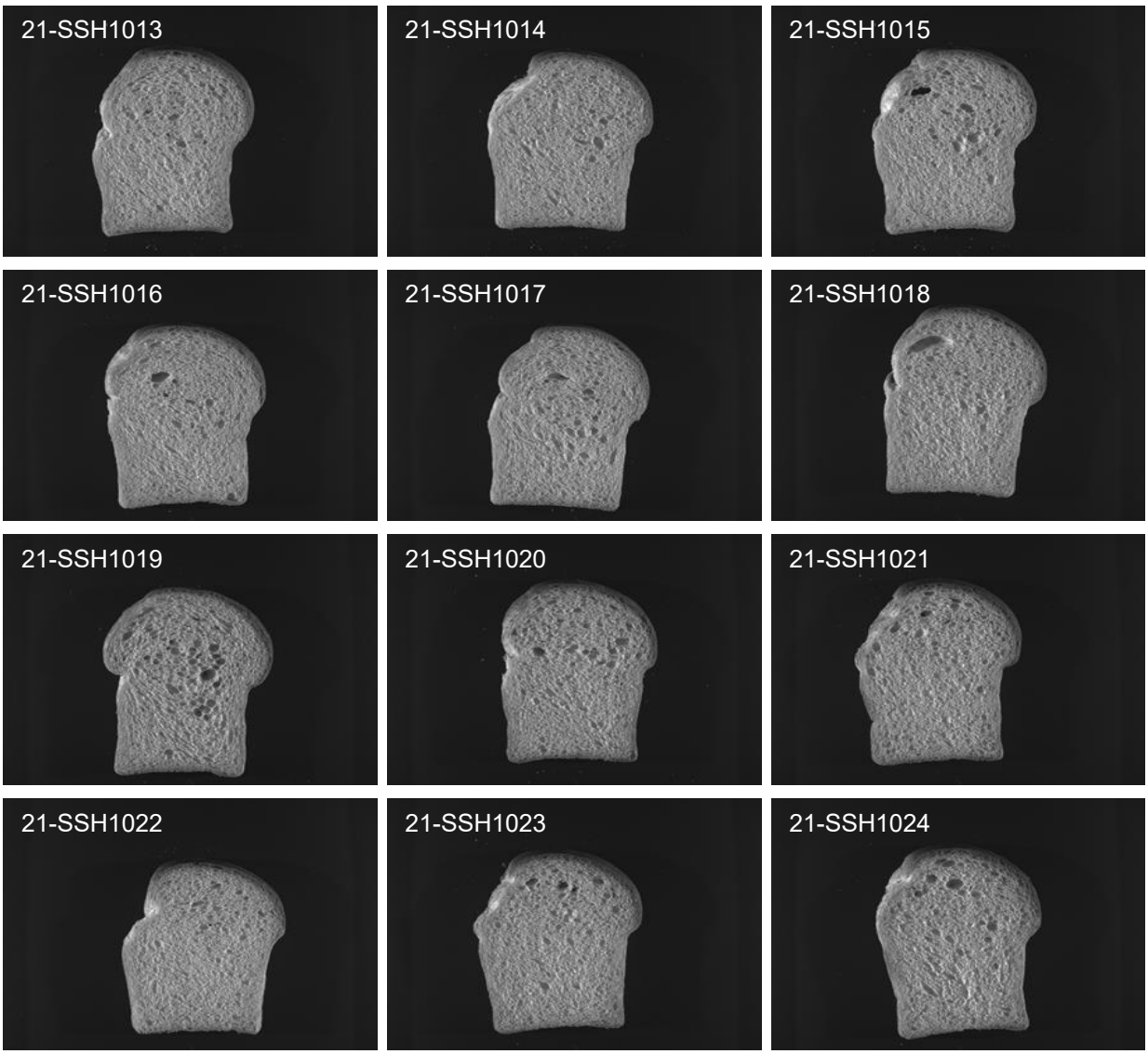
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
Kharkof	13.7	63.7	4.75	4.75	173.4	8.4	3.0	1015	6.8	67
Scout66	12.0	65.4	3.50	3.49	174.6	8.4	3.0	955	6.3	73
TAM-107	11.1	63.0	4.25	3.78	173.4	8.1	3.5	1025	6.9	89
Jagalene	11.1	62.2	4.50	4.01	171.9	7.9	3.5	970	6.5	82
TXAMPSY 473-18AZ816	10.9	62.9	7.75	6.69	173.8	7.8	4.0	955	6.3	83
TX13CSDHTAMTIA231-12	11.4	64.2	5.75	5.32	174.2	7.9	3.5	975	6.5	80
TX08CSDHHT202-24	11.5	64.2	4.00	3.77	174.2	7.9	2.5	980	6.6	80
TX16M9216	11.4	63.0	5.25	4.86	173.1	7.4	4.0	915	6.2	73
TX17A001181	11.2	63.5	8.13	7.31	172.8	7.6	4.0	935	6.3	77
TX17A001247	11.3	64.2	5.00	4.57	174.5	7.3	4.0	940	6.3	77
TX17A001295	11.1	63.1	5.00	4.43	173.1	8.3	4.5	1015	6.9	88
TX17M1572	11.8	62.5	4.50	4.38	172.2	8.3	3.5	1005	6.8	80
TX16M9155	11.5	62.2	4.75	4.46	172.0	7.9	3.5	945	6.4	76
NHH17450	11.6	63.2	4.25	4.05	173.3	7.5	4.0	925	6.1	72
NE17433	11.4	62.4	6.00	5.59	171.8	7.6	3.5	930	6.3	75
NHH17612	11.5	62.2	6.75	6.34	171.3	7.7	5.0	925	6.3	73
NE18455	10.7	61.2	8.00	6.75	170.9	7.4	3.5	905	6.0	78
20CP010069	10.7	60.3	5.00	4.23	168.9	7.9	3.5	950	6.5	83
20CP010063	11.4	62.3	6.13	5.72	172.0	7.7	3.0	990	6.7	82
20CP010061	11.2	63.0	4.25	3.83	172.9	7.6	2.0	895	6.0	72
20CP010072	11.9	63.2	3.25	3.23	173.4	7.7	2.0	945	6.3	72
KS18H110-3	12.0	61.4	2.38	2.37	171.1	7.3	1.5	850	5.6	61
KS18H111-3	11.4	62.2	3.50	3.26	172.2	7.8	2.5	920	6.2	73
KS18H19-6	12.4	64.3	4.38	4.38	174.8	7.6	2.5	965	6.5	71
KS14HD286	12.5	65.0	5.50	5.50	174.8	7.8	3.0	975	6.5	71
CO13007-F6R	11.3	61.3	6.00	5.47	170.6	7.7	3.5	985	6.7	82
CO16D1487	10.1	60.4	5.75	4.45	170.3	7.5	3.0	890	6.0	82
CO16SF027	11.1	60.5	3.50	3.10	170.3	7.4	3.0	880	5.9	72
CO16SF032	11.1	59.4	3.50	3.12	169.1	7.5	2.5	900	6.2	74
CO16SF067	13.2	65.3	4.75	4.75	175.0	8.3	2.5	1060	7.0	74
CO16D402W	10.6	61.5	6.63	5.50	170.7	7.7	3.5	930	6.3	82
NF99117	11.9	62.7	3.38	3.34	173.1	7.5	2.0	920	6.1	70
ON13P016	11.6	64.6	4.38	4.19	174.7	7.8	3.5	960	6.4	76
BASF 7	11.5	62.3	5.00	4.71	171.7	7.9	4.0	960	6.5	77
BASF 13	12.9	65.5	4.75	4.75	175.2	8.3	3.0	1075	7.2	79
OK12716W Composite I	11.4	63.5	3.38	3.14	173.9	7.6	3.0	955	6.3	78
OK15MASBx7 ARS 8-20	11.6	66.5	11.25	10.76	175.5	8.1	3.0	990	6.6	80
OK15MASBx7 ARS 8-29	11.5	66.5	12.00	11.34	175.2	8.0	2.5	960	6.4	77

	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/%)
OK15DMASBx7 ARS 6-8	11.6	64.5	6.50	6.18	174.0	7.9	3.0	1015	6.8	83
OKP17D101A350	12.0	59.9	3.63	3.63	169.4	7.7	3.5	925	6.3	69
OK18510	11.2	60.4	3.25	2.93	170.2	7.7	2.5	935	6.4	77
LCH17-3193	10.7	62.5	3.25	2.74	172.0	7.6	2.0	875	5.9	74
LCH17-1390	10.6	61.5	2.63	2.19	171.4	7.3	2.0	880	5.9	75
LCH17-3956	10.8	61.7	3.63	3.12	171.5	7.6	2.5	975	6.6	86
LCH18-9005	9.9	59.5	3.50	2.61	169.2	7.9	3.0	910	6.2	87
DH15HRW-65-142	12.0	63.9	5.00	4.97	173.4	7.6	3.5	960	6.5	74
KS13DH0041-35	11.1	60.4	4.63	4.15	170.1	7.9	2.5	975	6.6	82
NUSAKA15-3	10.9	60.4	3.63	3.13	170.5	7.7	3.5	925	6.3	79
XD4401	11.2	62.4	3.00	2.70	172.3	8.0	3.5	950	6.4	79
XD4101	11.4	62.4	4.00	3.73	171.9	7.4	4.5	905	6.1	71

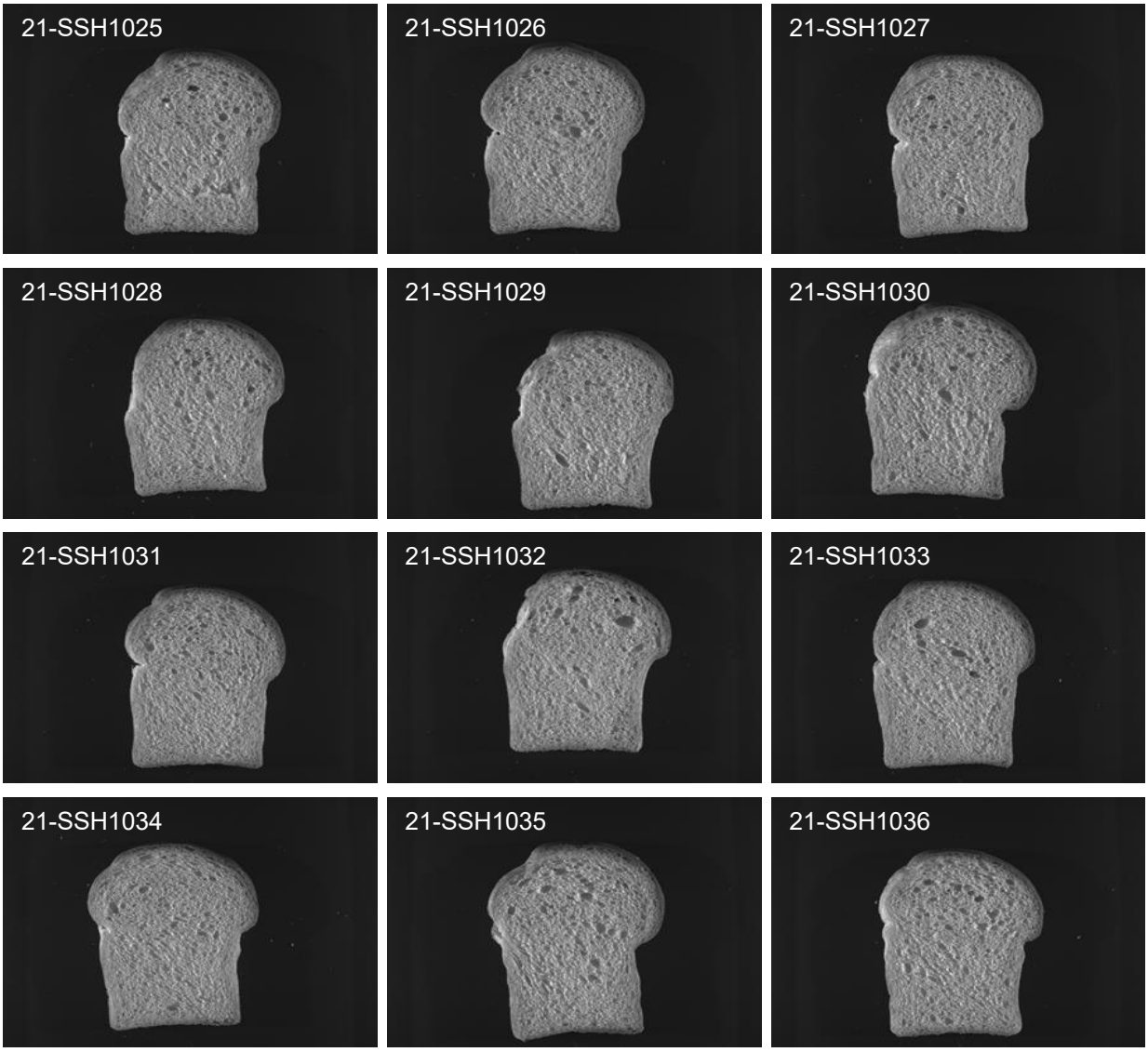
2021 SRPN Intraregional Production Zone
Southern High Plains



2021 SRPN Intraregional Production Zone
Southern High Plains



2021 SRPN Intraregional Production Zone
Southern High Plains



2021 SRPN Intraregional Production Zone
Southern High Plains

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***

CONTACT:
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Hard Winter Wheat Quality Laboratory
1515 College Avenue, Manhattan, KS 66502-2796
VOICE: (785) 776-2751 FAX: (785) 537- 5534 EMAIL: brad.seabourn@ars.usda.gov

Thank you for reviewing this report on milling and baking data of 2021 Regional Performance Nursery samples. The photos used for the cover and this page are based on 2022 Breeders' Field Day in Manhattan KS on May 19, 2022. 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