2020 Hard Winter Wheat Regional Performance Nursery Quality Report

Hard Winter Wheat Quality Laboratory

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About the 2020 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)

Lincoln, NE
Brookings, SD
Winner, SD
Dakota Lakes, SD

Northern Plains (NP)

Wichita, KS
St. Paul, MN

Northern High Plains (NHP)

Bozman, MT
Moccasin, MT
Casselton, ND
Williston, ND
Bismark, ND
Minot, ND (incomplete no #13)

Southern Regional Performance Nursery (SRPN)

North Central Plains (NCP)

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

Northern High Plains (NHP)

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

South Central Plains (SCP)

Clay Center, NE
Wichita, KS
Lahoma, OK
Stillwater, OK
Bushland-dry, TX
Bushland-irr, TX
McGregor, TX

Southern High Plains (SHP)

Goodwell-irr, OK
Hays, KS

HWWQL Laboratory Analyses

About the HWWQL Quality Data ...

Milling, flour chemical, physical dough, breadmaking, noodlemaking properties and flour protein analysis of 2020 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.

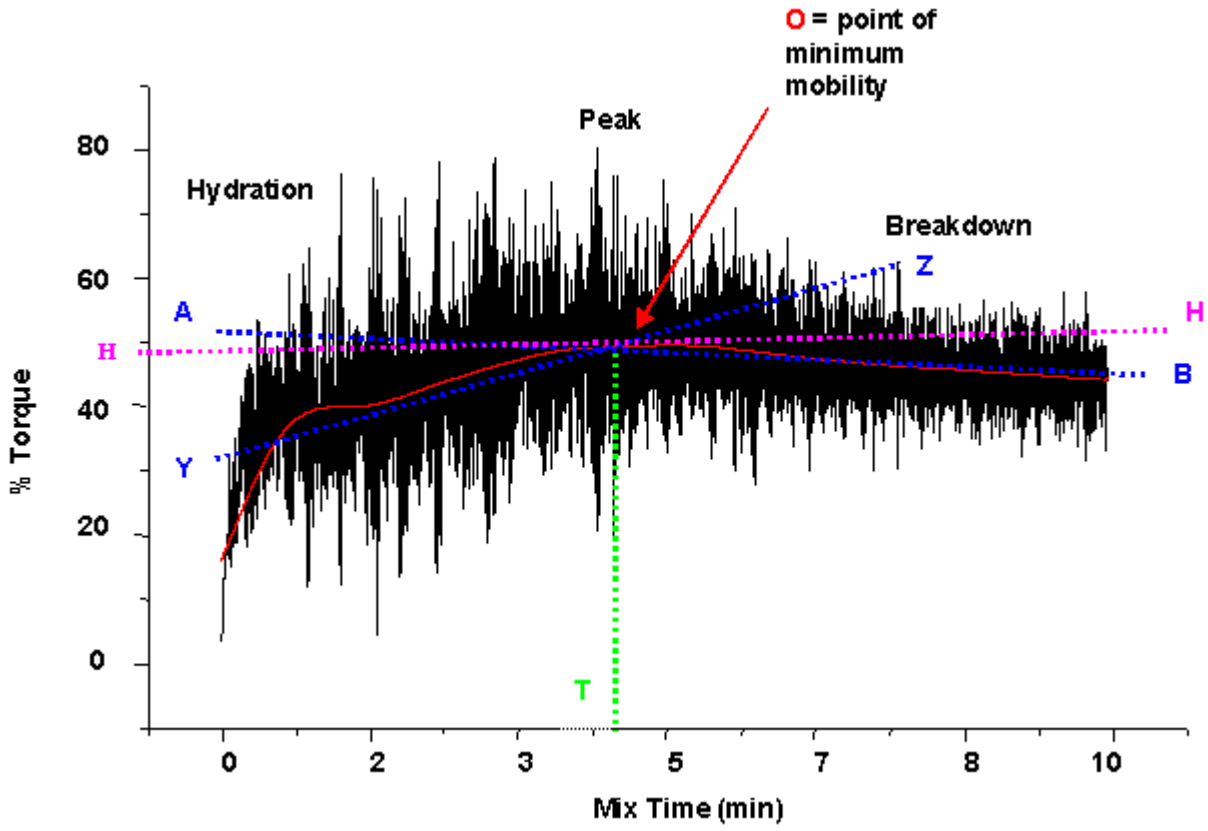
Wheat
- Protein (FP) = grain protein content (%) on 14% mb. (AACC Method 46-30 or 39-10)
- Flour % (FY) = flour yield (extraction) from milling (AACC Methods 26-10A, -50)

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

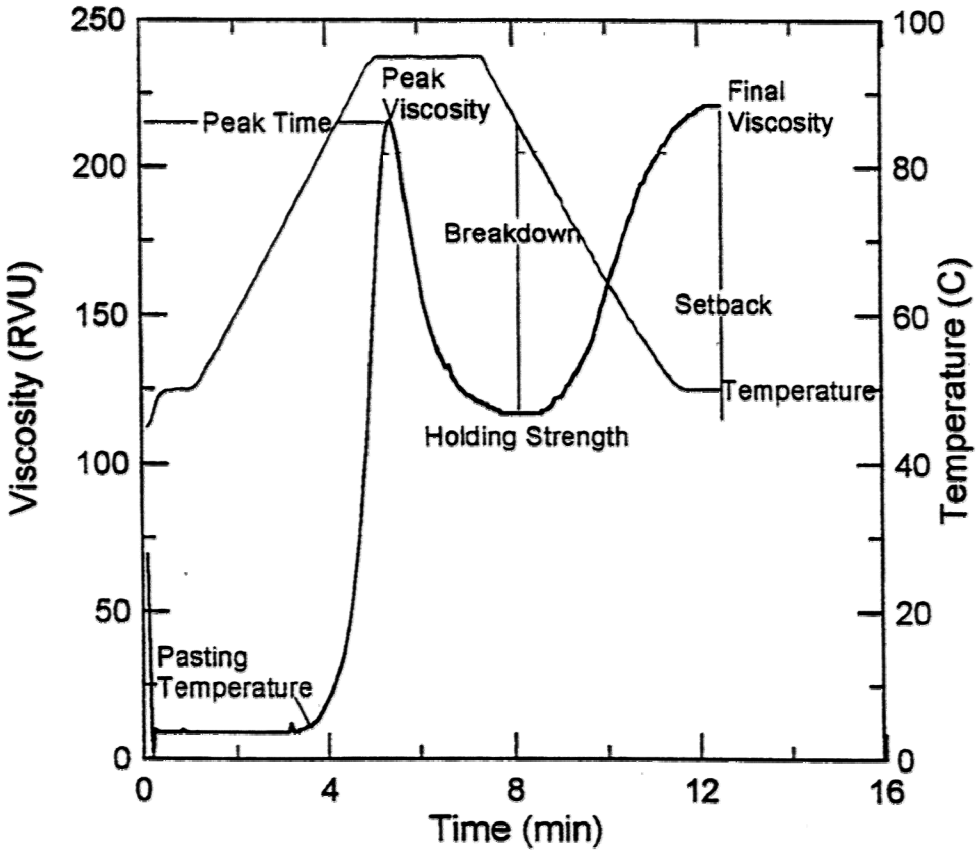


Rapid Visco Analyser (RVA) (AACC Method 61-02)

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: Laura Knapp, B.S. and Kerri McConnell, M.S.

Bake Lab: Margo Caley, B.S.; 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

2020 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	17NORD-94	Boomer/ Ideal	NDSU
7	18NORD-103	Jerry/SD09113	NDSU
8	18NORD-104	Boomer/SD06158	NDSU
9	18NORD-111	Boomer/Ideal	NDSU
10	18NORD-108	Broadview/SD07W083-4	NDSU
11	19CP010075	MORGAN/06BC796#96	AgriPro
12	19CP010078	SY MONUMENT/JAGALENE//OVERLAND	AgriPro
13	19CP010081	JUDEE/SY WOLF	AgriPro
14	19CP010083	JUDEE/SY SUNRISE	AgriPro
15	19CP010076	(BC98337-10-53/CDC FALCON/NE03458//SY WOLF)B-B-7-B-B-B-	AgriPro
16	LCH17-5660		LCS
17	DH15HRW-63-81		LCS
18	LCH18-7115		LCS
19	LCH17-1296		LCS
20	LCH17-3468		LCS
21	NE15624	NE05537/KS05HW15-2	UNL
22	NW15443	OR 2060108/NW03681//NW03666	UNL
23	NE16562	HV9W02-942R/CAMELOT	UNL
24	NHH17612	Brawl_CL/NHH09655	UNL
25	NE17441	Hitch/NE07409	UNL
26	NE17443	NW07534/NE06545	UNL
27	NE17544	Pan3349/HV9W04-1594R//NE06607	UNL
28	NE17590	R41/NE06545//NE06545	UNL
29	MT1745	Decade*2/NI06732	Montana State
30	MT1746	MT06103//MTW0881/SD06W166	Montana State
31	MTCL1737	YLL-2CL/3/YLL*2/Pelsart//PROM/3*YLL	Montana State
32	SD12DHA00031	Lyman/SD03164-2	SDSU
33	SD12DHA01373	Radiant/SD06069	SDSU
34	SD12DHA01688	SD07173/Redfield	SDSU
35	SD12DHA03282	Striker/SD03184-4	SDSU
36	SD12DHA03429	Overland/Lyman	SDSU
37	SD13DHA02346	Smoky Hill/Redifield	SDSU
38	SD14355-2	Lyman/SD339-71//Lyman	SDSU
39	SD15004-2	Striker/SD03164-2//SD06069	SDSU
40	SD15035-2	NE05425/SD07184//SD07056	SDSU
41	SD15205-1	Bearpaw/SD06156-1	SDSU

List of NRPN Sample ID

Entry	Line ID from Breeders	HWWQL ID		
		North Central Plains	Northern High Plains	Northern Plains
1	Kharkof	20-NNC1101	20-NNH1101	20-NNP1101
2	Overland	20-NNC1102	20-NNH1102	20-NNP1102
3	Wesley	20-NNC1103	20-NNH1103	20-NNP1103
4	Jagalene	20-NNC1104	20-NNH1104	20-NNP1104
5	Jerry	20-NNC1105	20-NNH1105	20-NNP1105
6	17NORD-94	20-NNC1106	20-NNH1106	20-NNP1106
7	18NORD-103	20-NNC1107	20-NNH1107	20-NNP1107
8	18NORD-104	20-NNC1108	20-NNH1108	20-NNP1108
9	18NORD-111	20-NNC1109	20-NNH1109	20-NNP1109
10	18NORD-108	20-NNC1110	20-NNH1110	20-NNP1110
11	19CP010075	20-NNC1111	20-NNH1111	20-NNP1111
12	19CP010078	20-NNC1112	20-NNH1112	20-NNP1112
13	19CP010081	20-NNC1113	20-NNH1113	20-NNP1113
14	19CP010083	20-NNC1114	20-NNH1114	20-NNP1114
15	19CP010076	20-NNC1115	20-NNH1115	20-NNP1115
16	LCH17-5660	20-NNC1116	20-NNH1116	20-NNP1116
17	DH15HRW-63-81	20-NNC1117	20-NNH1117	20-NNP1117
18	LCH18-7115	20-NNC1118	20-NNH1118	20-NNP1118
19	LCH17-1296	20-NNC1119	20-NNH1119	20-NNP1119
20	LCH17-3468	20-NNC1120	20-NNH1120	20-NNP1120
21	NE15624	20-NNC1121	20-NNH1121	20-NNP1121
22	NW15443	20-NNC1122	20-NNH1122	20-NNP1122
23	NE16562	20-NNC1123	20-NNH1123	20-NNP1123
24	NHH17612	20-NNC1124	20-NNH1124	20-NNP1124
25	NE17441	20-NNC1125	20-NNH1125	20-NNP1125
26	NE17443	20-NNC1126	20-NNH1126	20-NNP1126
27	NE17544	20-NNC1127	20-NNH1127	20-NNP1127
28	NE17590	20-NNC1128	20-NNH1128	20-NNP1128
29	MT1745	20-NNC1129	20-NNH1129	20-NNP1129
30	MT1746	20-NNC1130	20-NNH1130	20-NNP1130
31	MTCL1737	20-NNC1131	20-NNH1131	20-NNP1131
32	SD12DHA00031	20-NNC1132	20-NNH1132	20-NNP1132
33	SD12DHA01373	20-NNC1133	20-NNH1133	20-NNP1133
34	SD12DHA01688	20-NNC1134	20-NNH1134	20-NNP1134
35	SD12DHA03282	20-NNC1135	20-NNH1135	20-NNP1135
36	SD12DHA03429	20-NNC1136	20-NNH1136	20-NNP1136
37	SD13DHA02346	20-NNC1137	20-NNH1137	20-NNP1137
38	SD14355-2	20-NNC1138	20-NNH1138	20-NNP1138
39	SD15004-2	20-NNC1139	20-NNH1139	20-NNP1139
40	SD15035-2	20-NNC1140	20-NNH1140	20-NNP1140
41	SD15205-1	20-NNC1141	20-NNH1141	20-NNP1141

Hard Winter Wheat Quality Report

2020 NRPN-NCP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	42.1	Very Poor	65.7	57.1	Very Good	91.0		6,8,10,16,
Overland	52.4	Average	81.8	33.5	Very Poor	53.3		16,19,
Wesley	56.5	Very Good	88.2	48.6	Average	77.4		14,15,
Jagalene	52.4	Average	81.8	53.3	Good	85.0		15,
Jerry	54.3	Good	84.9	38.4	Very Poor	61.1	1AL	
17NORD-94	53.6	Good	83.8	52.9	Good	84.3		
18NORD-103	53.4	Good	83.4	39.6	Poor	63.0		15,18,
18NORD-104	52.6	Average	82.2	58.1	Very Good	92.6		
18NORD-111	52.4	Average	81.8	47.5	Average	75.7		14,15,
18NORD-108	48.4	Very Poor	75.5	46.5	Average	74.2		4,16,18,
19CP010075	49.8	Poor	77.8	41.5	Poor	66.2		5,11,12,
19CP010078	52.5	Average	82.0	39.2	Very Poor	62.4		9,10,14,15,
19CP010081	59.4	Very Good	92.8	62.7	Very Good	100.0		
19CP010083	54.2	Good	84.7	53.5	Good	85.3		14,15,
19CP010076	50.3	Poor	78.6	35.4	Very Poor	56.5	1BL	12,13,15,17,
LCH17-5660	45.7	Very Poor	71.5	43.8	Poor	69.8	h1BL	2,4,8,9,10,
DH15HRW-63-81	52.8	Average	82.4	36.3	Very Poor	57.9		16,
LCH18-7115	64.0	Very Good	100.0	31.9	Very Poor	50.9		12,13,14,15,
LCH17-1296	45.9	Very Poor	71.7	55.8	Very Good	88.9		1,16,
LCH17-3468	51.8	Poor	80.9	44.9	Poor	71.5		16,
NE15624	48.1	Very Poor	75.1	60.7	Very Good	96.7		8,14,15,
NW15443	54.0	Good	84.4	49.1	Average	78.3		12,13,15,18,
NE16562	48.4	Poor	75.6	36.9	Very Poor	58.8	1BL	1,11,12,13,15,
NHH17612	52.3	Average	81.8	34.7	Very Poor	55.4		14,15,
NE17441	57.4	Very Good	89.6	47.7	Average	76.0		14,15,
NE17443	49.5	Poor	77.3	53.2	Good	84.7		15,
NE17544	55.4	Very Good	86.5	45.8	Average	73.0		
NE17590	53.2	Good	83.1	43.6	Poor	69.6		
MT1745	47.0	Very Poor	73.4	31.2	Very Poor	49.8		9,14,15,
MT1746	46.2	Very Poor	72.2	44.2	Poor	70.5		3,15,

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

Hard Winter Wheat Quality Report

2020 NRPN-NCP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
MTCL1737	44.8	Very Poor	70.1	42.2	Poor	67.2		1,2,14,15,
SD12DHA00031	53.2	Good	83.0	55.3	Very Good	88.2		3,15,
SD12DHA01373	57.8	Very Good	90.3	46.2	Average	73.7		15,
SD12DHA01688	47.7	Very Poor	74.5	52.5	Good	83.7		4,15,
SD Andes	55.1	Very Good	86.1	39.5	Poor	62.9		18,
SD12DHA03429	53.8	Good	84.0	58.9	Very Good	93.9		20,
SD13DHA02346	50.2	Poor	78.4	44.9	Average	71.5		
SD14355-2	51.3	Poor	80.2	53.7	Good	85.6		16,18,19,20,
SD15004-2	52.6	Average	82.2	55.3	Very Good	88.1		14,15,
SD15035-2	51.7	Poor	80.7	54.7	Good	87.3		5,
SD15205-1	55.1	Very Good	86.1	53.7	Good	85.5		11,12,13,14,15,17,

2020 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	61.2	10.7	0.4	29.8	7.0	2.60	0.27	36	18	MIXED	46-27-16-11-03
Overland	60.3	10.7	0.4	31.7	9.3	2.63	0.36	56	15	HARD	08-16-35-41-01
Wesley	59.5	10.6	0.3	33.0	9.0	2.71	0.34	54	16	HARD	07-24-35-34-01
Jagalene	60.5	10.7	0.4	30.5	7.8	2.69	0.38	66	16	HARD	02-10-21-67-01
Jerry	60.3	11.0	0.4	31.8	8.4	2.66	0.33	65	15	HARD	02-09-26-63-01
17NORD-94	59.4	10.8	0.4	31.8	9.2	2.63	0.36	50	14	HARD	10-29-35-26-01
18NORD-103	59.7	11.0	0.4	30.8	7.3	2.61	0.31	55	16	HARD	10-19-31-40-01
18NORD-104	59.4	10.5	0.4	31.4	9.1	2.64	0.37	56	15	HARD	07-20-30-43-01
18NORD-111	60.5	10.7	0.3	29.5	8.9	2.58	0.34	56	16	HARD	07-17-36-40-01
18NORD-108	59.7	10.1	0.6	27.2	8.5	2.41	0.35	51	15	MIXED	12-25-30-33-03
19CP010075	60.2	10.2	0.5	29.8	9.5	2.56	0.40	49	17	MIXED	16-26-30-28-03
19CP010078	59.6	10.7	0.3	28.2	8.1	2.58	0.36	68	16	HARD	01-08-22-69-01
19CP010081	62.6	10.4	0.4	31.6	7.5	2.73	0.31	71	15	HARD	01-04-15-80-01
19CP010083	59.9	11.0	0.4	30.2	7.5	2.63	0.35	63	16	HARD	04-11-27-58-01
19CP010076	60.7	11.2	0.4	29.3	8.2	2.57	0.35	66	16	HARD	02-11-21-66-01
LCH17-5660	59.5	10.7	0.4	26.0	7.5	2.48	0.36	76	18	HARD	02-04-14-80-01
DH15HRW-63-81	60.1	10.8	0.4	31.8	8.0	2.72	0.34	68	16	HARD	03-07-19-71-01
LCH18-7115	61.7	11.0	0.3	34.1	8.8	2.71	0.33	51	14	MIXED	11-24-36-29-03
LCH17-1296	56.4	11.0	0.4	29.9	8.7	2.57	0.37	55	16	HARD	09-21-33-37-01
LCH17-3468	60.1	10.5	0.6	28.8	6.8	2.61	0.30	56	15	HARD	06-21-33-40-01
NE15624	60.1	10.6	0.4	27.6	8.0	2.51	0.37	65	15	HARD	02-08-26-64-01
NW15443	59.8	10.5	0.4	35.4	9.1	2.81	0.38	54	16	HARD	10-22-35-33-01
NE16562	58.2	10.8	0.4	30.3	8.9	2.64	0.36	50	17	MIXED	15-27-29-29-03
NHH17612	60.7	10.6	0.4	27.2	7.8	2.54	0.34	61	16	HARD	04-14-28-54-01
NE17441	61.0	10.5	0.4	32.0	8.4	2.71	0.35	59	15	HARD	05-14-30-51-01
NE17443	58.8	10.5	0.4	31.5	9.2	2.64	0.36	54	17	MIXED	11-22-33-34-03
NE17544	60.8	10.5	0.4	31.4	8.1	2.70	0.35	63	16	HARD	04-10-25-61-01
NE17590	60.8	10.5	0.4	30.1	8.1	2.63	0.35	55	15	HARD	06-19-36-39-01
MT1745	58.6	10.9	0.4	28.7	8.9	2.54	0.36	58	17	HARD	07-19-28-46-01
MT1746	59.7	10.8	0.3	27.1	9.8	2.52	0.33	56	16	HARD	08-18-31-43-01
MTCL1737	57.6	10.8	0.3	25.6	7.6	2.54	0.38	69	16	HARD	01-08-20-71-01
SD12DHA00031	60.7	10.5	0.4	32.0	9.8	2.63	0.34	54	16	MIXED	11-20-28-41-03
SD12DHA01373	61.0	10.7	0.3	33.5	8.6	2.77	0.34	53	15	HARD	09-20-35-36-01
SD12DHA01688	59.1	10.7	0.4	29.5	9.1	2.48	0.32	50	18	MIXED	17-27-25-31-03
SD12DHA03282	61.1	10.6	0.3	30.2	9.1	2.57	0.37	55	15	HARD	08-18-36-38-01
SD12DHA03429	59.0	10.5	0.3	30.7	8.4	2.64	0.34	57	14	HARD	05-18-38-39-01
SD13DHA02346	60.2	10.4	0.4	28.2	7.7	2.49	0.33	49	16	MIXED	13-31-33-23-03
SD14355-2	61.4	10.3	0.5	29.5	8.5	2.57	0.35	59	16	HARD	04-16-30-50-01
SD15004-2	60.7	10.6	0.4	32.2	8.8	2.66	0.36	54	16	HARD	10-24-31-35-01
SD15035-2	60.7	10.2	0.5	30.5	9.3	2.59	0.39	56	17	HARD	09-20-30-41-01
SD15205-1	60.2	10.4	0.4	33.5	9.1	2.67	0.37	53	15	HARD	10-25-31-34-01

2020 NRPN Intraregional Production Zone

North Central Plains

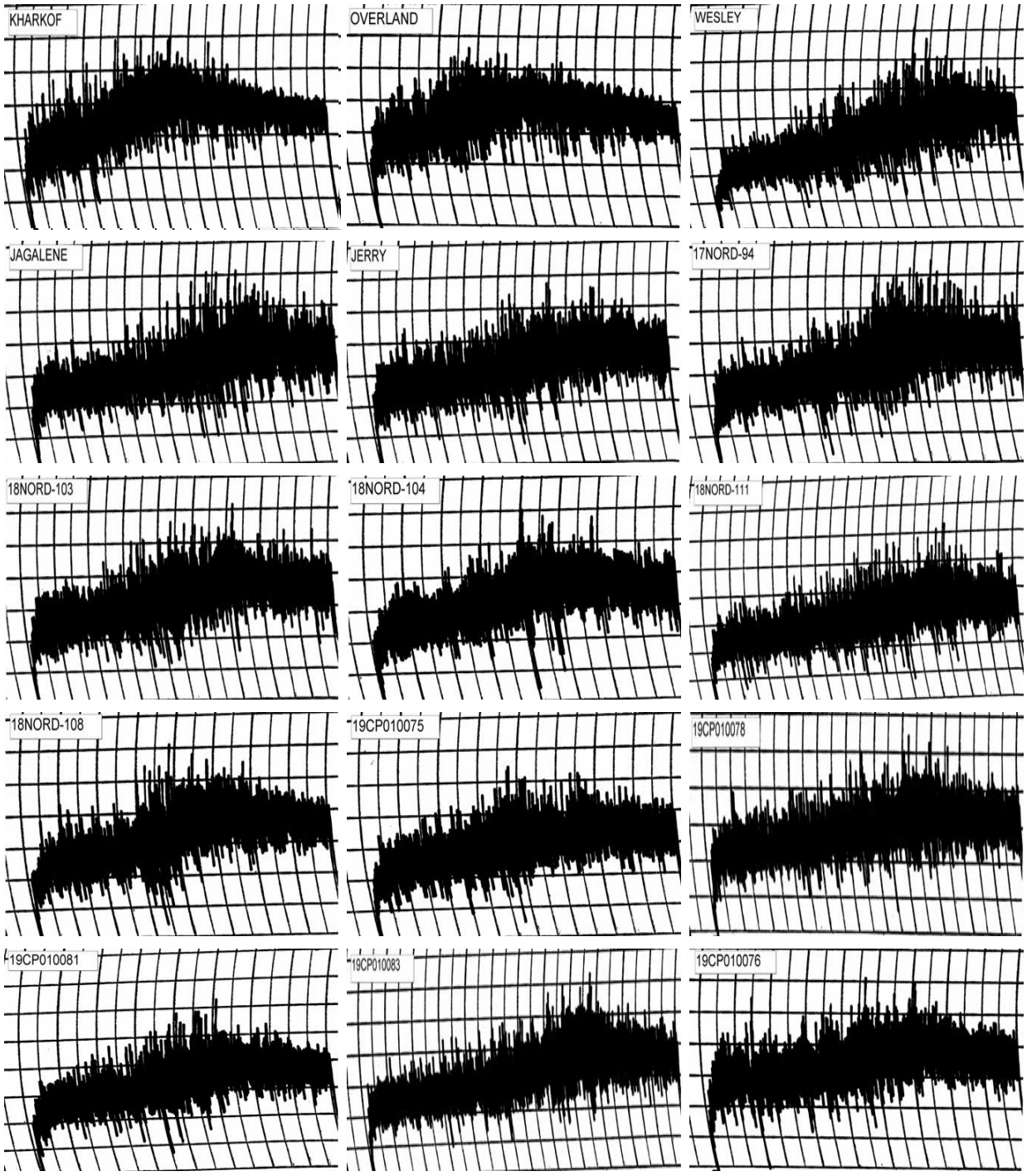
	Wheat		Flour			Noodle Color					
	Protein	Milling Yield	Ash	Protein	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
LINE	(%)	(%)	(%)	(%)							
Kharkof	15.0	62.4	0.40	13.1	0.628	77.57	-1.07	22.06	-9.19	1.23	1.26
Overland	12.7	67.7	0.43	11.5	0.634	78.34	-1.22	22.41	-8.57	0.83	0.38
Wesley	13.3	69.8	0.41	12.4	0.671	79.38	-1.47	21.20	-9.71	1.13	1.24
Jagalene	12.5	66.6	0.45	11.8	0.592	79.58	-1.50	22.36	-9.76	1.02	1.79
Jerry	12.8	66.9	0.42	11.9	0.559	79.51	-1.61	23.38	-8.80	1.14	2.52
17NORD-94	12.3	68.3	0.39	11.5	0.695	80.49	-1.44	20.91	-9.61	1.16	3.02
18NORD-103	13.2	67.2	0.40	12.1	0.709	79.74	-1.51	22.47	-9.11	1.08	2.93
18NORD-104	13.0	68.5	0.43	12.0	0.713	78.27	-1.25	21.99	-10.75	1.49	1.84
18NORD-111	12.3	68.3	0.42	11.4	0.688	79.91	-1.37	20.86	-9.57	1.11	3.43
18NORD-108	13.5	66.9	0.39	12.4	0.807	78.91	-0.96	20.20	-9.67	1.26	2.01
19CP010075	12.2	68.8	0.43	11.2	0.569	79.37	-1.39	21.88	-8.09	1.24	2.23
19CP010078	12.5	69.0	0.51	11.4	0.626	78.37	-1.66	23.89	-12.09	1.30	0.75
19CP010081	13.4	67.1	0.42	12.1	0.660	78.63	-1.27	21.90	-9.86	1.05	1.51
19CP010083	12.8	67.5	0.42	12.2	0.678	79.47	-1.35	22.80	-10.22	1.11	2.49
19CP010076	12.5	65.5	0.41	11.6	0.659	78.55	-1.73	24.97	-9.76	1.08	2.60
LCH17-5660	13.0	64.8	0.46	12.0	0.555	77.90	-1.59	26.63	-9.27	1.14	1.44
DH15HRW-63-81	13.6	65.9	0.41	12.5	0.693	78.35	-1.18	20.51	-10.17	1.27	1.19
LCH18-7115	12.5	71.2	0.36	11.7	0.603	78.79	-0.82	20.36	-8.81	1.00	2.63
LCH17-1296	12.9	66.0	0.39	11.9	0.708	78.92	-1.28	22.02	-10.39	1.28	1.86
LCH17-3468	13.3	65.6	0.40	12.5	0.669	78.57	-1.49	22.83	-9.90	1.23	0.83
NE15624	12.8	64.8	0.42	12.0	0.574	79.81	0.12	21.79	-8.52	-0.50	2.30
NW15443	12.6	66.8	0.36	11.4	0.270	80.10	-1.19	20.41	-8.50	1.06	6.20
NE16562	12.4	67.2	0.40	11.2	0.612	79.86	-1.50	22.27	-9.32	1.15	3.08
NHH17612	13.0	66.8	0.39	11.8	0.662	77.86	-1.34	22.80	-9.06	1.28	2.53
NE17441	12.7	68.6	0.40	11.8	0.686	80.18	-1.11	19.82	-10.85	1.16	3.37
NE17443	13.0	66.9	0.38	11.8	0.659	80.52	-1.61	21.53	-10.15	1.16	3.51
NE17544	13.3	67.2	0.38	12.3	0.643	78.74	-1.16	20.65	-10.08	1.33	2.88
NE17590	13.0	66.7	0.38	11.9	0.587	78.54	-1.38	21.78	-8.92	1.24	2.30
MT1745	12.5	67.5	0.47	11.7	0.626	79.82	-1.20	21.81	-10.66	1.22	4.52
MT1746	12.5	66.7	0.45	11.9	0.272	79.98	-1.61	23.20	-7.59	0.99	4.24
MTCL1737	13.3	65.3	0.45	12.6	0.590	78.43	-1.29	23.43	-9.09	1.37	3.80
SD12DHA00031	12.7	68.4	0.42	11.8	0.550	78.90	-1.19	20.45	-10.37	1.27	2.96
SD12DHA01373	12.5	69.2	0.42	11.6	0.613	79.50	-1.81	21.99	-9.47	1.17	2.64
SD12DHA01688	13.2	67.1	0.40	12.0	0.602	79.98	-1.52	20.64	-10.34	1.31	2.76
SD12DHA03282	12.6	69.1	0.42	11.6	0.602	80.03	-1.94	22.40	-10.67	1.37	2.82
SD12DHA03429	13.2	68.1	0.42	12.0	0.621	79.15	-1.23	20.68	-10.87	1.19	3.56
SD13DHA02346	12.6	67.8	0.44	11.6	0.624	79.93	-1.79	21.37	-9.64	1.13	2.70
SD14355-2	13.5	66.1	0.39	12.1	0.568	77.03	-1.01	21.87	-9.65	1.37	2.97
SD15004-2	12.8	67.4	0.41	11.8	0.645	79.45	-1.48	22.07	-10.39	1.17	4.14
SD15035-2	12.6	68.3	0.42	11.8	0.597	78.79	-1.27	21.03	-9.44	1.11	2.15
SD15205-1	12.1	68.9	0.42	11.0	0.570	80.29	-1.53	21.05	-10.35	1.14	3.61

2020 NRPN Intraregional Production Zone

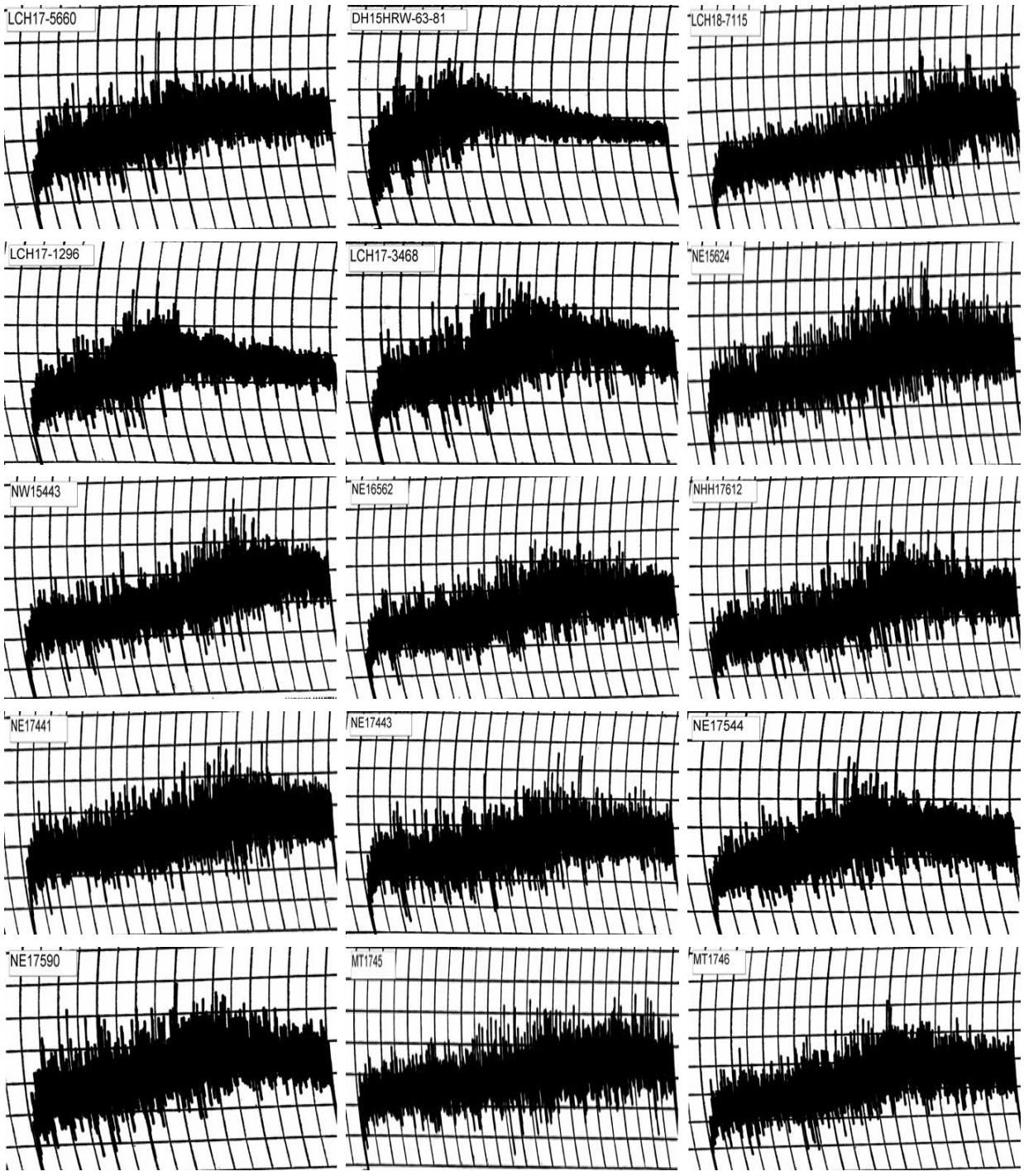
North Central Plains

Line	Flour Protein (%)	Mixograph Absorption (%)	Mixograph As-Is (min)	Mixograph Corrected (min)	Mixograph Tolerance
Kharkof	13.1	64.8	4.25	4.25	1
Overland	11.5	63.2	2.75	2.60	1
Wesley	12.4	64.6	6.38	6.38	4
Jagalene	11.8	63.6	6.38	6.26	4
Jerry	11.9	63.7	5.50	5.41	4
17NORD-94	11.5	63.2	5.63	5.31	5
18NORD-103	12.1	64.1	6.00	6.00	4
18NORD-104	12.0	64.0	4.13	4.13	4
18NORD-111	11.4	64.4	8.25	7.61	4
18NORD-108	12.4	64.6	4.38	4.38	2
19CP010075	11.2	62.6	4.13	3.73	3
19CP010078	11.4	62.9	7.38	6.80	3
19CP010081	12.1	64.1	4.75	4.75	3
19CP010083	12.2	64.2	8.13	8.13	4
19CP010076	11.6	62.2	6.00	5.70	4
LCH17-5660	12.0	62.9	3.75	3.75	3
DH15HRW-63-81	12.5	63.8	2.25	2.25	1
LCH18-7115	11.7	61.9	7.75	7.45	4
LCH17-1296	11.9	62.8	3.50	3.47	1
LCH17-3468	12.5	63.8	4.13	4.13	2
NE15624	12.0	64.4	7.25	7.21	4
NW15443	11.4	62.4	6.25	5.77	4
NE16562	11.2	62.1	6.50	5.90	4
NHH17612	11.8	64.2	6.38	6.24	4
NE17441	11.8	63.2	6.88	6.67	4
NE17443	11.8	63.7	6.25	6.06	4
NE17544	12.3	64.5	4.38	4.38	4
NE17590	11.9	63.7	4.63	4.57	3
MT1745	11.7	63.4	9.75	9.38	5
MT1746	11.9	63.8	6.13	6.06	5
MTCL1737	12.6	64.5	8.13	8.13	4
SD12DHA00031	11.8	63.9	6.38	6.20	4
SD12DHA01373	11.6	63.2	6.25	5.94	4
SD12DHA01688	12.0	63.9	7.25	7.22	4
SD12DHA03282	11.6	63.2	5.25	4.99	3
SD12DHA03429	12.0	63.9	4.75	4.74	4
SD13DHA02346	11.6	63.2	4.88	4.62	3
SD14355-2	12.1	63.5	5.00	5.00	2
SD15004-2	11.8	63.1	7.63	7.46	4
SD15035-2	11.8	63.1	5.50	5.37	4
SD15205-1	11.0	62.3	8.63	7.62	5

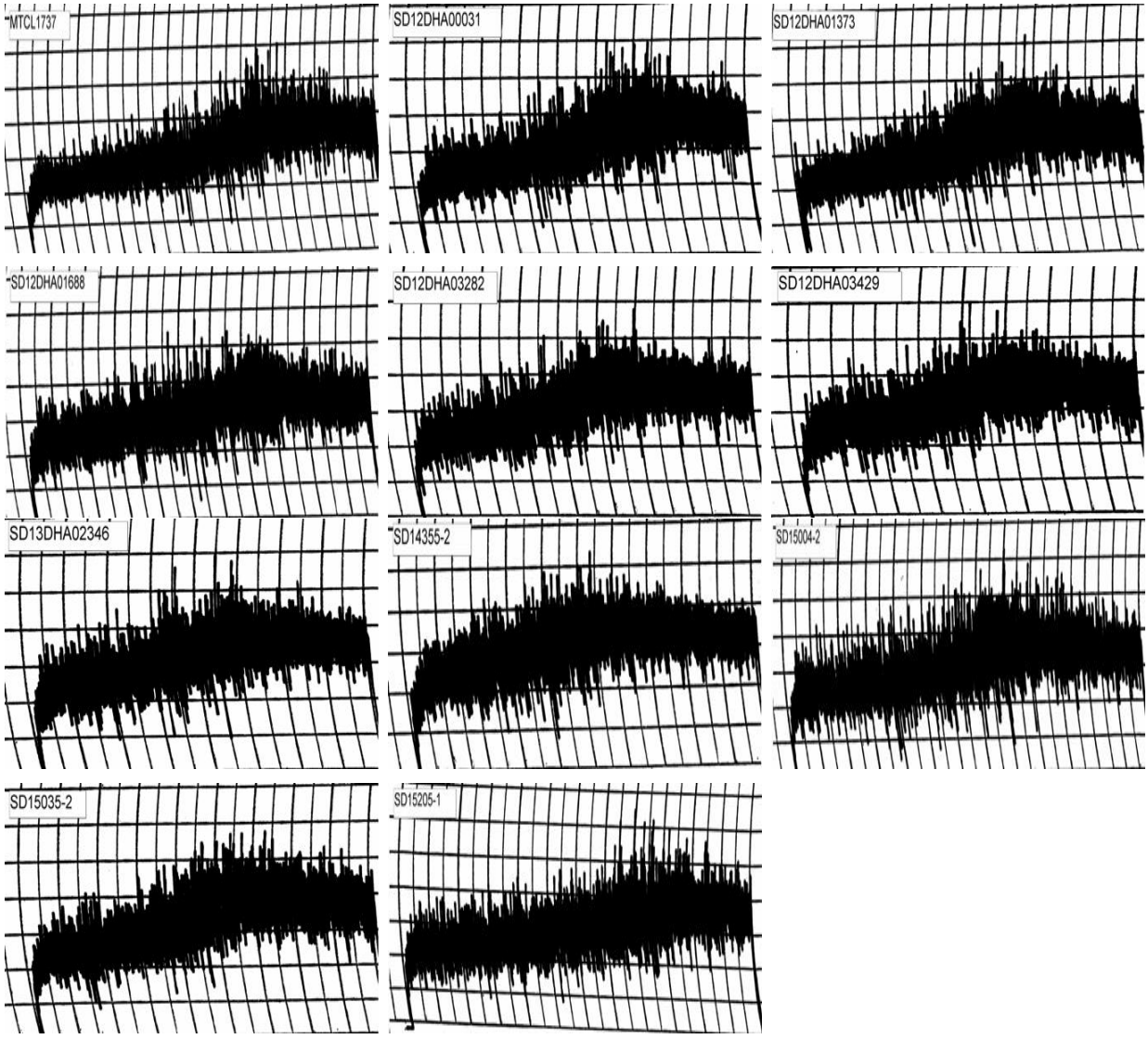
2020 NRPN Intraregional Production Zone
North Central Plains



2020 NRPN Intraregional Production Zone
North Central Plains



2020 NRPN Intraregional Production Zone
North Central Plains



2020 NRPN Intraregional Production Zone

North Central Plains

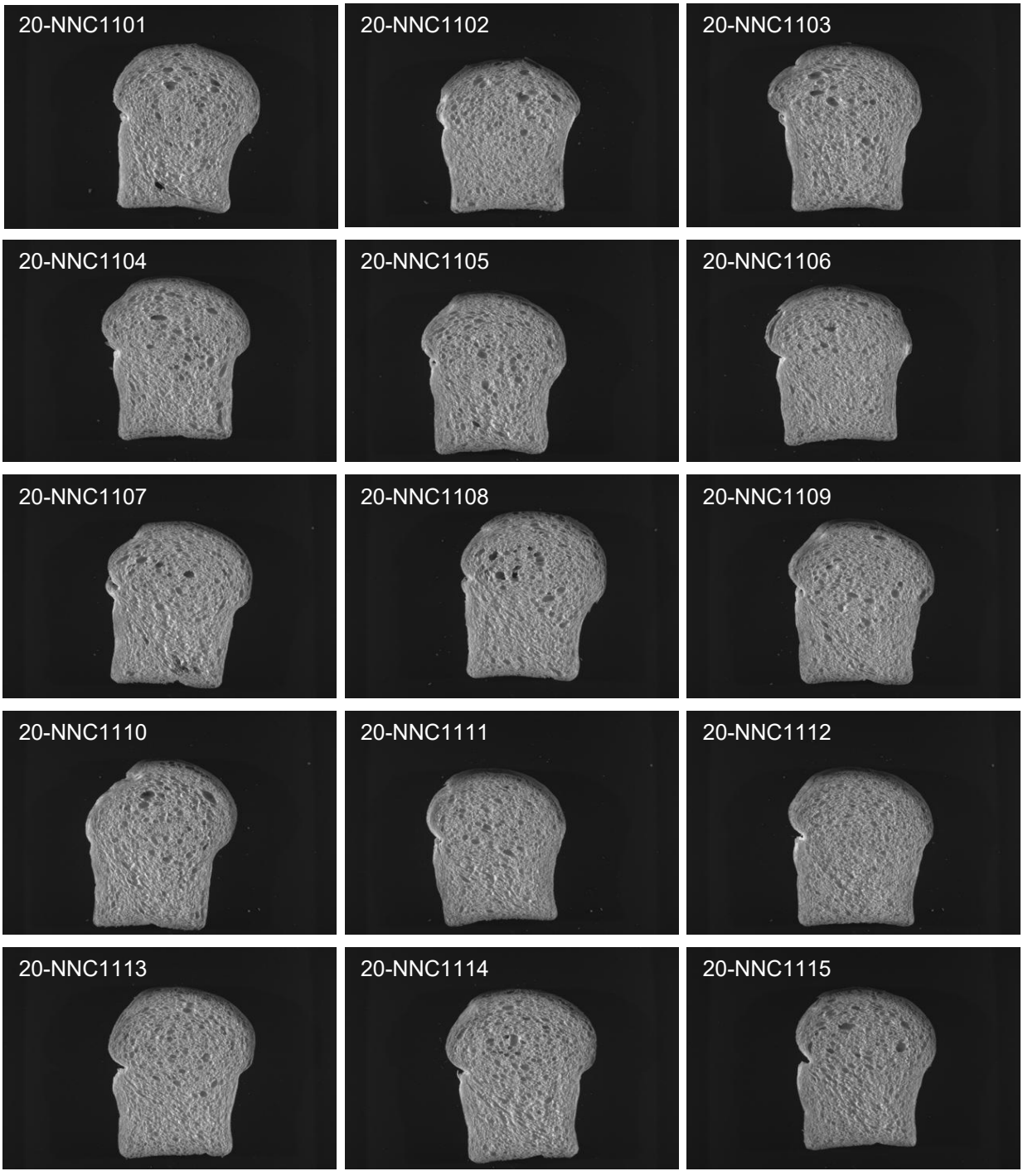
	RVA						
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)
Kharkof	170.58	252.17	181.17	71.00	301.92	120.75	6.40
Overland	140.17	252.58	171.33	81.25	298.92	127.58	6.27
Wesley	129.50	241.75	160.33	81.42	288.75	128.42	6.20
Jagalene	128.58	253.08	170.67	82.42	298.08	127.42	6.20
Jerry	113.33	238.08	155.00	83.08	276.33	121.33	6.20
17NORD-94	115.25	232.42	159.17	73.25	281.42	122.25	6.27
18NORD-103	135.83	246.08	175.33	70.75	309.83	134.50	6.27
18NORD-104	133.25	250.17	174.42	75.75	289.83	115.42	6.40
18NORD-111	124.92	246.92	171.50	75.42	298.25	126.75	6.27
18NORD-108	121.58	265.08	184.83	80.25	298.17	113.33	6.40
19CP010075	125.83	266.17	181.42	84.75	301.83	120.42	6.33
19CP010078	105.50	247.00	163.42	83.58	293.00	129.58	6.20
19CP010081	121.75	228.67	154.08	74.58	275.08	121.00	6.20
19CP010083	141.25	253.25	167.33	85.92	295.75	128.42	6.27
19CP010076	133.83	256.17	181.08	75.08	300.92	119.83	6.40
LCH17-5660	131.17	259.92	169.58	90.33	294.83	125.25	6.27
DH15HRW-63-81	128.58	255.33	179.83	75.50	308.83	129.00	6.33
LCH18-7115	127.33	248.67	167.33	81.33	293.42	126.08	6.27
LCH17-1296	136.42	252.58	163.92	88.67	281.00	117.08	6.27
LCH17-3468	143.58	263.08	181.75	81.33	307.67	125.92	6.33
NE15624	145.00	272.42	191.92	80.50	324.83	132.92	6.33
NW15443	136.25	238.75	168.00	70.75	293.83	125.83	6.33
NE16562	138.83	285.83	196.92	88.92	328.83	131.92	6.40
NHH17612	114.67	258.25	177.67	80.58	309.00	131.33	6.27
NE17441	100.83	246.17	165.83	80.33	290.42	124.58	6.20
NE17443	120.92	285.92	202.08	83.83	334.25	132.17	6.40
NE17544	120.00	242.33	172.58	69.75	288.58	116.00	6.40
NE17590	149.17	259.25	192.92	66.33	312.33	119.42	6.47
MT1745	149.25	260.75	189.75	71.00	325.75	136.00	6.33
MT1746	145.08	258.50	191.92	66.58	332.50	140.58	6.33
MTCL1737	118.42	257.92	176.25	81.67	303.08	126.83	6.33
SD12DHA00031	137.58	244.00	173.83	70.17	299.08	125.25	6.33
SD12DHA01373	135.75	244.75	175.83	68.92	302.25	126.42	6.33
SD12DHA01688	146.17	243.75	168.25	75.50	287.83	119.58	6.33
SD12DHA03282	149.33	244.25	180.50	63.75	303.00	122.50	6.40
SD12DHA03429	133.00	248.25	174.83	73.42	297.25	122.42	6.33
SD13DHA02346	141.58	259.33	176.17	83.17	301.67	125.50	6.27
SD14355-2	138.42	257.25	182.00	75.25	306.83	124.83	6.33
SD15004-2	135.92	240.17	175.50	64.67	301.83	126.33	6.33
SD15035-2	146.83	239.83	174.75	65.08	299.00	124.25	6.33
SD15205-1	122.08	256.58	173.67	82.92	304.50	130.83	6.20

2020 NRPN Intraregional Production Zone

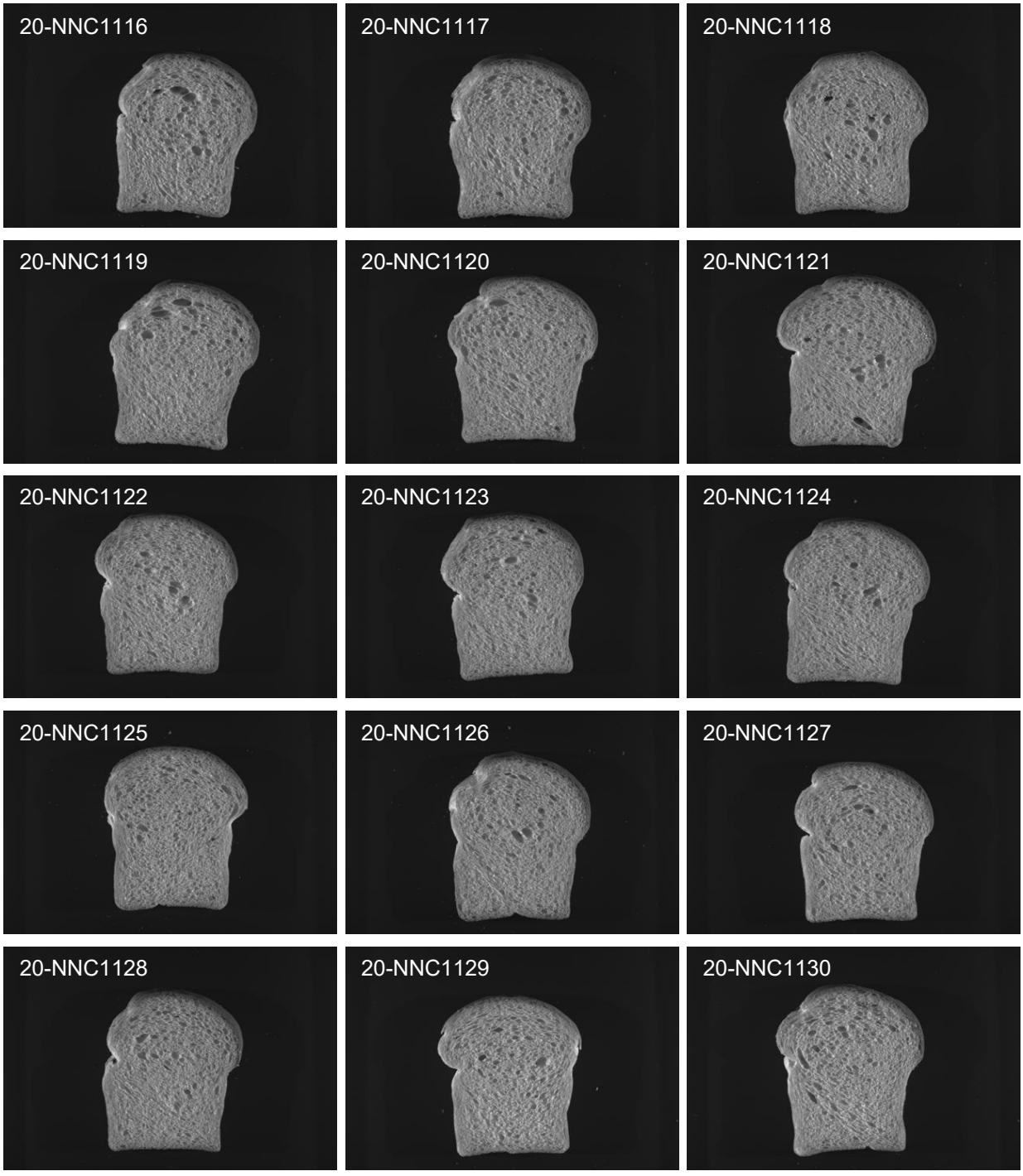
North Central Plains

	Flour		Mix Time		Dough					
Line	Protein (%)	Water Abs. (%)	As-is (min)	Corrected (min)	Weight (g)	Proof Height (cm)	Crumb Grain	As-Rec'd. (cc)	Specific Volume (cc/g)	Loaf Volume Potential (cc/%)
Kharkof	13.1	64.8	4.50	4.50	174.2	8.4	3.0	975	6.6	67
Overland	11.5	63.3	3.25	3.07	172.6	7.9	2.5	875	5.9	67
Wesley	12.4	64.2	7.50	7.50	172.9	8.1	3.0	980	6.7	72
Jagalene	11.8	63.6	7.00	6.87	172.2	7.7	4.0	970	6.6	76
Jerry	11.9	63.7	6.75	6.64	172.5	7.6	3.5	925	6.2	71
17NORD-94	11.5	63.3	6.75	6.37	172.1	7.6	4.0	915	6.2	72
18NORD-103	12.1	64.2	6.00	6.00	173.5	7.4	3.5	915	6.2	68
18NORD-104	12.0	64.2	5.25	5.25	173.7	7.9	3.0	955	6.5	72
18NORD-111	11.4	64.2	8.50	7.84	173.3	7.5	4.0	925	6.2	75
18NORD-108	12.4	64.2	4.75	4.75	173.5	7.4	3.5	975	6.6	72
19CP010075	11.2	62.3	5.00	4.51	171.1	7.5	3.5	890	6.1	72
19CP010078	11.4	63.1	8.50	7.84	171.8	8.1	3.0	900	6.1	72
19CP010081	12.1	64.1	5.00	5.00	173.2	7.9	4.0	975	6.5	74
19CP010083	12.2	64.1	7.75	7.75	173.0	7.9	4.0	1000	6.8	76
19CP010076	11.6	62.1	6.13	5.82	170.3	7.7	2.5	890	6.1	69
LCH17-5660	12.0	63.1	4.88	4.88	172.0	7.6	3.5	915	6.1	68
DH15HRW-63-81	12.5	64.2	2.75	2.75	173.8	7.9	3.5	950	6.4	68
LCH18-7115	11.7	62.2	8.00	7.69	171.5	7.7	4.5	945	6.5	74
LCH17-1296	11.9	63.0	4.00	3.97	172.5	7.7	4.0	945	6.3	72
LCH17-3468	12.5	64.2	4.25	4.25	172.6	7.9	4.5	960	6.5	70
NE15624	12.0	64.2	7.50	7.46	173.3	7.6	5.0	1030	6.9	82
NW15443	11.4	62.3	6.50	6.00	170.9	7.4	4.0	900	6.1	72
NE16562	11.2	62.2	6.75	6.13	170.9	7.8	4.5	965	6.6	80
NHH17612	11.8	64.3	7.75	7.58	173.2	7.6	4.5	935	6.2	72
NE17441	11.8	63.3	7.50	7.28	171.6	7.7	4.0	905	6.2	69
NE17443	11.8	63.4	6.75	6.55	172.0	7.5	4.0	960	6.5	75
NE17544	12.3	64.3	4.75	4.75	173.4	7.7	3.5	920	6.2	66
NE17590	11.9	63.3	4.75	4.69	172.8	7.8	3.5	930	6.3	71
MT1745	11.7	63.0	9.00	8.65	171.4	7.9	3.5	900	6.1	69
MT1746	11.9	64.2	6.38	6.30	171.8	8.2	3.5	1000	6.8	79
MTCL1737	12.6	64.5	7.50	7.50	172.8	8.1	3.5	1040	7.0	77
SD12DHA00031	11.8	64.1	6.75	6.56	172.9	7.9	4.0	980	6.6	78
SD12DHA01373	11.6	63.1	6.75	6.41	172.3	7.7	3.0	925	6.3	73
SD12DHA01688	12.0	64.1	7.00	6.97	172.4	7.7	4.0	945	6.4	72
SD12DHA03282	11.6	63.1	5.75	5.46	172.7	7.4	3.5	915	6.2	72
SD12DHA03429	12.0	64.0	5.00	4.99	173.4	7.7	4.0	890	6.0	66
SD13DHA02346	11.6	63.3	5.00	4.73	172.1	7.7	3.5	955	6.5	76
SD14355-2	12.1	63.1	4.88	4.88	172.2	7.4	4.0	870	5.8	63
SD15004-2	11.8	63.1	8.50	8.31	171.7	7.9	5.0	995	6.8	79
SD15035-2	11.8	63.2	6.75	6.59	172.2	7.8	4.0	960	6.5	75
SD15205-1	11.0	62.1	10.50	9.27	169.2	7.9	5.0	970	6.6	83

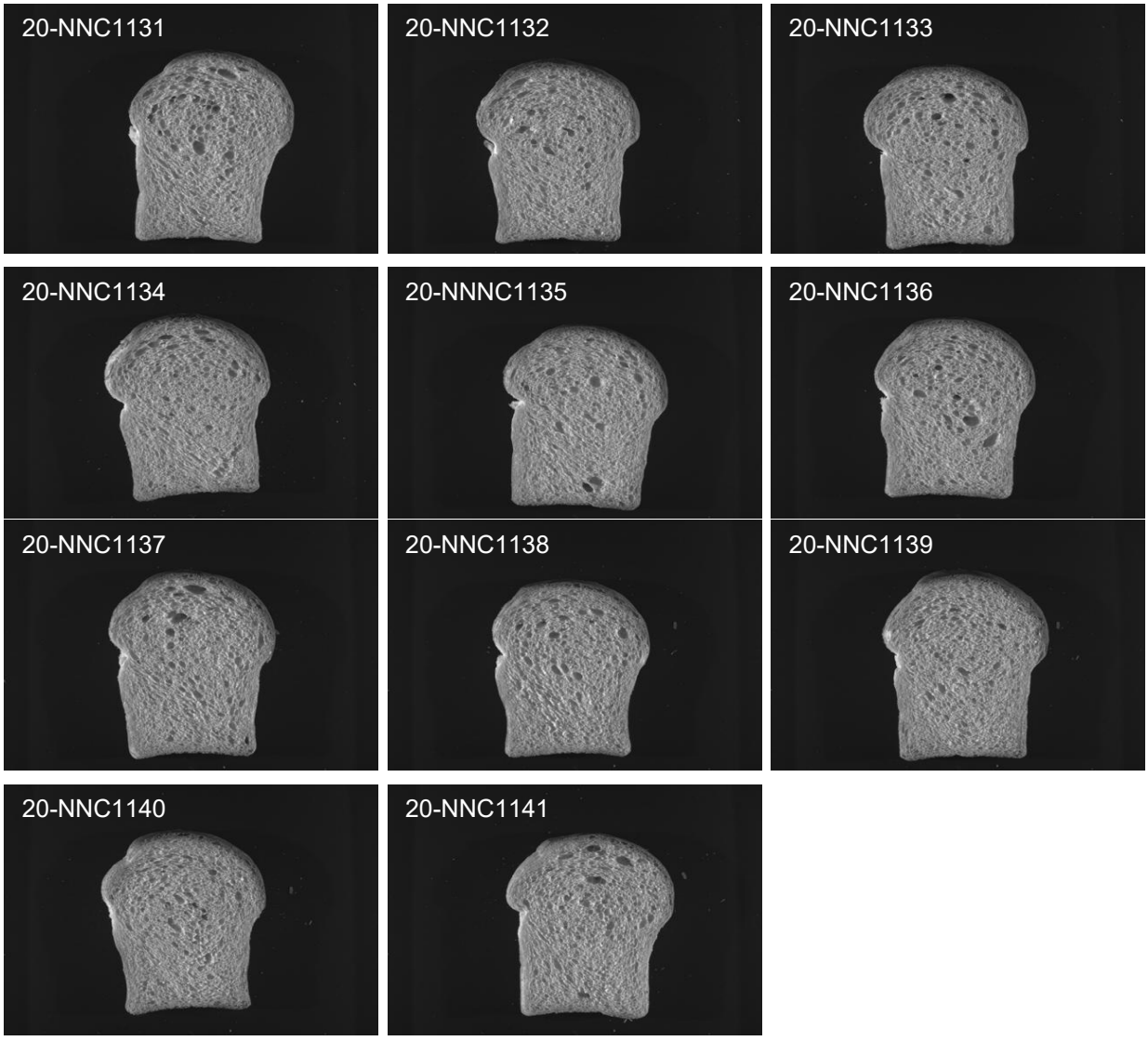
2020 NRPN Intraregional Production Zone
North Central Plains



2020 NRPN Intraregional Production Zone
North Central Plains



2020 NRPN Intraregional Production Zone
North Central Plains



Hard Winter Wheat Quality Report

2020 NRPN-NHP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	41.9	Very Poor	74.0	30.0	Very Good	91.7		8,20,
Overland	49.8	Good	87.9	15.6	Poor	47.6		16,
Wesley	48.8	Good	86.1	32.1	Very Good	98.3		
Jagalene	50.0	Good	88.3	13.1	Very Poor	40.2		18,
Jerry	44.9	Very Poor	79.4	20.1	Average	61.4	1AL	16,21,
17NORD-94	46.1	Poor	81.4	31.3	Very Good	95.7		1,16,
18NORD-103	51.0	Very Good	90.1	28.4	Very Good	86.9		16,
18NORD-104	46.4	Poor	81.9	23.5	Good	72.0		16,
18NORD-111	47.2	Poor	83.3	26.3	Good	80.5		15,
18NORD-108	35.7	Very Poor	63.0	32.7	Very Good	100.0		2,4,8,16,
19CP010075	46.2	Poor	81.6	20.8	Average	63.5		
19CP010078	46.9	Poor	82.9	8.9	Very Poor	27.2		9,10,12,13,15,16,17,
19CP010081	50.1	Very Good	88.5	21.5	Good	65.7		10,16,21,
19CP010083	50.5	Very Good	89.2	14.4	Poor	44.1		16,21,
19CP010076	47.4	Average	83.8	24.7	Good	75.6	1BL	16,21,
LCH17-5660	40.5	Very Poor	71.5	16.9	Poor	51.8	h1BL	8,9,10,12,13,16,19,20,21,
DH15HRW-63-81	49.5	Good	87.3	16.7	Poor	51.1		16,21,
LCH18-7115	56.2	Very Good	99.3	12.5	Very Poor	38.2		15,
LCH17-1296	45.5	Poor	80.4	15.0	Poor	46.0		1,16,21,
LCH17-3468	47.7	Average	84.2	21.9	Good	66.9		21,
NE15624	44.2	Very Poor	78.0	13.2	Poor	40.5		14,15,21,
NW15443	48.7	Average	86.1	10.7	Very Poor	32.6		5,15,16,
NE16562	47.1	Poor	83.2	17.7	Average	54.1	1BL	6,11,16,21,
NHH17612	49.4	Good	87.2	11.4	Very Poor	34.7		2,15,
NE17441	56.6	Very Good	100.0	15.8	Poor	48.4		15,
NE17443	47.0	Poor	83.1	22.5	Good	68.7		5,
NE17544	48.7	Average	86.0	19.6	Average	59.9		
NE17590	51.1	Very Good	90.2	24.6	Good	75.2		21,
MT1745	43.7	Very Poor	77.2	6.9	Very Poor	21.2		5,14,15,17,
MT1746	40.9	Very Poor	72.2	20.5	Average	62.6		2,15,

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

Hard Winter Wheat Quality Report

2020 NRPN-NHP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
MTCL1737	42.9	Very Poor	75.7	27.4	Very Good	83.8		2,9,
SD12DHA00031	44.7	Very Poor	78.9	18.1	Average	55.3		
SD12DHA01373	49.7	Good	87.8	31.5	Very Good	96.5		3,
SD12DHA01688	47.8	Average	84.4	10.1	Very Poor	31.0		13,16,18,
SD Andes	53.4	Very Good	94.3	32.4	Very Good	99.2		16,18,
SD12DHA03429	49.7	Good	87.7	27.3	Good	83.5		16,
SD13DHA02346	47.6	Average	84.1	19.5	Average	59.7		2,4,16,
SD14355-2	49.3	Good	87.1	13.3	Poor	40.6		16,18,
SD15004-2	48.6	Average	85.8	9.2	Very Poor	28.1		11,12,13,14,15,17,18,19,21,
SD15035-2	47.9	Average	84.6	19.3	Average	59.0		
SD15205-1	55.2	Very Good	97.4	5.3	Very Poor	16.1		14,15,17,18,19,21,

2020 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	60.4	15.2	0.4	31.5	9.0	2.63	0.30	43	17	MIXED	26-33-24-17-03
Overland	58.6	15.0	0.4	33.3	9.1	2.70	0.38	47	17	MIXED	17-30-31-22-03
Wesley	57.7	14.5	0.3	33.1	9.4	2.74	0.36	49	17	MIXED	17-28-27-28-03
Jagalene	59.7	14.9	0.3	32.9	9.3	2.78	0.37	57	17	HARD	06-21-32-41-01
Jerry	58.4	14.7	0.4	31.4	9.4	2.66	0.39	60	18	HARD	07-14-34-45-01
17NORD-94	57.6	14.3	0.4	30.8	9.0	2.62	0.36	50	18	MIXED	19-27-27-27-03
18NORD-103	59.4	14.4	0.4	33.1	7.9	2.73	0.32	53	17	HARD	10-26-32-32-01
18NORD-104	58.5	14.1	0.5	31.1	8.5	2.56	0.33	49	18	MIXED	18-28-30-24-03
18NORD-111	59.4	13.7	0.5	30.5	9.2	2.64	0.35	51	18	MIXED	15-28-25-32-03
18NORD-108	58.5	13.4	0.4	26.4	9.4	2.33	0.35	52	21	MIXED	17-24-29-30-03
19CP010075	59.9	13.4	0.3	30.8	9.2	2.59	0.39	49	18	MIXED	21-24-28-27-03
19CP010078	59.6	14.3	0.3	30.2	9.8	2.66	0.38	58	19	HARD	08-21-27-44-01
19CP010081	61.6	14.0	0.3	33.2	9.6	2.75	0.39	61	16	HARD	02-12-35-51-01
19CP010083	59.8	14.2	0.3	34.0	9.2	2.77	0.37	48	17	MIXED	18-28-30-24-03
19CP010076	60.3	15.0	0.4	32.9	8.3	2.70	0.37	57	17	HARD	04-24-30-42-01
LCH17-5660	59.4	14.7	0.4	28.0	8.2	2.50	0.34	64	19	HARD	05-14-23-58-01
DH15HRW-63-81	59.4	14.8	0.5	32.9	8.6	2.77	0.31	63	17	HARD	03-14-24-59-01
LCH18-7115	60.6	14.7	0.4	35.6	9.5	2.73	0.33	46	18	MIXED	23-30-27-20-03
LCH17-1296	57.0	14.0	0.4	32.7	9.0	2.65	0.37	45	15	MIXED	23-36-25-16-03
LCH17-3468	59.6	13.9	0.4	30.9	7.7	2.67	0.32	49	17	MIXED	19-22-32-27-03
NE15624	59.6	14.8	0.4	30.2	9.9	2.56	0.39	61	17	HARD	06-12-32-50-01
NW15443	58.4	14.1	0.5	36.8	9.2	2.89	0.41	45	16	MIXED	23-29-30-18-03
NE16562	58.6	13.8	0.4	36.2	9.5	2.82	0.38	39	16	MIXED	37-31-21-11-03
NHH17612	59.6	13.4	0.5	27.9	7.5	2.56	0.33	54	17	HARD	09-24-29-38-01
NE17441	60.1	13.4	0.4	32.0	7.9	2.68	0.31	48	16	MIXED	15-31-30-24-03
NE17443	57.7	14.7	0.3	31.8	9.8	2.69	0.40	51	18	MIXED	16-24-29-31-03
NE17544	59.2	14.6	0.4	31.1	8.3	2.66	0.35	54	16	HARD	06-26-33-35-01
NE17590	60.2	13.4	0.6	33.4	8.9	2.71	0.34	50	16	MIXED	14-27-33-26-03
MT1745	58.1	14.7	0.4	30.5	9.8	2.60	0.40	54	18	HARD	09-28-29-34-01
MT1746	58.6	14.4	0.4	27.1	9.4	2.50	0.35	56	18	HARD	10-22-28-40-01
MTCL1737	58.6	15.4	0.4	27.8	9.1	2.57	0.37	70	19	HARD	01-08-22-69-01
SD12DHA00031	59.6	14.1	0.4	31.5	9.5	2.60	0.36	47	19	MIXED	21-31-23-25-03
SD12DHA01373	60.7	14.1	0.4	35.2	10.0	2.78	0.38	51	17	MIXED	14-26-30-30-03
SD12DHA01688	59.0	14.0	0.4	30.4	8.1	2.55	0.34	42	17	MIXED	31-31-24-14-03
SD12DHA03282	61.8	13.9	0.5	32.1	9.8	2.63	0.35	55	17	HARD	08-22-30-40-01
SD12DHA03429	58.2	13.7	0.5	32.8	8.9	2.70	0.35	47	16	MIXED	19-33-26-22-03
SD13DHA02346	57.7	13.1	0.5	27.0	9.0	2.41	0.39	44	15	MIXED	24-33-27-16-03
SD14355-2	60.2	13.3	0.4	30.0	8.8	2.60	0.35	51	17	MIXED	15-25-33-27-03
SD15004-2	59.5	13.6	0.4	34.4	7.9	2.72	0.34	45	17	MIXED	27-28-25-20-03
SD15035-2	59.9	13.0	0.4	31.0	9.2	2.58	0.38	46	17	MIXED	22-30-28-20-03
SD15205-1	59.6	13.4	0.5	37.3	8.9	2.80	0.37	41	15	MIXED	30-35-23-12-03

2020 NRPN Intraregional Production Zone

Northern High Plains

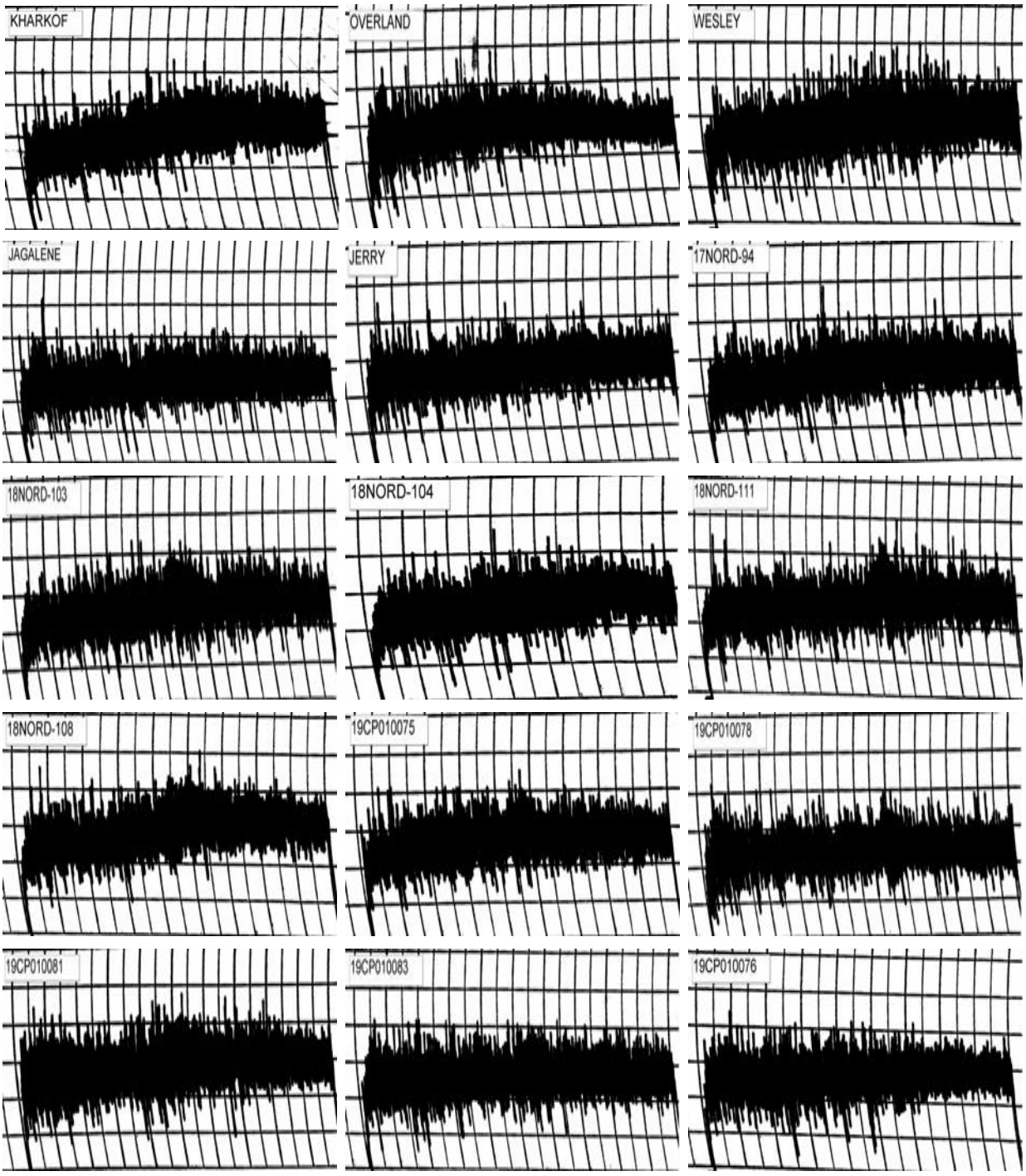
	Wheat		Flour			Noodle Color					
LINE	Protein (%)	Milling Yield (%)	Ash (%)	Protein (%)	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
Kharkof	11.4	62.2	0.39	10.2	0.528	80.55	-2.14	22.87	-7.14	1.00	2.41
Overland	9.0	68.2	0.45	7.7	0.449	80.94	-2.41	22.86	-6.94	1.02	1.96
Wesley	9.5	68.0	0.45	8.7	0.527	80.86	-2.42	23.33	-7.11	1.17	2.01
Jagalene	8.8	66.5	0.42	7.9	0.416	81.16	-2.61	25.24	-6.24	0.98	1.74
Jerry	9.2	65.8	0.45	8.3	0.452	81.52	-2.54	23.92	-7.27	0.89	3.70
17NORD-94	9.1	67.8	0.46	8.6	0.561	81.41	-2.38	23.95	-7.69	1.05	3.95
18NORD-103	9.7	66.7	0.44	8.2	0.603	82.44	-2.49	22.20	-7.62	1.01	3.41
18NORD-104	9.7	66.9	0.46	8.6	0.661	80.58	-2.32	23.75	-8.44	1.55	1.90
18NORD-111	9.6	66.9	0.43	8.6	0.645	81.55	-2.23	22.70	-7.57	0.97	3.25
18NORD-108	9.8	63.9	0.44	8.9	0.760	81.06	-2.02	22.27	-7.81	1.24	2.09
19CP010075	9.2	66.7	0.43	8.3	0.541	81.60	-1.99	21.73	-6.64	0.85	3.21
19CP010078	8.5	68.0	0.50	7.5	0.559	81.11	-2.74	26.02	-7.61	1.18	2.20
19CP010081	9.1	65.8	0.46	8.1	0.569	82.29	-2.29	21.30	-8.31	0.63	3.74
19CP010083	8.6	67.1	0.40	7.7	0.575	81.98	-2.69	25.01	-7.85	1.01	2.81
19CP010076	9.0	64.8	0.43	7.9	0.576	80.82	-3.05	27.95	-7.26	1.03	2.06
LCH17-5660	9.0	63.7	0.49	7.9	0.448	80.70	-3.25	30.25	-6.18	1.02	2.06
DH15HRW-63-81	9.0	65.5	0.45	8.0	0.604	81.50	-2.40	22.47	-8.27	1.28	2.22
LCH18-7115	8.9	70.2	0.41	8.0	0.465	81.82	-2.38	23.09	-6.46	1.04	3.44
LCH17-1296	9.0	66.4	0.44	8.0	0.529	81.12	-2.39	23.78	-7.05	1.06	2.14
LCH17-3468	8.9	65.0	0.40	7.9	0.557	82.78	-2.30	21.15	-8.53	0.72	5.54
NE15624	9.4	64.8	0.42	8.3	0.520	82.09	-2.63	23.97	-6.69	1.03	2.71
NW15443	8.6	66.2	0.41	7.5	0.238	82.09	-2.60	23.44	-5.46	0.66	2.86
NE16562	7.9	65.9	0.41	6.9	0.405	83.33	-2.31	19.98	-7.36	0.58	5.21
NHH17612	9.1	66.5	0.41	7.9	0.578	82.12	-2.29	21.73	-8.42	0.78	6.59
NE17441	9.0	69.4	0.41	8.2	0.572	82.01	-2.30	22.28	-9.02	1.07	3.74
NE17443	8.8	66.9	0.37	7.9	0.521	82.52	-2.62	23.02	-7.68	0.87	4.16
NE17544	9.3	66.0	0.43	8.3	0.510	81.13	-2.27	22.47	-7.76	1.06	3.26
NE17590	9.2	66.3	0.40	8.1	0.469	81.21	-2.04	22.79	-7.61	0.77	4.38
MT1745	8.9	66.7	0.45	7.8	0.500	81.82	-2.31	23.54	-7.35	0.93	4.28
MT1746	9.6	65.4	0.47	8.8	0.190	81.22	-2.50	24.99	-5.12	0.57	4.00
MTCL1737	10.2	65.4	0.49	9.4	0.477	79.95	-2.37	25.83	-5.76	1.03	2.59
SD12DHA00031	8.7	66.0	0.42	7.7	0.488	81.83	-2.28	21.42	-7.33	0.90	4.19
SD12DHA01373	9.8	66.7	0.45	9.0	0.514	80.81	-2.43	23.73	-7.55	1.18	3.03
SD12DHA01688	8.9	67.0	0.40	7.8	0.601	81.18	-2.30	22.11	-8.21	1.20	3.20
SD12DHA03282	10.1	68.6	0.44	9.1	0.527	81.04	-2.72	24.85	-8.32	1.26	2.57
SD12DHA03429	9.1	67.2	0.40	7.9	0.477	81.77	-2.41	22.87	-8.21	1.04	3.28
SD13DHA02346	9.1	69.2	0.42	7.9	0.510	80.21	-2.48	24.19	-8.29	1.12	2.87
SD14355-2	9.2	66.3	0.37	8.0	0.489	79.50	-2.29	23.39	-7.59	1.04	4.41
SD15004-2	8.2	65.5	0.40	7.2	0.550	82.13	-2.73	24.04	-7.13	0.67	5.17
SD15035-2	9.1	67.2	0.41	8.2	0.453	81.82	-2.08	21.01	-8.38	0.90	4.25
SD15205-1	8.4	68.6	0.41	7.4	0.450	82.66	-2.56	21.15	-7.46	0.70	5.78

2020 NRPN Intraregional Production Zone

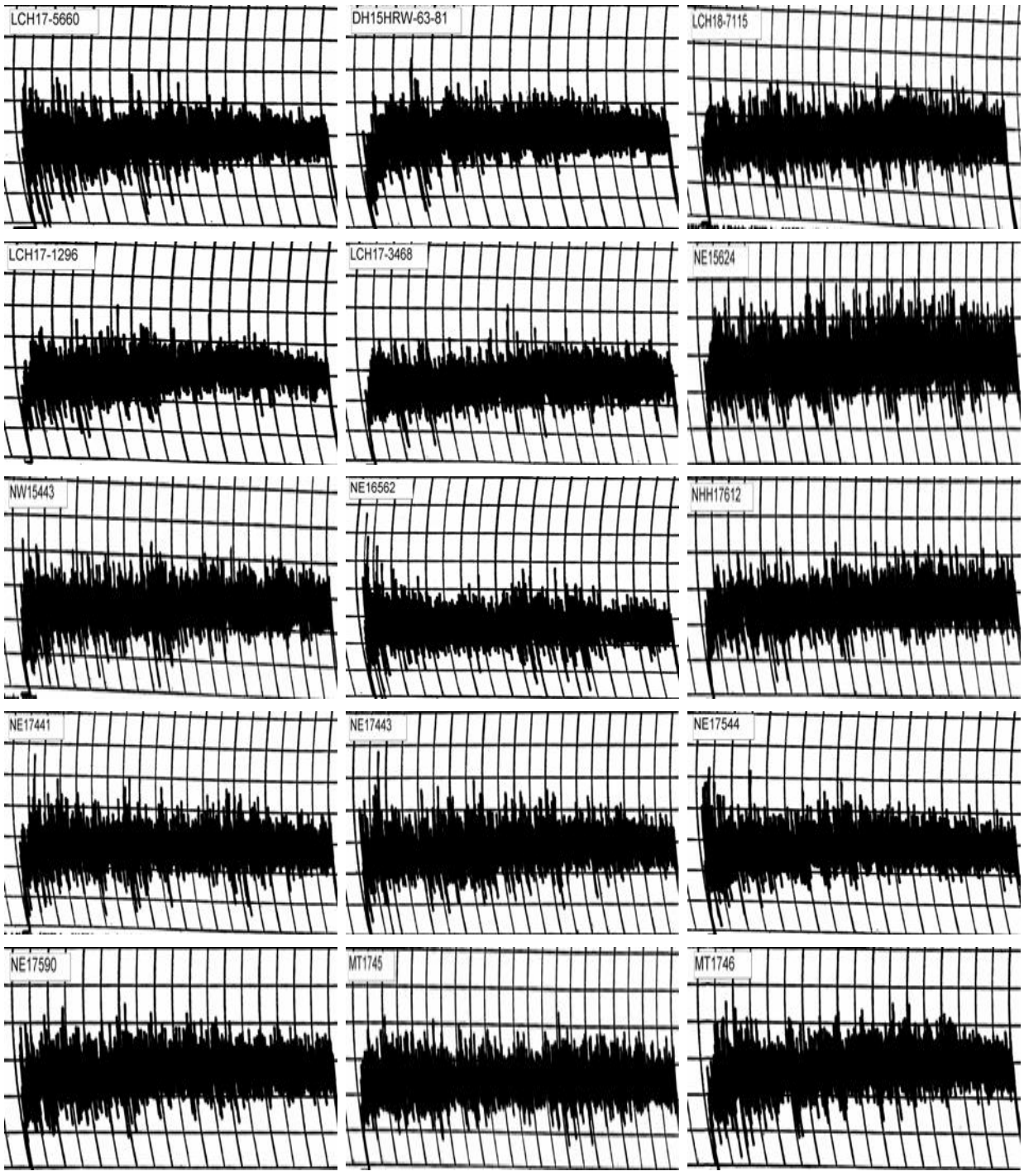
Northern High Plains

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	10.2	60.0	4.75	3.73	4
Overland	7.7	55.8	3.25	1.58	1
Wesley	8.7	57.4	5.25	3.15	4
Jagalene	7.9	56.1	5.63	2.87	3
Jerry	8.3	56.7	5.50	3.03	2
17NORD-94	8.6	57.3	3.63	2.14	2
18NORD-103	8.2	56.6	5.00	2.73	2
18NORD-104	8.6	57.3	3.50	2.07	2
18NORD-111	8.6	57.2	6.00	3.52	3
18NORD-108	8.9	56.2	4.88	3.04	2
19CP010075	8.3	56.8	4.75	2.65	3
19CP010078	7.5	53.9	6.00	2.76	2
19CP010081	8.1	57.5	5.25	2.82	2
19CP010083	7.7	55.8	5.63	2.75	2
19CP010076	7.9	56.1	3.75	1.91	1
LCH17-5660	7.9	54.6	3.75	1.90	2
DH15HRW-63-81	8.0	56.3	2.38	1.25	2
LCH18-7115	8.0	56.4	6.50	3.41	3
LCH17-1296	8.0	54.7	3.25	1.69	1
LCH17-3468	7.9	56.2	5.50	2.82	3
NE15624	8.3	56.8	6.25	3.49	4
NW15443	7.5	55.4	6.13	2.83	2
NE16562	6.9	55.4	4.75	1.85	2
NHH17612	7.9	56.0	6.50	3.30	3
NE17441	8.2	57.6	6.13	3.32	3
NE17443	7.9	57.0	4.13	2.07	3
NE17544	8.3	56.7	4.25	2.35	3
NE17590	8.1	56.3	4.25	2.24	3
MT1745	7.8	55.9	7.38	3.64	3
MT1746	8.8	57.6	5.88	3.64	3
MTCL1737	9.4	58.1	5.38	3.71	4
SD12DHA00031	7.7	55.8	4.75	2.31	3
SD12DHA01373	9.0	57.8	5.25	3.33	3
SD12DHA01688	7.8	54.4	5.13	2.56	2
SD12DHA03282	9.1	57.1	4.00	2.61	2
SD12DHA03429	7.9	56.1	4.50	2.29	2
SD13DHA02346	7.9	56.1	4.75	2.40	2
SD14355-2	8.0	56.3	5.63	2.95	2
SD15004-2	7.2	53.9	6.88	2.89	3
SD15035-2	8.2	56.6	5.13	2.82	3
SD15205-1	7.4	55.2	7.13	3.17	4

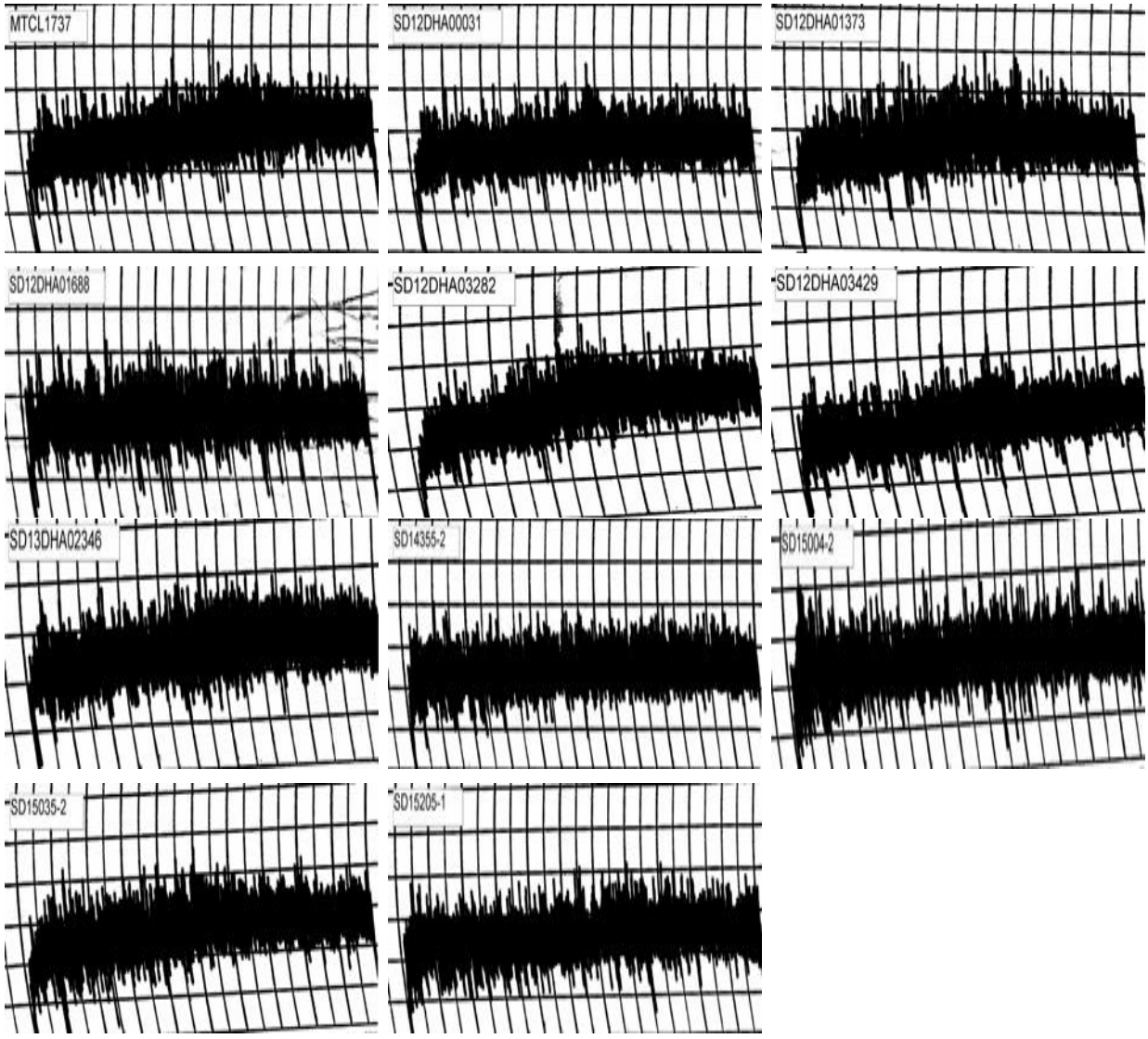
2020 NRPN Intraregional Production Zone
Northern High Plains



2020 NRPN Intraregional Production Zone
Northern High Plains



2020 NRPN Intraregional Production Zone
Northern High Plains



2020 NRPN Intraregional Production Zone

Northern High Plains

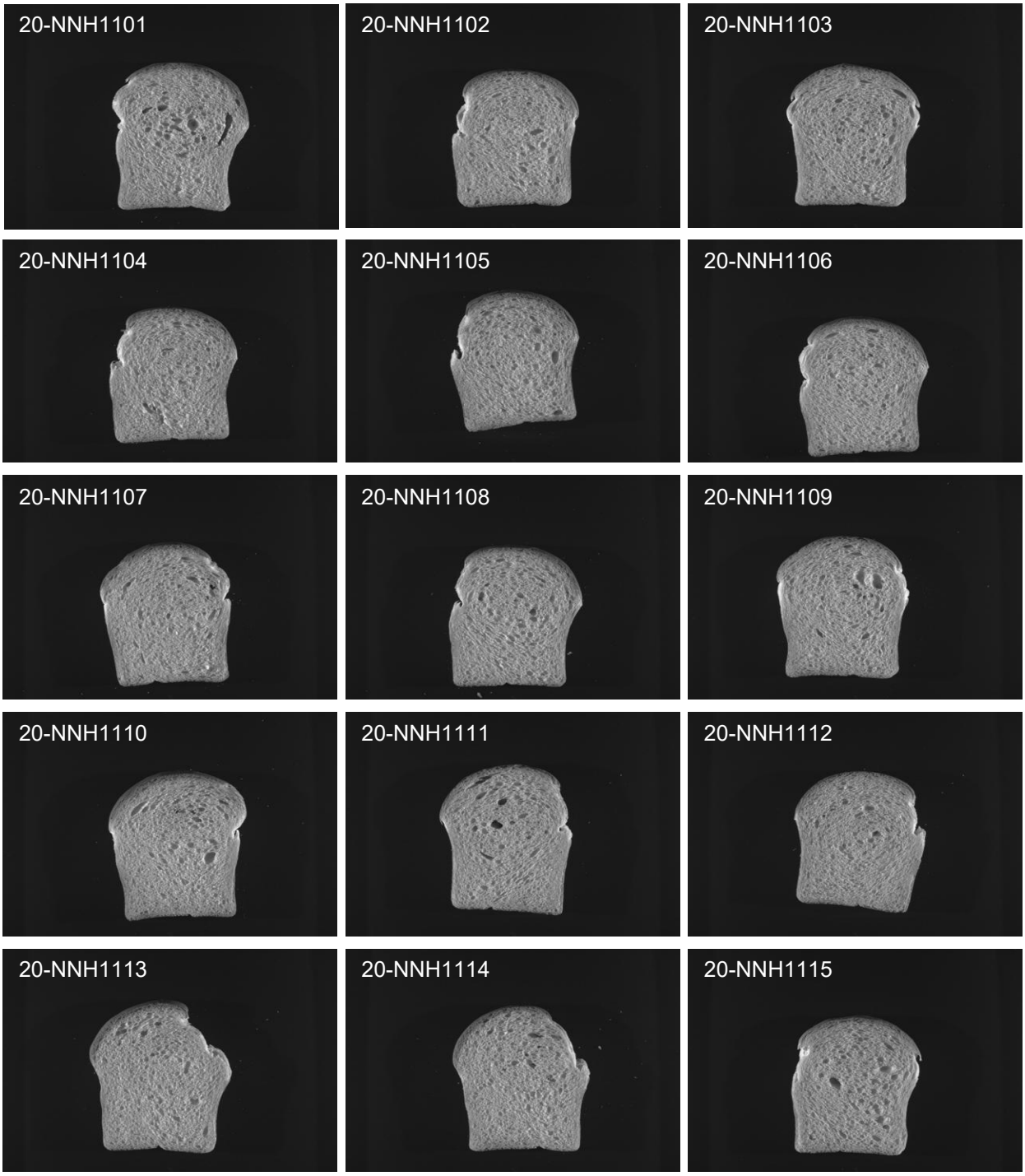
	RVA						
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)
Kharkof	182.17	255.58	193.25	62.33	304.67	111.42	6.47
Overland	136.67	236.50	164.42	72.08	277.25	112.83	6.27
Wesley	132.17	232.75	151.42	81.33	275.25	123.83	6.13
Jagalene	97.75	232.75	150.50	82.25	271.42	120.92	6.13
Jerry	121.00	250.08	170.83	79.25	290.33	119.50	6.27
17NORD-94	136.00	242.33	178.83	63.50	309.25	130.42	6.33
18NORD-103	125.50	236.42	164.83	71.58	283.17	118.33	6.27
18NORD-104	137.58	256.92	185.75	71.17	302.92	117.17	6.33
18NORD-111	133.25	246.58	177.25	69.33	298.42	121.17	6.33
18NORD-108	115.67	274.33	195.25	79.08	312.00	116.75	6.40
19CP010075	145.25	267.25	183.17	84.08	306.25	123.08	6.27
19CP010078	122.00	240.75	151.42	89.33	279.42	128.00	6.07
19CP010081	84.25	215.67	142.92	72.75	260.33	117.42	6.13
19CP010083	121.33	241.00	157.75	83.25	281.92	124.17	6.20
19CP010076	127.92	245.42	167.58	77.83	294.00	126.42	6.27
LCH17-5660	113.83	240.25	154.42	85.83	272.67	118.25	6.20
DH15HRW-63-81	140.00	232.50	165.08	67.42	293.75	128.67	6.27
LCH18-7115	112.25	229.92	159.83	70.08	289.42	129.58	6.20
LCH17-1296	128.83	240.83	151.33	89.50	263.58	112.25	6.20
LCH17-3468	95.67	241.92	160.92	81.00	285.08	124.17	6.20
NE15624	122.25	258.92	181.83	77.08	309.17	127.33	6.33
NW15443	131.67	233.50	166.67	66.83	288.58	121.92	6.27
NE16562	123.08	244.58	156.17	88.42	269.50	113.33	6.20
NHH17612	127.67	238.00	154.50	83.50	275.08	120.58	6.20
NE17441	116.75	216.67	138.25	78.42	249.50	111.25	6.13
NE17443	105.58	247.17	161.50	85.67	290.00	128.50	6.20
NE17544	151.25	229.25	163.50	65.75	282.75	119.25	6.27
NE17590	163.50	235.33	182.58	52.75	302.67	120.08	6.47
MT1745	137.33	253.67	184.75	68.92	318.42	133.67	6.27
MT1746	134.25	237.00	179.75	57.25	314.75	135.00	6.27
MTCL1737	134.58	259.75	177.83	81.92	297.42	119.58	6.27
SD12DHA00031	112.67	227.33	160.25	67.08	281.42	121.17	6.27
SD12DHA01373	127.33	232.67	167.50	65.17	286.17	118.67	6.27
SD12DHA01688	152.92	253.42	177.67	75.75	298.75	121.08	6.27
SD12DHA03282	142.92	234.33	175.25	59.08	291.58	116.33	6.27
SD12DHA03429	90.00	232.58	161.25	71.33	283.92	122.67	6.20
SD13DHA02346	98.75	240.33	161.42	78.92	283.75	122.33	6.20
SD14355-2	119.75	236.42	160.33	76.08	279.17	118.83	6.27
SD15004-2	98.33	225.42	155.33	70.08	281.00	125.67	6.13
SD15035-2	131.42	219.58	157.58	62.00	276.33	118.75	6.27
SD15205-1	127.17	238.17	163.08	75.08	283.33	120.25	6.20

2020 NRPN Intraregional Production Zone

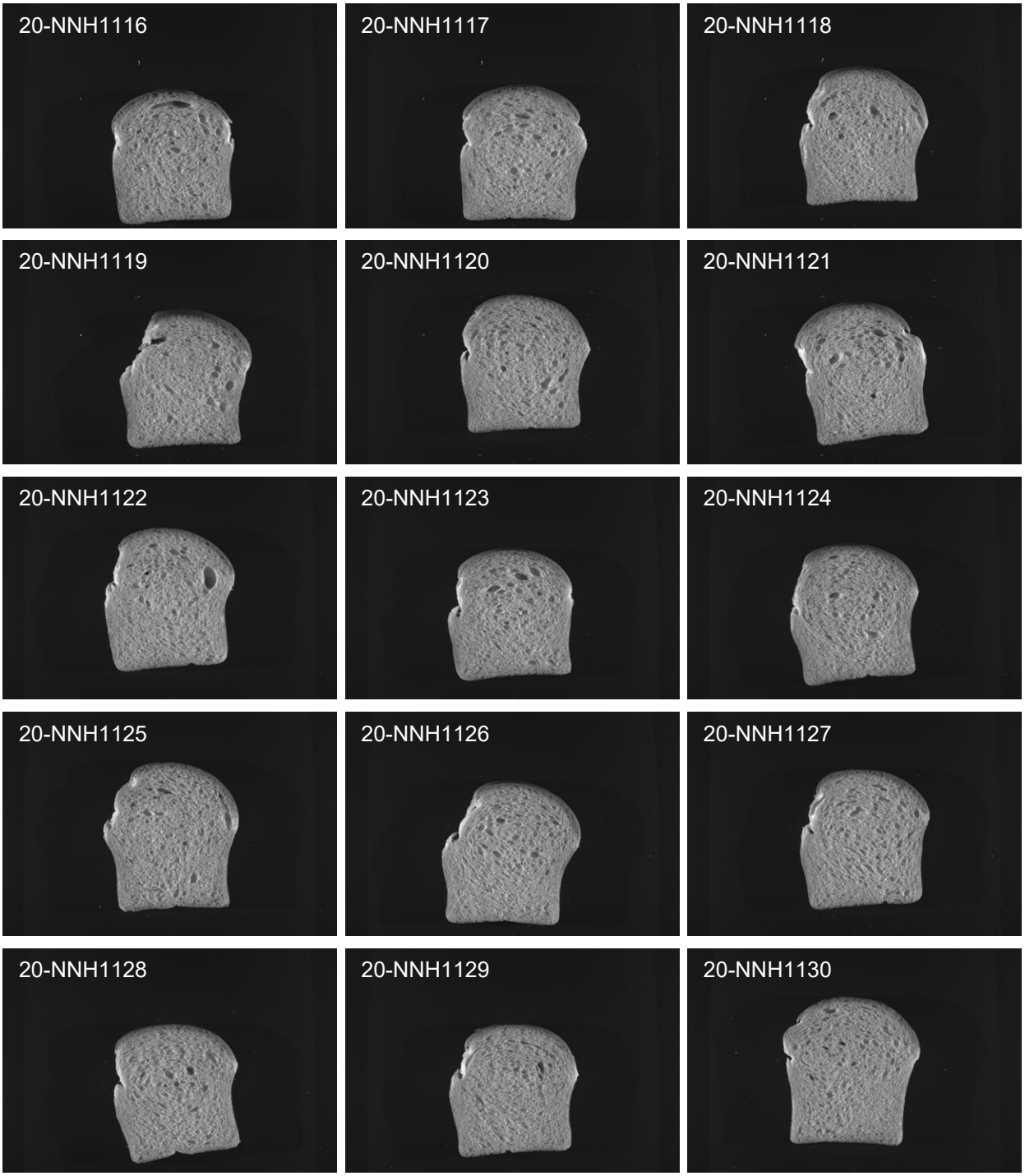
Northern High Plains

	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	10.2	60.4	4.75	3.73	168.9	7.0	3.5	760	5.1	63
Overland	7.7	55.8	4.00	1.94	165.0	6.6	2.5	690	4.8	75
Wesley	8.7	57.3	5.50	3.30	166.0	6.7	3.0	725	5.0	71
Jagalene	7.9	56.4	6.25	3.19	164.7	6.2	2.5	670	4.6	69
Jerry	8.3	56.3	5.75	3.17	166.2	6.4	2.0	685	4.7	68
17NORD-94	8.6	57.4	4.75	2.80	166.2	6.6	3.0	700	4.9	68
18NORD-103	8.2	56.4	5.50	3.01	165.5	6.5	3.0	710	4.9	73
18NORD-104	8.6	57.5	5.00	2.96	166.7	6.6	3.5	730	5.0	73
18NORD-111	8.6	57.4	6.50	3.82	166.5	6.8	3.0	720	5.0	71
18NORD-108	8.9	56.2	5.13	3.19	164.9	6.5	3.0	770	5.4	77
19CP010075	8.3	56.4	4.75	2.65	165.6	6.5	2.5	710	4.9	72
19CP010078	7.5	54.3	7.00	3.22	162.9	6.5	2.5	665	4.6	73
19CP010081	8.1	57.2	5.50	2.95	166.0	6.7	1.5	745	5.1	80
19CP010083	7.7	55.8	6.50	3.17	164.7	6.6	1.5	720	5.0	81
19CP010076	7.9	56.4	4.75	2.42	165.1	6.8	2.0	695	4.7	74
LCH17-5660	7.9	54.5	4.00	2.02	163.6	6.5	1.0	615	4.3	59
DH15HRW-63-81	8.0	56.4	3.50	1.83	165.4	6.6	2.0	665	4.6	67
LCH18-7115	8.0	56.5	6.75	3.54	164.7	6.5	2.5	705	4.8	74
LCH17-1296	8.0	54.7	3.75	1.95	163.9	6.3	1.5	700	4.8	74
LCH17-3468	7.9	56.3	5.25	2.69	164.6	6.4	2.0	675	4.7	70
NE15624	8.3	56.6	8.25	4.61	165.2	6.6	2.0	685	4.7	68
NW15443	7.5	55.6	6.38	2.95	163.5	6.4	2.5	670	4.6	74
NE16562	6.9	55.2	5.00	1.95	164.4	6.4	1.5	645	4.4	76
NHH17612	7.9	56.3	6.75	3.43	165.0	6.6	2.5	685	4.8	72
NE17441	8.2	57.7	7.00	3.79	166.0	6.6	2.5	725	5.0	76
NE17443	7.9	57.4	5.63	2.83	166.1	6.4	2.5	720	4.9	79
NE17544	8.3	56.5	5.25	2.90	165.3	6.5	2.5	675	4.6	66
NE17590	8.1	56.4	4.50	2.37	165.5	6.4	2.0	690	4.8	71
MT1745	7.8	55.5	7.50	3.70	163.0	6.5	2.5	645	4.5	66
MT1746	8.8	57.5	5.25	3.25	165.8	6.8	2.5	720	4.9	69
MTCL1737	9.4	58.5	5.50	3.80	167.6	6.7	2.5	800	5.5	75
SD12DHA00031	7.7	55.4	5.25	2.55	164.1	6.6	2.5	675	4.7	72
SD12DHA01373	9.0	57.4	5.25	3.33	166.4	6.5	3.0	720	5.0	68
SD12DHA01688	7.8	55.1	7.00	3.50	163.5	6.2	2.5	665	4.7	69
SD12DHA03282	9.1	57.4	4.50	2.94	166.2	6.2	3.0	730	5.0	68
SD12DHA03429	7.9	56.2	6.00	3.06	165.0	6.5	3.0	700	4.8	75
SD13DHA02346	7.9	56.1	5.38	2.72	164.5	6.6	2.5	705	5.0	76
SD14355-2	8.0	56.3	5.75	3.01	164.9	6.2	2.5	660	4.5	66
SD15004-2	7.2	53.9	8.50	3.57	162.3	6.2	2.0	610	4.3	65
SD15035-2	8.2	56.2	5.50	3.02	164.9	6.3	2.5	715	4.9	74
SD15205-1	7.4	55.3	9.00	4.00	163.0	6.1	1.5	625	4.3	66

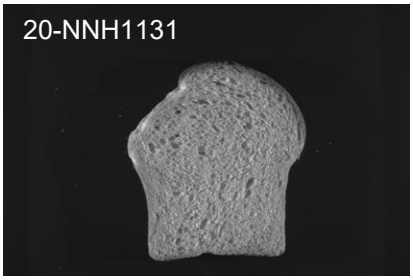
2020 NRPN Intraregional Production Zone
Northern High Plains

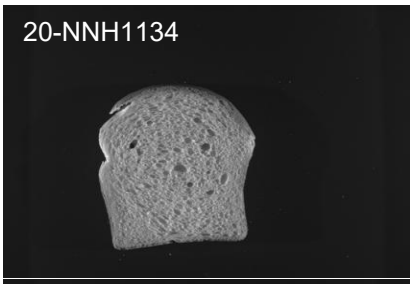


2020 NRPN Intraregional Production Zone
Northern High Plains



2020 NRPN Intraregional Production Zone
Northern High Plains





Hard Winter Wheat Quality Report

2020 NRPN-NP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	34.8	Very Poor	58.0	55.0	Good	86.0		8,10,
Overland	51.3	Poor	85.5	52.2	Good	81.8		16,
Wesley	52.2	Average	87.1	49.7	Good	77.8		
Jagalene	54.7	Good	91.2	48.6	Average	76.0		9,
Jerry	54.1	Average	90.3	58.3	Very Good	91.3	1AL	20,
17NORD-94	52.2	Poor	87.0	42.8	Poor	66.9		
18NORD-103	55.2	Good	92.0	63.6	Very Good	99.6		
18NORD-104	54.1	Average	90.2	58.7	Very Good	91.9		
18NORD-111	50.0	Very Poor	83.4	58.7	Very Good	91.8		
18NORD-108	52.0	Poor	86.7	62.0	Very Good	97.1		4,
19CP010075	50.4	Poor	84.0	49.4	Average	77.3		
19CP010078	45.1	Very Poor	75.2	51.3	Good	80.4		2,9,10,
19CP010081	58.2	Very Good	96.9	48.6	Average	76.1		
19CP010083	55.2	Good	92.0	49.9	Good	78.2		
19CP010076	48.0	Very Poor	80.0	39.8	Very Poor	62.3	1BL	8,
LCH17-5660	39.8	Very Poor	66.3	35.9	Very Poor	56.1	h1BL	2,4,8,9,10,16,
DH15HRW-63-81	52.6	Average	87.8	32.7	Very Poor	51.1		8,14,15,16,20,
LCH18-7115	55.5	Good	92.6	47.2	Average	73.9		3,15,17,18,
LCH17-1296	42.4	Very Poor	70.7	31.9	Very Poor	49.9		1,5,16,
LCH17-3468	50.3	Very Poor	83.8	44.7	Poor	70.0		16,
NE15624	47.2	Very Poor	78.7	44.6	Poor	69.8		
NW15443	52.9	Average	88.1	46.1	Poor	72.1		5,11,13,19,
NE16562	51.9	Poor	86.6	42.5	Poor	66.5	1BL	
NHH17612	55.7	Very Good	92.9	49.2	Average	77.0		
NE17441	55.2	Good	92.0	51.9	Good	81.3		
NE17443	54.1	Average	90.1	57.1	Good	89.4		5,
NE17544	58.7	Very Good	97.9	48.2	Average	75.4		
NE17590	56.0	Very Good	93.3	33.7	Very Poor	52.8		
MT1745	56.4	Very Good	94.1	28.7	Very Poor	44.9		15,18,19,
MT1746	48.4	Very Poor	80.6	57.1	Good	89.4		

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

Hard Winter Wheat Quality Report

2020 NRPN-NP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
MTCL1737	51.4	Poor	85.7	41.1	Poor	64.4		2,
SD12DHA00031	56.2	Very Good	93.7	46.8	Average	73.2		
SD12DHA01373	54.3	Average	90.5	34.7	Very Poor	54.3		3,11,19,
SD12DHA01688	50.8	Poor	84.6	48.5	Average	75.9		
SD Andes	60.0	Very Good	100.0	42.5	Poor	66.5		
SD12DHA03429	54.7	Good	91.3	45.4	Poor	71.1		
SD13DHA02346	56.5	Very Good	94.1	59.9	Very Good	93.7		
SD14355-2	54.1	Average	90.3	57.9	Very Good	90.6		
SD15004-2	55.7	Good	92.8	29.9	Very Poor	46.7		14,15,
SD15035-2	55.0	Good	91.7	63.9	Very Good	100.0		
SD15205-1	50.9	Poor	84.9	28.7	Very Poor	44.9		3,5,14,15,

2020 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	60.6	13.3	0.5	34.0	9.6	2.65	0.35	42	18	MIXED	32-34-17-17-03
Overland	61.0	10.9	0.6	32.0	10.6	2.60	0.36	64	15	HARD	02-10-27-61-01
Wesley	60.5	10.9	0.7	34.4	11.1	2.71	0.41	55	15	HARD	07-22-35-36-01
Jagalene	61.4	10.8	0.6	34.5	10.5	2.80	0.37	70	15	HARD	01-04-19-76-01
Jerry	61.0	11.1	0.6	36.1	11.3	2.74	0.37	68	16	HARD	01-07-24-68-01
17NORD-94	60.2	10.9	0.7	34.5	10.3	2.70	0.37	58	16	HARD	06-16-31-47-01
18NORD-103	61.0	11.0	0.7	33.4	9.0	2.66	0.34	60	16	HARD	04-15-28-53-01
18NORD-104	60.3	11.4	0.7	32.9	9.1	2.59	0.35	59	17	HARD	06-16-30-48-01
18NORD-111	61.2	11.2	0.7	32.3	10.5	2.61	0.37	64	17	HARD	04-11-23-62-01
18NORD-108	61.0	10.4	0.7	30.8	8.8	2.51	0.30	56	15	HARD	06-19-37-38-01
19CP010075	61.5	11.3	0.8	32.2	10.1	2.61	0.42	57	16	HARD	06-18-31-45-01
19CP010078	60.5	11.1	0.5	29.0	11.1	2.56	0.40	78	18	HARD	01-05-08-86-01
19CP010081	63.5	12.0	0.6	34.1	9.3	2.73	0.35	78	15	HARD	00-03-06-91-01
19CP010083	61.5	11.9	0.7	35.3	10.8	2.73	0.37	66	15	HARD	02-07-23-68-01
19CP010076	61.9	12.8	0.6	31.0	9.3	2.57	0.39	72	16	HARD	02-04-14-80-01
LCH17-5660	60.1	12.6	0.5	27.5	10.7	2.41	0.41	81	18	HARD	01-04-07-88-01
DH15HRW-63-81	60.9	12.3	0.7	35.4	8.7	2.80	0.32	74	15	HARD	00-03-12-85-01
LCH18-7115	62.1	12.6	0.5	37.2	12.5	2.72	0.40	59	16	HARD	04-16-31-49-01
LCH17-1296	58.1	12.7	0.5	33.5	11.3	2.66	0.44	58	16	HARD	07-16-30-47-01
LCH17-3468	61.4	12.1	0.6	31.0	10.1	2.61	0.35	67	17	HARD	02-09-22-67-01
NE15624	61.1	12.5	0.6	30.6	10.3	2.58	0.38	71	15	HARD	01-04-15-80-01
NW15443	61.3	11.8	0.7	38.3	11.6	2.85	0.44	64	16	HARD	03-12-23-62-01
NE16562	61.2	12.5	0.6	36.1	10.6	2.81	0.37	58	17	HARD	07-19-29-45-01
NHH17612	62.4	12.0	0.7	30.9	9.4	2.65	0.33	68	15	HARD	02-06-20-72-01
NE17441	62.1	12.1	0.8	35.0	11.2	2.73	0.34	67	17	HARD	03-09-20-68-01
NE17443	60.9	12.2	0.7	35.8	10.8	2.80	0.42	61	16	HARD	04-15-25-56-01
NE17544	62.3	12.2	0.5	34.9	9.1	2.75	0.37	65	14	HARD	01-08-23-68-01
NE17590	62.1	12.7	0.6	35.4	9.6	2.77	0.35	60	16	HARD	04-15-31-50-01
MT1745	61.1	12.0	0.4	35.0	10.6	2.72	0.39	66	15	HARD	01-06-25-68-01
MT1746	61.8	12.4	0.6	30.5	10.9	2.60	0.39	64	18	HARD	04-11-23-62-01
MTCL1737	60.7	13.2	0.5	29.0	8.7	2.58	0.39	75	17	HARD	01-03-13-83-01
SD12DHA00031	62.2	12.8	0.7	37.3	10.8	2.79	0.35	63	15	HARD	03-10-29-58-01
SD12DHA01373	61.8	12.7	0.6	37.9	11.9	2.81	0.38	58	16	HARD	06-18-27-49-01
SD12DHA01688	60.7	12.0	0.5	33.5	9.8	2.61	0.32	51	16	MIXED	13-25-31-31-03
SD12DHA03282	62.5	11.9	0.5	35.4	9.6	2.74	0.33	62	16	HARD	04-07-33-56-01
SD12DHA03429	60.5	12.2	0.6	35.6	9.8	2.78	0.39	64	15	HARD	02-10-29-59-01
SD13DHA02346	62.2	11.9	0.7	32.4	8.9	2.62	0.33	57	16	HARD	05-20-31-44-01
SD14355-2	62.7	11.3	0.7	31.0	9.4	2.63	0.35	64	15	HARD	02-09-27-62-01
SD15004-2	61.8	12.0	0.6	38.0	9.4	2.80	0.36	61	15	HARD	04-15-26-55-01
SD15035-2	62.2	11.2	0.6	34.6	10.8	2.73	0.39	59	15	HARD	05-13-32-50-01
SD15205-1	61.2	12.0	0.6	36.3	12.4	2.69	0.42	62	17	HARD	05-14-27-54-01

2020 NRPN Intraregional Production Zone

Northern Plains

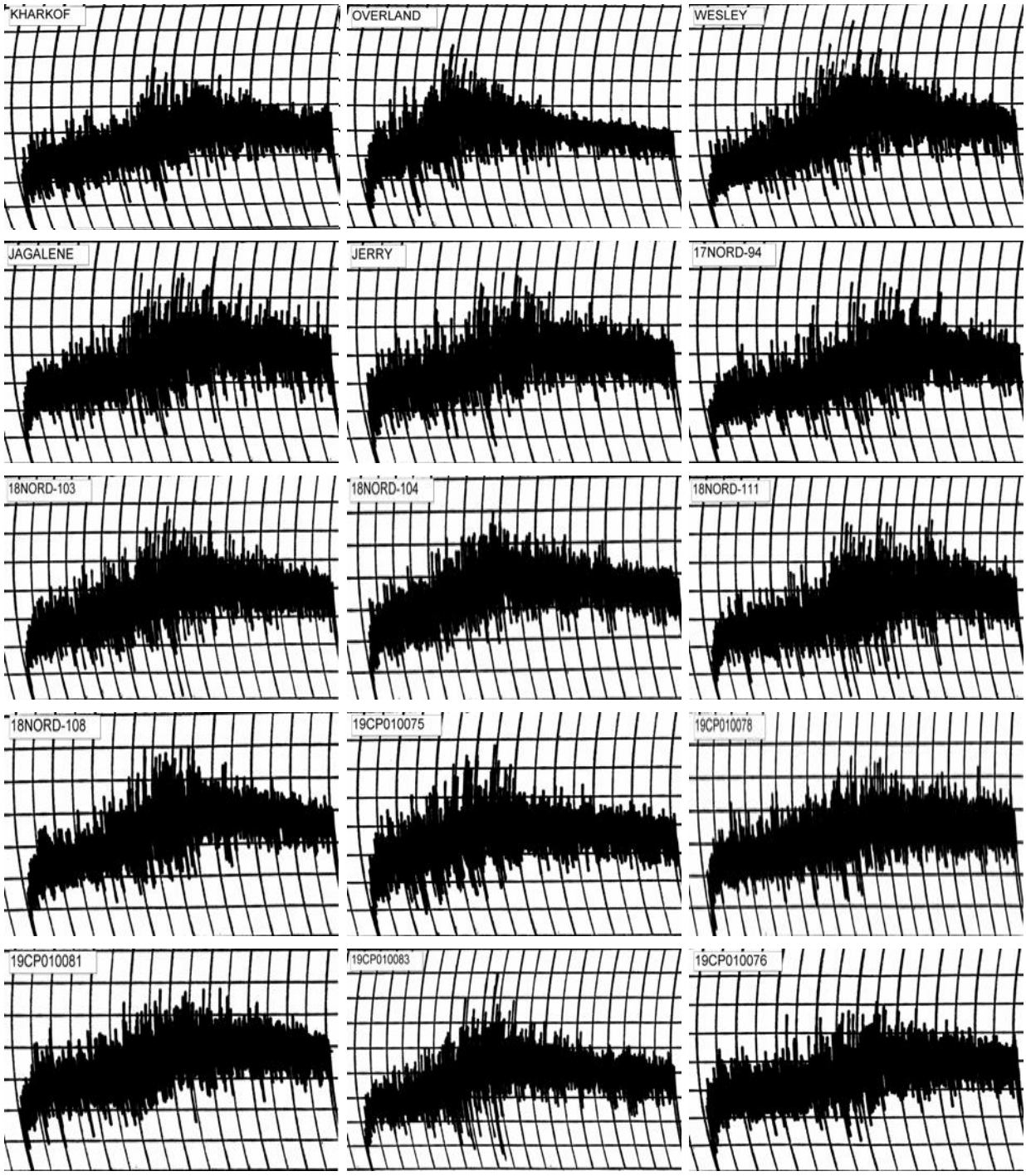
	Wheat		Flour			Noodle Color					
	Protein	Milling Yield	Ash	Protein	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
LINE	(%)	(%)	(%)	(%)							
Kharkof	14.5	58.6	0.40	13.1	0.535	79.60	-1.73	22.18	-8.82	1.25	1.61
Overland	13.0	66.8	0.42	12.1	0.491	78.75	-1.40	22.43	-9.29	1.29	1.86
Wesley	14.0	67.6	0.39	13.3	0.603	79.94	-1.38	20.70	-10.75	1.22	2.87
Jagalene	13.3	67.0	0.44	12.6	0.452	78.86	-1.36	23.03	-9.65	1.27	2.67
Jerry	13.0	67.3	0.42	12.4	0.438	79.54	-1.53	23.10	-10.24	1.42	3.51
17NORD-94	12.9	67.2	0.41	12.4	0.593	79.35	-1.43	22.67	-8.73	1.52	1.01
18NORD-103	13.6	67.2	0.38	13.1	0.603	78.81	-1.29	23.59	-8.63	1.30	1.58
18NORD-104	13.3	68.0	0.39	12.5	0.641	78.48	-1.33	22.59	-11.23	1.91	1.33
18NORD-111	13.3	65.8	0.38	12.4	0.542	79.03	-1.29	22.35	-9.43	1.35	1.57
18NORD-108	13.4	66.1	0.38	12.9	0.746	79.93	-1.11	20.28	-10.57	1.39	1.91
19CP010075	12.0	66.4	0.39	11.4	0.491	80.51	-1.38	20.80	-9.31	1.29	3.22
19CP010078	12.4	65.6	0.48	11.4	0.554	78.38	-1.48	24.67	-10.67	1.40	1.68
19CP010081	12.8	65.6	0.39	12.0	0.532	78.39	-1.38	22.37	-9.23	1.16	1.85
19CP010083	13.2	66.8	0.39	12.7	0.570	79.41	-1.42	23.02	-11.09	1.31	2.19
19CP010076	12.5	63.1	0.40	11.7	0.608	78.99	-2.08	27.00	-9.55	1.26	1.71
LCH17-5660	12.7	62.6	0.46	12.1	0.488	78.47	-2.03	28.19	-9.12	1.35	2.47
DH15HRW-63-81	14.7	63.1	0.40	13.9	0.603	78.43	-1.09	21.77	-11.20	1.30	0.50
LCH18-7115	12.1	68.1	0.36	11.7	0.592	80.22	-1.47	22.43	-7.98	1.02	1.97
LCH17-1296	12.3	64.2	0.39	11.7	0.608	79.08	-1.53	22.34	-8.78	1.22	1.38
LCH17-3468	13.6	65.4	0.39	13.1	0.600	78.97	-1.51	22.68	-9.88	1.12	2.58
NE15624	13.4	63.7	0.42	13.0	0.529	79.96	-1.42	22.65	-8.90	1.16	2.34
NW15443	11.6	66.2	0.38	10.9	0.250	80.89	-1.81	22.61	-7.31	0.98	3.75
NE16562	12.2	65.7	0.37	11.6	0.507	80.77	-1.61	21.39	-8.63	1.11	2.99
NHH17612	12.7	66.0	0.35	12.0	0.572	78.92	-1.73	24.02	-8.31	1.27	1.59
NE17441	12.7	66.4	0.34	12.1	0.613	79.88	-1.57	21.77	-9.90	1.51	2.56
NE17443	12.7	66.9	0.35	12.0	0.553	79.67	-1.69	23.05	-9.13	1.41	2.51
NE17544	12.5	66.9	0.38	11.9	0.518	79.53	-1.42	21.00	-10.02	1.37	2.77
NE17590	12.5	65.9	0.34	11.7	0.452	79.17	-1.27	22.18	-9.12	1.08	2.54
MT1745	11.8	67.8	0.39	11.0	0.468	80.18	-1.51	23.36	-8.83	1.40	3.50
MT1746	11.6	66.1	0.41	11.3	0.199	80.71	-1.84	23.62	-7.24	1.00	4.38
MTCL1737	11.9	66.3	0.42	11.4	0.401	78.94	-1.74	26.01	-6.53	1.09	0.99
SD12DHA00031	12.3	66.7	0.38	11.7	0.467	79.81	-1.73	21.83	-7.99	1.28	1.15
SD12DHA01373	11.7	67.2	0.39	10.9	0.544	81.24	-2.21	22.18	-8.05	1.11	1.78
SD12DHA01688	12.8	66.0	0.37	12.3	0.583	79.84	-1.52	21.35	-10.15	1.50	2.08
SD12DHA03282	11.8	68.4	0.38	11.2	0.536	79.96	-2.28	23.66	-8.02	1.52	1.01
SD12DHA03429	13.7	66.9	0.40	12.7	0.543	78.44	-1.18	22.26	-10.76	1.41	1.91
SD13DHA02346	12.4	67.7	0.38	11.6	0.567	79.73	-2.01	23.69	-8.14	1.10	0.59
SD14355-2	13.5	65.4	0.35	12.5	0.521	77.66	-1.32	24.35	-8.80	1.37	1.48
SD15004-2	12.6	65.4	0.36	11.8	0.591	79.22	-1.57	21.97	-9.32	1.16	4.21
SD15035-2	12.2	67.5	0.39	11.5	0.496	80.05	-1.60	21.93	-8.29	1.43	1.28
SD15205-1	11.9	67.0	0.38	11.2	0.519	80.74	-1.92	22.56	-9.25	1.42	3.00

2020 NRPN Intraregional Production Zone

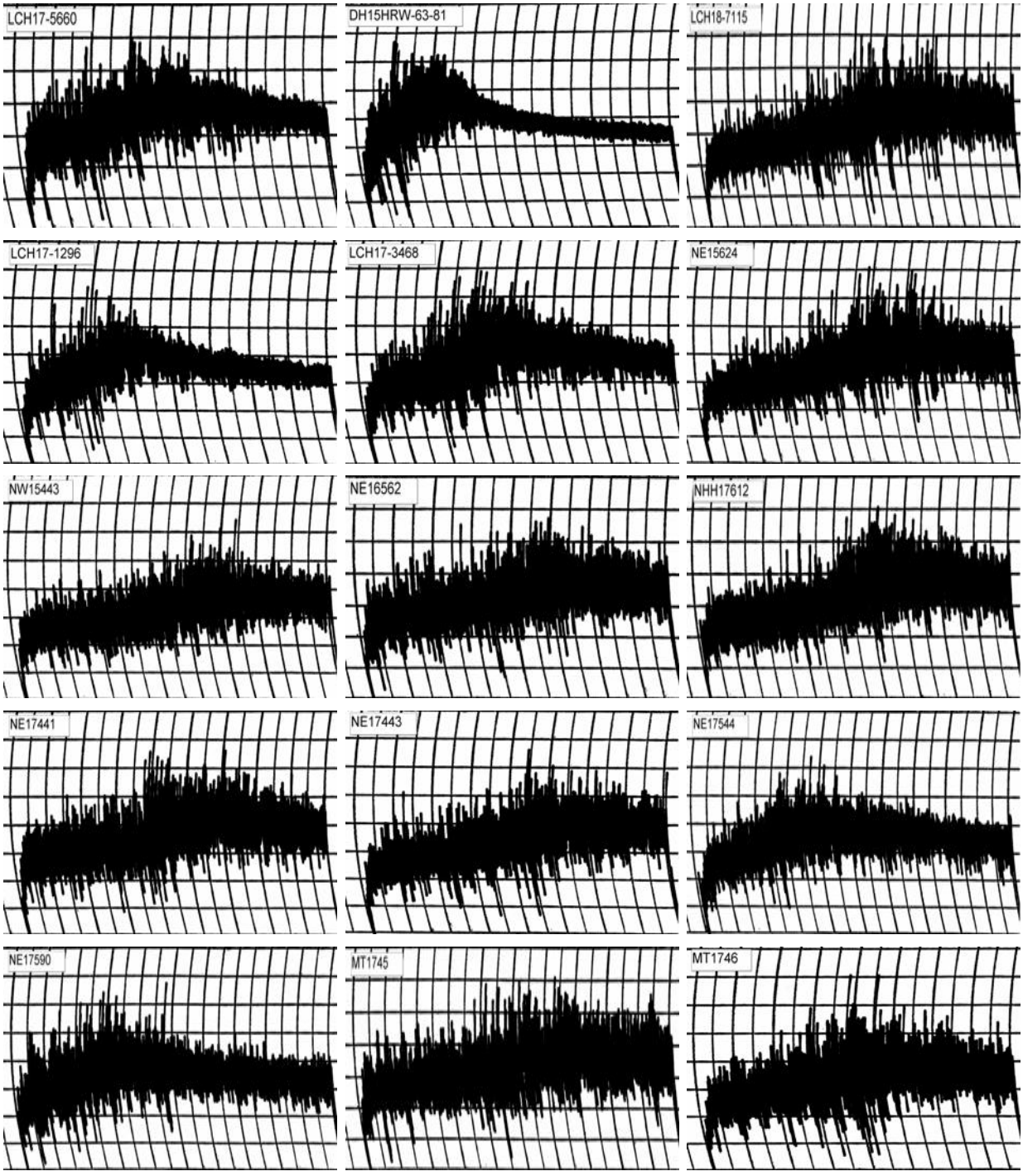
Northern Plains

Line	Flour Protein (%)	Mixograph Absorption (%)	Mixograph As-Is (min)	Mixograph Corrected (min)	Mixograph Tolerance
Kharkof	13.1	64.8	4.63	4.63	3
Overland	12.1	63.6	2.63	2.63	1
Wesley	13.3	65.0	4.13	4.13	4
Jagalene	12.6	64.4	4.50	4.50	5
Jerry	12.4	65.1	4.00	4.00	4
17NORD-94	12.4	64.7	4.63	4.63	4
18NORD-103	13.1	65.8	4.50	4.50	4
18NORD-104	12.5	63.8	3.75	3.75	3
18NORD-111	12.4	66.2	5.00	5.00	5
18NORD-108	12.9	65.5	4.13	4.13	3
19CP010075	11.4	63.9	3.00	2.77	3
19CP010078	11.4	62.9	5.25	4.87	4
19CP010081	12.0	64.9	4.38	4.36	3
19CP010083	12.7	65.7	4.38	4.38	4
19CP010076	11.7	62.5	4.50	4.34	4
LCH17-5660	12.1	63.0	3.13	3.13	1
DH15HRW-63-81	13.9	66.1	1.88	1.88	0
LCH18-7115	11.7	62.4	5.88	5.66	4
LCH17-1296	11.7	62.3	2.50	2.40	1
LCH17-3468	13.1	64.8	3.25	3.25	2
NE15624	13.0	66.6	5.63	5.63	5
NW15443	10.9	62.1	5.75	4.98	4
NE16562	11.6	63.3	4.88	4.64	5
NHH17612	12.0	64.4	5.13	5.11	5
NE17441	12.1	64.1	4.63	4.63	5
NE17443	12.0	64.4	4.63	4.60	5
NE17544	11.9	63.8	3.75	3.72	3
NE17590	11.7	63.4	3.00	2.88	3
MT1745	11.0	62.3	6.00	5.31	6
MT1746	11.3	63.8	4.00	3.65	5
MTCL1737	11.4	62.4	4.75	4.40	4
SD12DHA00031	11.7	63.4	4.50	4.33	5
SD12DHA01373	10.9	62.2	4.50	3.92	4
SD12DHA01688	12.3	64.3	4.63	4.63	6
SD12DHA03282	11.2	62.7	3.00	2.72	4
SD12DHA03429	12.7	65.1	3.88	3.88	3
SD13DHA02346	11.6	63.3	4.13	3.94	4
SD14355-2	12.5	64.3	3.50	3.50	4
SD15004-2	11.8	64.1	8.50	8.29	5
SD15035-2	11.5	63.1	4.25	4.01	4
SD15205-1	11.2	63.1	6.63	5.99	5

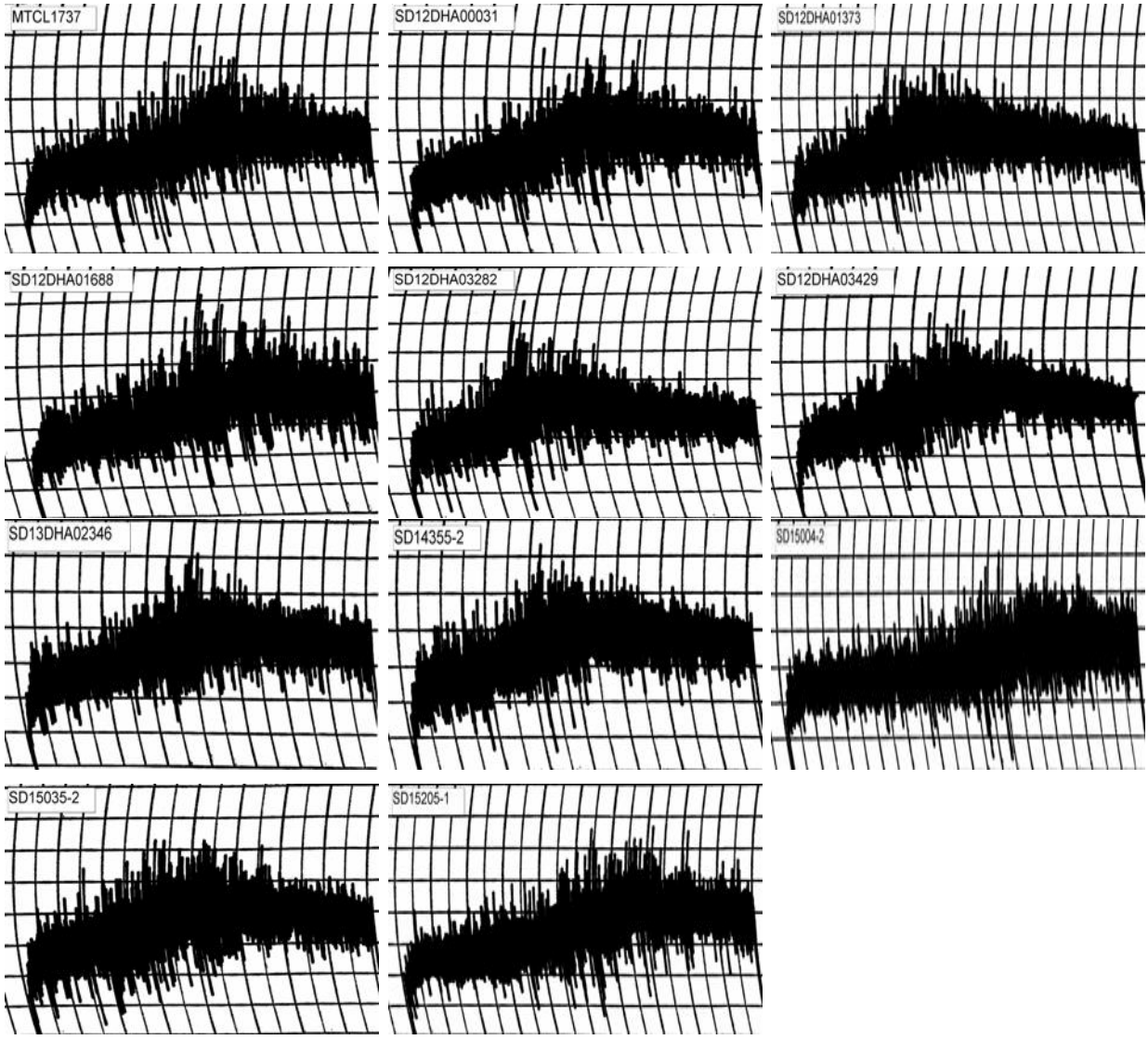
2020 NRPN Intraregional Production Zone
Northern Plains



2020 NRPN Intraregional Production Zone
Northern Plains



2020 NRPN Intraregional Production Zone
Northern Plains



2020 NRPN Intraregional Production Zone

Northern Plains

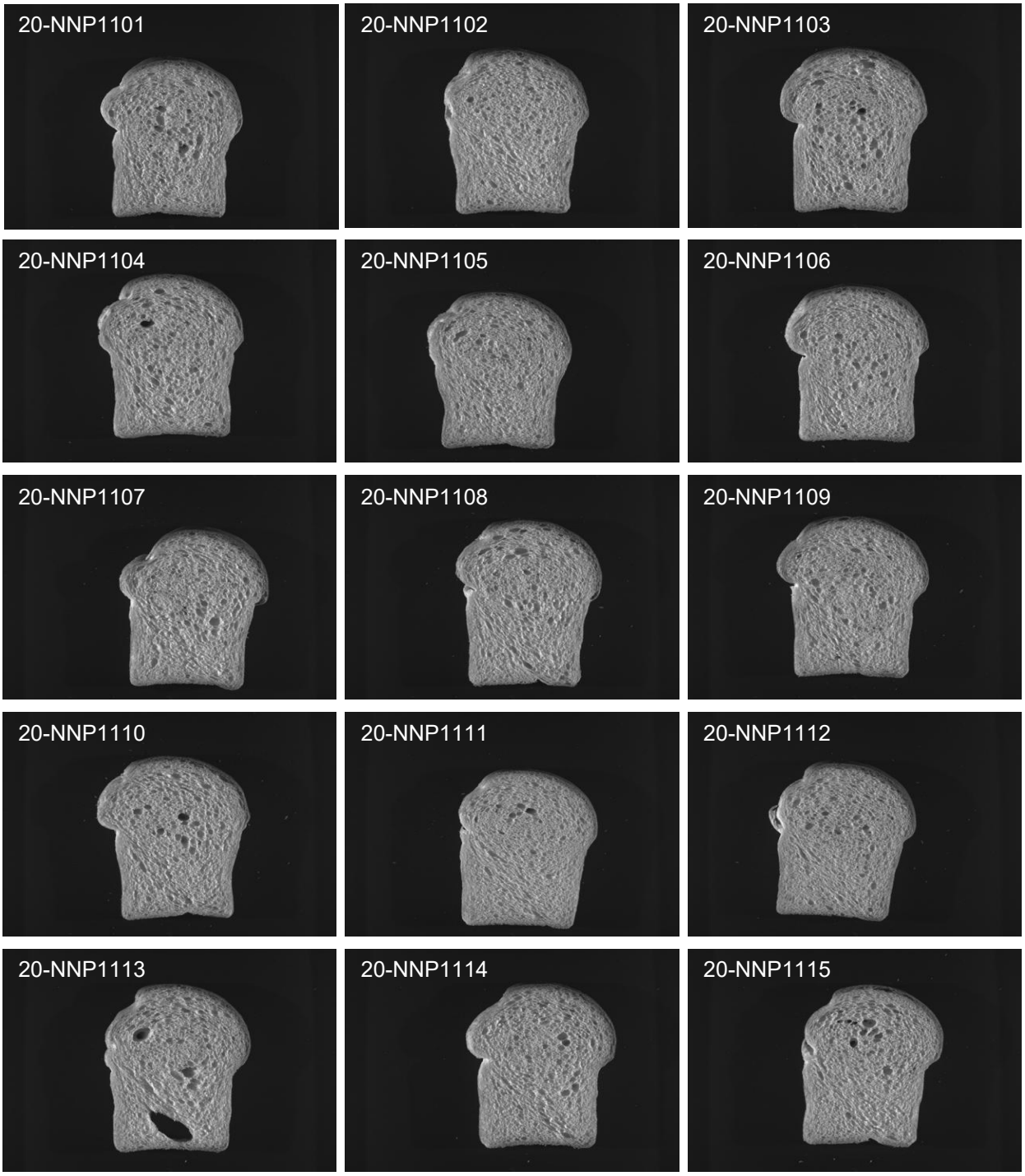
	RVA						
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)
Kharkof	169.08	246.83	174.00	72.83	287.58	113.58	6.33
Overland	140.58	230.67	159.50	71.17	270.75	111.25	6.27
Wesley	147.17	212.25	151.17	61.08	268.58	117.42	6.27
Jagalene	137.42	223.67	155.67	68.00	267.92	112.25	6.27
Jerry	109.25	210.08	136.42	73.67	241.00	104.58	6.20
17NORD-94	131.58	193.00	126.58	66.42	226.00	99.42	6.20
18NORD-103	149.92	206.42	142.08	64.33	254.25	112.17	6.20
18NORD-104	156.67	236.50	172.50	64.00	275.42	102.92	6.47
18NORD-111	154.08	217.17	155.83	61.33	262.17	106.33	6.33
18NORD-108	150.42	264.50	183.75	80.75	289.83	106.08	6.40
19CP010075	152.25	258.75	179.67	79.08	291.92	112.25	6.33
19CP010078	116.00	235.08	155.17	79.92	273.17	118.00	6.20
19CP010081	106.50	207.83	138.33	69.50	245.00	106.67	6.20
19CP010083	145.42	232.08	157.75	74.33	271.50	113.75	6.27
19CP010076	148.25	237.75	166.75	71.00	285.58	118.83	6.33
LCH17-5660	140.33	235.33	157.58	77.75	271.92	114.33	6.27
DH15HRW-63-81	151.92	218.17	165.75	52.42	278.83	113.08	6.47
LCH18-7115	113.08	216.58	146.50	70.08	257.33	110.83	6.20
LCH17-1296	140.25	241.17	157.50	83.67	267.25	109.75	6.27
LCH17-3468	145.58	234.83	172.67	62.17	287.67	115.00	6.40
NE15624	164.00	257.75	192.50	65.25	312.25	119.75	6.47
NW15443	115.25	216.50	154.75	61.75	265.83	111.08	6.33
NE16562	160.33	268.42	201.00	67.42	315.83	114.83	6.53
NHH17612	138.00	229.75	159.25	70.50	279.58	120.33	6.27
NE17441	103.50	219.08	154.50	64.58	265.17	110.67	6.27
NE17443	114.67	233.92	165.50	68.42	284.75	119.25	6.33
NE17544	150.75	221.75	169.08	52.67	276.33	107.25	6.47
NE17590	173.42	241.00	186.75	54.25	300.67	113.92	6.53
MT1745	144.17	250.83	187.50	63.33	313.25	125.75	6.40
MT1746	150.17	234.58	182.58	52.00	312.42	129.83	6.33
MTCL1737	137.58	244.58	162.00	82.58	279.17	117.17	6.20
SD12DHA00031	149.67	216.17	160.75	55.42	272.25	111.50	6.33
SD12DHA01373	126.17	228.67	166.83	61.83	281.17	114.33	6.40
SD12DHA01688	160.08	231.17	167.50	63.67	283.50	116.00	6.33
SD12DHA03282	155.83	233.75	175.75	58.00	291.17	115.42	6.40
SD12DHA03429	113.42	214.33	161.25	53.08	278.75	117.50	6.33
SD13DHA02346	115.08	261.42	177.83	83.58	302.33	124.50	6.27
SD14355-2	159.75	228.25	168.67	59.58	278.50	109.83	6.40
SD15004-2	130.92	204.58	140.42	64.17	254.83	114.42	6.13
SD15035-2	149.42	210.83	156.25	54.58	267.00	110.75	6.33
SD15205-1	134.75	225.92	159.33	66.58	272.58	113.25	6.27

2020 NRPN Intraregional Production Zone

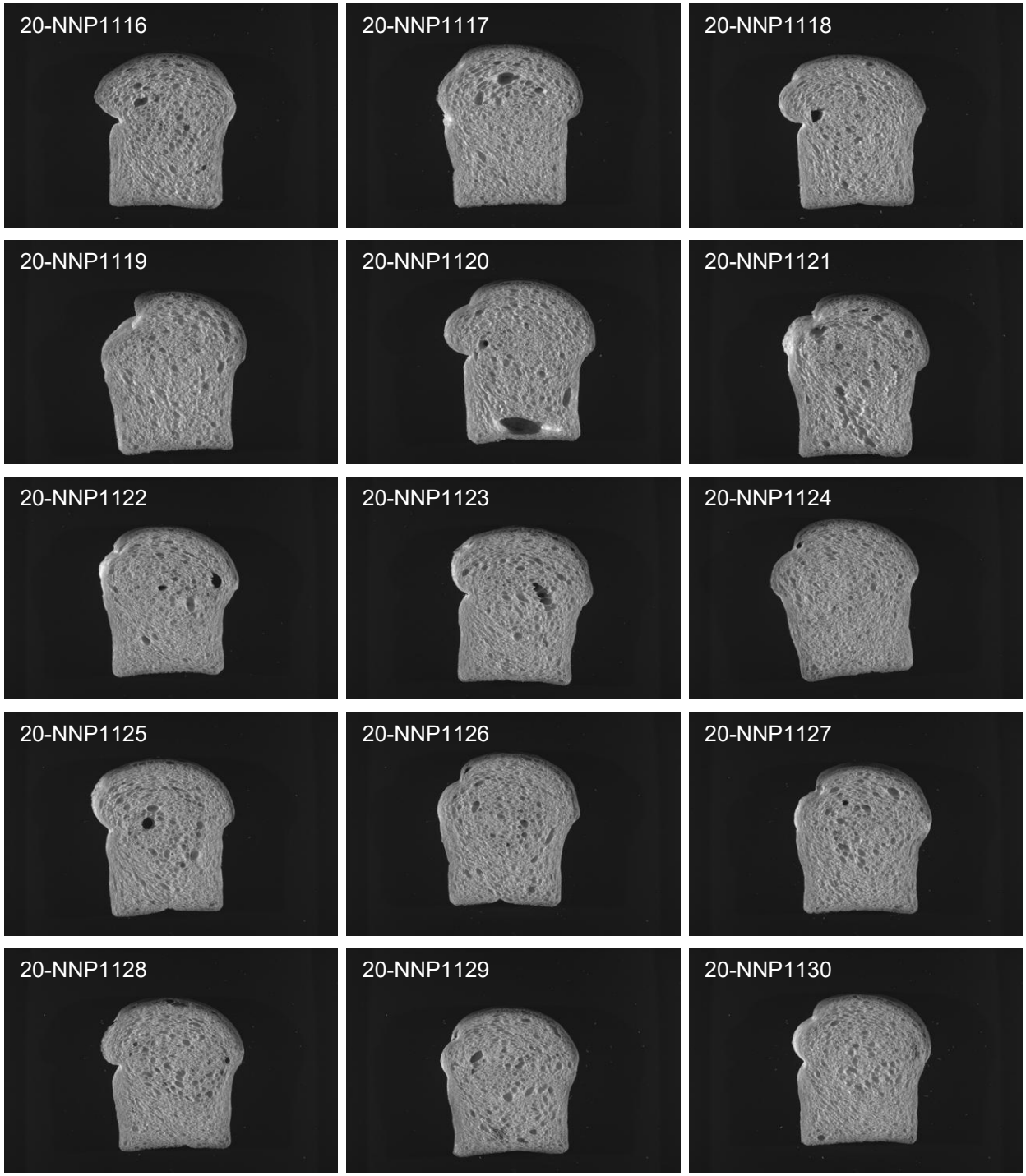
Northern Plains

	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
Kharkof	13.1	65.2	5.38	5.38	174.8	7.8	3.0	915	6.1	61
Overland	12.1	63.9	3.38	3.38	173.5	7.6	4.0	925	6.2	68
Wesley	13.3	64.9	5.50	5.50	174.4	7.6	2.5	975	6.6	66
Jagalene	12.6	64.0	5.00	5.00	173.4	7.3	3.5	950	6.4	68
Jerry	12.4	65.0	5.50	5.50	174.5	7.2	4.0	860	5.8	60
17NORD-94	12.4	64.3	5.50	5.50	174.1	7.4	3.5	890	5.9	63
18NORD-103	13.1	65.8	5.38	5.38	175.4	7.5	4.0	950	6.3	65
18NORD-104	12.5	64.0	4.25	4.25	172.9	7.5	4.0	925	6.2	66
18NORD-111	12.4	66.1	6.50	6.50	175.5	7.6	4.0	910	6.1	65
18NORD-108	12.9	65.5	4.50	4.50	175.5	7.1	4.0	940	6.3	64
19CP010075	11.4	62.2	3.63	3.35	171.8	7.1	4.0	860	5.7	67
19CP010078	11.4	62.0	5.75	5.34	171.2	7.3	4.0	860	5.8	66
19CP010081	12.0	65.1	4.75	4.73	174.8	7.8	3.5	970	6.5	75
19CP010083	12.7	66.1	5.63	5.63	175.9	7.7	3.5	975	6.5	70
19CP010076	11.7	62.2	5.38	5.19	171.7	7.4	3.5	875	5.9	66
LCH17-5660	12.1	63.0	4.13	4.13	171.7	7.3	2.5	865	5.8	62
DH15HRW-63-81	13.9	63.9	2.00	2.00	173.7	7.5	2.5	930	6.2	58
LCH18-7115	11.7	62.0	6.75	6.50	170.3	7.0	4.0	870	5.9	66
LCH17-1296	11.7	62.0	2.75	2.63	171.5	7.3	3.5	915	6.1	71
LCH17-3468	13.1	65.0	4.00	4.00	174.9	7.5	4.5	970	6.4	66
NE15624	13.0	66.6	6.50	6.50	176.3	7.4	3.5	940	6.2	64
NW15443	10.9	62.2	6.25	5.42	171.3	7.1	4.0	820	5.5	65
NE16562	11.6	63.2	5.25	4.99	172.6	7.5	3.5	890	6.0	69
NHH17612	12.0	64.3	6.50	6.48	173.3	7.3	3.0	885	6.0	65
NE17441	12.1	64.2	6.00	6.00	173.5	7.3	3.0	890	5.9	65
NE17443	12.0	64.3	5.38	5.35	173.3	7.2	4.0	860	5.8	63
NE17544	11.9	64.1	4.13	4.10	173.6	7.3	3.0	835	5.6	60
NE17590	11.7	63.1	3.50	3.36	173.2	7.1	3.5	840	5.6	62
MT1745	11.0	62.2	7.00	6.19	171.7	7.0	3.5	790	5.4	61
MT1746	11.3	63.8	5.50	5.02	173.5	7.1	4.0	860	5.7	67
MTCL1737	11.4	62.3	5.00	4.63	171.3	7.4	3.5	890	6.1	70
SD12DHA00031	11.7	63.2	5.00	4.81	173.0	7.5	4.5	940	6.4	74
SD12DHA01373	10.9	62.3	6.00	5.23	171.5	7.1	3.5	825	5.6	66
SD12DHA01688	12.3	63.9	5.50	5.50	173.6	7.6	4.5	960	6.5	71
SD12DHA03282	11.2	62.7	4.75	4.31	172.1	7.3	4.5	925	6.2	76
SD12DHA03429	12.7	65.1	4.50	4.50	175.1	7.9	3.5	905	6.0	63
SD13DHA02346	11.6	63.2	5.00	4.77	173.0	7.5	4.0	910	6.1	71
SD14355-2	12.5	64.2	4.50	4.50	173.9	7.4	4.0	885	5.9	62
SD15004-2	11.8	64.2	9.00	8.77	173.1	7.4	2.5	860	5.7	64
SD15035-2	11.5	63.3	5.25	4.95	172.3	7.3	5.0	915	6.1	72
SD15205-1	11.2	63.3	9.50	8.59	175.4	7.4	3.5	865	5.8	69

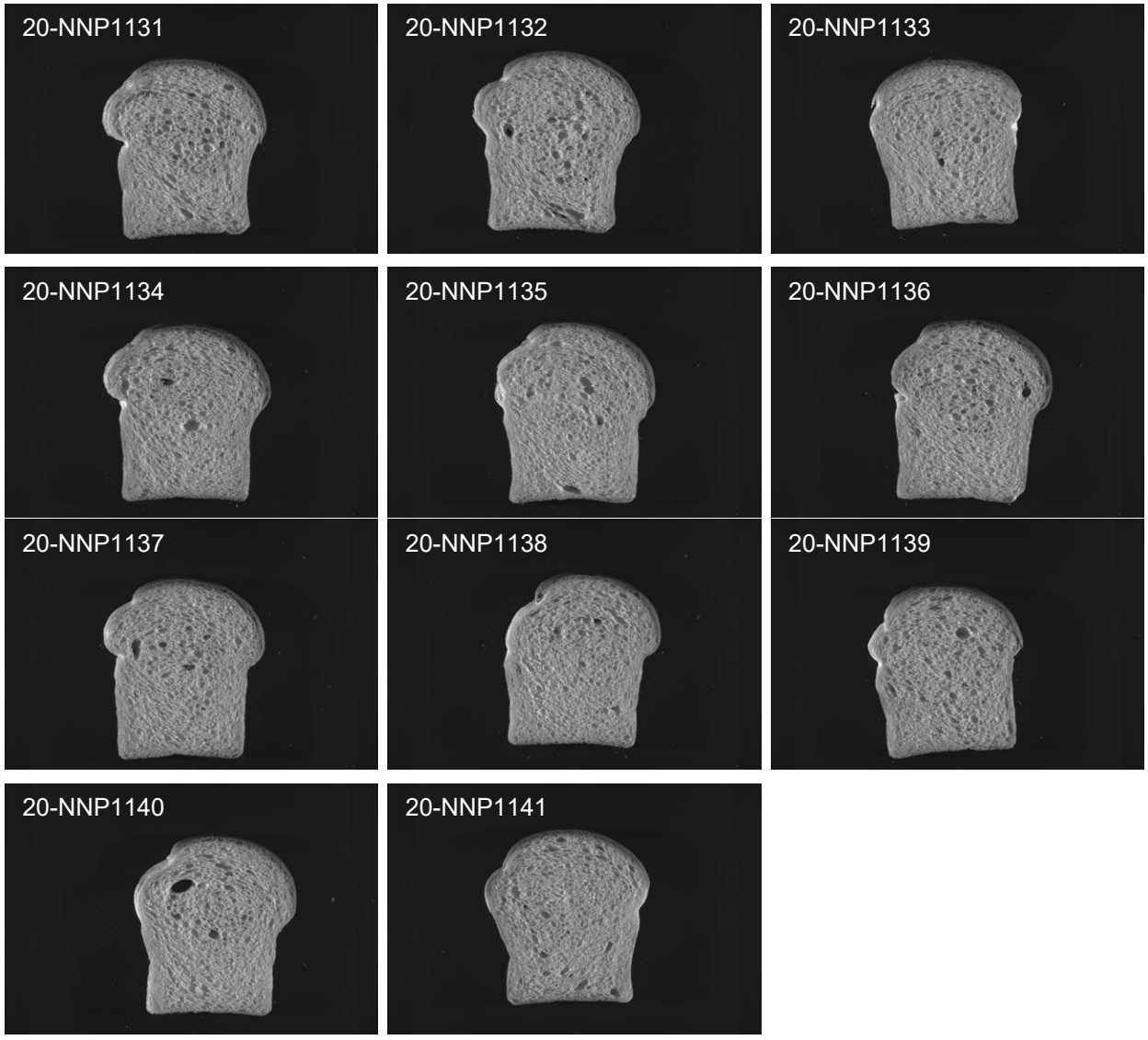
2020 NRPN Intraregional Production Zone
Northern Plains



2020 NRPN Intraregional Production Zone
Northern Plains



2020 NRPN Intraregional Production Zone
Northern Plains



Southern
Regional Performance Nursery

2020 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	K19U7124R10	Duster*2/5/Duster*3//Sr35/2*2174/3/X100994-1/4/Duster*3//Sr35/2*2174/3/L	USDA-ARS (KS)
6	K19U7126R37	Duster*2/5/Duster*3//Sr35/2*2174/3/X100994-1/4/Duster*3//Sr35/2*2174/3/L	USDA-ARS (KS)
7	KS15H137-2	KS08HW176-4//Bill Brown/KS08HW61-2	KSU-Hays
8	KS17H17	Oakley CL//KS07HW5-1-1-3-3/T158	KSU-Hays
9	KS17H91-1	KS07HW5-1-1-3-3//T158/KS09HW97-5	KSU-Hays
10	TX15M8024	TAM 203/Duster	TAMU
11	TX16A001183	Hitch/TX07A001305	TAMU
12	TX16A001193	TX07A001421/Duster	TAMU
13	TX16A001205	Winterhawk/TX05V7269	TAMU
14	TX16A001289	TX05A001188/Fuller	TAMU
15	TX16A001405	TX05A001188/Duster	TAMU
16	TX16M9216	X09A440S [=TX07A001482/TAM 401]/Duster	TAMU
17	TX16M9315	TAM 203/Hitch	TAMU
18	ON1366277	Duster/Billings//OK06822W	NRI
19	ON13P016	OK93P656H3299-99/OK03522	NRI
20	19CP010066	KS020633-M-13/SY WOLF//SY WOLF	AgriPro
21	19CP010063	SY GOLD/TAM 111//POSTROCK	AgriPro
22	19CP010068	Everest/APH09T9506	AgriPro
23	19CP010057	DUSTER/05BC083-29-2//SY WOLF	AgriPro
24	BASF 1	unknown	BASF
25	BASF 2	unknown	BASF
26	LCH17-3481		LCS
27	LCH17-5221		LCS
28	LCH17-5660		LCS
29	LCH17-4196		LCS
30	LCH18-7071		LCS
31	CO15D098R	TAM 114/Antero//Byrd	CSU
32	CO14A136-135	AF10/2*Byrd//AF26/Byrd	CSU
33	CO14A055-258	AF28/Byrd//AF10/2*Byrd	CSU
34	CO16SF065	Antero/Judee//Antero	CSU
35	CO16SF070	Antero/Judee//Antero	CSU
36	KS12DH0090-172	KanMark/KS050444-M-6	KSU-Manhattan
37	KS12DH0156-88	KS040477K-12/Gallagher	KSU-Manhattan
38	KS13DH0041-35	T158/KS040640K-1	KSU-Manhattan
39	KS13DH0030-28	KS060634K-8/KS040640K-1	KSU-Manhattan
40	OK16729W	LA98149BUB-3-4-B/OK03522//OK07231	OSU
41	OK16D101089	OK12621/OK09125	OSU
42	OK168512	Wsm1-Overley/Fuller//CO050270/3/CO050337-8	OSU
43	OK188608	KS020635-M-2/OK08214//OK07214	OSU
44	OK15MASBx7 ARS 8-1	Gallagher*3/ Snowmass	OSU
45	OK16D101105	OK12621/OK09125	OSU
46	NE16562	HV9W02-942R/CAMELOT	UNL

Entry	Selection No.	Pedigree	Source
47	NI17410	TX06A001281/NI04420	UNL
48	NE17433	NI10720W/NW03666	UNL
49	NHH17450	Brawl_CL/NHH09655	UNL
50	NHH17612	Brawl_CL/NHH09655	UNL

List of SRPN Sample ID

Entry	Breeder ID	HWWQL ID			
		North Central Plains	Northern High Plains	South Central Plains	Southern High Plains
1	Kharkof	20-SNC1001	20-SNH1001	20-SSC1001	20-SSH1001
2	Scout66	20-SNC1002	20-SNH1002	20-SSC1002	20-SSH1002
3	TAM-107	20-SNC1003	20-SNH1003	20-SSC1003	20-SSH1003
4	Jagalene	20-SNC1004	20-SNH1004	20-SSC1004	20-SSH1004
5	K19U7124R10	20-SNC1005	20-SNH1005	20-SSC1005	20-SSH1005
6	K19U7126R37	20-SNC1006	20-SNH1006	20-SSC1006	20-SSH1006
7	KS15H137-2	20-SNC1007	20-SNH1007	20-SSC1007	20-SSH1007
8	KS17H17	20-SNC1008	20-SNH1008	20-SSC1008	20-SSH1008
9	KS17H91-1	20-SNC1009	20-SNH1009	20-SSC1009	20-SSH1009
10	TX15M8024	20-SNC1010	20-SNH1010	20-SSC1010	20-SSH1010
11	TX16A001183	20-SNC1011	20-SNH1011	20-SSC1011	20-SSH1011
12	TX16A001193	20-SNC1012	20-SNH1012	20-SSC1012	20-SSH1012
13	TX16A001205	20-SNC1013	20-SNH1013	20-SSC1013	20-SSH1013
14	TX16A001289	20-SNC1014	20-SNH1014	20-SSC1014	20-SSH1014
15	TX16A001405	20-SNC1015	20-SNH1015	20-SSC1015	20-SSH1015
16	TX16M9216	20-SNC1016	20-SNH1016	20-SSC1016	20-SSH1016
17	TX16M9315	20-SNC1017	20-SNH1017	20-SSC1017	20-SSH1017
18	ON1366277	20-SNC1018	20-SNH1018	20-SSC1018	20-SSH1018
19	ON13P016	20-SNC1019	20-SNH1019	20-SSC1019	20-SSH1019
20	19CP010066	20-SNC1020	20-SNH1020	20-SSC1020	20-SSH1020
21	19CP010063	20-SNC1021	20-SNH1021	20-SSC1021	20-SSH1021
22	19CP010068	20-SNC1022	20-SNH1022	20-SSC1022	20-SSH1022
23	19CP010057	20-SNC1023	20-SNH1023	20-SSC1023	20-SSH1023
24	BASF 1	20-SNC1024	20-SNH1024	20-SSC1024	20-SSH1024
25	BASF 2	20-SNC1025	20-SNH1025	20-SSC1025	20-SSH1025
26	LCH17-3481	20-SNC1026	20-SNH1026	20-SSC1026	20-SSH1026
27	LCH17-5221	20-SNC1027	20-SNH1027	20-SSC1027	20-SSH1027
28	LCH17-5660	20-SNC1028	20-SNH1028	20-SSC1028	20-SSH1028
29	LCH17-4196	20-SNC1029	20-SNH1029	20-SSC1029	20-SSH1029
30	LCH18-7071	20-SNC1030	20-SNH1030	20-SSC1030	20-SSH1030
31	CO15D098R	20-SNC1031	20-SNH1031	20-SSC1031	20-SSH1031
32	CO14A136-135	20-SNC1032	20-SNH1032	20-SSC1032	20-SSH1032
33	CO14A055-258	20-SNC1033	20-SNH1033	20-SSC1033	20-SSH1033
34	CO16SF065	20-SNC1034	20-SNH1034	20-SSC1034	20-SSH1034
35	CO16SF070	20-SNC1035	20-SNH1035	20-SSC1035	20-SSH1035
36	KS12DH0090-172	20-SNC1036	20-SNH1036	20-SSC1036	20-SSH1036
37	KS12DH0156-88	20-SNC1037	20-SNH1037	20-SSC1037	20-SSH1037
38	KS13DH0041-35	20-SNC1038	20-SNH1038	20-SSC1038	20-SSH1038
39	KS13DH0030-28	20-SNC1039	20-SNH1039	20-SSC1039	20-SSH1039
40	OK16729W	20-SNC1040	20-SNH1040	20-SSC1040	20-SSH1040
41	OK16D101089	20-SNC1041	20-SNH1041	20-SSC1041	20-SSH1041
42	OK168512	20-SNC1042	20-SNH1042	20-SSC1042	20-SSH1042
43	OK188608	20-SNC1043	20-SNH1043	20-SSC1043	20-SSH1043
44	OK15MASBx7 ARS 8-1	20-SNC1044	20-SNH1044	20-SSC1044	20-SSH1044
45	OK16D101105	20-SNC1045	20-SNH1045	20-SSC1045	20-SSH1045
46	NE16562	20-SNC1046	20-SNH1046	20-SSC1046	20-SSH1046
47	NI17410	20-SNC1047	20-SNH1047	20-SSC1047	20-SSH1047
48	NE17433	20-SNC1048	20-SNH1048	20-SSC1048	20-SSH1048
49	NHH17450	20-SNC1049	20-SNH1049	20-SSC1049	20-SSH1049
50	NHH17612	20-SNC1050	20-SNH1050	20-SSC1050	20-SSH1050

Hard Winter Wheat Quality Report

2020 SRPN-NCP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	41.2	Very Poor	69.2	64.2	Very Good	100.0		10,16,
Scout 66	57.2	Very Good	96.2	47.9	Average	74.7		
TAM 107	51.2	Poor	86.1	45.2	Average	70.5	1AL	
Jagalene	56.8	Very Good	95.5	58.5	Very Good	91.1		15,
K19U7124R10	48.2	Very Poor	81.1	55.3	Good	86.2		
K19U7126R37	43.5	Very Poor	73.2	63.4	Very Good	98.8		1,2,4,9,
KS Hamilton	52.7	Average	88.6	44.9	Average	70.0		9,
KS17H17	54.2	Good	91.2	55.5	Good	86.6		9,
KS17H91-1	53.1	Average	89.2	43.8	Poor	68.3		3,
TX15M8024	53.0	Average	89.1	44.0	Average	68.6		
TX16A001183	44.7	Very Poor	75.2	31.8	Very Poor	49.6		2,4,14,15,
TX16A001193	50.2	Poor	84.4	34.6	Very Poor	53.9		2,15,
TX16A001205	50.4	Poor	84.8	41.1	Poor	64.1		5,
TX16A001289	49.7	Poor	83.5	62.6	Very Good	97.6		
TX16A001405	55.2	Good	92.7	36.7	Very Poor	57.2		11,12,13,14,15,17,18,19,
TX16M9216	54.7	Good	91.9	43.7	Poor	68.1		
TX16M9315	48.6	Very Poor	81.6	48.6	Average	75.8	1BL	1,9,19,
ON1366277	56.5	Good	94.9	58.8	Very Good	91.7		3,
ON13P016	58.1	Very Good	97.7	47.9	Average	74.6		
19CP010066	57.0	Very Good	95.7	43.7	Poor	68.2	h1BL	
19CP010063	47.4	Very Poor	79.6	31.0	Very Poor	48.3		10,15,19,
19CP010068	58.6	Very Good	98.5	54.2	Good	84.5		
19CP010057	57.6	Very Good	96.9	50.7	Average	79.0	1BL	
BASF 1	51.6	Poor	86.7	31.7	Very Poor	49.5		3,14,15,
BASF 2	56.5	Very Good	95.0	63.2	Very Good	98.4	h1BL	
LCH17-3481	53.2	Average	89.5	61.4	Very Good	95.7		
LCH17-5221	52.0	Average	87.5	52.7	Good	82.1		
LCH17-5660	43.7	Very Poor	73.5	58.7	Very Good	91.5	h1BL	2,4,8,
LCH17-4196	55.1	Good	92.6	37.9	Very Poor	59.1	h1BL	11,12,13,17,18,
LCH18-7071	49.2	Very Poor	82.7	58.2	Good	90.7		9,15,

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

Hard Winter Wheat Quality Report

2020 SRPN-NCP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Steamboat	55.4	Good	93.1	48.9	Average	76.2		15,
CO14A136-135	53.8	Average	90.4	35.9	Very Poor	55.9		14,15,
Kivari AX	58.5	Very Good	98.3	53.2	Good	82.9		11,12,13,17,
CO16SF065	53.9	Average	90.6	41.8	Poor	65.2		
CO16SF070	54.7	Good	91.9	50.4	Average	78.5		
KS12DH0090-172	59.5	Very Good	100.0	47.5	Average	74.0		
KS12DH0156-88	43.8	Very Poor	73.7	43.2	Poor	67.3	1BL	8,9,
KS13DH0041-35	52.0	Poor	87.3	60.4	Very Good	94.1	1BL	
KS13DH0030-28	51.6	Poor	86.7	43.6	Poor	68.0		1,5,
OK16729W	56.4	Good	94.8	40.4	Poor	62.9		18,21,
Uncharted	53.5	Average	89.9	54.8	Good	85.5		
Breakthrough	48.7	Very Poor	81.8	33.9	Very Poor	52.9		8,15,
OK188608	55.7	Good	93.6	41.2	Poor	64.2		14,15,
OK15MASBx7 ARS 8-1	51.8	Poor	87.0	33.5	Very Poor	52.2		14,15,
OK16D101105	54.1	Good	91.0	24.3	Very Poor	38.0		14,15,16,18,19,20,21,
NE16562	51.6	Poor	86.7	39.5	Poor	61.6	1BL	15,17,
NI17410	58.5	Very Good	98.4	54.2	Good	84.5		15,
NE17433	50.8	Poor	85.5	56.1	Good	87.4		14,15,
NHH17450	52.0	Average	87.3	59.3	Very Good	92.4		
NHH17612	52.7	Average	88.7	52.6	Good	82.0		2,15,

2020 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	60.8	11.8	0.5	29.7	9.2	2.57	0.32	42	21	MIXED	34-27-21-18-03
Scout66	61.1	12.2	0.6	32.8	9.4	2.66	0.32	55	16	HARD	10-18-35-37-01
TAM-107	59.1	12.4	0.3	31.4	8.4	2.64	0.35	57	17	HARD	07-22-25-46-01
Jagalene	61.6	11.4	0.5	32.1	8.5	2.75	0.37	69	17	HARD	02-07-19-72-01
K19U7124R10	60.0	12.0	0.3	30.3	9.7	2.65	0.35	74	19	HARD	01-06-14-79-01
K19U7126R37	57.6	12.2	0.3	27.4	9.4	2.45	0.35	76	17	HARD	01-05-11-83-01
KS15H137-2	60.2	12.2	0.4	32.6	9.7	2.62	0.35	70	16	HARD	01-06-21-72-01
KS17H17	62.2	11.6	0.4	33.5	8.9	2.73	0.36	74	17	HARD	01-04-16-79-01
KS17H91-1	61.9	11.5	0.3	32.1	10.1	2.63	0.31	56	16	HARD	09-18-33-40-01
TX15M8024	60.4	11.8	0.4	31.1	8.7	2.67	0.32	76	17	HARD	02-03-14-81-01
TX16A001183	59.4	11.6	0.4	27.4	9.3	2.52	0.37	64	18	HARD	03-14-22-61-01
TX16A001193	60.8	11.7	0.3	27.2	7.8	2.56	0.33	69	19	HARD	02-12-17-69-01
TX16A001205	61.2	11.9	0.3	29.6	9.7	2.55	0.38	66	17	HARD	02-11-22-65-01
TX16A001289	61.3	11.4	0.4	31.4	9.2	2.67	0.35	58	15	HARD	05-16-33-46-01
TX16A001405	59.1	11.8	0.3	32.1	8.7	2.65	0.37	61	17	HARD	05-15-24-56-01
TX16M9216	61.0	11.3	0.3	29.9	8.6	2.61	0.30	73	18	HARD	01-06-18-75-01
TX16M9315	58.8	12.7	0.3	33.6	8.8	2.73	0.35	71	17	HARD	02-04-17-77-01
ON1366277	61.2	12.0	0.4	35.8	10.0	2.72	0.34	67	14	HARD	01-06-21-72-01
ON13P016	61.1	12.3	0.4	32.6	8.6	2.73	0.32	73	15	HARD	00-06-11-83-01
19CP010066	62.9	12.4	0.4	33.6	8.1	2.74	0.34	69	15	HARD	01-06-21-72-01
19CP010063	59.1	12.3	0.4	32.3	8.2	2.65	0.36	66	18	HARD	03-11-25-61-01
19CP010068	61.7	11.8	0.4	34.2	6.9	2.78	0.29	65	14	HARD	01-06-30-63-01
19CP010057	60.6	11.8	0.4	34.0	8.9	2.74	0.33	71	15	HARD	01-05-18-76-01
BASF 1	61.2	12.1	0.4	31.9	10.1	2.63	0.36	51	18	MIXED	18-21-27-34-03
BASF 2	61.2	12.0	0.4	34.8	8.9	2.73	0.36	57	17	HARD	08-17-30-45-01
LCH17-3481	59.7	12.2	0.3	31.4	8.3	2.64	0.35	60	16	HARD	05-14-27-54-01
LCH17-5221	61.1	12.1	0.3	34.5	9.4	2.72	0.35	68	16	HARD	00-08-25-67-01
LCH17-5660	59.9	10.4	0.7	27.2	7.9	2.49	0.36	74	20	HARD	04-06-14-76-01
LCH17-4196	62.0	11.8	0.3	31.9	9.4	2.63	0.35	51	16	MIXED	11-28-30-31-03
LCH18-7071	59.8	11.9	0.3	29.7	9.0	2.53	0.32	68	17	HARD	03-08-23-66-01
CO15D098R	61.4	12.0	0.3	33.2	9.0	2.73	0.34	57	17	HARD	07-17-32-44-01
CO14A136-135	59.9	12.1	0.3	33.1	9.8	2.53	0.36	52	16	MIXED	13-27-27-33-03
CO14A055-258	60.2	12.0	0.3	30.6	8.7	2.58	0.34	52	16	MIXED	12-25-32-31-03
CO16SF065	60.0	12.1	0.4	30.2	8.5	2.59	0.35	53	17	MIXED	13-19-35-33-03
CO16SF070	59.8	12.4	0.3	29.6	8.4	2.59	0.37	49	17	MIXED	16-31-25-28-03
KS12DH0090-172	62.9	11.8	0.4	32.4	7.8	2.74	0.32	59	16	HARD	04-17-31-48-01
KS12DH0156-88	59.0	12.3	0.4	32.2	9.9	2.61	0.33	67	18	HARD	04-09-20-67-01
KS13DH0041-35	60.4	12.0	0.3	33.5	9.4	2.68	0.36	65	16	HARD	03-11-22-64-01
KS13DH0030-28	58.5	11.7	0.4	30.2	7.3	2.67	0.38	62	18	HARD	07-11-25-57-01
OK16729W	62.3	11.6	0.4	35.3	8.5	2.75	0.36	61	17	HARD	05-15-27-53-01
OK16D101089	60.5	11.9	0.4	31.2	9.0	2.69	0.36	57	17	HARD	08-18-29-45-01
OK168512	61.7	12.3	0.3	29.4	8.7	2.55	0.34	62	17	HARD	03-15-26-56-01
OK188608	60.6	11.9	0.3	33.4	7.0	2.86	0.31	73	15	HARD	01-04-16-79-01
OK15MASBx7 ARS 8-1	60.4	11.8	0.3	29.7	8.8	2.61	0.35	77	17	HARD	00-03-11-86-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
OK16D101105	61.2	11.6	0.3	30.4	7.5	2.77	0.31	72	16	HARD	02-05-14-79-01
NE16562	59.2	11.0	0.6	31.2	8.9	2.67	0.33	51	18	MIXED	17-22-32-29-03
NI17410	61.5	11.3	0.4	33.2	7.9	2.74	0.32	61	16	HARD	05-12-26-57-01
NE17433	60.1	11.4	0.3	30.4	8.8	2.67	0.36	63	17	HARD	04-11-28-57-01
NHH17450	59.9	11.1	0.4	30.3	8.5	2.64	0.32	58	17	HARD	08-18-26-48-01
NHH17612	61.1	10.5	0.7	27.2	7.9	2.54	0.32	62	18	HARD	07-13-25-55-01

2020 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	15.1	64.9	0.43	13.3	0.620	78.11	-1.06	22.10	-9.75	1.36	0.75
Scout66	13.5	69.6	0.41	12.5	0.606	78.99	-1.13	21.18	-9.64	1.31	1.98
TAM-107	12.8	67.5	0.41	11.8	0.639	78.65	-1.02	21.27	-11.34	1.41	3.22
Jagalene	13.0	68.5	0.45	12.0	0.552	79.67	-1.03	20.66	-11.01	1.17	4.16
K19U7124R10	13.9	65.6	0.43	12.7	0.196	79.55	-0.92	20.91	-9.37	1.12	5.31
K19U7126R37	14.0	65.5	0.49	12.7	0.192	78.59	-0.98	22.27	-7.92	1.16	4.34
KS15H137-2	12.6	67.9	0.49	11.7	0.621	78.22	-1.22	23.75	-10.72	1.57	2.03
KS17H17	12.9	66.5	0.48	11.9	0.463	77.85	-0.62	21.33	-9.10	1.20	2.98
KS17H91-1	11.9	67.3	0.41	11.3	0.552	79.02	-1.68	22.56	-7.96	1.23	1.84
TX15M8024	13.5	66.8	0.46	12.1	0.618	77.65	-0.71	21.88	-9.69	1.52	1.41
TX16A001183	12.4	65.6	0.44	11.4	0.643	78.88	-1.57	22.60	-9.33	1.47	1.08
TX16A001193	12.5	66.5	0.43	11.5	0.540	79.53	-1.58	22.90	-9.35	1.34	2.99
TX16A001205	12.4	66.8	0.42	11.2	0.557	78.56	-1.16	23.06	-8.98	1.49	2.30
TX16A001289	12.9	64.7	0.40	11.6	0.575	77.77	-1.04	22.39	-9.26	1.33	2.27
TX16A001405	11.9	68.9	0.39	10.7	0.582	78.66	-1.25	22.68	-8.25	1.38	2.26
TX16M9216	13.1	68.3	0.47	11.8	0.643	78.27	-1.03	21.84	-9.38	1.50	2.17
TX16M9315	12.6	65.3	0.49	11.4	0.632	77.41	-1.42	24.26	-9.29	1.59	1.22
ON1366277	13.0	66.7	0.40	12.1	0.541	78.28	-0.88	22.20	-8.71	1.35	2.21
ON13P016	12.8	67.2	0.40	11.6	0.184	78.86	-1.29	23.16	-6.78	1.18	2.95
19CP010066	13.0	66.0	0.42	12.0	0.637	78.20	-1.16	22.64	-9.23	1.28	1.59
19CP010063	12.7	65.3	0.46	11.0	0.587	77.82	-0.93	22.44	-9.28	1.43	2.25
19CP010068	12.9	66.5	0.45	12.0	0.551	77.06	-0.99	23.40	-8.61	1.39	1.50
19CP010057	12.9	67.2	0.39	11.7	0.667	77.26	-0.92	22.73	-9.79	1.38	1.24
BASF 1	12.5	68.2	0.39	11.3	0.550	78.76	-1.43	24.47	-8.80	1.21	2.25
BASF 2	13.2	68.2	0.39	12.1	0.607	78.78	-1.13	22.75	-9.27	1.20	2.88
LCH17-3481	12.9	67.9	0.44	12.3	0.744	78.29	-1.74	25.16	-8.99	1.58	-0.36
LCH17-5221	12.6	65.6	0.44	11.4	0.716	78.18	-1.39	23.64	-9.24	1.57	1.54
LCH17-5660	13.2	64.5	0.47	12.1	0.559	77.80	-1.64	26.39	-8.97	1.67	1.45
LCH17-4196	12.0	68.5	0.38	10.9	0.583	80.23	-1.61	22.13	-8.69	1.14	2.52
LCH18-7071	12.4	66.7	0.48	11.2	0.701	79.10	-1.52	23.75	-10.11	1.59	1.98
CO15D098R	12.1	68.2	0.42	11.2	0.617	78.74	-1.52	23.83	-8.92	1.16	2.10
CO14A136-135	12.2	69.6	0.42	11.2	0.687	79.64	-1.09	21.16	-9.51	1.09	3.28
CO14A055-258	11.3	71.9	0.43	10.6	0.564	80.63	-1.79	22.55	-8.15	1.27	2.05
CO16SF065	12.3	69.2	0.39	11.3	0.694	78.65	-1.30	21.59	-10.46	1.34	1.72
CO16SF070	12.5	69.7	0.37	11.2	0.674	78.68	-1.37	21.63	-10.21	1.51	1.32
KS12DH0090-172	13.8	67.7	0.37	12.6	0.498	76.43	-0.49	21.91	-8.54	1.56	1.65
KS12DH0156-88	12.5	64.6	0.48	11.8	0.211	78.86	-1.33	23.99	-7.57	1.27	3.17
KS13DH0041-35	12.7	66.1	0.40	11.7	0.192	79.03	-1.38	24.21	-6.33	1.31	4.30
KS13DH0030-28	12.8	67.1	0.38	12.0	0.520	78.23	-1.42	23.92	-7.24	1.20	1.34
OK16729W	12.7	67.1	0.40	11.4	0.587	77.46	-0.63	20.28	-8.25	1.36	2.68
OK16D101089	12.9	67.9	0.38	12.1	0.553	78.34	-1.22	24.19	-7.66	1.32	2.19
OK168512	12.6	64.1	0.37	11.4	0.642	79.27	-1.32	22.50	-8.72	1.25	3.47

	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	(%)	(%)	(%)	(%)							
OK188608	13.3	65.2	0.45	12.1	0.512	77.39	-0.87	21.74	-10.07	1.29	1.37
OK15MASBx7 ARS 8-1	12.7	66.7	0.47	11.6	0.274	78.47	-1.20	24.02	-8.38	1.16	2.91
OK16D101105	13.1	65.5	0.43	11.9	0.524	76.71	-1.25	25.18	-10.27	1.61	1.36
NE16562	12.3	68.7	0.43	11.3	0.605	79.28	-1.15	21.99	-9.21	1.25	2.33
NI17410	13.1	67.8	0.38	11.9	0.701	79.47	-0.92	20.41	-10.06	1.44	2.85
NE17433	12.5	66.8	0.42	11.5	783.78	78.90	-1.61	24.68	-9.97	1.24	2.68
NHH17450	13.1	67.4	0.40	11.9	0.711	77.96	-1.13	22.75	-9.61	1.34	2.20
NHH17612	13.1	67.2	0.38	11.9	0.692	78.41	-1.42	23.59	-8.88	1.32	1.32

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		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	13.3	65.1	4.00	4.00	2
Scout66	12.5	66.3	3.50	3.50	3
TAM-107	11.8	63.1	4.25	4.14	3
Jagalene	12.0	63.5	5.88	5.88	4
K19U7124R10	12.7	66.8	5.13	5.13	5
K19U7126R37	12.7	65.1	5.75	5.75	5
KS15H137-2	11.7	63.5	5.50	5.32	5
KS17H17	11.9	62.8	5.50	5.43	4
KS17H91-1	11.3	62.8	5.00	4.59	4
TX15M8024	12.1	63.6	4.00	4.00	4
TX16A001183	11.4	62.9	8.38	7.73	4
TX16A001193	11.5	64.6	6.88	6.46	5
TX16A001205	11.2	62.1	4.50	4.05	4
TX16A001289	11.6	62.8	5.13	4.91	5
TX16A001405	10.7	61.2	7.25	6.09	4
TX16M9216	11.8	63.7	5.63	5.49	4
TX16M9315	11.4	61.7	4.50	4.18	4
ON1366277	12.1	64.2	4.00	4.00	4
ON13P016	11.6	63.8	4.50	4.29	6
19CP010066	12.0	62.5	4.38	4.38	4
19CP010063	11.0	62.3	6.13	5.40	4
19CP010068	12.0	63.3	3.75	3.73	5
19CP010057	11.7	62.5	5.50	5.30	4
BASF 1	11.3	63.3	7.50	6.90	5
BASF 2	12.1	63.7	4.88	4.88	5
LCH17-3481	12.3	63.9	3.50	3.50	3
LCH17-5221	11.4	62.3	4.25	3.92	4
LCH17-5660	12.1	62.6	4.75	4.75	4
LCH17-4196	10.9	61.1	4.88	4.24	3
LCH18-7071	11.2	62.1	6.25	5.64	5
CO15D098R	11.2	62.1	6.13	5.53	4
CO14A136-135	11.2	62.1	8.00	7.21	5
CO14A055-258	10.6	61.1	5.63	4.67	5
CO16SF065	11.3	61.8	5.38	4.95	4
CO16SF070	11.2	62.2	5.38	4.88	4
KS12DH0090-172	12.6	64.4	4.63	4.63	5
KS12DH0156-88	11.8	63.1	5.63	5.51	4
KS13DH0041-35	11.7	62.9	4.88	4.68	4
KS13DH0030-28	12.0	64.9	5.50	5.49	4
OK16729W	11.4	62.3	3.50	3.23	3
OK16D101089	12.1	63.6	4.38	4.38	4
OK168512	11.4	62.4	7.38	6.82	5

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
OK188608	12.1	65.5	7.13	7.13	6
OK15MASBx7 ARS 8-1	11.6	64.8	1.75	1.19	6
OK16D101105	11.9	63.2	1.75	1.72	1
NE16562	11.3	62.2	6.00	5.47	4
NI17410	11.9	64.8	7.00	6.93	5
NE17433	11.5	63.6	8.38	7.87	5
NHH17450	11.9	63.7	3.88	3.81	3
NHH17612	11.9	63.7	6.75	6.64	5

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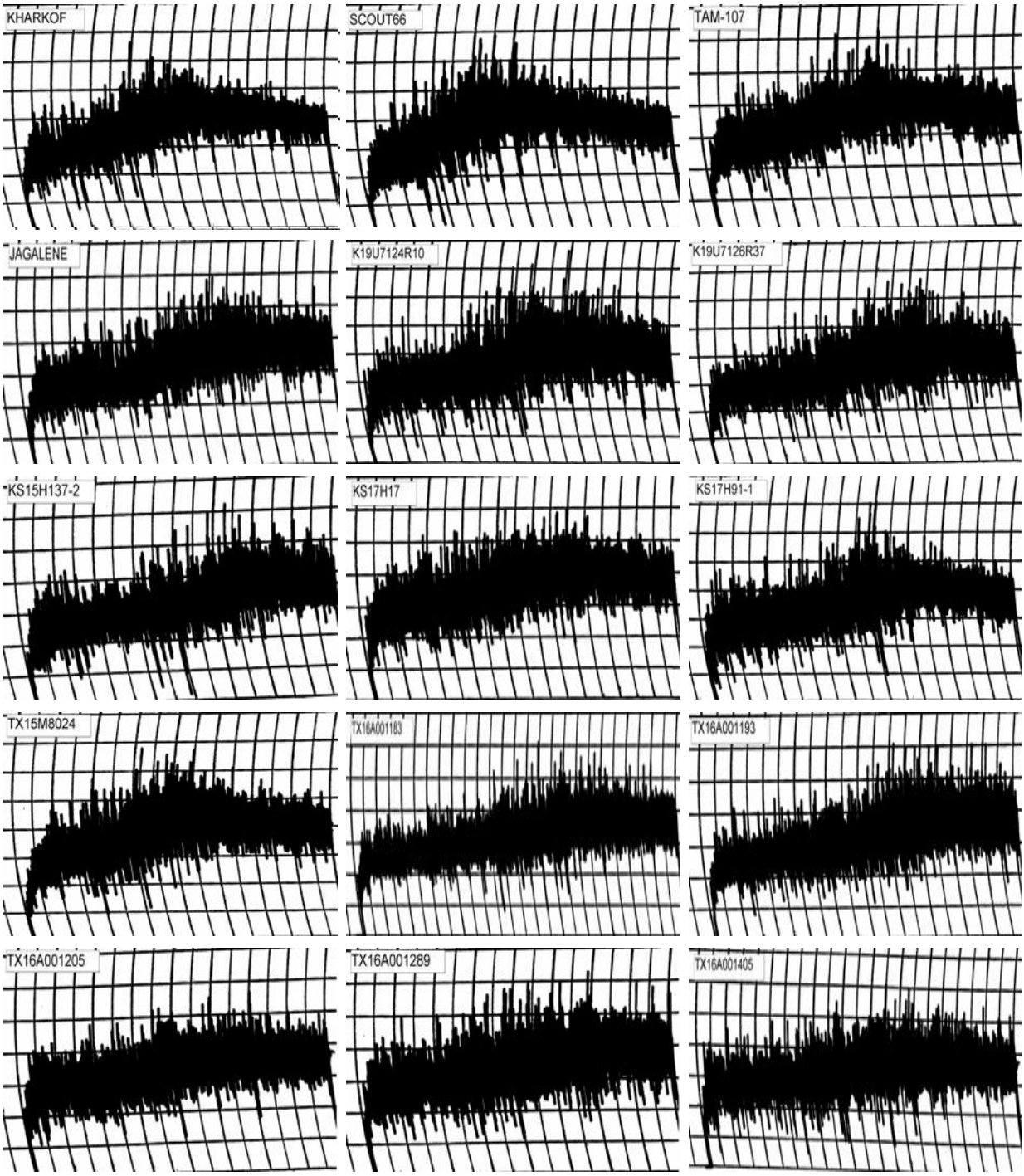

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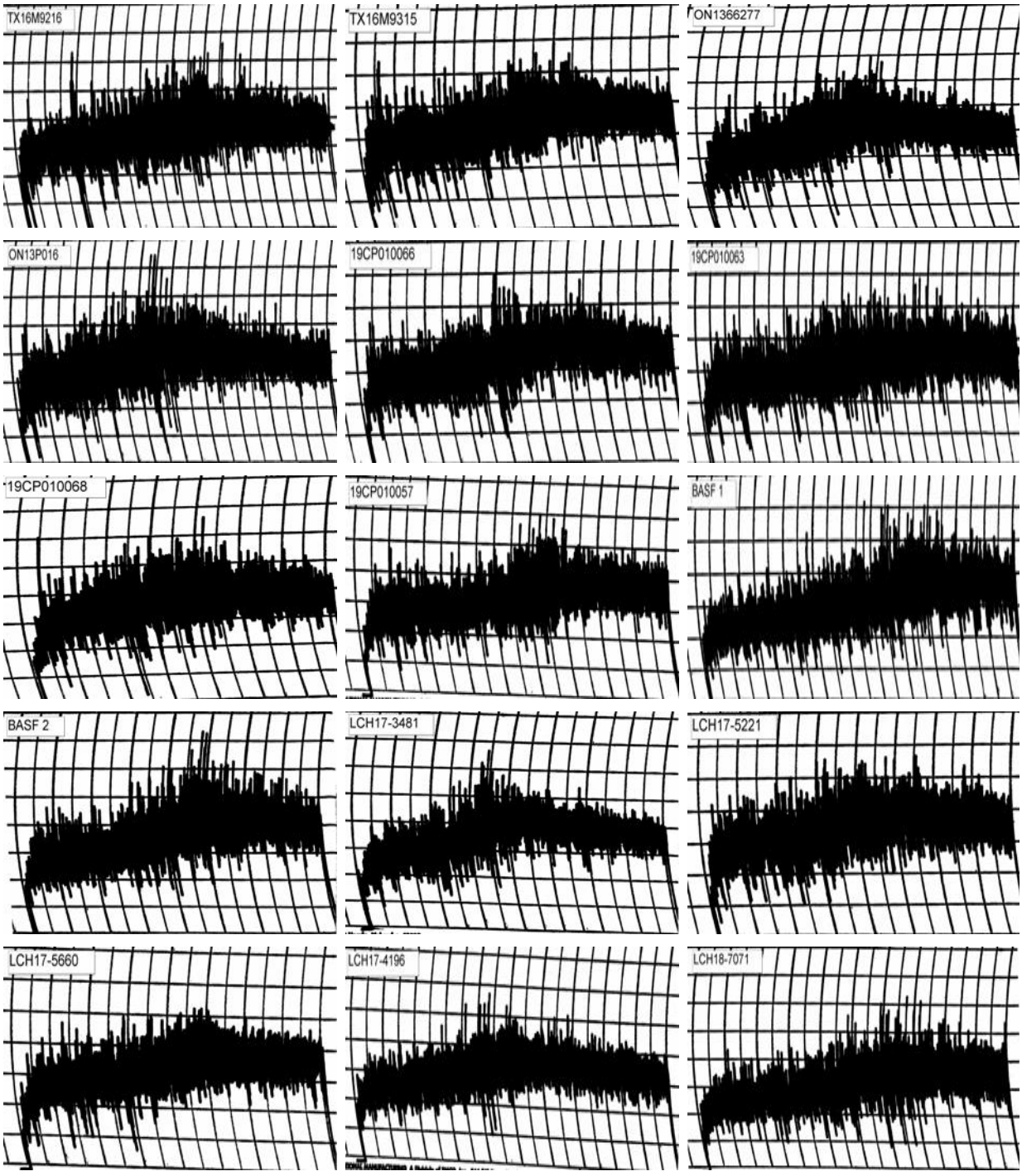
North Central Plains



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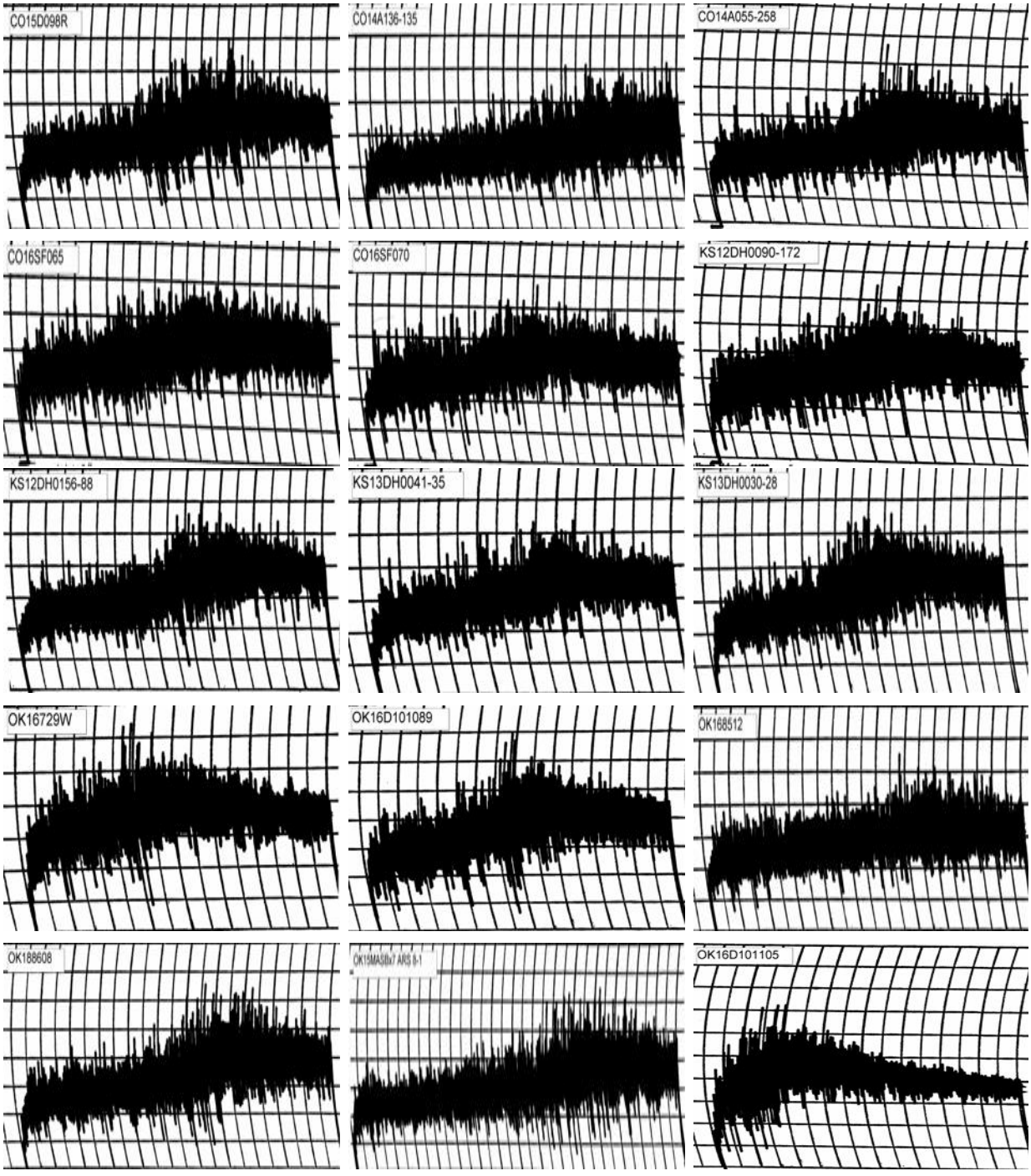
North Central Plains



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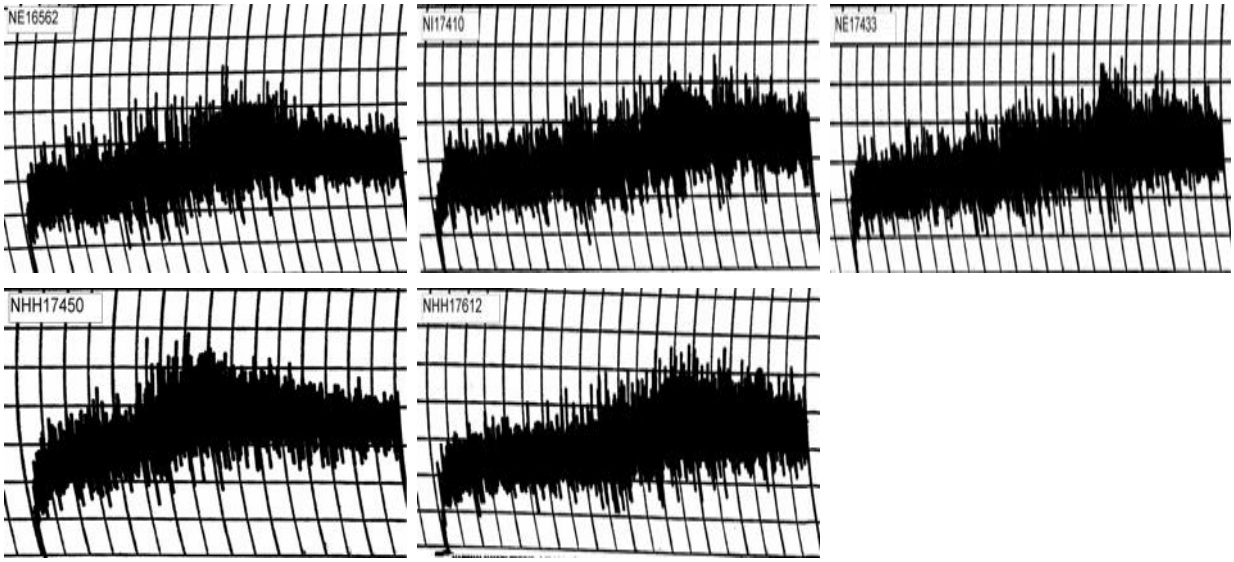
North Central Plains



2020 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)
Kharkof	161.58	242.67	173.92	68.75	285.00	111.08	6.40
Scout66	122.17	236.50	163.83	72.67	273.50	109.67	6.40
TAM-107	139.17	273.50	183.92	89.58	299.08	115.17	6.40
Jagalene	131.83	248.83	170.58	78.25	288.00	117.42	6.33
K19U7124R10	142.17	222.75	157.17	65.58	276.33	119.17	6.27
K19U7126R37	130.58	219.00	150.00	69.00	266.25	116.25	6.27
KS15H137-2	121.08	289.00	168.67	120.33	275.17	106.50	6.27
KS17H17	139.17	257.67	170.08	87.58	282.92	112.83	6.27
KS17H91-1	124.25	281.58	188.92	92.67	306.83	117.92	6.33
TX15M8024	155.67	249.17	168.17	81.00	279.25	111.08	6.33
TX16A001183	127.00	268.83	187.17	81.67	302.42	115.25	6.40
TX16A001193	127.75	248.67	178.42	70.25	298.75	120.33	6.40
TX16A001205	153.75	262.58	193.92	68.67	308.75	114.83	6.47
TX16A001289	172.17	270.83	200.67	70.17	315.25	114.58	6.53
TX16A001405	132.92	251.75	170.33	81.42	291.75	121.42	6.27
TX16M9216	130.42	231.00	160.00	71.00	271.58	111.58	6.33
TX16M9315	128.83	242.00	172.75	69.25	287.08	114.33	6.40
ON1366277	125.08	264.58	168.50	96.08	266.92	98.42	6.33
ON13P016	128.00	238.75	164.17	74.58	280.83	116.67	6.33
19CP010066	138.67	241.17	166.00	75.17	279.17	113.17	6.33
19CP010063	134.67	251.17	163.67	87.50	283.25	119.58	6.20
19CP010068	121.00	255.17	178.83	76.33	296.75	117.92	6.40
19CP010057	144.67	242.42	167.50	74.92	278.17	110.67	6.40
BASF 1	87.58	274.75	183.42	91.33	308.50	125.08	6.27
BASF 2	144.67	268.42	190.42	78.00	298.42	108.00	6.47
LCH17-3481	106.17	256.58	178.00	78.58	298.42	120.42	6.33
LCH17-5221	163.33	266.33	203.42	62.92	304.50	101.08	6.60
LCH17-5660	138.92	255.83	173.58	82.25	290.08	116.50	6.33
LCH17-4196	101.17	267.33	175.75	91.58	297.25	121.50	6.27
LCH18-7071	145.58	258.92	182.08	76.83	295.58	113.50	6.40
CO15D098R	84.50	287.67	167.58	120.08	276.67	109.08	6.20
CO14A136-135	122.00	266.92	181.75	85.17	307.33	125.58	6.27
CO14A055-258	94.25	279.17	176.75	102.42	306.83	130.08	6.13
CO16SF065	108.83	277.75	181.33	96.42	293.67	112.33	6.33
CO16SF070	104.83	272.75	188.83	83.92	301.67	112.83	6.40
KS12DH0090-172	173.92	252.00	190.58	61.42	297.75	107.17	6.53
KS12DH0156-88	151.67	254.92	182.08	72.83	297.92	115.83	6.47
KS13DH0041-35	150.83	234.33	172.25	62.08	288.17	115.92	6.40
KS13DH0030-28	122.83	235.08	161.75	73.33	287.67	125.92	6.20
OK16729W	138.08	262.67	172.08	90.58	284.08	112.00	6.33
OK16D101089	150.83	280.33	190.58	89.75	307.08	116.50	6.40
OK168512	97.17	255.75	171.75	84.00	300.58	128.83	6.20
OK188608	144.08	256.25	168.17	88.08	277.92	109.75	6.27
OK15MASBx7 ARS 8-1	142.00	243.42	164.58	78.83	288.33	123.75	6.27

	RVA						
	Stirring Number	Peak Viscosity	Trough Viscosity	Breakdown	Final Viscosity	Set back	Peak Time
Line	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(min)
OK16D101105	136.67	275.67	187.92	87.75	300.17	112.25	6.40
NE16562	140.08	274.00	187.17	86.83	310.00	122.83	6.40
NI17410	101.50	245.50	168.00	77.50	289.50	121.50	6.27
NE17433	133.00	225.42	136.08	89.33	245.00	108.92	6.13
NHH17450	138.17	259.42	179.08	80.33	295.08	116.00	6.40
NHH17612	127.67	250.25	170.08	80.17	295.17	125.08	6.27

2020 SRPN Intraregional Production Zone

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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	13.3	65.1	4.50	4.50	174.0	8.3	4.0	985	6.6	66
Scout66	12.5	66.1	3.50	3.50	175.4	8.1	4.5	995	6.5	73
TAM-107	11.8	63.1	4.38	4.27	172.3	7.8	3.5	970	6.6	76
Jagalene	12.0	63.2	6.38	6.38	172.7	7.5	4.0	1025	6.8	80
K19U7124R10	12.7	67.2	6.00	6.00	176.3	8.1	2.5	1075	7.1	80
K19U7126R37	12.7	65.2	5.50	5.50	174.7	7.6	4.0	995	6.7	72
KS15H137-2	11.7	63.2	5.50	5.32	172.1	7.8	3.5	965	6.6	76
KS17H17	11.9	63.2	6.00	5.93	172.9	7.5	4.0	940	6.4	72
KS17H91-1	11.3	63.2	6.50	5.97	172.4	7.8	4.5	1005	6.9	84
TX15M8024	12.1	64.0	4.25	4.25	173.4	7.5	3.5	910	6.2	67
TX16A001183	11.4	63.1	9.25	8.53	171.4	7.5	4.5	940	6.5	76
TX16A001193	11.5	64.2	7.25	6.81	172.8	7.6	4.5	885	5.9	69
TX16A001205	11.2	62.2	4.63	4.17	171.0	7.6	2.5	900	6.1	73
TX16A001289	11.6	63.2	5.00	4.78	172.8	7.6	5.0	890	6.0	68
TX16A001405	10.7	61.2	7.50	6.30	169.5	7.1	3.0	855	5.8	72
TX16M9216	11.8	64.1	5.50	5.36	172.5	7.6	3.5	950	6.3	74
TX16M9315	11.4	61.7	5.13	4.76	171.3	7.4	3.0	855	5.7	66
ON1366277	12.1	64.1	4.50	4.50	173.6	7.6	3.0	980	6.5	74
ON13P016	11.6	64.2	6.00	5.72	173.6	7.7	3.5	975	6.5	78
19CP010066	12.0	62.2	5.38	5.38	171.7	7.6	2.5	940	6.4	71
19CP010063	11.0	62.1	7.00	6.17	170.7	7.5	2.5	865	5.9	70
19CP010068	12.0	63.1	4.00	3.98	172.5	7.8	3.0	930	6.3	70
19CP010057	11.7	62.2	5.38	5.19	170.4	7.7	3.0	925	6.2	72
BASF 1	11.3	63.2	8.50	7.82	172.4	7.3	3.5	920	6.2	74
BASF 2	12.1	64.1	5.50	5.50	173.5	7.7	4.0	985	6.6	75
LCH17-3481	12.3	64.2	4.13	4.13	174.0	7.7	4.0	990	6.6	74
LCH17-5221	11.4	62.1	5.00	4.62	170.8	7.4	3.0	900	6.1	72
LCH17-5660	12.1	62.8	4.63	4.63	172.2	7.5	4.0	935	6.2	69
LCH17-4196	10.9	60.9	4.88	4.24	170.0	7.2	3.5	890	6.1	74
LCH18-7071	11.2	61.8	6.50	5.86	171.0	7.6	5.0	955	6.5	80
CO15D098R	11.2	61.9	6.50	5.86	170.8	7.4	3.0	985	6.6	83
CO14A136-135	11.2	62.1	8.75	7.89	170.2	8.0	3.5	1010	6.8	86
CO14A055-258	10.6	61.2	7.00	5.81	170.1	7.4	4.0	985	6.6	89
CO16SF065	11.3	62.2	5.38	4.95	171.3	7.8	3.5	945	6.3	77
CO16SF070	11.2	62.4	5.75	5.21	171.3	7.9	3.0	935	6.3	77
KS12DH0090-172	12.6	64.3	4.63	4.63	173.0	7.6	2.5	950	6.3	68
KS12DH0156-88	11.8	61.9	5.75	5.63	170.9	7.8	3.5	990	6.7	78
KS13DH0041-35	11.7	63.1	4.88	4.68	172.3	7.6	4.0	955	6.3	76
KS13DH0030-28	12.0	65.0	5.38	5.37	174.6	7.7	2.5	910	6.0	68
OK16729W	11.4	62.1	3.50	3.23	171.4	7.2	2.0	875	5.9	69
OK16D101089	12.1	63.2	4.50	4.50	172.2	7.4	3.0	945	6.4	71
OK168512	11.4	64.2	7.25	6.70	173.5	7.4	2.5	890	5.9	70
OK188608	12.1	65.1	7.75	7.75	173.7	7.7	3.5	990	6.6	76

	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/%)
OK15MASBx7 ARS 8-1	11.6	64.8	12.25	11.66	173.0	7.5	3.5	895	6.0	69
OK16D101105	11.9	63.1	2.38	2.35	172.9	7.0	1.5	805	5.3	57
NE16562	11.3	62.1	6.00	5.47	170.1	7.6	3.5	960	6.5	79
NI17410	11.9	64.8	7.00	6.93	173.3	7.6	4.0	945	6.3	72
NE17433	11.5	63.3	8.50	7.98	172.1	7.5	5.0	995	6.7	82
NHH17450	11.9	62.3	4.00	3.93	172.1	7.7	4.0	980	6.5	77
NHH17612	11.9	63.4	7.00	6.88	172.4	7.5	4.0	950	6.3	73

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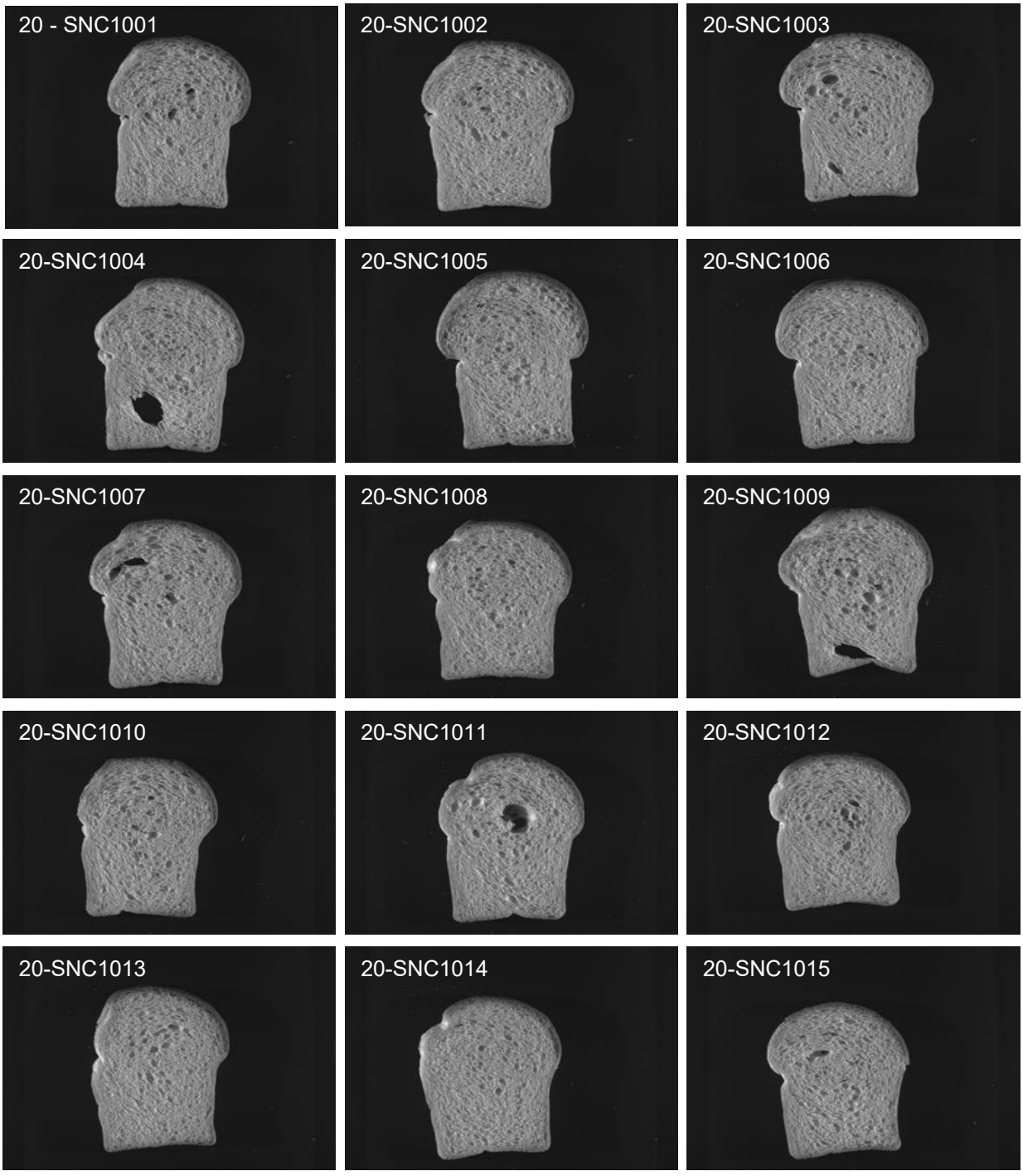
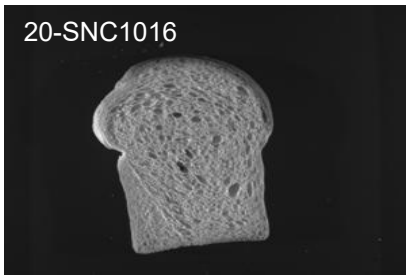
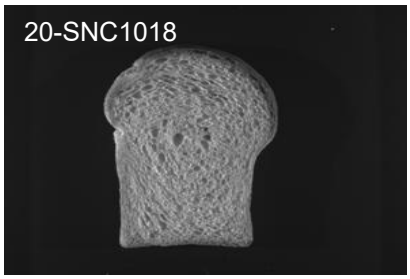
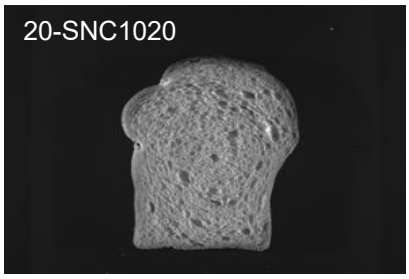
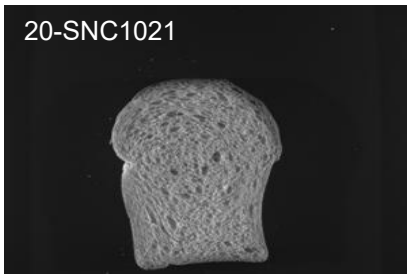


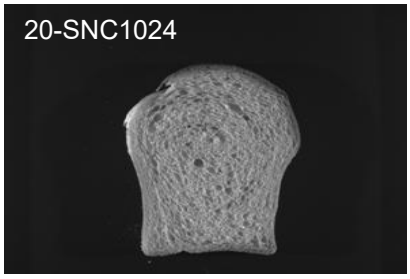
2020 SRPN Intraregional Production Zone
North Central Plains

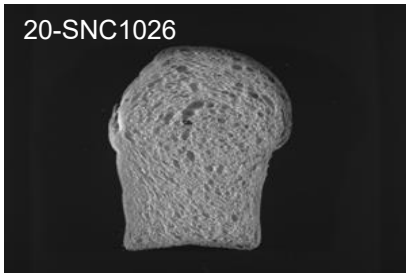


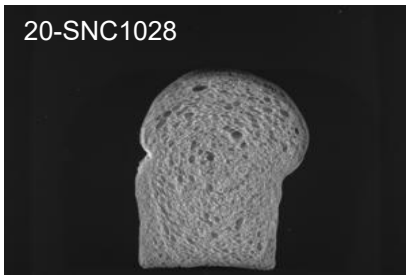


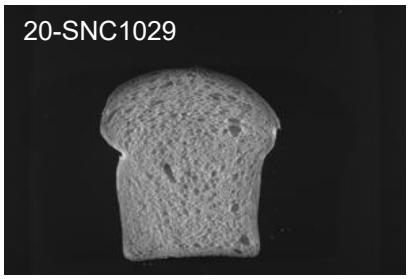


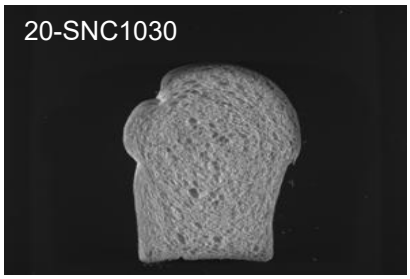




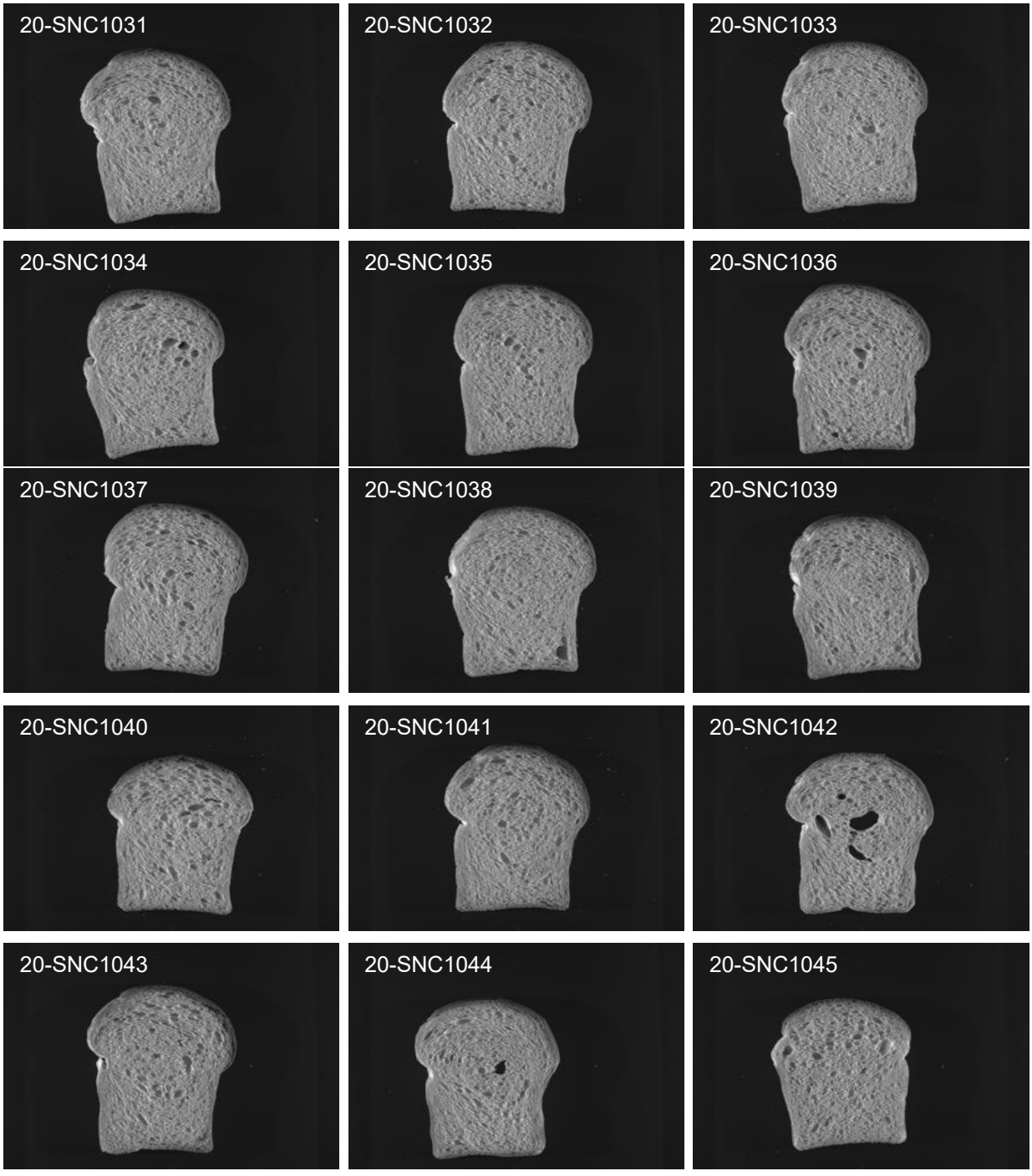




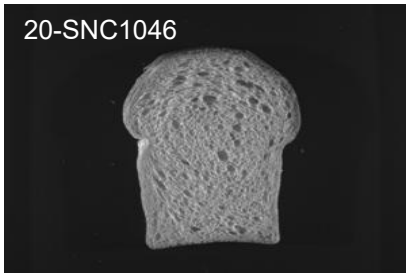


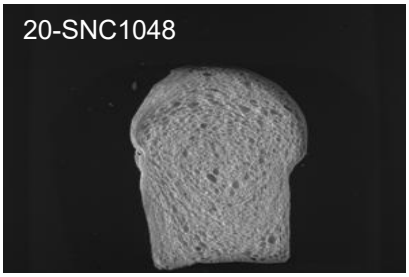


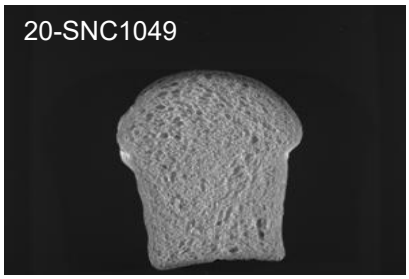
2020 SRPN Intraregional Production Zone
North Central Plains



2020 SRPN Intraregional Production Zone
North Central Plains







Hard Winter Wheat Quality Report

2020 SRPN-NHP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	28.9	Very Poor	58.8	54.1	Good	68.3		8,10,16,20,
Scout 66	48.2	Very Good	98.1	53.5	Good	67.6		16,
TAM 107	44.6	Good	90.7	36.3	Very Poor	45.8	1AL	16,
Jagalene	49.2	Very Good	100.0	55.3	Good	69.8		16,
K19U7124R10	33.8	Very Poor	68.8	74.9	Very Good	94.5		1,2,5,
K19U7126R37	26.2	Very Poor	53.2	79.2	Very Good	100.0		1,2,4,5,9,
KS Hamilton	42.5	Average	86.5	56.0	Very Good	70.6		
KS17H17	47.6	Very Good	96.8	61.3	Very Good	77.4		6,
KS17H91-1	41.7	Poor	84.7	66.6	Very Good	84.0		3,
TX15M8024	42.7	Average	86.9	44.6	Poor	56.4		
TX16A001183	38.2	Poor	77.6	65.1	Very Good	82.1		2,
TX16A001193	41.3	Poor	84.0	46.3	Average	58.4		
TX16A001205	43.8	Good	89.1	36.8	Very Poor	46.4		16,
TX16A001289	43.5	Good	88.4	40.2	Poor	50.8		
TX16A001405	42.4	Average	86.2	40.2	Poor	50.8		5,11,19,
TX16M9216	41.7	Poor	84.8	56.4	Very Good	71.2		16,
TX16M9315	34.5	Very Poor	70.2	31.9	Very Poor	40.3	1BL	16,
ON1366277	42.2	Average	85.8	46.1	Average	58.2		16,21,
ON13P016	39.6	Poor	80.4	44.7	Average	56.5		
19CP010066	43.4	Good	88.3	36.7	Very Poor	46.3	h1BL	5,12,16,
19CP010063	32.7	Very Poor	66.6	49.8	Good	62.8		1,10,11,
19CP010068	38.0	Very Poor	77.3	38.7	Poor	48.9		
19CP010057	47.6	Very Good	96.7	37.3	Poor	47.1	1BL	16,
BASF 1	44.0	Good	89.5	55.7	Good	70.3		
BASF 2	46.8	Very Good	95.2	47.0	Average	59.4	h1BL	
LCH17-3481	42.2	Average	85.7	49.1	Good	61.9		16,
LCH17-5221	41.9	Average	85.2	45.5	Average	57.4		16,
LCH17-5660	27.8	Very Poor	56.6	33.9	Very Poor	42.8	h1BL	2,4,8,9,10,16,
LCH17-4196	45.5	Very Good	92.6	35.8	Very Poor	45.2	h1BL	5,16,
LCH18-7071	35.4	Very Poor	71.9	43.9	Poor	55.4		9,10,

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

Hard Winter Wheat Quality Report

2020 SRPN-NHP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Steamboat	44.1	Good	89.7	45.7	Average	57.7		
CO14A136-135	40.9	Poor	83.1	47.8	Average	60.3		3,4,14,15,17,
Kivari AX	43.0	Good	87.4	43.0	Poor	54.3		11,
CO16SF065	47.1	Very Good	95.7	52.8	Good	66.6		
CO16SF070	46.3	Very Good	94.2	45.0	Average	56.8		11,12,16,17,
KS12DH0090-172	47.5	Very Good	96.5	39.8	Poor	50.2		16,
KS12DH0156-88	34.3	Very Poor	69.8	42.6	Poor	53.8	1BL	9,16,21,
KS13DH0041-35	44.5	Good	90.5	48.3	Good	60.9	1BL	16,
KS13DH0030-28	37.8	Very Poor	76.9	36.1	Very Poor	45.5		1,2,4,16,21,
OK16729W	47.7	Very Good	97.0	31.8	Very Poor	40.2		11,12,16,18,21,
Uncharted	45.2	Good	91.9	54.5	Good	68.8		16,
Breakthrough	42.9	Average	87.3	47.4	Average	59.9		19,
OK188608	42.2	Average	85.7	52.7	Good	66.5		
OK15MASBx7 ARS 8-1	39.1	Poor	79.4	32.6	Very Poor	41.1		6,9,14,15,19,20,
OK16D101105	38.9	Poor	79.1	28.4	Very Poor	35.8		6,14,15,16,19,20,21,
NE16562	39.2	Poor	79.7	44.1	Poor	55.6	1BL	
NI17410	44.4	Good	90.3	68.1	Very Good	85.9		
NE17433	42.4	Average	86.1	60.0	Very Good	75.8		
NHH17450	41.3	Poor	84.0	57.3	Very Good	72.3		16,
NHH17612	41.8	Average	84.9	47.7	Average	60.2		

2020 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	59.6	14.6	0.4	26.9	10.3	2.35	0.36	51	18	MIXED	17-27-27-29-03
Scout66	60.3	14.1	0.4	30.0	10.8	2.46	0.35	64	19	HARD	06-09-26-59-01
TAM-107	59.2	14.0	0.4	29.5	11.0	2.46	0.38	71	17	HARD	03-08-13-76-01
Jagalene	61.0	13.8	0.4	28.8	9.1	2.57	0.39	79	17	HARD	01-03-09-87-01
K19U7124R10	57.4	13.9	0.4	24.4	10.3	2.29	0.42	83	21	HARD	02-04-09-85-01
K19U7126R37	55.0	13.9	0.4	24.3	11.0	2.21	0.42	78	20	HARD	03-04-09-84-01
KS15H137-2	59.5	14.6	0.4	30.0	10.2	2.42	0.37	82	18	HARD	01-03-07-89-01
KS17H17	60.9	13.7	0.4	31.7	8.7	2.60	0.36	86	17	HARD	01-01-05-93-01
KS17H91-1	61.0	13.9	0.5	28.8	11.6	2.43	0.36	71	18	HARD	03-06-15-76-01
TX15M8024	58.9	13.5	0.4	28.1	9.9	2.44	0.38	82	17	HARD	00-03-08-89-01
TX16A001183	59.1	12.5	0.4	24.5	9.1	2.31	0.38	74	20	HARD	02-06-16-76-01
TX16A001193	60.3	12.8	0.4	25.3	8.8	2.42	0.36	81	19	HARD	01-03-09-87-01
TX16A001205	60.5	12.4	0.4	27.6	10.0	2.39	0.38	73	19	HARD	02-06-16-76-01
TX16A001289	61.2	11.3	0.5	28.2	9.8	2.45	0.37	67	17	HARD	04-09-20-67-01
TX16A001405	58.5	11.9	0.4	28.5	9.8	2.41	0.42	65	20	HARD	07-13-19-61-01
TX16M9216	59.8	11.6	0.6	26.3	9.5	2.39	0.38	76	20	HARD	02-06-15-77-01
TX16M9315	58.3	13.0	0.6	27.8	9.6	2.43	0.38	73	20	HARD	03-07-12-78-01
ON1366277	60.1	12.8	0.5	33.0	10.9	2.59	0.37	69	16	HARD	02-07-17-74-01
ON13P016	59.2	14.7	0.6	28.1	9.7	2.42	0.40	75	18	HARD	03-03-10-84-01
19CP010066	61.5	15.1	0.4	29.9	10.3	2.47	0.42	78	16	HARD	01-03-09-87-01
19CP010063	57.0	15.0	0.4	29.5	10.0	2.49	0.39	82	22	HARD	02-05-12-81-01
19CP010068	60.1	13.4	0.4	29.3	10.6	2.49	0.40	77	17	HARD	01-04-11-84-01
19CP010057	60.1	13.4	0.4	30.0	9.3	2.49	0.35	77	17	HARD	01-02-11-86-01
BASF 1	60.3	13.6	0.4	26.2	9.6	2.34	0.40	69	19	HARD	03-07-19-71-01
BASF 2	59.6	14.3	0.4	32.1	10.8	2.56	0.39	69	16	HARD	02-06-21-71-01
LCH17-3481	58.9	14.3	0.3	27.0	8.6	2.41	0.37	76	19	HARD	02-05-10-83-01
LCH17-5221	59.9	13.7	0.4	29.8	10.0	2.46	0.39	80	18	HARD	01-04-09-86-01
LCH17-5660	57.9	12.4	0.4	23.1	9.3	2.22	0.37	77	20	HARD	03-04-09-84-01
LCH17-4196	61.2	12.9	0.4	28.3	10.0	2.44	0.42	63	19	HARD	06-13-24-57-01
LCH18-7071	59.1	13.7	0.5	25.2	9.6	2.29	0.35	78	20	HARD	02-05-09-84-01
CO15D098R	61.0	12.7	0.4	28.8	10.2	2.45	0.38	68	20	HARD	03-12-20-65-01
CO14A136-135	59.7	13.0	0.4	28.4	11.6	2.26	0.40	64	19	HARD	05-13-22-60-01
CO14A055-258	59.3	13.7	0.4	27.4	10.0	2.38	0.38	67	21	HARD	07-12-18-63-01
CO16SF065	59.2	13.5	0.5	27.8	9.6	2.42	0.38	66	18	HARD	03-14-17-66-01
CO16SF070	59.0	14.9	0.5	28.3	10.0	2.41	0.35	63	19	HARD	06-14-23-57-01
KS12DH0090-172	61.2	14.6	0.4	27.4	10.1	2.41	0.41	75	17	HARD	02-05-13-80-01
KS12DH0156-88	58.9	13.6	0.5	27.8	10.8	2.37	0.40	78	19	HARD	01-04-13-82-01
KS13DH0041-35	59.1	14.3	0.4	28.7	9.8	2.41	0.36	72	15	HARD	01-05-17-77-01
KS13DH0030-28	56.3	13.7	0.4	24.2	9.0	2.28	0.40	73	19	HARD	01-09-14-76-01
OK16729W	61.3	13.1	0.3	28.6	9.7	2.43	0.39	72	19	HARD	02-08-14-76-01
OK16D101089	60.3	12.7	0.3	27.2	9.9	2.42	0.38	71	19	HARD	02-07-20-71-01
OK168512	60.8	13.5	0.4	27.9	10.5	2.43	0.37	76	17	HARD	01-05-12-82-01
OK188608	60.2	12.9	0.4	28.5	9.3	2.57	0.39	81	18	HARD	01-02-08-89-01
OK15MASBx7 ARS 8-1	59.3	13.5	0.5	27.9	10.3	2.45	0.41	85	18	HARD	01-02-07-90-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
OK16D101105	60.1	13.1	0.4	25.4	8.9	2.48	0.39	88	20	HARD	01-02-06-91-01
NE16562	58.2	13.1	0.6	28.0	9.7	2.46	0.37	67	19	HARD	04-13-17-66-01
NI17410	60.4	13.0	0.4	27.9	10.4	2.41	0.40	72	19	HARD	02-07-18-73-01
NE17433	60.2	13.0	0.5	27.9	10.0	2.47	0.39	75	19	HARD	02-06-13-79-01
NHH17450	59.8	12.3	0.4	25.7	10.1	2.36	0.37	66	19	HARD	05-10-18-67-01
NHH17612	60.9	12.3	0.4	25.1	9.0	2.34	0.34	71	20	HARD	05-07-18-70-01

2020 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	13.7	58.9	0.43	12.3	0.433	78.55	-1.42	23.14	-9.78	1.41	0.94
Scout66	12.6	67.9	0.44	11.6	0.411	79.18	-1.36	23.30	-9.50	1.54	0.19
TAM-107	12.6	65.1	0.41	11.9	0.436	78.48	-1.30	24.12	-12.01	1.74	0.91
Jagalene	12.7	65.9	0.47	11.8	0.413	78.64	-1.43	24.65	-10.63	1.76	0.78
K19U7124R10	13.7	62.6	0.46	12.7	0.120	78.23	-1.27	25.73	-9.43	1.51	2.37
K19U7126R37	13.7	61.2	0.51	12.6	0.128	78.29	-0.92	24.96	-8.75	1.51	3.54
KS15H137-2	11.8	63.3	0.47	11.1	0.573	78.22	-1.48	25.51	-11.46	1.83	0.96
KS17H17	12.5	63.2	0.48	11.6	0.321	78.18	-1.15	24.30	-9.73	1.47	0.54
KS17H91-1	11.9	63.6	0.44	11.6	0.365	80.28	-2.04	23.76	-8.79	1.28	1.77
TX15M8024	13.0	63.6	0.46	12.2	0.416	78.19	-1.26	24.34	-9.59	1.66	-0.16
TX16A001183	11.8	63.1	0.44	11.1	0.427	79.26	-2.20	25.21	-9.62	1.79	-0.77
TX16A001193	12.0	62.9	0.45	11.2	0.353	78.31	-1.81	25.72	-10.28	1.77	0.64
TX16A001205	12.4	64.6	0.43	11.4	0.359	79.11	-1.45	23.70	-11.53	1.84	1.17
TX16A001289	12.0	63.3	0.40	11.3	0.370	79.10	-1.90	25.00	-9.41	1.65	0.27
TX16A001405	11.9	65.8	0.41	10.7	0.354	79.45	-1.55	24.38	-9.65	1.63	1.67
TX16M9216	12.5	64.7	0.47	11.5	0.430	77.62	-1.48	25.33	-9.93	2.04	-0.26
TX16M9315	12.3	61.3	0.48	11.5	0.441	78.33	-2.14	27.28	-10.14	1.88	-0.57
ON1366277	12.6	62.2	0.43	11.9	0.393	78.07	-1.47	24.40	-10.21	1.83	0.23
ON13P016	12.5	62.5	0.45	11.5	0.113	79.32	-1.59	25.59	-7.97	1.25	2.36
19CP010066	12.2	62.3	0.43	11.4	0.489	79.67	-1.89	25.33	-11.10	1.54	0.23
19CP010063	12.1	61.0	0.49	10.7	0.360	78.04	-1.37	24.36	-10.63	1.67	0.85
19CP010068	12.5	61.2	0.48	11.7	0.344	78.92	-1.71	25.64	-9.88	1.52	0.96
19CP010057	12.5	64.3	0.43	11.5	0.463	77.26	-1.52	25.76	-11.67	2.09	-0.36
BASF 1	12.6	65.5	0.41	11.7	0.418	79.21	-1.93	26.29	-9.31	1.71	0.23
BASF 2	12.8	64.7	0.39	12.3	0.400	79.33	-1.78	24.56	-9.86	1.58	0.46
LCH17-3481	12.6	63.6	0.44	12.3	0.551	78.85	-2.19	26.35	-11.55	1.86	-1.15
LCH17-5221	12.2	62.9	0.47	11.4	0.444	78.77	-1.95	26.61	-10.56	1.90	-1.27
LCH17-5660	13.1	60.1	0.56	12.1	0.371	76.93	-1.71	31.31	-10.11	1.86	-1.77
LCH17-4196	11.8	66.7	0.45	10.9	0.460	79.97	-2.32	25.40	-10.49	1.84	-1.14
LCH18-7071	12.1	63.1	0.55	11.1	0.569	78.83	-1.74	25.63	-11.06	1.91	1.00
CO15D098R	11.8	65.5	0.45	10.8	0.418	79.48	-2.04	25.68	-10.93	1.79	0.91
CO14A136-135	11.6	65.7	0.42	10.9	0.435	80.83	-1.88	23.94	-10.23	1.32	1.40
CO14A055-258	11.3	66.9	0.44	10.4	0.368	80.72	-2.07	23.92	-9.91	1.92	1.27
CO16SF065	12.0	66.9	0.40	11.3	0.502	78.56	-1.81	24.65	-11.75	1.92	-0.04
CO16SF070	11.9	67.2	0.40	10.6	0.515	79.39	-1.93	23.63	-11.87	2.04	-0.16
KS12DH0090-172	13.0	66.2	0.45	11.9	0.379	77.03	-0.99	24.15	-10.74	1.95	0.11
KS12DH0156-88	11.9	61.9	0.51	11.1	0.153	78.57	-1.65	26.48	-8.02	1.47	1.75
KS13DH0041-35	12.3	64.3	0.44	11.5	0.130	79.40	-1.87	27.15	-6.83	1.31	2.30
KS13DH0030-28	11.9	64.1	0.42	11.4	0.377	78.71	-1.93	25.18	-10.24	1.76	-0.04
OK16729W	11.8	66.8	0.46	10.7	0.461	80.07	-1.85	23.58	-9.47	1.88	0.90
OK16D101089	13.0	66.1	0.44	12.3	0.380	78.12	-1.66	27.20	-9.21	1.56	1.09
OK168512	12.0	62.9	0.41	11.0	0.429	78.69	-1.56	24.90	-10.80	1.82	2.06

	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	(%)	(%)	(%)	(%)							
OK188608	12.9	62.4	0.48	11.8	0.348	76.92	-1.28	24.48	-11.58	1.66	-0.31
OK15MASBx7 ARS 8-1	12.0	62.8	0.51	11.4	0.117	79.44	-1.44	24.86	-8.64	1.35	3.68
OK16D101105	12.8	61.7	0.49	11.9	0.365	77.46	-1.49	26.47	-12.18	1.98	0.70
NE16562	12.1	64.1	0.46	11.4	0.387	78.88	-1.55	23.88	-11.93	1.60	0.52
NI17410	12.3	65.5	0.43	11.6	0.461	79.18	-1.40	22.85	-11.82	1.84	1.37
NE17433	11.9	64.8	0.49	11.1	0.358	80.59	-2.36	27.65	-11.14	1.62	1.55
NHH17450	12.4	65.2	0.44	11.5	0.406	79.79	-2.16	26.23	-11.11	1.94	-0.29
NHH17612	12.5	64.4	0.45	11.5	0.434	78.79	-1.93	25.50	-10.41	1.80	-0.64

2020 SRPN Intraregional Production Zone

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		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	12.3	63.4	3.63	3.63	1
Scout66	11.6	64.8	2.50	2.38	1
TAM-107	11.9	62.7	3.00	2.95	2
Jagalene	11.8	63.1	2.75	2.69	2
K19U7124R10	12.7	67.6	3.75	3.75	3
K19U7126R37	12.6	66.0	4.00	4.00	5
KS15H137-2	11.1	62.4	4.25	3.77	4
KS17H17	11.6	62.2	3.25	3.08	4
KS17H91-1	11.6	63.2	4.00	3.78	4
TX15M8024	12.2	63.9	3.50	3.50	3
TX16A001183	11.1	62.5	4.75	4.25	4
TX16A001193	11.2	64.1	4.13	3.73	4
TX16A001205	11.4	62.3	3.50	3.23	2
TX16A001289	11.3	62.3	3.75	3.44	3
TX16A001405	10.7	61.2	4.50	3.80	5
TX16M9216	11.5	63.1	3.75	3.53	2
TX16M9315	11.5	62.1	2.63	2.48	0
ON1366277	11.9	63.8	3.00	2.96	1
ON13P016	11.5	63.6	3.75	3.53	3
19CP010066	11.4	60.9	3.88	3.61	1
19CP010063	10.7	61.8	4.63	3.90	3
19CP010068	11.7	63.0	2.75	2.66	3
19CP010057	11.5	62.1	3.63	3.42	1
BASF 1	11.7	64.4	5.25	5.04	4
BASF 2	12.3	64.0	3.88	3.88	3
LCH17-3481	12.3	63.9	2.50	2.50	0
LCH17-5221	11.4	62.5	3.00	2.79	2
LCH17-5660	12.1	61.6	2.75	2.75	0
LCH17-4196	10.9	61.1	2.75	2.40	1
LCH18-7071	11.1	61.9	4.50	4.02	4
CO15D098R	10.8	61.5	4.25	3.66	4
CO14A136-135	10.9	61.5	7.38	6.37	4
CO14A055-258	10.4	61.7	4.50	3.63	5
CO16SF065	11.3	61.7	3.63	3.31	3
CO16SF070	10.6	61.1	3.38	2.83	2
KS12DH0090-172	11.9	63.2	3.25	3.19	2
KS12DH0156-88	11.1	61.0	3.88	3.48	1
KS13DH0041-35	11.5	61.7	3.50	3.30	1
KS13DH0030-28	11.4	62.9	2.38	2.22	0
OK16729W	10.7	60.7	2.38	2.00	1
OK16D101089	12.3	63.4	3.00	3.00	1
OK168512	11.0	61.3	4.50	3.95	3

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
OK188608	11.8	66.0	5.00	4.86	5
OK15MASBx7 ARS 8-1	11.4	65.8	1.25	0.40	6
OK16D101105	11.9	63.7	2.00	1.97	0
NE16562	11.4	63.0	3.63	3.38	3
NI17410	11.6	64.3	4.63	4.41	5
NE17433	11.1	62.9	5.00	4.46	4
NHH17450	11.5	62.6	2.75	2.59	1
NHH17612	11.5	63.0	4.13	3.87	5

2020 SRPN Intraregional Production Zone
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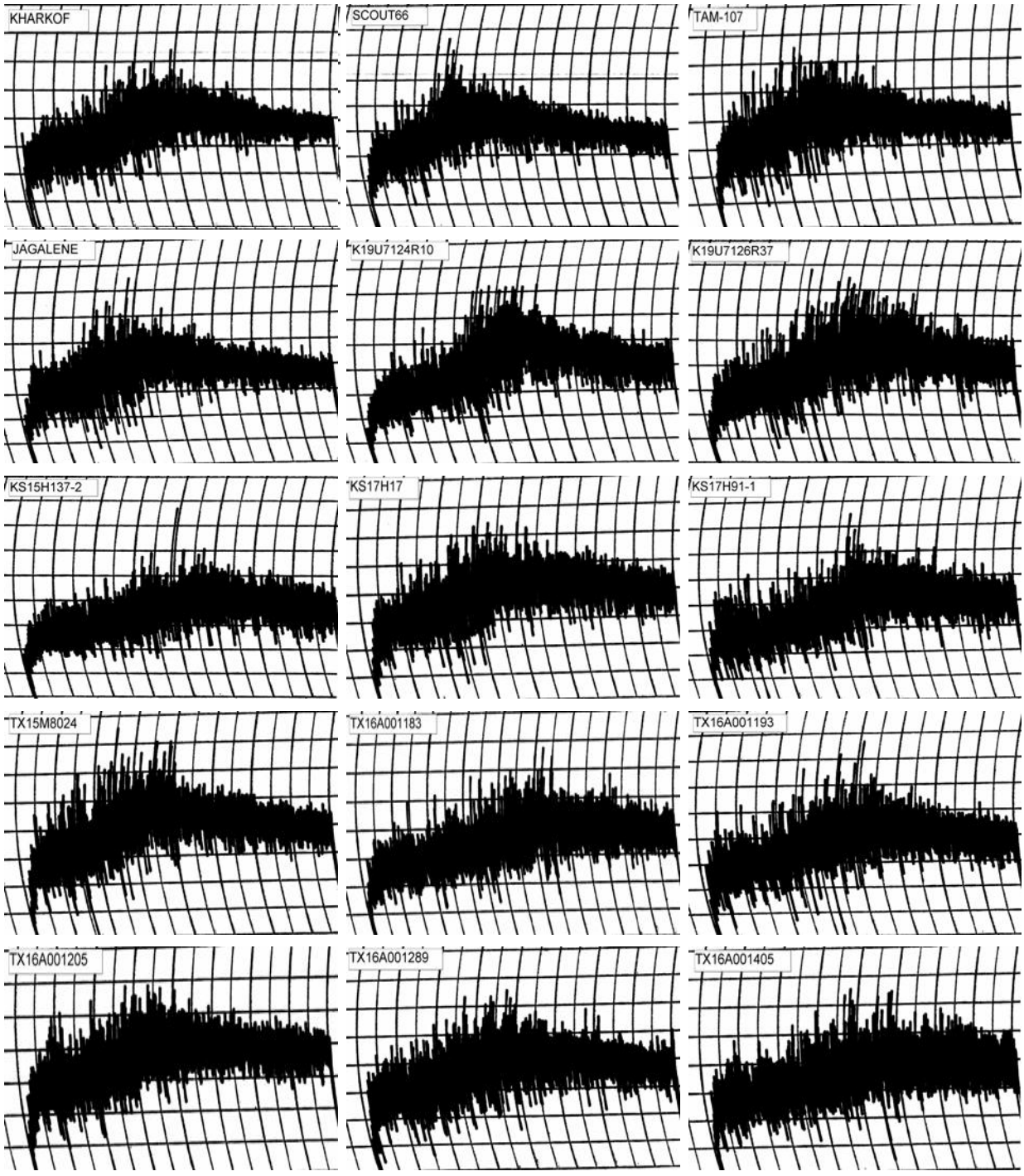
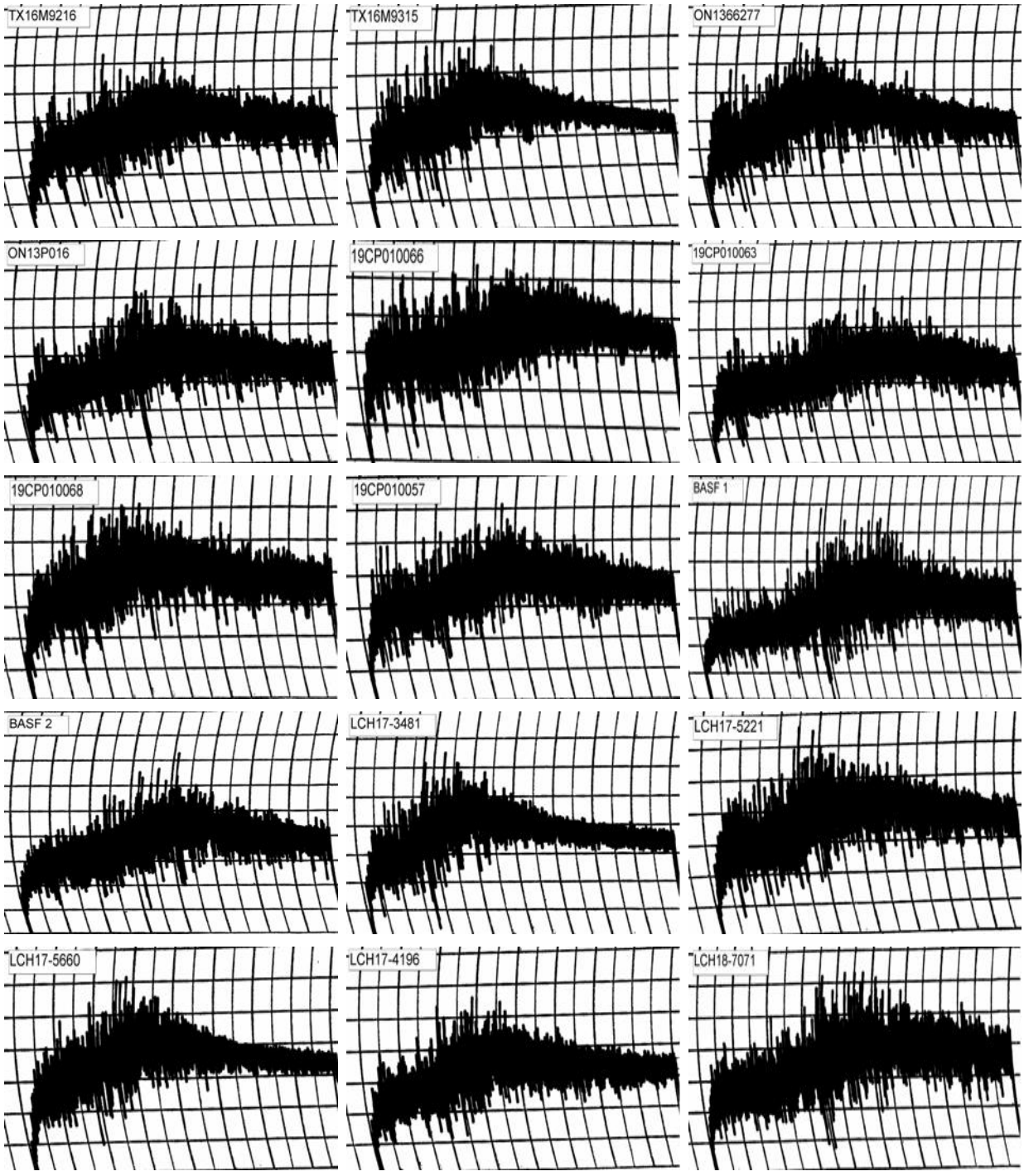
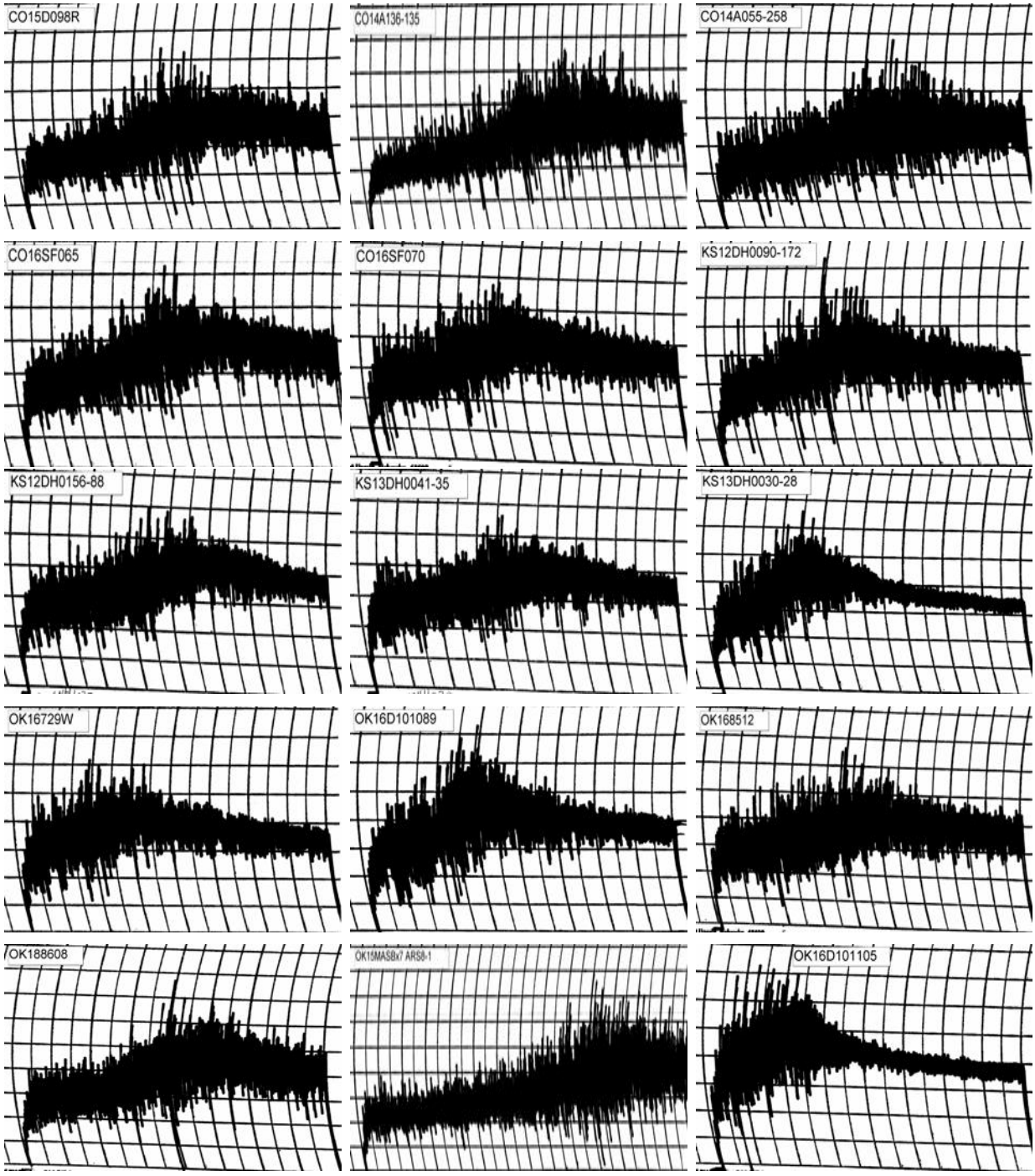


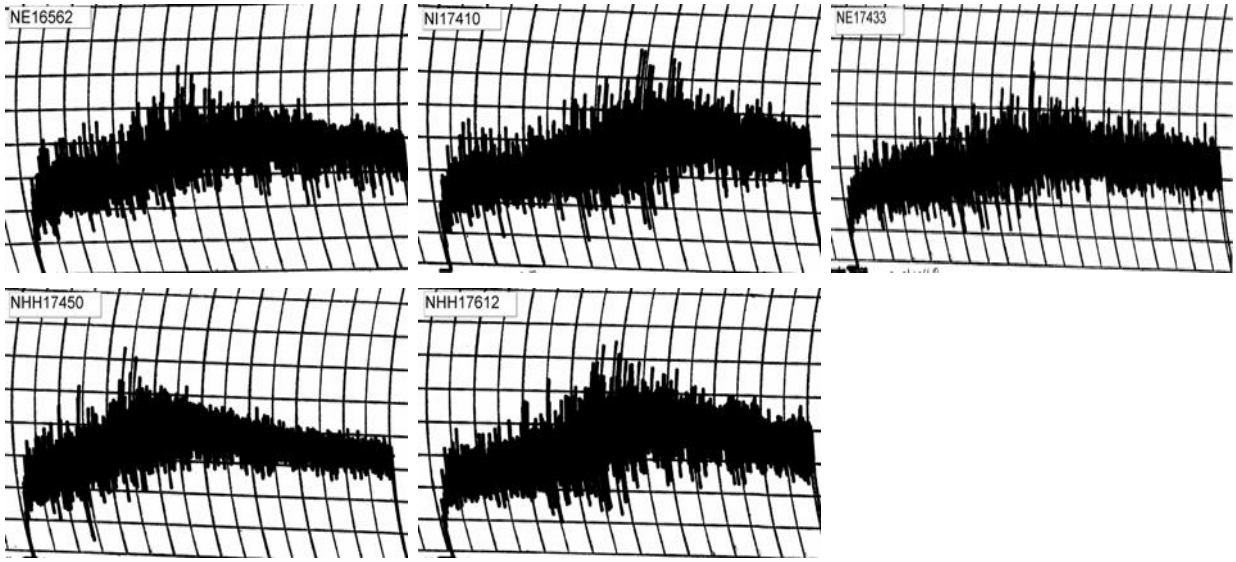
2020 SRPN Intraregional Production Zone
Northern High Plains



2020 SRPN Intraregional Production Zone
Northern High Plains



2020 SRPN Intraregional Production Zone
Northern High Plains



2020 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)
Kharkof	182.83	244.50	187.42	57.08	301.75	114.33	6.53
Scout66	135.83	192.75	130.42	62.33	231.75	101.33	6.20
TAM-107	152.83	252.25	189.08	63.17	300.67	111.58	6.53
Jagalene	140.42	220.50	163.33	57.17	274.83	111.50	6.33
K19U7124R10	139.83	205.08	154.33	50.75	276.67	122.33	6.27
K19U7126R37	137.00	201.50	143.83	57.67	261.00	117.17	6.20
KS15H137-2	129.00	282.67	178.83	103.83	287.42	108.58	6.33
KS17H17	159.17	232.58	173.08	59.50	279.67	106.58	6.40
KS17H91-1	142.50	267.17	198.25	68.92	313.08	114.83	6.47
TX15M8024	176.67	243.58	182.33	61.25	292.33	110.00	6.47
TX16A001183	127.25	244.50	182.17	62.33	296.25	114.08	6.40
TX16A001193	142.67	227.75	173.58	54.17	294.92	121.33	6.40
TX16A001205	177.67	239.33	190.92	48.42	308.25	117.33	6.47
TX16A001289	190.33	250.00	200.08	49.92	306.83	106.75	6.60
TX16A001405	150.17	237.08	172.08	65.00	289.42	117.33	6.33
TX16M9216	170.33	214.50	160.67	53.83	270.25	109.58	6.33
TX16M9315	174.17	221.08	172.00	49.08	283.50	111.50	6.47
ON1366277	118.50	254.50	175.33	79.17	273.83	98.50	6.40
ON13P016	128.50	213.58	157.08	56.50	272.08	115.00	6.33
19CP010066	158.33	225.92	167.17	58.75	277.67	110.50	6.40
19CP010063	146.00	242.67	175.75	66.92	294.25	118.50	6.33
19CP010068	126.92	238.25	179.00	59.25	291.33	112.33	6.47
19CP010057	127.17	215.17	162.42	52.75	272.00	109.58	6.40
BASF 1	149.58	252.42	185.00	67.42	306.08	121.08	6.40
BASF 2	173.08	254.50	191.58	62.92	303.67	112.08	6.53
LCH17-3481	116.58	236.58	177.83	58.75	291.17	113.33	6.40
LCH17-5221	176.17	240.83	198.33	42.50	293.67	95.33	6.67
LCH17-5660	154.17	232.00	162.58	69.42	276.83	114.25	6.33
LCH17-4196	120.67	243.92	176.83	67.08	298.00	121.17	6.33
LCH18-7071	153.42	254.67	180.33	74.33	294.83	114.50	6.33
CO15D098R	137.67	282.67	187.83	94.83	296.08	108.25	6.40
CO14A136-135	133.75	256.08	181.17	74.92	308.08	126.92	6.27
CO14A055-258	129.75	271.33	187.58	83.75	317.00	129.42	6.27
CO16SF065	143.50	273.92	192.08	81.83	300.25	108.17	6.47
CO16SF070	149.33	266.33	196.42	69.92	308.17	111.75	6.47
KS12DH0090-172	194.25	235.58	194.33	41.25	297.08	102.75	6.67
KS12DH0156-88	179.67	227.67	178.25	49.42	290.67	112.42	6.47
KS13DH0041-35	171.00	218.50	172.17	46.33	283.33	111.17	6.47
KS13DH0030-28	110.33	212.25	154.00	58.25	275.42	121.42	6.27
OK16729W	159.08	245.42	179.92	65.50	288.92	109.00	6.47
OK16D101089	166.08	259.75	193.58	66.17	306.08	112.50	6.47
OK168512	116.42	206.92	152.67	54.25	272.08	119.42	6.27
OK188608	145.50	224.42	157.67	66.75	262.33	104.67	6.33
OK15MASBx7 ARS 8-1	154.58	220.00	169.33	50.67	283.17	113.83	6.40

	RVA						
	Stirring Number	Peak Viscosity	Trough Viscosity	Breakdown	Final Viscosity	Set back	Peak Time
Line	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(min)
OK16D101105	163.33	265.25	191.75	73.50	303.50	111.75	6.47
NE16562	138.25	260.25	203.58	56.67	319.83	116.25	6.60
NI17410	122.00	217.42	168.67	48.75	283.08	114.42	6.40
NE17433	154.50	253.00	180.33	72.67	299.42	119.08	6.40
NHH17450	149.25	239.67	173.00	66.67	288.08	115.08	6.40
NHH17612	123.17	226.50	169.75	56.75	291.58	121.83	6.33

2020 SRPN 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	12.3	63.4	4.13	4.13	172.7	8.1	4.0	890	6.0	64
Scout66	11.6	64.5	3.25	3.10	174.0	7.9	4.0	950	6.4	75
TAM-107	11.9	62.5	3.13	3.08	172.3	7.6	2.5	940	6.4	72
Jagalene	11.8	63.4	4.00	3.92	173.2	7.6	4.0	955	6.4	74
K19U7124R10	12.7	67.3	4.75	4.75	176.5	8.4	4.0	1110	7.3	84
K19U7126R37	12.6	66.4	5.00	5.00	176.6	8.0	5.0	1075	7.1	81
KS15H137-2	11.1	63.4	4.50	3.99	172.7	7.4	3.0	970	6.4	83
KS17H17	11.6	62.4	4.00	3.79	171.6	7.9	4.0	1030	7.0	85
KS17H91-1	11.6	63.4	5.75	5.44	173.4	7.9	4.0	1065	7.2	89
TX15M8024	12.2	63.9	4.00	4.00	173.4	7.9	4.5	970	6.5	73
TX16A001183	11.1	62.4	5.75	5.15	172.1	7.6	5.0	1000	6.8	86
TX16A001193	11.2	64.5	5.00	4.51	174.4	7.8	3.5	910	6.1	74
TX16A001205	11.4	62.5	3.50	3.23	171.9	7.8	3.5	910	6.2	73
TX16A001289	11.3	62.6	4.00	3.66	172.0	7.7	3.5	920	6.2	74
TX16A001405	10.7	61.5	5.00	4.23	170.7	7.5	3.5	870	5.9	73
TX16M9216	11.5	63.1	3.88	3.65	172.6	7.6	4.0	955	6.3	77
TX16M9315	11.5	62.4	3.25	3.07	172.4	7.6	2.5	890	5.9	69
ON1366277	11.9	63.5	3.25	3.21	173.0	7.8	2.0	1005	6.8	79
ON13P016	11.5	63.7	4.25	4.00	173.4	7.9	4.5	960	6.3	77
19CP010066	11.4	60.6	4.00	3.72	170.0	7.8	2.5	920	6.3	73
19CP010063	10.7	61.7	5.00	4.21	170.5	7.5	3.0	900	6.1	77
19CP010068	11.7	63.0	3.38	3.27	172.3	8.0	3.5	945	6.3	74
19CP010057	11.5	62.4	3.75	3.53	171.4	7.6	2.5	915	6.2	72
BASF 1	11.7	64.6	7.00	6.71	173.7	7.6	4.0	960	6.4	76
BASF 2	12.3	63.6	4.38	4.38	172.5	7.7	3.5	990	6.7	74
LCH17-3481	12.3	63.6	3.13	3.13	173.2	7.8	3.0	1000	6.7	75
LCH17-5221	11.4	62.5	3.38	3.14	172.1	7.5	3.0	915	6.2	73
LCH17-5660	12.1	61.3	3.50	3.50	170.8	7.7	3.5	925	6.3	69
LCH17-4196	10.9	61.4	3.75	3.27	171.2	7.8	3.5	940	6.3	80
LCH18-7071	11.1	61.9	4.75	4.24	170.8	7.8	4.5	950	6.4	80
CO15D098R	10.8	61.4	5.13	4.42	170.4	7.7	2.5	980	6.7	86
CO14A136-135	10.9	61.3	7.75	6.69	169.6	7.5	4.0	970	6.6	85
CO14A055-258	10.4	61.4	6.13	4.95	170.1	7.7	4.5	975	6.6	90
CO16SF065	11.3	61.7	4.00	3.65	171.3	7.9	3.0	980	6.5	82
CO16SF070	10.6	60.4	3.75	3.14	169.9	7.5	3.0	915	6.2	80
KS12DH0090-172	11.9	63.4	3.75	3.68	173.0	7.9	2.5	935	6.2	72
KS12DH0156-88	11.1	61.1	4.13	3.70	170.1	7.6	2.0	915	6.3	75
KS13DH0041-35	11.5	61.4	4.00	3.77	170.7	7.8	3.0	940	6.3	75
KS13DH0030-28	11.4	63.3	2.75	2.56	173.0	7.8	2.0	885	5.8	69
OK16729W	10.7	60.5	2.75	2.31	170.2	7.2	2.0	875	5.9	74
OK16D101089	12.3	63.3	3.63	3.63	172.7	7.8	4.0	955	6.4	71
OK168512	11.0	61.5	4.75	4.17	171.0	7.4	3.0	870	5.9	71
OK188608	11.8	66.4	5.50	5.35	175.1	8.2	4.5	1015	6.7	81

	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/%)
OK15MASBx7 ARS 8-1	11.4	65.4	14.50	13.40	173.1	7.4	2.5	865	5.8	67
OK16D101105	11.9	63.3	2.38	2.34	173.5	7.4	1.5	870	5.8	64
NE16562	11.4	63.4	4.00	3.73	172.8	7.9	4.5	970	6.5	79
NI17410	11.6	64.4	4.75	4.53	173.3	7.8	5.0	955	6.5	76
NE17433	11.1	62.5	6.25	5.58	171.8	7.4	5.0	945	6.3	79
NHH17450	11.5	62.4	3.25	3.06	171.7	8.0	5.0	965	6.5	78
NHH17612	11.5	63.4	5.38	5.04	172.8	7.9	5.5	960	6.4	78

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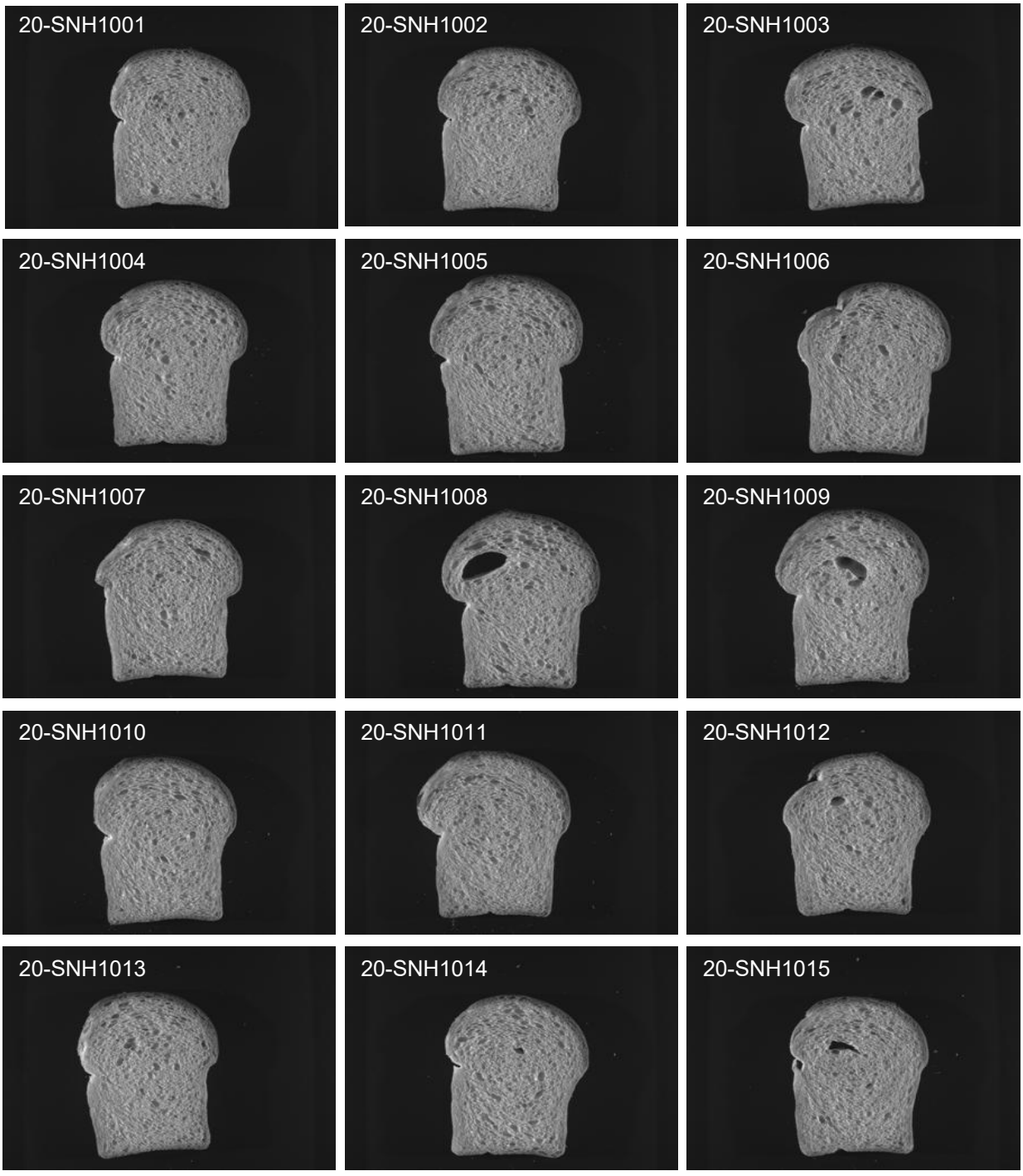
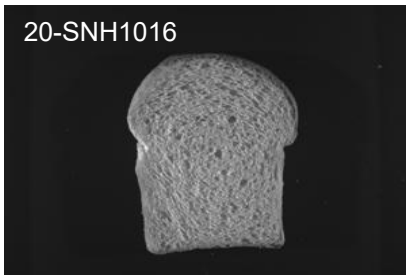
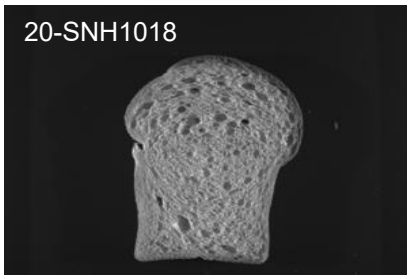
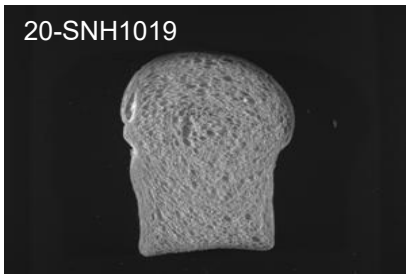
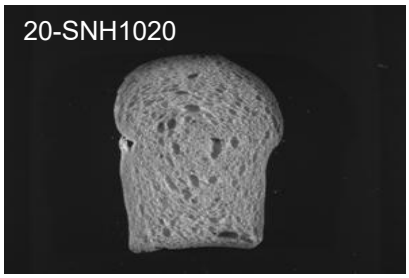


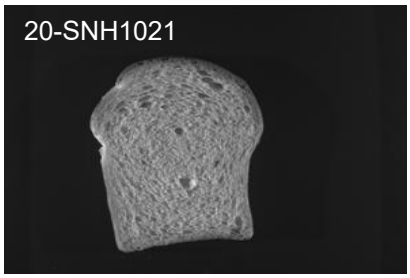
2020 SRPN Intraregional Production Zone
Northern High Plains

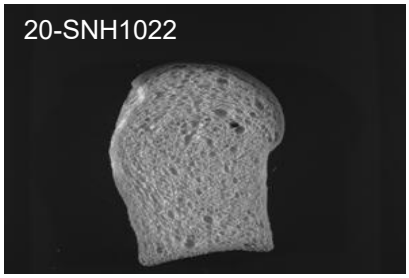


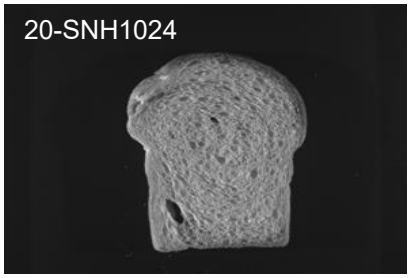


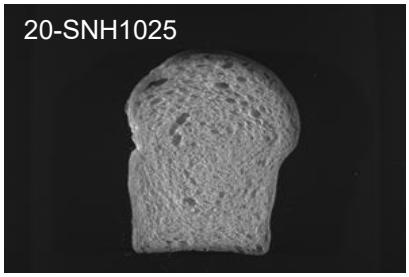


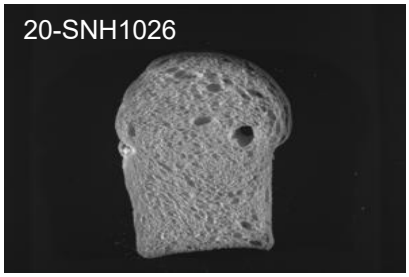


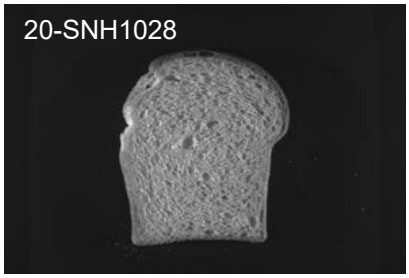


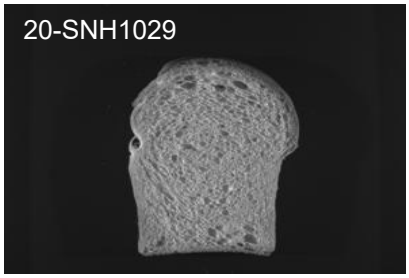




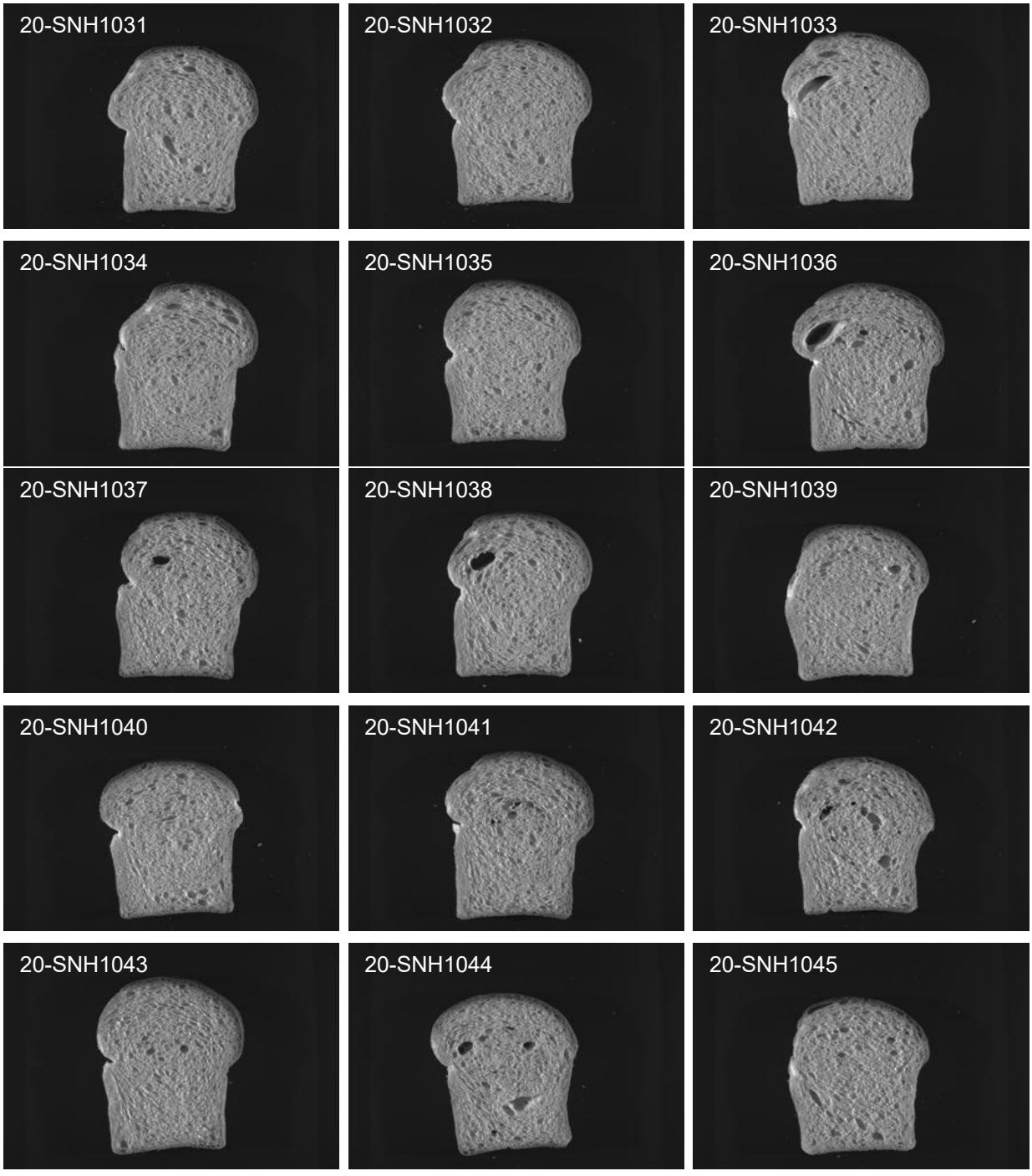




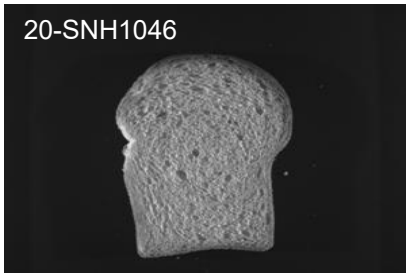


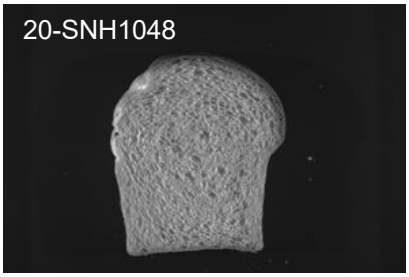


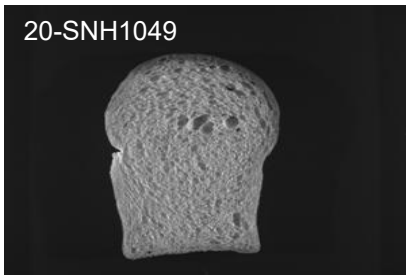
2020 SRPN Intraregional Production Zone
Northern High Plains



2020 SRPN Intraregional Production Zone
Northern High Plains







Hard Winter Wheat Quality Report

2020 SRPN-SCP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	38.6	Very Poor	62.3	43.3	Average	67.0		8,10,16,
Scout 66	57.5	Very Good	92.9	37.1	Poor	57.3		16,
TAM 107	51.7	Poor	83.5	52.6	Good	81.3	1AL	
Jagalene	53.9	Average	86.9	62.2	Very Good	96.2		
K19U7124R10	46.6	Very Poor	75.3	55.0	Very Good	85.0		6,8,
K19U7126R37	41.1	Very Poor	66.4	51.8	Good	80.2		1,2,3,4,6,
KS Hamilton	51.9	Average	83.7	60.8	Very Good	94.0		
KS17H17	55.8	Good	90.0	57.4	Very Good	88.7		
KS17H91-1	52.3	Average	84.5	62.2	Very Good	96.2		
TX15M8024	56.5	Very Good	91.2	49.1	Good	76.0		6,
TX16A001183	50.2	Poor	81.1	36.4	Poor	56.3		15,
TX16A001193	51.6	Poor	83.2	40.9	Poor	63.2		6,21,
TX16A001205	53.6	Average	86.6	33.8	Very Poor	52.2		
TX16A001289	51.5	Poor	83.2	42.6	Average	65.8		
TX16A001405	53.8	Average	86.8	34.1	Very Poor	52.8		1,
TX16M9216	54.1	Good	87.3	55.0	Very Good	85.2		18,
TX16M9315	46.1	Very Poor	74.4	43.2	Average	66.8	1BL	9,10,16,
ON1366277	54.9	Good	88.6	38.8	Poor	59.9		3,16,
ON13P016	55.2	Good	89.1	56.4	Very Good	87.2		
19CP010066	57.8	Very Good	93.4	40.1	Poor	62.0	h1BL	
19CP010063	45.0	Very Poor	72.6	35.5	Very Poor	54.9		5,10,
19CP010068	56.0	Very Good	90.4	50.2	Good	77.7		
19CP010057	56.9	Very Good	91.9	48.6	Average	75.2	1BL	16,
BASF 1	56.4	Very Good	91.1	39.3	Poor	60.8		14,15,
BASF 2	52.9	Average	85.5	42.8	Average	66.2	h1BL	3,
LCH17-3481	49.2	Very Poor	79.4	40.0	Poor	61.9		16,
LCH17-5221	55.0	Good	88.8	49.6	Good	76.7		
LCH17-5660	45.2	Very Poor	73.0	31.2	Very Poor	48.3	h1BL	2,4,9,10,16,
LCH17-4196	55.0	Good	88.7	40.9	Average	63.3	h1BL	5,11,12,13,16,17,
LCH18-7071	45.4	Very Poor	73.3	59.6	Very Good	92.3		2,4,9,10,11,

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

Hard Winter Wheat Quality Report

2020 SRPN-SCP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Steamboat	55.9	Good	90.2	39.9	Poor	61.8		
CO14A136-135	55.6	Good	89.7	46.1	Average	71.4		4,11,14,
Kivari AX	55.2	Good	89.1	52.6	Good	81.4		11,
CO16SF065	50.0	Poor	80.6	44.4	Average	68.7		21,
CO16SF070	49.5	Poor	80.0	35.2	Very Poor	54.4		5,
KS12DH0090-172	61.3	Very Good	99.0	38.7	Poor	59.9		15,
KS12DH0156-88	43.5	Very Poor	70.2	38.2	Poor	59.1	1BL	8,16,21,
KS13DH0041-35	51.9	Average	83.8	49.7	Good	76.9	1BL	16,
KS13DH0030-28	51.0	Poor	82.4	35.9	Very Poor	55.6		1,16,21,
OK16729W	49.6	Poor	80.1	29.9	Very Poor	46.2		16,21,
Uncharted	61.9	Very Good	100.0	49.4	Good	76.4		
Breakthrough	45.2	Very Poor	73.0	45.6	Average	70.6		3,5,8,19,
OK188608	57.3	Very Good	92.5	49.0	Average	75.8		
OK15MASBx7 ARS 8-1	53.5	Average	86.4	30.1	Very Poor	46.5		14,19,20,21,
OK16D101105	53.0	Average	85.6	28.3	Very Poor	43.8		14,16,18,19,20,21,
NE16562	50.6	Poor	81.6	55.8	Very Good	86.3	1BL	
NI17410	58.3	Very Good	94.1	64.6	Very Good	100.0		
NE17433	50.8	Poor	82.1	54.0	Good	83.6		
NHH17450	54.3	Good	87.6	32.2	Very Poor	49.8		15,
NHH17612	51.9	Average	83.8	54.7	Good	84.6		2,

2020 SRPN Intraregional Production Zone

South Central Plains

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
Kharkof	60.9	14.5	0.5	29.7	9.6	2.51	0.32	54	18	MIXED	14-22-29-35-03
Scout66	61.9	14.0	0.4	33.1	9.2	2.68	0.34	73	18	HARD	02-06-14-78-01
TAM-107	60.3	13.8	0.5	32.4	9.6	2.65	0.37	71	18	HARD	03-06-18-73-01
Jagalene	61.9	13.9	0.5	31.7	9.2	2.70	0.38	79	18	HARD	01-03-11-85-01
K19U7124R10	60.6	14.0	0.5	29.6	9.9	2.62	0.38	90	17	HARD	00-01-04-95-01
K19U7126R37	59.1	14.1	0.4	28.4	11.5	2.48	0.39	87	20	HARD	01-02-08-89-01
KS15H137-2	60.6	14.0	0.5	32.6	10.2	2.59	0.38	84	17	HARD	01-02-06-91-01
KS17H17	62.5	13.6	0.5	35.5	10.0	2.75	0.38	85	17	HARD	01-01-06-92-01
KS17H91-1	62.2	13.8	0.4	32.6	9.6	2.64	0.32	74	17	HARD	01-05-14-80-01
TX15M8024	61.7	13.9	0.5	30.3	8.2	2.63	0.32	88	16	HARD	00-01-04-95-01
TX16A001183	61.3	13.7	0.5	29.3	9.6	2.56	0.37	78	17	HARD	01-02-13-84-01
TX16A001193	61.8	13.0	0.4	29.6	9.6	2.62	0.36	85	18	HARD	01-02-08-89-01
TX16A001205	62.7	12.8	0.4	32.0	9.2	2.62	0.35	73	17	HARD	02-05-12-81-01
TX16A001289	62.6	12.5	0.4	33.6	9.7	2.71	0.33	68	16	HARD	02-05-23-70-01
TX16A001405	59.9	12.8	0.4	34.0	9.8	2.65	0.38	71	18	HARD	03-08-14-75-01
TX16M9216	61.9	12.4	0.4	30.1	8.8	2.60	0.35	79	18	HARD	00-03-12-85-01
TX16M9315	60.7	12.6	0.4	33.8	9.9	2.72	0.36	73	18	HARD	01-07-15-77-01
ON1366277	62.2	12.8	0.5	38.2	11.1	2.78	0.37	69	16	HARD	02-08-20-70-01
ON13P016	62.3	13.7	0.5	33.6	10.0	2.71	0.39	81	18	HARD	01-03-07-89-01
19CP010066	63.3	14.2	0.5	35.4	9.2	2.78	0.38	77	15	HARD	01-02-11-86-01
19CP010063	60.0	13.9	0.5	31.4	10.3	2.60	0.43	82	19	HARD	01-03-10-86-01
19CP010068	62.7	13.7	0.5	33.9	8.8	2.76	0.34	80	15	HARD	00-03-07-90-01
19CP010057	61.0	13.8	0.4	35.8	9.6	2.77	0.35	77	16	HARD	01-02-09-88-01
BASF 1	61.7	13.8	0.5	30.9	8.9	2.59	0.35	70	17	HARD	02-06-17-75-01
BASF 2	61.5	13.9	0.5	37.3	11.6	2.75	0.38	67	16	HARD	01-08-23-68-01
LCH17-3481	61.1	13.8	0.4	31.0	9.8	2.59	0.39	71	19	HARD	04-08-16-72-01
LCH17-5221	62.0	13.4	0.5	33.6	9.4	2.64	0.35	85	16	HARD	01-01-05-93-01
LCH17-5660	61.2	13.2	0.4	26.3	8.6	2.44	0.39	84	18	HARD	01-03-05-91-01
LCH17-4196	62.7	13.4	0.4	31.2	8.9	2.62	0.41	64	18	HARD	06-12-18-64-01
LCH18-7071	60.1	13.4	0.4	27.9	8.6	2.45	0.35	75	19	HARD	01-06-17-76-01
CO15D098R	62.2	13.4	0.4	33.6	9.7	2.68	0.35	75	19	HARD	02-05-14-79-01
CO14A136-135	61.0	13.5	0.4	32.4	10.5	2.46	0.34	65	18	HARD	04-10-21-65-01
CO14A055-258	60.9	13.7	0.4	32.0	10.0	2.61	0.35	66	19	HARD	05-12-23-60-01
CO16SF065	60.1	14.1	0.4	31.4	10.3	2.58	0.38	64	19	HARD	04-13-27-56-01
CO16SF070	60.4	14.2	0.5	30.1	10.7	2.57	0.41	66	18	HARD	05-09-20-66-01
KS12DH0090-172	63.4	13.8	0.5	32.7	9.4	2.69	0.36	73	15	HARD	00-03-16-81-01
KS12DH0156-88	60.4	14.4	0.5	32.1	10.4	2.58	0.39	80	17	HARD	01-03-09-87-01
KS13DH0041-35	61.1	14.0	0.4	33.8	9.9	2.66	0.40	73	17	HARD	01-05-14-80-01
KS13DH0030-28	59.7	13.7	0.4	30.3	9.1	2.60	0.37	74	18	HARD	02-06-11-81-01
OK16729W	60.1	13.8	0.5	33.4	9.4	2.70	0.40	74	18	HARD	01-05-16-78-01
OK16D101089	62.4	13.8	0.5	31.1	7.4	2.69	0.32	74	16	HARD	01-05-12-82-01
OK168512	62.6	13.9	0.4	30.4	10.9	2.58	0.42	76	19	HARD	01-06-14-79-01
OK188608	62.0	12.9	0.6	34.3	8.8	2.85	0.36	82	16	HARD	00-01-09-90-01
OK15MASBx7 ARS 8-1	62.0	13.2	0.4	34.8	9.5	2.76	0.35	83	18	HARD	00-03-08-89-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
OK16D101105	61.5	13.0	0.4	31.0	7.9	2.79	0.36	84	18	HARD	01-03-04-92-01
NE16562	60.1	13.2	0.5	31.7	9.8	2.63	0.39	64	19	HARD	06-11-21-62-01
NI17410	62.3	12.8	0.5	33.0	9.4	2.70	0.33	75	17	HARD	00-05-13-82-01
NE17433	61.5	13.3	0.4	31.7	10.2	2.67	0.37	75	18	HARD	02-04-14-80-01
NHH17450	61.6	12.8	0.5	31.2	8.8	2.64	0.33	71	17	HARD	01-06-15-78-01
NHH17612	61.5	13.5	0.5	28.5	8.5	2.53	0.33	81	18	HARD	00-04-08-88-01

2020 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	14.1	61.4	0.41	12.7	0.535	79.19	-1.78	23.55	-8.59	1.37	1.02
Scout66	12.5	68.2	0.41	11.7	0.523	79.07	-1.43	23.25	-9.34	1.35	0.95
TAM-107	12.7	66.3	0.38	11.5	0.522	78.22	-1.48	25.13	-9.37	1.32	0.46
Jagalene	12.9	66.8	0.45	11.9	0.492	78.72	-1.45	24.09	-9.17	1.30	1.63
K19U7124R10	13.0	62.6	0.41	11.8	0.150	78.97	-1.61	24.70	-7.38	1.20	3.15
K19U7126R37	13.1	64.0	0.45	12.1	0.141	78.97	-1.31	23.73	-7.53	1.28	4.31
KS15H137-2	12.4	66.2	0.44	11.7	0.610	77.72	-1.36	26.23	-9.99	1.72	1.19
KS17H17	12.8	65.8	0.43	11.7	0.399	77.99	-1.03	23.30	-8.45	1.36	1.69
KS17H91-1	11.5	64.9	0.41	11.1	0.471	80.46	-2.06	23.04	-8.60	1.94	2.05
TX15M8024	12.6	65.9	0.41	11.6	0.520	78.35	-1.12	23.29	-9.71	1.51	1.78
TX16A001183	12.0	65.0	0.40	11.4	0.569	79.15	-1.72	23.66	-9.18	1.54	1.58
TX16A001193	12.3	65.0	0.41	11.3	0.461	79.40	-1.67	24.23	-9.98	1.50	2.76
TX16A001205	11.7	65.5	0.38	10.7	0.450	79.93	-1.52	22.55	-10.21	1.46	3.02
TX16A001289	12.6	63.7	0.38	11.6	0.528	79.97	-1.61	22.69	-9.76	1.44	3.57
TX16A001405	11.7	67.4	0.37	10.7	0.510	79.65	-1.55	23.68	-8.14	1.26	2.21
TX16M9216	12.1	66.3	0.40	11.4	0.550	78.64	-1.43	24.50	-9.05	1.60	1.40
TX16M9315	12.4	63.5	0.46	11.5	0.439	77.97	-1.95	26.21	-8.49	1.80	1.02
ON1366277	12.7	66.0	0.40	11.9	0.550	78.24	-1.30	23.85	-8.23	1.49	1.74
ON13P016	12.3	66.3	0.40	11.6	0.160	79.18	-1.47	24.30	-7.07	1.15	3.12
19CP010066	12.6	65.6	0.41	11.9	0.603	78.59	-1.65	24.95	-9.41	1.49	1.44
19CP010063	12.1	64.3	0.45	10.9	0.487	78.11	-1.19	24.26	-9.62	1.49	2.09
19CP010068	12.2	64.9	0.42	11.5	0.480	78.84	-1.38	25.61	-8.37	1.17	1.10
19CP010057	12.7	66.4	0.40	11.8	0.570	77.50	-1.17	24.99	-9.74	1.47	0.64
BASF 1	12.2	67.2	0.35	11.3	0.511	79.82	-1.59	24.66	-9.51	1.36	4.04
BASF 2	12.3	65.7	0.38	11.8	0.540	79.62	-1.65	24.19	-8.91	1.47	2.61
LCH17-3481	12.2	65.7	0.40	11.7	0.647	79.02	-1.95	25.51	-9.24	1.70	1.45
LCH17-5221	12.2	65.3	0.43	11.3	0.585	78.25	-1.52	25.45	-10.26	1.85	1.82
LCH17-5660	12.4	64.2	0.49	11.6	0.474	77.46	-1.87	29.71	-7.95	1.64	0.42
LCH17-4196	11.3	68.3	0.41	10.5	0.552	79.66	-1.92	24.66	-8.68	1.59	1.84
LCH18-7071	11.5	65.5	0.49	10.4	0.621	79.53	-2.01	25.66	-10.08	1.71	1.68
CO15D098R	11.6	67.6	0.40	10.6	0.527	79.78	-2.02	25.04	-9.54	1.38	2.54
CO14A136-135	11.3	69.3	0.37	10.4	0.537	80.29	-1.78	23.74	-8.45	1.22	2.24
CO14A055-258	10.9	69.5	0.40	10.0	0.449	80.12	-1.86	23.69	-8.55	1.18	2.12
CO16SF065	11.9	66.7	0.35	11.0	0.607	79.62	-1.67	23.02	-10.64	1.30	2.13
CO16SF070	12.0	66.3	0.33	11.1	0.605	79.31	-1.82	23.52	-9.54	1.35	0.65
KS12DH0090-172	13.3	68.2	0.37	12.3	0.444	77.26	-0.71	22.50	-8.91	1.45	2.17
KS12DH0156-88	11.8	61.9	0.42	11.1	0.183	80.07	-1.89	25.75	-6.82	0.89	2.70
KS13DH0041-35	12.3	65.5	0.39	11.4	0.209	79.18	-1.90	26.48	-6.01	1.08	2.23
KS13DH0030-28	12.0	65.9	0.36	11.3	0.524	78.91	-1.82	24.99	-8.02	1.23	1.35
OK16729W	12.0	65.2	0.41	10.9	0.508	79.27	-1.45	22.50	-7.57	1.25	2.22
OK16D101089	12.3	68.6	0.39	11.6	0.420	78.76	-1.71	26.34	-7.47	1.34	1.46
OK168512	12.0	63.2	0.39	10.9	0.530	79.38	-1.74	24.67	-8.94	1.37	2.57

	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	(%)	(%)	(%)	(%)							
OK188608	12.7	66.1	0.44	11.5	0.428	77.62	-1.10	23.36	-11.05	1.60	1.90
OK15MASBx7 ARS 8-1	11.8	65.1	0.43	11.0	0.161	80.76	-1.64	23.14	-7.97	1.28	5.60
OK16D101105	12.2	64.3	0.41	11.3	0.466	78.14	-1.53	25.40	-11.29	1.65	2.87
NE16562	11.9	67.4	0.40	11.1	0.512	79.49	-1.52	22.74	-9.68	1.33	2.63
NI17410	12.6	67.2	0.37	12.0	0.601	79.65	-1.15	21.31	-10.96	1.42	3.68
NE17433	11.8	66.1	0.42	11.1	0.489	80.21	-1.86	24.44	-10.83	1.40	4.09
NHH17450	12.1	66.3	0.40	11.3	0.583	79.47	-1.70	23.88	-9.66	1.64	2.78
NHH17612	12.0	65.6	0.42	11.2	0.548	78.54	-1.71	24.81	-10.31	1.56	1.55

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		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	12.7	64.1	4.00	4.00	2
Scout66	11.7	64.9	2.63	2.52	2
TAM-107	11.5	62.1	3.50	3.29	3
Jagalene	11.9	63.2	3.38	3.32	4
K19U7124R10	11.8	67.2	4.63	4.53	5
K19U7126R37	12.1	67.1	4.13	4.13	5
KS15H137-2	11.7	63.5	4.88	4.73	5
KS17H17	11.7	62.9	3.63	3.49	4
KS17H91-1	11.1	62.5	4.25	3.81	4
TX15M8024	11.6	63.3	3.13	2.98	4
TX16A001183	11.4	63.0	6.63	6.15	4
TX16A001193	11.3	65.2	5.13	4.71	5
TX16A001205	10.7	61.8	3.50	2.97	3
TX16A001289	11.6	64.3	4.50	4.27	4
TX16A001405	10.7	63.3	5.63	4.76	5
TX16M9216	11.4	63.5	4.13	3.84	4
TX16M9315	11.5	62.1	3.50	3.27	1
ON1366277	11.9	63.8	2.88	2.86	2
ON13P016	11.6	64.8	4.00	3.82	4
19CP010066	11.9	62.2	4.25	4.18	3
19CP010063	10.9	62.3	5.13	4.42	4
19CP010068	11.5	63.1	3.25	3.05	3
19CP010057	11.8	62.6	4.25	4.15	2
BASF 1	11.3	63.7	7.13	6.49	5
BASF 2	11.8	63.5	4.63	4.49	4
LCH17-3481	11.7	63.0	4.00	3.86	1
LCH17-5221	11.3	62.8	2.63	2.42	3
LCH17-5660	11.6	61.2	3.50	3.32	1
LCH17-4196	10.5	60.0	3.38	2.77	2
LCH18-7071	10.4	61.3	4.63	3.75	4
CO15D098R	10.6	61.4	4.13	3.44	3
CO14A136-135	10.4	61.1	4.88	3.95	5
CO14A055-258	10.0	61.2	3.63	2.77	4
CO16SF065	11.0	61.2	4.25	3.72	4
CO16SF070	11.1	61.5	3.13	2.80	3
KS12DH0090-172	12.3	64.9	6.63	6.63	4
KS12DH0156-88	11.1	61.5	5.13	4.59	2
KS13DH0041-35	11.4	61.9	3.50	3.24	2
KS13DH0030-28	11.3	63.3	4.50	4.13	1
OK16729W	10.9	61.2	5.63	4.91	1
OK16D101089	11.6	62.2	4.13	3.93	3
OK168512	10.9	62.1	3.50	3.05	4

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
OK188608	11.5	65.7	2.88	2.72	5
OK15MASBx7 ARS 8-1	11.0	65.3	4.00	3.54	6
OK16D101105	11.3	62.8	4.25	3.88	0
NE16562	11.1	61.9	5.13	4.55	4
NI17410	12.0	64.9	3.25	3.23	4
NE17433	11.1	62.9	4.25	3.78	4
NHH17450	11.3	61.9	7.13	6.57	3
NHH17612	11.2	62.6	4.63	4.18	3

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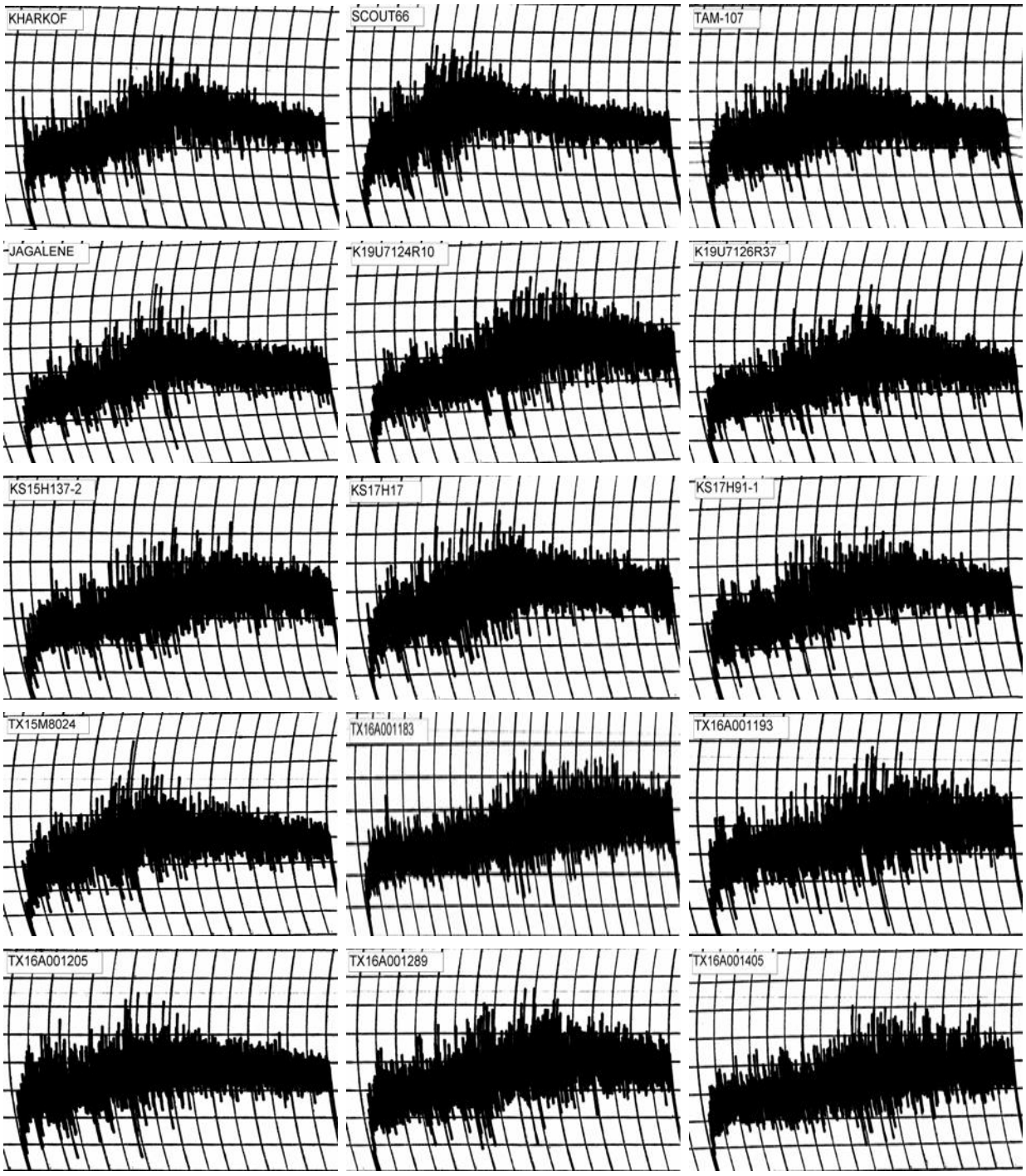

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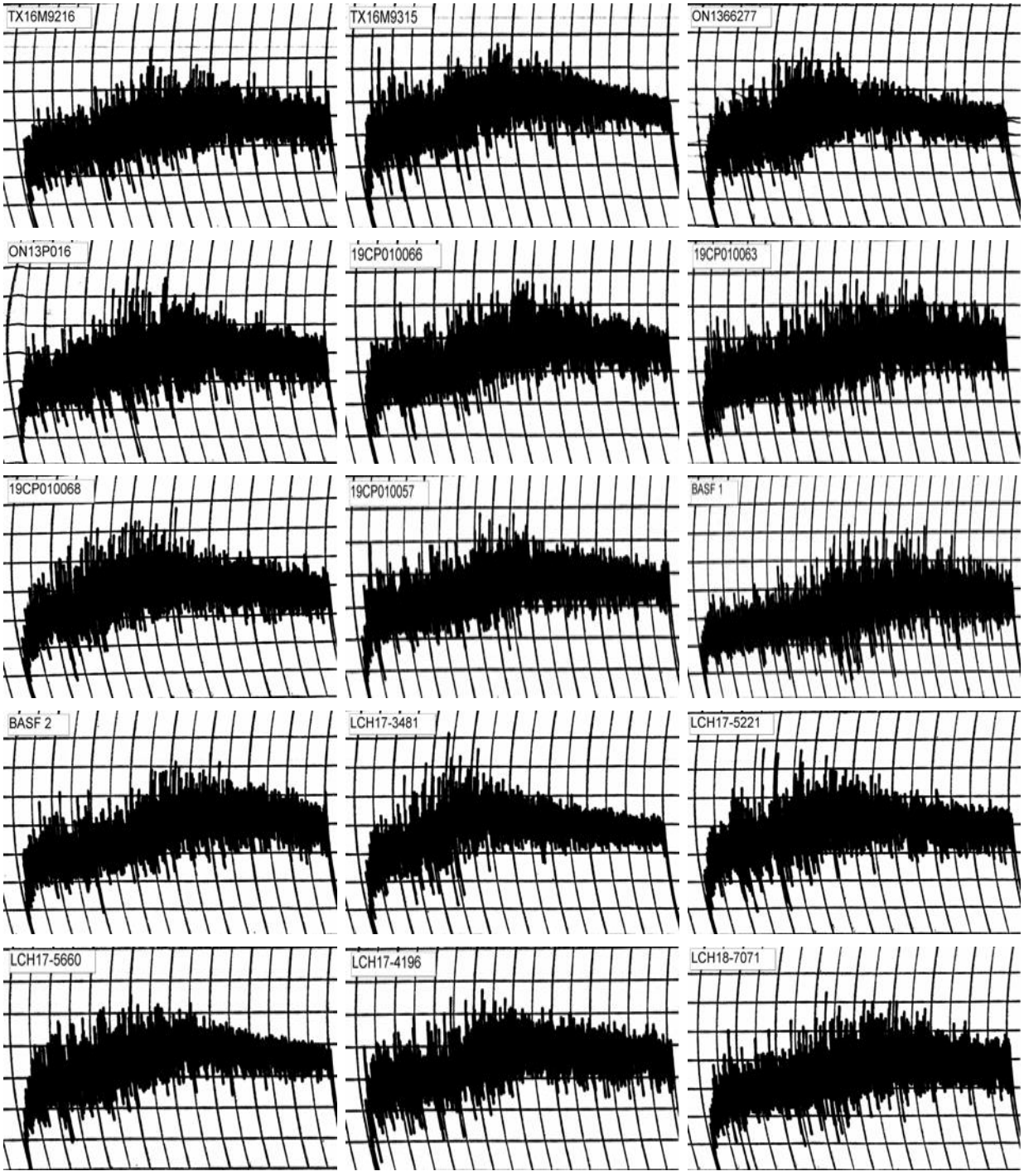
South Central Plains



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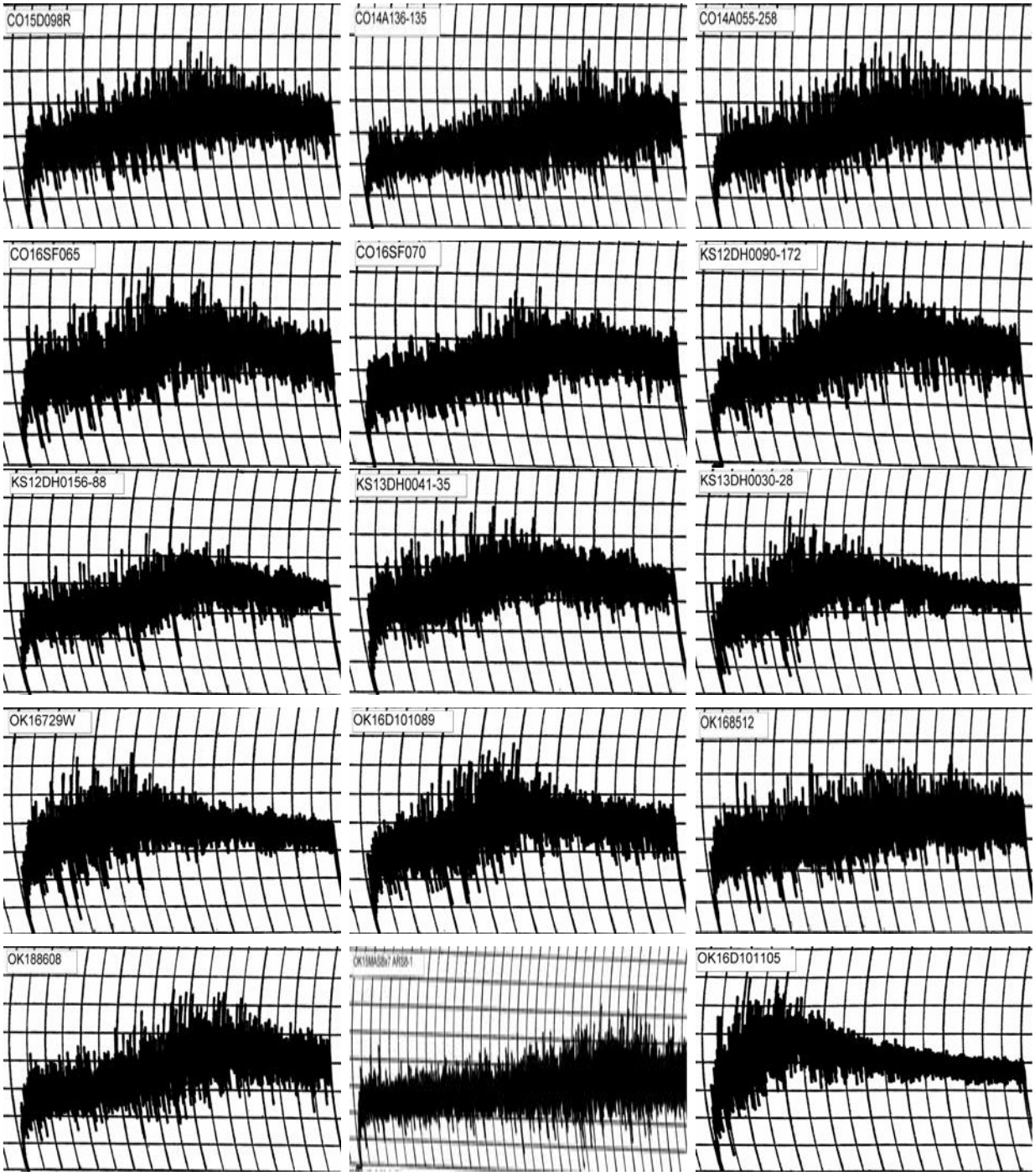
South Central Plains



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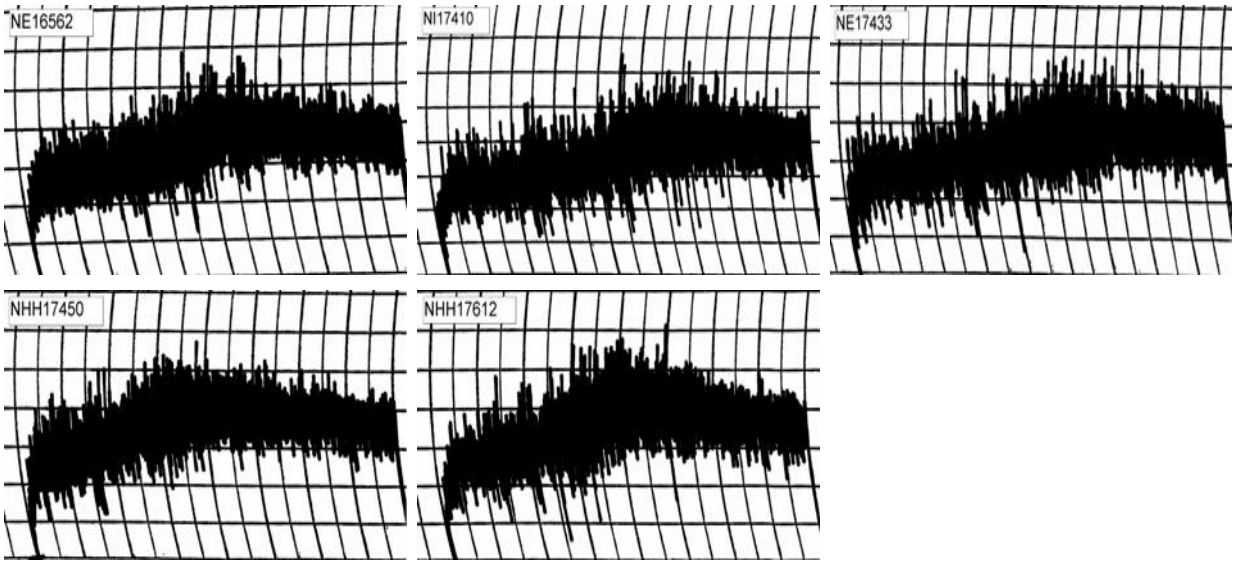
South Central Plains



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Southern Central Plains

	RVA						
Line	Stirring Number (RVU)	Peak Viscosity (RVU)	Trough Viscosity (RVU)	Breakdown (RVU)	Final Viscosity (RVU)	Set back (RVU)	Peak Time (min)
Kharkof	155.00	241.92	177.58	64.33	288.83	111.25	6.40
Scout66	117.25	188.33	120.00	68.33	218.00	98.00	6.07
TAM-107	104.92	246.08	166.08	80.00	281.83	115.75	6.27
Jagalene	93.17	215.67	148.33	67.33	262.08	113.75	6.13
K19U7124R10	118.92	198.17	145.33	52.83	261.75	116.42	6.20
K19U7126R37	104.33	184.25	129.08	55.17	239.50	110.42	6.13
KS15H137-2	100.00	278.75	163.92	114.83	273.58	109.67	6.20
KS17H17	114.75	235.42	160.67	74.75	268.92	108.25	6.27
KS17H91-1	97.50	269.33	177.83	91.50	294.75	116.92	6.27
TX15M8024	127.08	240.00	167.25	72.75	275.50	108.25	6.33
TX16A001183	111.58	246.92	170.67	76.25	284.17	113.50	6.27
TX16A001193	131.83	223.25	161.67	61.58	281.08	119.42	6.27
TX16A001205	129.25	239.92	179.17	60.75	294.67	115.50	6.40
TX16A001289	158.00	250.08	189.67	60.42	303.50	113.83	6.47
TX16A001405	97.33	225.33	155.58	69.75	271.42	115.83	6.27
TX16M9216	129.67	201.00	139.25	61.75	248.58	109.33	6.20
TX16M9315	121.33	221.75	160.42	61.33	275.25	114.83	6.33
ON1366277	124.50	233.42	145.58	87.83	239.08	93.50	6.27
ON13P016	92.67	202.42	139.08	63.33	249.25	110.17	6.20
19CP010066	116.25	216.00	149.42	66.58	260.00	110.58	6.27
19CP010063	121.58	224.33	148.17	76.17	265.42	117.25	6.07
19CP010068	121.75	232.92	164.92	68.00	278.08	113.17	6.33
19CP010057	111.33	185.08	119.50	65.58	214.00	94.50	6.20
BASF 1	126.33	247.50	166.67	80.83	283.25	116.58	6.20
BASF 2	102.75	249.83	175.75	74.08	281.58	105.83	6.40
LCH17-3481	113.83	235.33	165.50	69.83	280.42	114.92	6.27
LCH17-5221	142.25	234.33	175.58	58.75	280.17	104.58	6.47
LCH17-5660	104.83	221.92	145.17	76.75	257.42	112.25	6.20
LCH17-4196	121.08	237.75	159.83	77.92	280.08	120.25	6.20
LCH18-7071	121.58	242.33	158.92	83.42	272.75	113.83	6.20
CO15D098R	74.00	270.42	156.58	113.83	261.92	105.33	6.13
CO14A136-135	117.50	246.58	167.08	79.50	294.58	127.50	6.13
CO14A055-258	108.25	260.25	165.67	94.58	293.42	127.75	6.00
CO16SF065	98.58	266.50	170.75	95.75	283.83	113.08	6.20
CO16SF070	129.50	258.00	178.33	79.67	291.33	113.00	6.33
KS12DH0090-172	164.75	235.00	179.50	55.50	288.58	109.08	6.47
KS12DH0156-88	123.42	191.67	118.50	73.17	217.42	98.92	6.07
KS13DH0041-35	130.50	214.00	151.50	62.50	264.67	113.17	6.27
KS13DH0030-28	125.00	218.25	150.42	67.83	266.58	116.17	6.20
OK16729W	101.42	236.00	158.17	77.83	267.25	109.08	6.27
OK16D101089	118.67	260.42	184.75	75.67	299.50	114.75	6.40
OK168512	105.33	211.92	148.00	63.92	272.50	124.50	6.13
OK188608	119.50	231.17	156.42	74.75	262.17	105.75	6.27
OK15MASBx7 ARS 8-1	125.25	212.42	152.58	59.83	271.50	118.92	6.20

	RVA						
	Stirring Number	Peak Viscosity	Trough Viscosity	Breakdown	Final Viscosity	Set back	Peak Time
Line	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(min)
OK16D101105	121.17	269.42	189.17	80.25	298.25	109.08	6.40
NE16562	132.92	256.67	181.08	75.58	301.58	120.50	6.33
NI17410	122.75	220.75	154.75	66.00	269.92	115.17	6.20
NE17433	93.00	217.33	142.17	75.17	251.83	109.67	6.13
NHH17450	125.17	240.00	163.50	76.50	278.25	114.75	6.27
NHH17612	93.75	219.25	153.92	65.33	277.42	123.50	6.20

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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	12.7	64.1	4.50	4.50	173.1	7.7	3.5	920	6.2	64
Scout66	11.7	64.6	2.88	2.76	174.0	7.5	3.5	935	6.2	73
TAM-107	11.5	61.6	3.63	3.41	170.9	7.3	4.0	925	6.2	73
Jagalene	11.9	63.5	4.50	4.42	172.8	7.5	4.0	995	6.6	78
K19U7124R10	11.8	67.5	5.00	4.89	176.8	7.8	3.5	1015	6.7	81
K19U7126R37	12.1	67.1	4.50	4.50	176.5	7.6	3.5	960	6.3	73
KS15H137-2	11.7	63.4	5.00	4.84	172.6	7.2	4.0	940	6.4	73
KS17H17	11.7	62.6	4.00	3.84	171.8	7.1	4.0	950	6.4	75
KS17H91-1	11.1	62.6	4.75	4.25	171.8	7.4	4.0	995	6.7	85
TX15M8024	11.6	63.6	4.00	3.81	173.1	7.1	3.0	890	5.9	68
TX16A001183	11.4	62.7	6.38	5.92	171.0	7.5	3.5	935	6.3	75
TX16A001193	11.3	65.3	5.50	5.04	174.1	7.3	1.5	840	5.5	65
TX16A001205	10.7	61.8	3.88	3.29	170.9	7.1	2.5	840	5.6	69
TX16A001289	11.6	64.4	4.50	4.27	173.5	7.2	3.5	890	5.8	69
TX16A001405	10.7	65.4	7.25	6.13	174.5	7.0	3.5	850	5.5	71
TX16M9216	11.4	63.5	4.00	3.72	172.4	6.9	4.0	885	5.8	69
TX16M9315	11.5	62.5	3.88	3.63	171.9	7.1	3.0	845	5.6	64
ON1366277	11.9	63.4	3.25	3.23	173.0	7.5	2.5	960	6.3	74
ON13P016	11.6	64.5	4.25	4.06	173.5	7.6	3.0	945	6.3	75
19CP010066	11.9	62.5	4.75	4.67	171.7	7.3	3.5	885	6.0	66
19CP010063	10.9	62.5	5.50	4.74	171.1	7.4	2.5	830	5.6	67
19CP010068	11.5	63.1	3.50	3.29	172.8	7.1	4.0	870	5.9	67
19CP010057	11.8	62.3	4.50	4.40	171.3	7.5	3.0	885	6.0	66
BASF 1	11.3	63.4	8.00	7.28	171.4	7.1	3.0	860	5.8	68
BASF 2	11.8	63.3	4.50	4.37	171.7	7.3	4.5	920	6.2	71
LCH17-3481	11.7	63.4	3.25	3.14	173.0	7.5	3.5	960	6.4	76
LCH17-5221	11.3	63.2	3.75	3.44	172.8	7.1	4.0	860	5.7	67
LCH17-5660	11.6	61.3	3.50	3.32	170.4	7.2	2.5	850	5.7	64
LCH17-4196	10.5	60.0	3.50	2.87	168.6	7.3	3.0	875	6.0	76
LCH18-7071	10.4	61.3	5.00	4.05	170.6	7.3	5.0	885	6.0	78
CO15D098R	10.6	61.4	5.25	4.37	170.1	7.2	3.5	905	6.1	79
CO14A136-135	10.4	61.4	7.75	6.28	169.7	7.2	4.0	875	5.8	76
CO14A055-258	10.0	61.5	6.00	4.58	170.5	7.3	4.0	890	6.0	82
CO16SF065	11.0	61.2	4.00	3.50	170.1	7.5	2.0	935	6.2	79
CO16SF070	11.1	61.2	4.25	3.80	169.6	7.5	3.5	880	6.0	71
KS12DH0090-172	12.3	64.9	4.25	4.25	174.2	7.4	3.5	885	5.8	63
KS12DH0156-88	11.1	61.2	4.25	3.81	170.1	7.2	2.0	880	6.0	71
KS13DH0041-35	11.4	61.8	3.75	3.47	171.4	7.4	4.0	885	6.0	70
KS13DH0030-28	11.3	63.0	3.00	2.75	172.5	7.3	2.0	845	5.6	65
OK16729W	10.9	61.1	2.63	2.30	170.4	7.0	2.0	850	5.7	69
OK16D101089	11.6	62.0	4.00	3.80	171.1	7.1	3.0	930	6.3	73
OK168512	10.9	62.1	5.25	4.58	171.0	7.1	3.0	815	5.4	64
OK188608	11.5	65.7	5.75	5.43	174.5	7.8	3.5	980	6.6	80

	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/%)
OK15MASBx7 ARS 8-1	11.0	64.9	15.00	13.27	172.2	7.2	1.5	755	5.0	56
OK16D101105	11.3	62.4	2.38	2.17	171.7	6.9	1.0	795	5.3	60
NE16562	11.1	61.9	4.63	4.11	170.6	7.4	4.0	930	6.3	78
NI17410	12.0	64.5	5.50	5.47	172.9	7.5	5.0	925	6.2	70
NE17433	11.1	62.5	6.00	5.34	171.3	7.1	4.0	890	6.0	73
NHH17450	11.3	61.6	3.25	2.99	170.3	7.2	3.5	925	6.2	75
NHH17612	11.2	62.6	4.75	4.29	171.0	7.4	4.0	890	6.0	72

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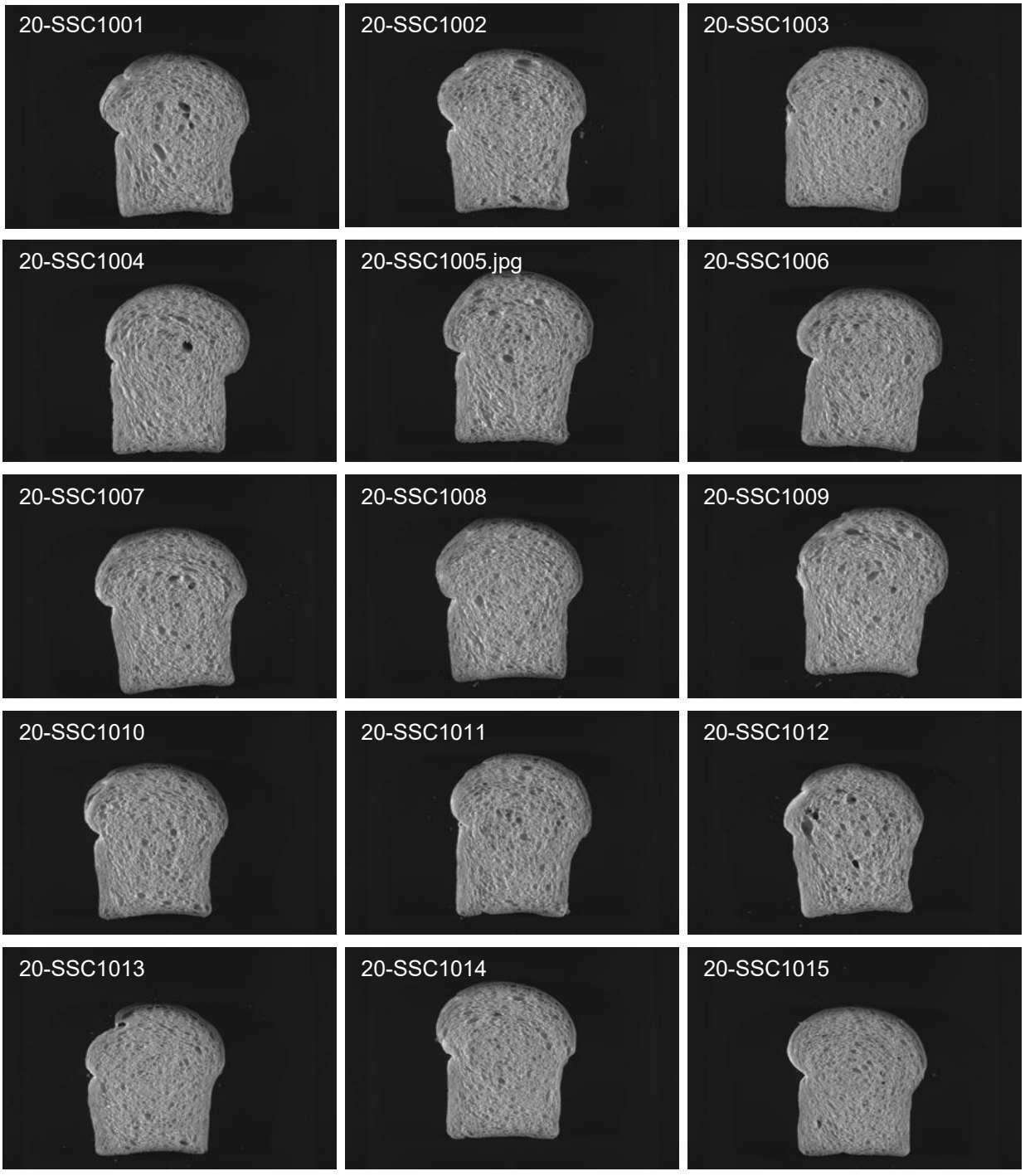

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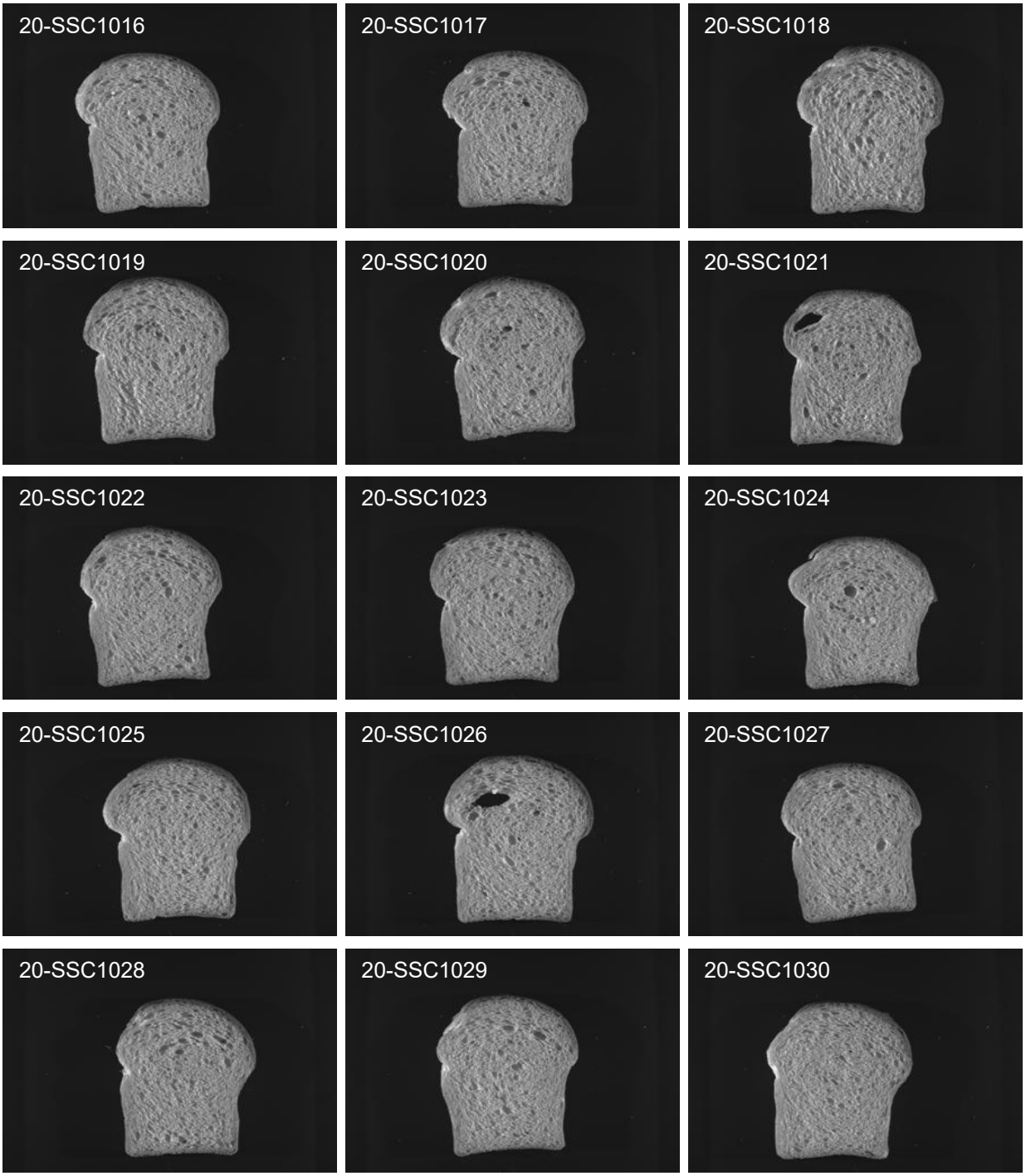
South Central Plains



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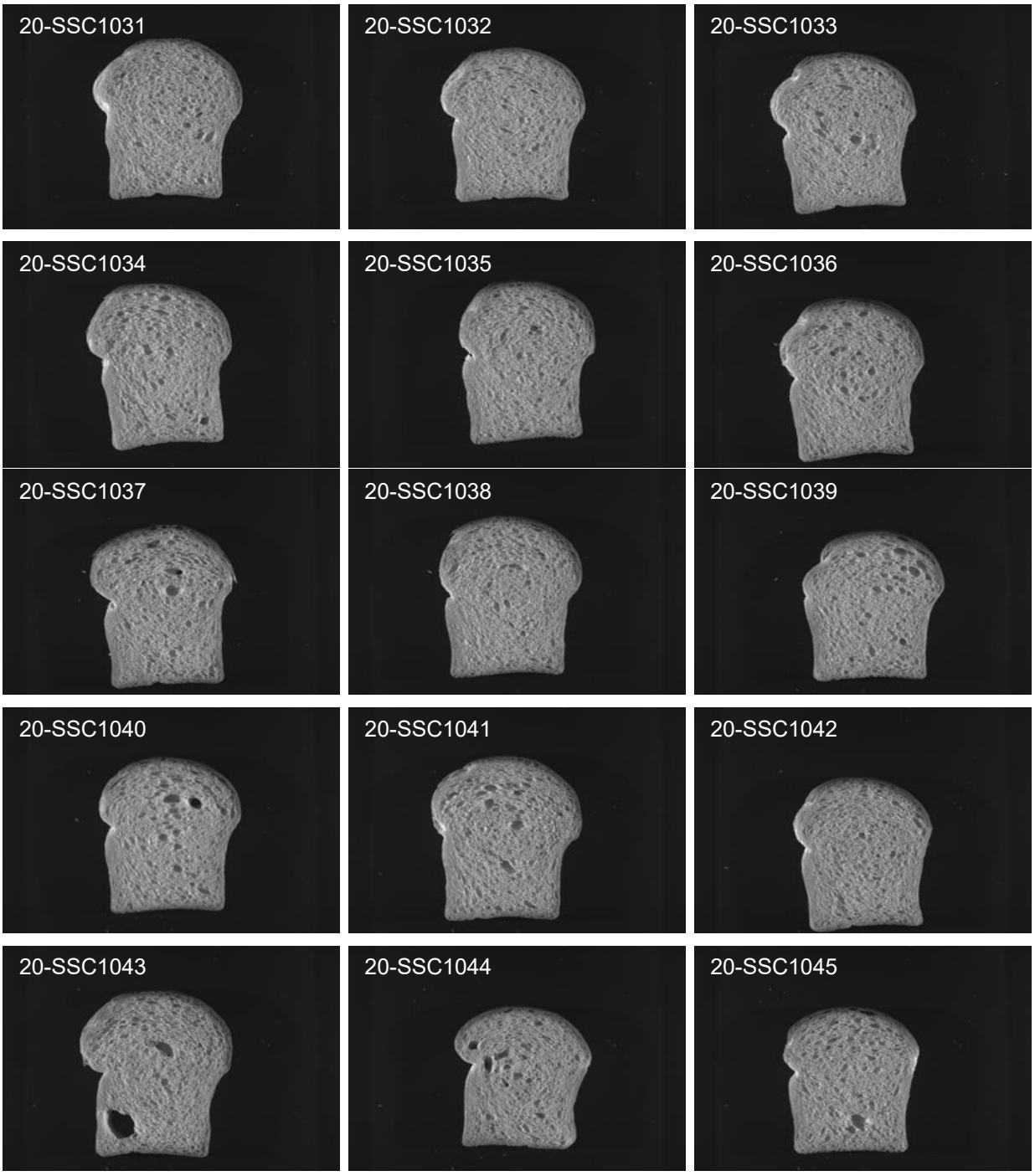

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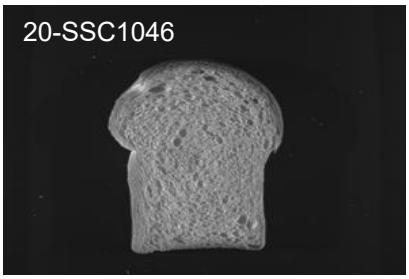
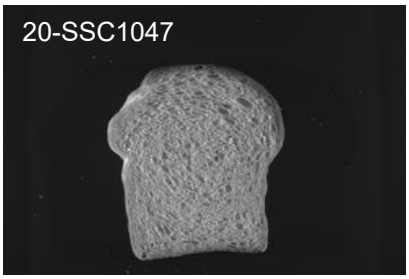
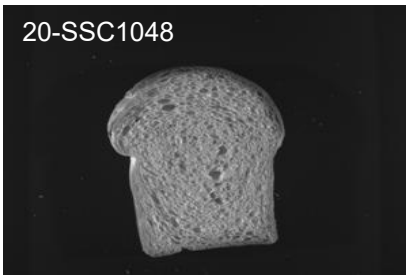
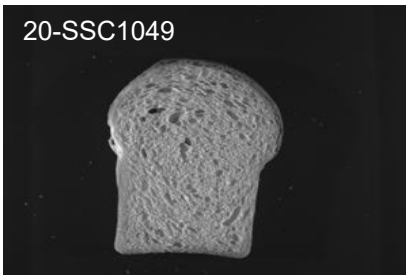
South Central Plains









Hard Winter Wheat Quality Report

2020 SRPN-SHP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Kharkof	28.0	Very Poor	52.0	57.5	Good	87.6		4,8,10,20,
Scout 66	50.6	Very Good	93.9	47.0	Average	71.6		16,
TAM 107	45.9	Average	85.2	45.6	Poor	69.6	1AL	16,
Jagalene	46.3	Average	86.0	55.5	Good	84.6		
K19U7124R10	40.7	Very Poor	75.5	58.9	Very Good	89.8		1,2,
K19U7126R37	39.3	Very Poor	73.0	65.6	Very Good	100.0		1,2,4,
KS Hamilton	47.8	Average	88.7	40.6	Very Poor	61.8		15,
KS17H17	51.8	Very Good	96.1	45.6	Poor	69.5		
KS17H91-1	44.2	Poor	82.1	42.4	Poor	64.6		3,
TX15M8024	43.9	Poor	81.4	55.4	Good	84.4		11,18,
TX16A001183	40.3	Very Poor	74.7	33.8	Very Poor	51.5		14,15,
TX16A001193	42.0	Very Poor	77.9	51.9	Average	79.2		
TX16A001205	49.8	Good	92.3	46.1	Average	70.4		
TX16A001289	43.4	Poor	80.6	43.7	Poor	66.6		20,
TX16A001405	42.6	Poor	79.0	35.1	Very Poor	53.6		1,11,
TX16M9216	45.6	Average	84.6	40.3	Very Poor	61.5		15,18,
TX16M9315	42.3	Poor	78.6	52.2	Good	79.5	1BL	16,
ON1366277	50.9	Very Good	94.5	46.2	Average	70.4		
ON13P016	47.9	Average	88.8	58.3	Good	88.9		
19CP010066	49.7	Good	92.2	46.1	Average	70.3	h1BL	12,13,16,17,
19CP010063	37.4	Very Poor	69.5	37.0	Very Poor	56.4		1,9,10,
19CP010068	42.9	Poor	79.6	56.2	Good	85.7		16,
19CP010057	53.9	Very Good	100.0	43.8	Poor	66.8	1BL	
BASF 1	50.0	Good	92.7	49.5	Average	75.5		14,15,
BASF 2	49.4	Good	91.7	62.6	Very Good	95.4	h1BL	3,5,16,
LCH17-3481	41.6	Very Poor	77.2	59.9	Very Good	91.3		16,
LCH17-5221	50.5	Good	93.8	65.1	Very Good	99.2		
LCH17-5660	37.4	Very Poor	69.4	35.2	Very Poor	53.7	h1BL	2,4,9,10,12,13,16,
LCH17-4196	49.9	Good	92.5	40.7	Poor	62.0	h1BL	12,13,16,
LCH18-7071	43.5	Poor	80.7	54.6	Good	83.2		9,11,

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

Hard Winter Wheat Quality Report

2020 SRPN-SHP

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

ID	Milling Score	Rating	%	Baking Score	Rating	%	1RS	Trait Deficiencies
Steamboat	47.3	Average	87.8	58.3	Good	88.9		3,
CO14A136-135	44.8	Poor	83.2	54.1	Good	82.4		3,4,14,15,
Kivari AX	51.8	Very Good	96.2	49.8	Average	76.0		11,15,
CO16SF065	52.0	Very Good	96.5	47.0	Average	71.6		
CO16SF070	52.4	Very Good	97.3	43.1	Poor	65.8		
KS12DH0090-172	51.4	Very Good	95.4	62.1	Very Good	94.6		16,
KS12DH0156-88	41.8	Very Poor	77.6	42.1	Poor	64.2	1BL	16,
KS13DH0041-35	42.8	Poor	79.4	59.3	Very Good	90.4	1BL	3,16,
KS13DH0030-28	42.3	Very Poor	78.5	32.4	Very Poor	49.3		1,5,16,
OK16729W	47.2	Average	87.5	45.2	Poor	68.8		16,
Uncharted	51.7	Very Good	95.9	46.9	Average	71.5		16,
Breakthrough	45.6	Average	84.7	38.9	Very Poor	59.4		11,15,18,19,
OK188608	45.1	Poor	83.7	65.4	Very Good	99.7		15,
OK15MASBx7 ARS 8-1	45.6	Average	84.6	47.1	Average	71.8		14,15,
OK16D101105	49.6	Good	92.1	26.8	Very Poor	40.9		14,15,16,18,19,20,21,
NE16562	45.3	Average	84.1	63.6	Very Good	96.9	1BL	
NI17410	52.0	Very Good	96.6	44.1	Poor	67.3		15,
NE17433	48.4	Good	89.7	60.0	Very Good	91.4		15,
NHH17450	49.1	Good	91.0	57.4	Good	87.5		16,
NHH17612	48.2	Good	89.4	40.2	Very Poor	61.3		

2020 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	57.5	14.6	0.4	28.8	9.1	2.46	0.36	44	18	MIXED	26-28-25-21-03
Scout66	59.1	14.4	0.3	32.8	9.5	2.62	0.36	59	17	HARD	06-16-29-49-01
TAM-107	57.7	14.3	0.3	31.6	9.7	2.59	0.39	62	18	HARD	08-11-23-58-01
Jagalene	59.7	14.4	0.3	31.6	9.4	2.71	0.36	62	21	HARD	10-14-19-57-01
K19U7124R10	56.8	14.3	0.4	27.7	9.1	2.52	0.35	74	18	HARD	02-04-14-80-01
K19U7126R37	56.2	13.7	0.4	26.7	9.6	2.41	0.31	73	17	HARD	01-07-13-79-01
KS15H137-2	59.7	13.9	0.3	32.3	10.1	2.57	0.36	70	18	HARD	03-08-19-70-01
KS17H17	61.0	13.6	0.3	33.6	9.3	2.70	0.33	73	18	HARD	02-04-15-79-01
KS17H91-1	60.2	14.6	0.3	32.1	11.4	2.61	0.32	64	16	HARD	04-12-24-60-01
TX15M8024	58.7	14.4	0.3	32.7	9.8	2.70	0.39	69	22	HARD	07-13-17-63-01
TX16A001183	58.2	13.4	0.3	28.3	10.0	2.50	0.34	63	20	HARD	08-13-25-54-01
TX16A001193	58.8	13.1	0.3	28.8	9.9	2.59	0.34	67	21	HARD	07-11-16-66-01
TX16A001205	59.3	13.5	0.4	31.4	9.1	2.62	0.34	61	17	HARD	06-14-23-57-01
TX16A001289	59.2	13.9	0.4	30.8	9.7	2.62	0.35	64	16	HARD	04-12-23-61-01
TX16A001405	56.4	13.0	0.6	33.7	10.5	2.62	0.38	55	21	MIXED	16-19-21-44-03
TX16M9216	58.7	12.8	0.3	31.1	9.2	2.65	0.36	60	19	HARD	08-19-19-54-01
TX16M9315	57.8	13.3	0.5	32.5	9.2	2.67	0.36	62	19	HARD	05-13-26-56-01
ON1366277	59.6	13.9	0.4	38.0	10.3	2.79	0.34	61	16	HARD	05-11-26-58-01
ON13P016	59.9	13.1	0.3	33.3	10.3	2.67	0.32	62	19	HARD	06-17-21-56-01
19CP010066	61.2	14.1	0.4	34.6	10.3	2.69	0.39	60	18	HARD	07-15-26-52-01
19CP010063	56.6	14.6	0.5	30.0	10.3	2.56	0.39	68	20	HARD	05-12-18-65-01
19CP010068	57.7	14.5	0.3	32.7	9.3	2.67	0.34	68	18	HARD	03-09-21-67-01
19CP010057	58.1	14.7	0.4	33.6	9.1	2.69	0.34	68	15	HARD	02-06-20-72-01
BASF 1	59.0	14.4	0.4	31.1	9.5	2.63	0.38	59	17	HARD	07-16-27-50-01
BASF 2	59.1	14.4	0.3	36.7	11.7	2.79	0.40	58	17	HARD	10-13-29-48-01
LCH17-3481	58.0	14.8	0.3	30.5	10.4	2.55	0.39	61	20	HARD	08-17-21-54-01
LCH17-5221	59.8	14.6	0.3	33.5	9.5	2.64	0.33	68	17	HARD	03-07-22-68-01
LCH17-5660	57.8	13.9	0.3	25.8	8.9	2.41	0.37	71	18	HARD	02-08-16-74-01
LCH17-4196	59.4	14.2	0.3	31.4	9.7	2.60	0.34	51	19	MIXED	18-19-26-37-03
LCH18-7071	57.8	14.7	0.3	29.2	8.9	2.49	0.34	65	20	HARD	06-13-23-58-01
CO15D098R	58.7	14.1	0.4	32.3	11.0	2.66	0.37	63	20	HARD	08-15-21-56-01
CO14A136-135	57.5	13.7	0.4	31.3	10.8	2.46	0.37	51	18	MIXED	16-27-24-33-03
CO14A055-258	58.7	14.3	0.3	32.6	9.0	2.66	0.34	55	20	MIXED	14-20-24-42-03
CO16SF065	58.9	14.0	0.3	30.9	10.0	2.58	0.36	52	18	MIXED	17-18-29-36-03
CO16SF070	58.4	13.8	0.3	30.2	9.2	2.56	0.36	49	19	MIXED	22-21-29-28-03
KS12DH0090-172	59.8	13.4	0.4	29.5	9.5	2.57	0.36	60	16	HARD	06-12-31-51-01
KS12DH0156-88	57.7	14.4	0.5	33.0	9.8	2.66	0.37	65	19	HARD	04-14-17-65-01
KS13DH0041-35	57.8	14.2	0.5	32.0	10.9	2.56	0.34	57	18	HARD	10-16-28-46-01
KS13DH0030-28	56.5	14.0	0.3	29.6	9.9	2.60	0.43	54	18	MIXED	12-20-32-36-03
OK16729W	59.5	14.7	0.3	31.0	10.0	2.57	0.38	64	20	HARD	07-10-24-59-01
OK16D101089	58.8	14.0	0.4	29.7	8.3	2.61	0.35	60	16	HARD	06-13-30-51-01
OK168512	60.3	14.5	0.4	31.4	10.0	2.59	0.36	62	17	HARD	05-15-25-55-01
OK188608	59.2	14.0	0.4	32.3	10.3	2.73	0.38	73	19	HARD	01-09-14-76-01
OK15MASBx7 ARS 8-1	58.0	14.3	0.3	32.7	10.4	2.65	0.38	73	18	HARD	02-07-16-75-01

		SKCS Average Kernel						Hardness			
		Moisture		Weight		Diameter		SKCS		Class	Distribution
LINE	Wt/Bu (lb)	(%)	(sd)	(mg)	(sd)	(mm)	(sd)		(sd)		
OK16D101105	58.9	14.1	0.3	30.2	8.9	2.70	0.37	78	17	HARD	01-02-10-87-01
NE16562	57.1	13.6	0.4	29.3	9.0	2.60	0.37	52	20	MIXED	18-23-24-35-03
NI17410	58.5	13.4	0.4	29.3	9.7	2.56	0.36	64	17	HARD	04-12-19-65-01
NE17433	58.2	14.0	0.4	31.4	9.7	2.65	0.36	62	16	HARD	06-11-27-56-01
NHH17450	58.1	13.9	0.4	28.5	9.2	2.52	0.34	60	18	HARD	08-17-25-50-01
NHH17612	59.2	13.8	0.3	28.1	9.5	2.53	0.32	60	19	HARD	08-17-27-48-01

2020 SRPN Intraregional Production Zone

Southern High Plains

	Wheat		Flour			Noodle Color					
LINE	Protein (%)	Milling Yield (%)	Ash (%)	Protein (%)	PPO	L @ 0	a @ 0	b @ 0	Delta L 24 hrs	Delta a 24 hrs	Delta b 24 hrs
Kharkof	13.6	57.9	0.45	12.6	0.548	78.56	-1.77	24.18	-9.09	1.50	0.56
Scout66	13.3	67.6	0.44	12.5	0.511	78.80	-0.89	21.41	-11.03	1.53	1.88
TAM-107	12.9	66.3	0.41	12.3	0.478	78.15	-1.17	23.71	-11.05	1.61	0.73
Jagalene	12.7	66.5	0.45	12.0	0.469	79.15	-1.71	24.44	-9.10	1.43	0.38
K19U7124R10	14.1	63.9	0.46	13.1	0.161	78.36	-1.33	25.04	-7.83	1.39	2.65
K19U7126R37	13.0	63.7	0.46	12.4	0.149	79.39	-1.50	24.34	-6.86	1.58	3.57
KS15H137-2	12.5	66.2	0.45	12.0	0.523	78.97	-1.68	25.35	-10.36	1.63	1.31
KS17H17	13.0	66.1	0.46	12.5	0.361	78.60	-1.10	23.15	-8.91	1.48	2.30
KS17H91-1	11.8	64.0	0.44	11.5	0.455	81.02	-2.33	23.61	-7.94	1.30	1.89
TX15M8024	11.8	65.6	0.46	11.2	0.439	79.37	-1.39	22.85	-9.23	1.38	2.09
TX16A001183	12.2	64.7	0.43	11.4	0.489	80.00	-1.93	23.54	-9.50	1.47	1.66
TX16A001193	12.5	64.9	0.44	11.6	0.447	79.71	-1.57	22.87	-10.24	1.50	3.44
TX16A001205	12.8	66.7	0.41	12.0	0.439	79.21	-1.29	22.96	-10.57	1.62	2.34
TX16A001289	13.0	63.1	0.42	12.4	0.447	79.03	-1.44	23.84	-9.99	1.48	2.19
TX16A001405	12.1	66.7	0.41	11.1	0.469	79.98	-1.34	22.79	-10.27	1.49	3.07
TX16M9216	12.8	66.3	0.45	12.1	0.481	78.70	-1.28	23.94	-9.60	1.46	1.71
TX16M9315	12.2	64.7	0.48	11.6	0.502	78.63	-1.80	25.18	-9.91	1.61	1.49
ON1366277	12.9	65.7	0.43	12.3	0.423	78.27	-1.22	23.57	-8.61	1.66	1.15
ON13P016	12.8	66.0	0.43	11.9	0.163	79.54	-1.33	23.17	-7.58	1.36	4.14
19CP010066	12.3	66.2	0.42	11.7	0.601	79.48	-1.60	23.05	-10.36	1.52	3.11
19CP010063	12.7	64.4	0.49	11.7	0.455	77.95	-1.08	23.49	-10.65	1.80	2.32
19CP010068	13.1	63.7	0.47	12.6	0.449	77.99	-1.20	25.04	-9.51	1.40	1.20
19CP010057	13.0	67.4	0.41	12.3	0.619	77.00	-1.04	23.89	-11.86	1.63	0.40
BASF 1	13.0	67.7	0.41	12.5	0.439	79.95	-1.47	23.75	-10.67	1.48	3.79
BASF 2	13.2	67.2	0.41	12.5	0.515	79.26	-1.07	23.12	-11.73	1.65	2.19
LCH17-3481	13.0	65.6	0.44	12.8	0.581	78.76	-2.15	26.56	-10.39	1.81	-1.56
LCH17-5221	12.6	66.3	0.44	11.9	0.568	77.86	-1.88	25.08	-9.08	1.80	0.92
LCH17-5660	12.9	63.7	0.53	12.4	0.451	77.13	-2.07	30.59	-8.57	1.87	-1.98
LCH17-4196	12.3	69.0	0.42	11.7	0.496	79.39	-2.21	25.25	-8.99	1.68	-1.28
LCH18-7071	12.2	66.7	0.50	11.2	0.637	78.52	-1.90	26.45	-9.20	1.81	-0.50
CO15D098R	12.4	67.4	0.41	11.6	0.532	78.68	-2.06	26.94	-8.30	1.76	-0.56
CO14A136-135	12.4	68.0	0.42	11.8	0.591	80.23	-1.65	24.16	-9.53	1.51	1.21
CO14A055-258	11.5	69.5	0.43	10.9	0.496	80.15	-1.83	24.17	-8.88	1.47	0.91
CO16SF065	13.0	70.1	0.40	12.2	0.556	78.59	-1.63	24.39	-11.21	1.71	-0.23
CO16SF070	12.2	70.0	0.35	11.7	0.552	79.61	-1.77	23.98	-10.22	1.61	-0.31
KS12DH0090-172	13.9	67.9	0.41	13.2	0.475	75.34	-0.30	24.11	-9.72	1.40	-1.30
KS12DH0156-88	12.0	64.2	0.47	11.7	0.203	78.98	-1.76	26.62	-7.15	1.16	1.23
KS13DH0041-35	13.6	65.6	0.44	13.1	0.259	77.73	-1.25	26.75	-7.10	1.47	0.31
KS13DH0030-28	11.6	65.6	0.37	11.3	0.508	79.08	-1.87	25.60	-7.98	1.31	0.19
OK16729W	12.5	67.5	0.45	11.6	0.542	79.48	-1.71	23.53	-7.15	1.72	0.01
OK16D101089	12.9	67.7	0.41	12.6	0.433	78.67	-1.85	28.14	-7.45	1.48	-0.75
OK168512	12.3	64.0	0.39	11.1	0.561	79.37	-1.86	25.02	-7.96	1.61	2.08

	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	(%)	(%)	(%)	(%)							
OK188608	13.2	64.3	0.43	12.1	0.408	77.20	-1.52	25.34	-10.10	1.73	-1.62
OK15MASBx7 ARS 8-1	13.0	64.7	0.42	12.2	0.243	79.28	-1.50	25.12	-7.91	1.23	2.75
OK16D101105	13.8	66.2	0.48	12.8	0.444	75.46	-1.14	27.88	-10.87	2.16	-0.81
NE16562	12.8	68.0	0.41	12.1	0.504	79.24	-1.52	22.73	-10.41	1.72	1.18
NI17410	13.0	68.8	0.40	12.4	0.605	79.11	-1.35	22.62	-11.40	1.84	1.29
NE17433	12.6	66.7	0.43	12.1	0.553	79.47	-2.10	27.08	-10.40	1.75	0.42
NHH17450	13.0	68.5	0.42	12.2	0.562	79.12	-1.91	25.59	-10.21	1.99	0.36
NHH17612	12.8	67.7	0.43	12.0	0.607	77.49	-1.69	25.19	-9.04	1.94	-0.65

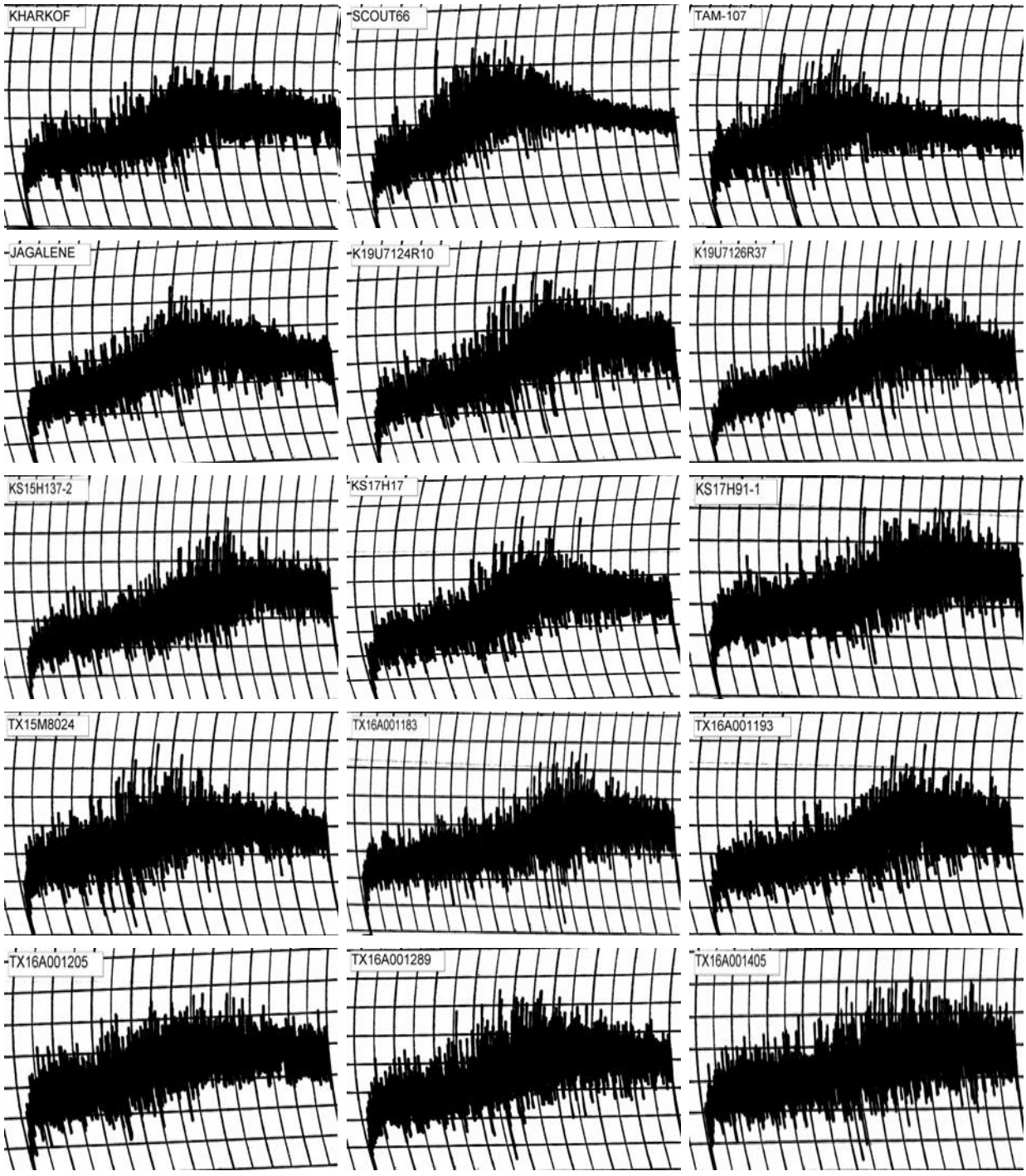
2020 SRPN Intraregional Production Zone

Southern High Plains

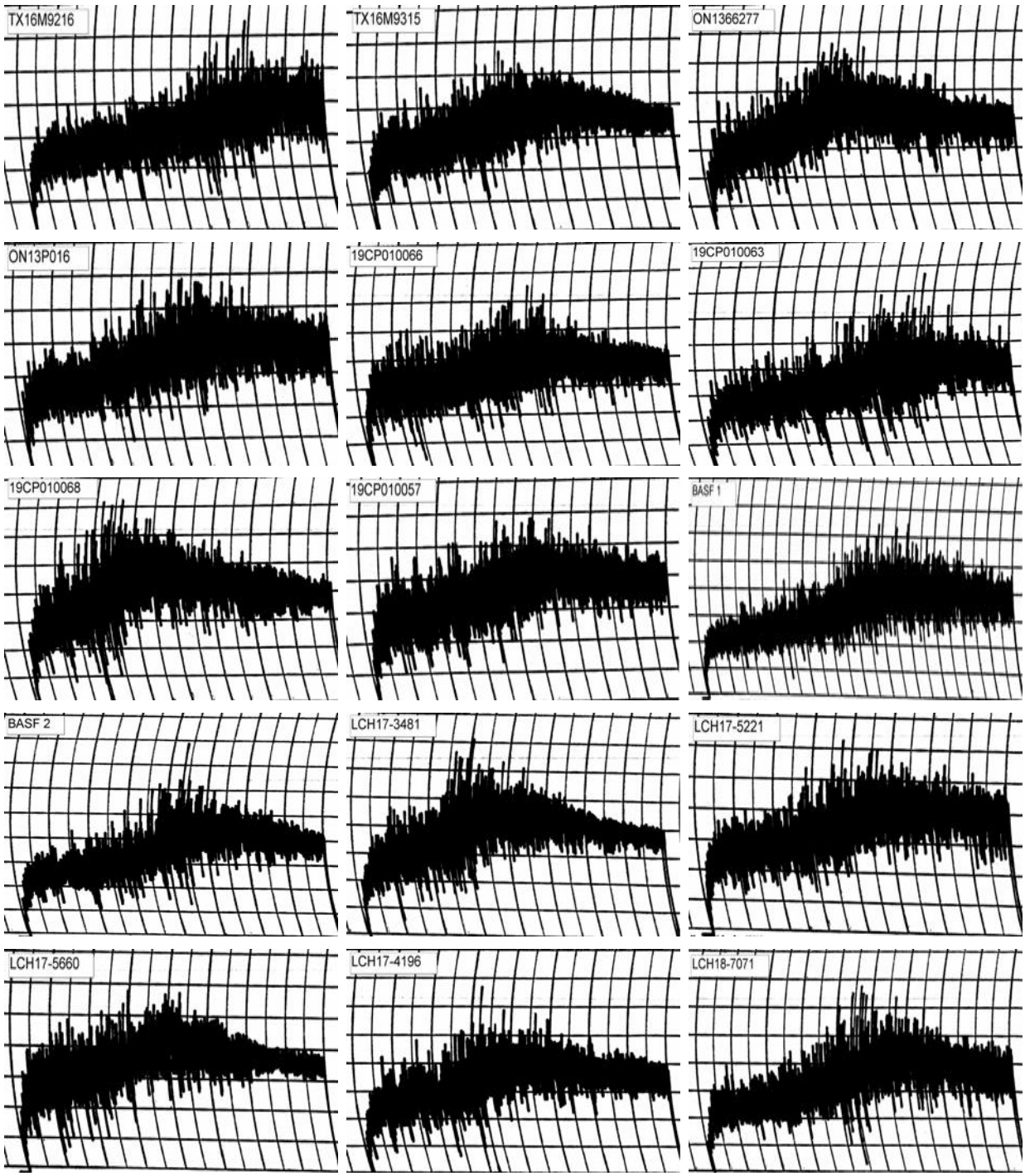
		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
Kharkof	12.6	63.5	4.63	4.63	3
Scout66	12.5	66.3	3.38	3.38	1
TAM-107	12.3	63.9	3.00	3.00	2
Jagalene	12.0	63.5	4.25	4.25	3
K19U7124R10	13.1	67.8	4.75	4.75	5
K19U7126R37	12.4	67.1	5.63	5.63	4
KS15H137-2	12.0	64.0	6.00	6.00	4
KS17H17	12.5	63.7	4.50	4.50	4
KS17H91-1	11.5	63.0	5.75	5.38	5
TX15M8024	11.2	63.1	3.88	3.50	3
TX16A001183	11.4	62.9	6.75	6.26	5
TX16A001193	11.6	64.8	5.50	5.23	5
TX16A001205	12.0	63.4	4.50	4.48	4
TX16A001289	12.4	64.0	4.38	4.38	4
TX16A001405	11.1	61.9	5.75	5.14	5
TX16M9216	12.1	64.1	5.88	5.88	5
TX16M9315	11.6	62.4	3.75	3.59	1
ON1366277	12.3	64.5	3.50	3.50	3
ON13P016	11.9	64.3	4.63	4.57	4
19CP010066	11.7	59.8	4.13	3.96	2
19CP010063	11.7	64.4	5.25	5.05	5
19CP010068	12.6	65.0	2.88	2.88	2
19CP010057	12.3	61.9	4.50	4.50	3
BASF 1	12.5	65.4	7.38	7.38	5
BASF 2	12.5	64.8	4.38	4.38	2
LCH17-3481	12.8	63.8	3.00	3.00	1
LCH17-5221	11.9	63.8	4.50	4.46	4
LCH17-5660	12.4	60.5	3.88	3.88	1
LCH17-4196	11.7	61.0	3.75	3.62	2
LCH18-7071	11.2	62.7	5.00	4.53	4
CO15D098R	11.6	63.1	5.13	4.91	4
CO14A136-135	11.8	63.0	7.13	6.93	4
CO14A055-258	10.9	62.6	6.13	5.34	5
CO16SF065	12.2	63.3	4.63	4.63	4
CO16SF070	11.7	62.4	4.75	4.57	4
KS12DH0090-172	13.2	65.4	4.25	4.25	1
KS12DH0156-88	11.7	62.3	4.00	3.83	1
KS13DH0041-35	13.1	62.7	3.50	3.50	0
KS13DH0030-28	11.3	62.7	3.00	2.73	1
OK16729W	11.6	61.8	3.00	2.85	1
OK16D101089	12.6	64.4	3.38	3.38	2
OK168512	11.1	61.9	6.38	5.68	4

		Mixograph			
	Flour Protein	Absorption	As-Is	Corrected	Tolerance
Line	(%)	(%)	(min)	(min)	
OK188608	12.1	66.7	5.88	5.88	5
OK15MASBx7 ARS 8-1	12.2	66.3	4.50	4.50	6
OK16D101105	12.8	64.3	1.88	1.88	0
NE16562	12.1	63.1	4.50	4.50	4
NI17410	12.4	65.1	6.50	6.50	4
NE17433	12.1	64.6	5.88	5.88	5
NHH17450	12.2	62.8	3.00	3.00	2
NHH17612	12.0	63.9	5.50	5.49	4

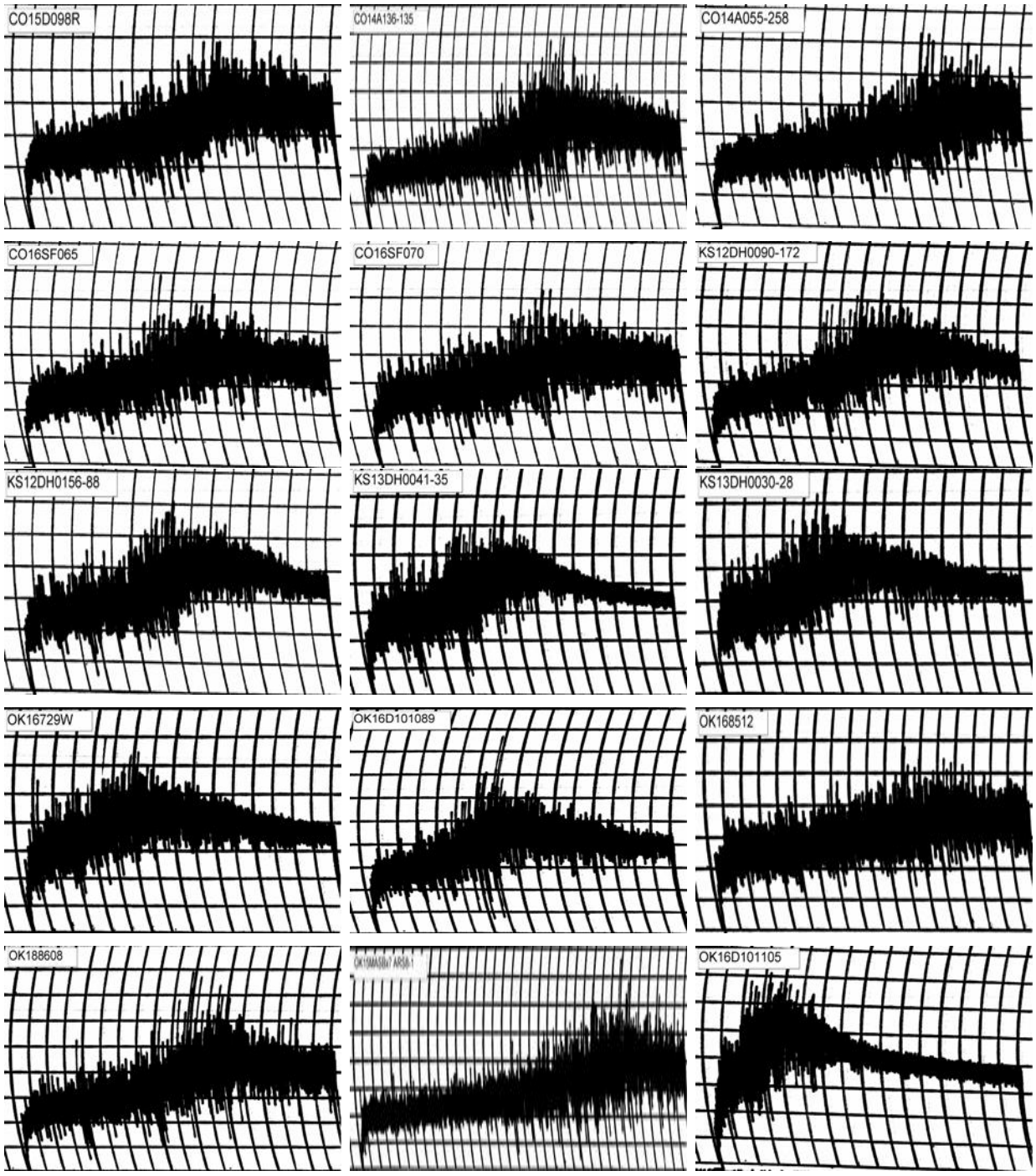
2020 SRPN Intraregional Production Zone
Southern High Plains



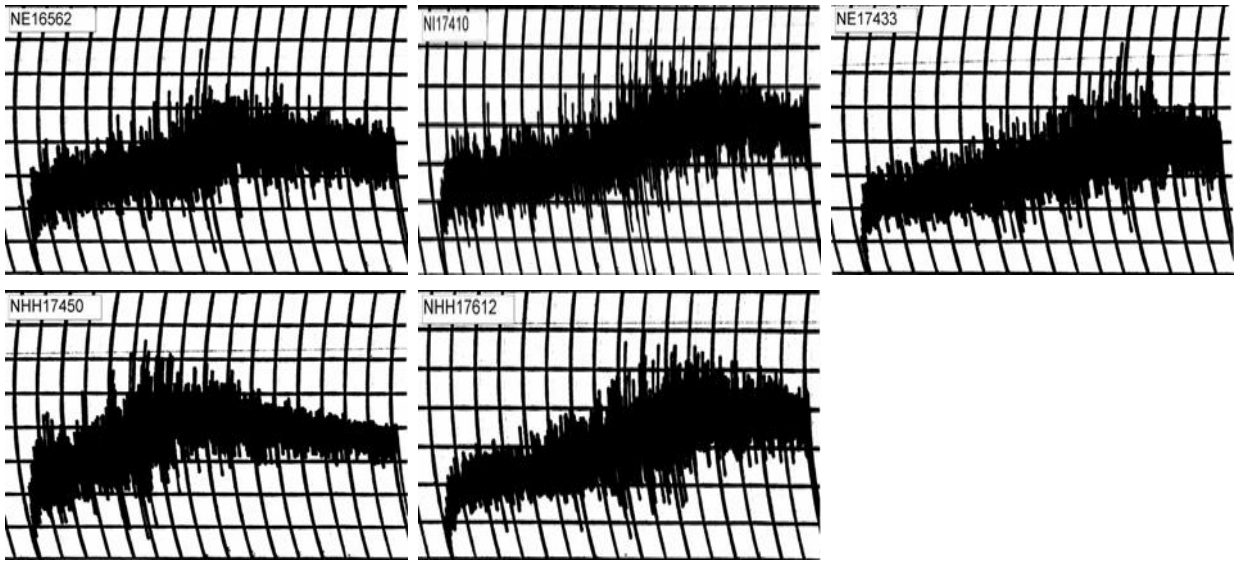
2020 SRPN Intraregional Production Zone
Southern High Plains



2020 SRPN Intraregional Production Zone
Southern High Plains



2020 SRPN Intraregional Production Zone
Southern High Plains



2020 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)
Kharkof	148.83	247.83	195.42	52.42	310.92	115.50	6.53
Scout66	135.17	251.58	190.17	61.42	317.58	127.42	6.40
TAM-107	136.00	271.92	199.92	72.00	321.17	121.25	6.40
Jagalene	139.17	236.25	170.67	65.58	292.67	122.00	6.27
K19U7124R10	141.50	224.25	170.67	53.58	296.92	126.25	6.27
K19U7126R37	128.17	214.33	152.50	61.83	277.92	125.42	6.13
KS15H137-2	94.25	291.58	177.75	113.83	292.08	114.33	6.20
KS17H17	141.42	246.83	177.75	69.08	291.08	113.33	6.33
KS17H91-1	129.67	283.92	201.33	82.58	320.00	118.67	6.33
TX15M8024	130.83	244.00	186.50	57.50	302.33	115.83	6.47
TX16A001183	139.50	262.58	186.00	76.58	309.00	123.00	6.27
TX16A001193	129.50	240.42	181.75	58.67	310.42	128.67	6.33
TX16A001205	160.75	256.58	199.58	57.00	318.00	118.42	6.47
TX16A001289	141.67	254.75	202.50	52.25	320.67	118.17	6.53
TX16A001405	142.67	257.50	185.08	72.42	314.08	129.00	6.33
TX16M9216	138.17	229.67	170.17	59.50	290.92	120.75	6.33
TX16M9315	155.67	232.67	178.75	53.92	295.75	117.00	6.40
ON1366277	123.50	257.42	176.08	81.33	276.92	100.83	6.40
ON13P016	143.42	234.17	172.67	61.50	296.50	123.83	6.27
19CP010066	124.17	240.50	177.83	62.67	298.58	120.75	6.33
19CP010063	146.67	252.08	174.75	77.33	303.33	128.58	6.20
19CP010068	144.25	247.92	186.25	61.67	301.33	115.08	6.47
19CP010057	143.75	231.75	165.42	66.33	284.25	118.83	6.27
BASF 1	99.58	264.33	188.92	75.42	316.75	127.83	6.27
BASF 2	145.83	258.33	194.50	63.83	306.00	111.50	6.53
LCH17-3481	136.75	250.83	182.08	68.75	301.17	119.08	6.33
LCH17-5221	152.58	250.92	190.75	60.17	299.75	109.00	6.47
LCH17-5660	133.00	242.67	163.67	79.00	284.75	121.08	6.27
LCH17-4196	93.83	253.92	181.17	72.75	304.25	123.08	6.27
LCH18-7071	127.33	263.58	187.08	76.50	302.08	115.00	6.33
CO15D098R	132.00	279.75	183.00	96.75	296.00	113.00	6.27
CO14A136-135	124.50	264.92	185.92	79.00	311.83	125.92	6.27
CO14A055-258	78.17	281.92	189.83	92.08	322.42	132.58	6.13
CO16SF065	98.92	272.67	182.42	90.25	294.17	111.75	6.27
CO16SF070	144.67	273.50	194.50	79.00	310.08	115.58	6.40
KS12DH0090-172	158.42	241.00	192.33	48.67	300.08	107.75	6.60
KS12DH0156-88	127.17	247.33	184.08	63.25	307.08	123.00	6.40
KS13DH0041-35	127.33	228.42	173.83	54.58	289.67	115.83	6.40
KS13DH0030-28	125.50	229.75	169.83	59.92	300.17	130.33	6.27
OK16729W	128.58	252.08	182.92	69.17	294.75	111.83	6.40
OK16D101089	122.00	267.08	195.33	71.75	315.58	120.25	6.40
OK168512	98.75	225.25	166.42	58.83	299.42	133.00	6.20
OK188608	135.08	257.00	187.75	69.25	306.42	118.67	6.40
OK15MASBx7 ARS 8-1	151.17	240.17	175.83	64.33	301.92	126.08	6.27

	RVA						
	Stirring Number	Peak Viscosity	Trough Viscosity	Breakdown	Final Viscosity	Set back	Peak Time
Line	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(RVU)	(min)
OK16D101105	136.75	267.42	188.83	78.58	299.50	110.67	6.40
NE16562	158.67	262.00	189.33	72.67	311.17	121.83	6.40
NI17410	136.17	239.33	181.67	57.67	305.00	123.33	6.33
NE17433	151.58	262.42	185.50	76.92	307.33	121.83	6.33
NHH17450	124.83	255.25	183.33	71.92	303.75	120.42	6.33
NHH17612	127.58	246.00	173.58	72.42	302.00	128.42	6.20

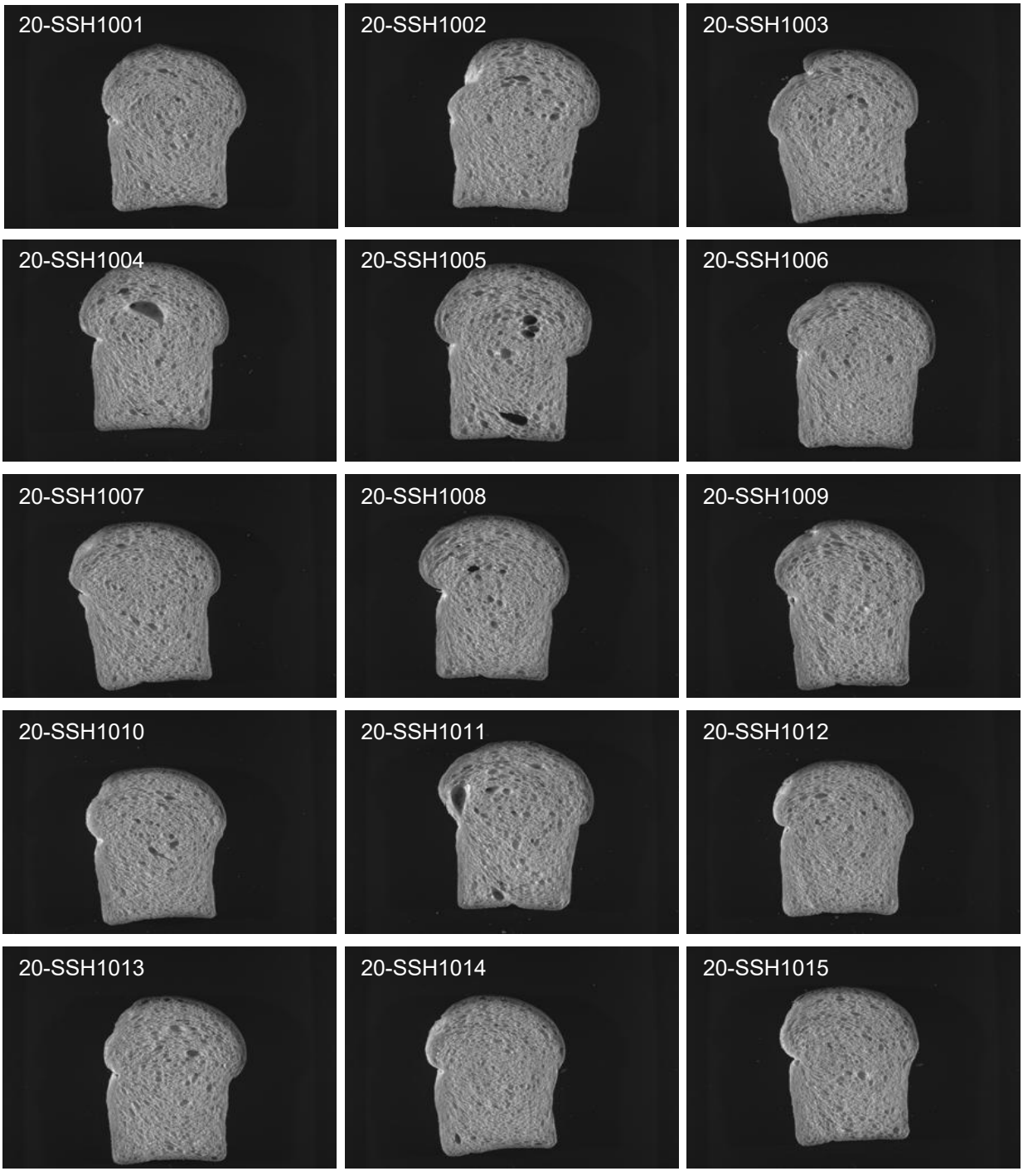
2020 SRPN Intraregional Production Zone

Southern High Plains

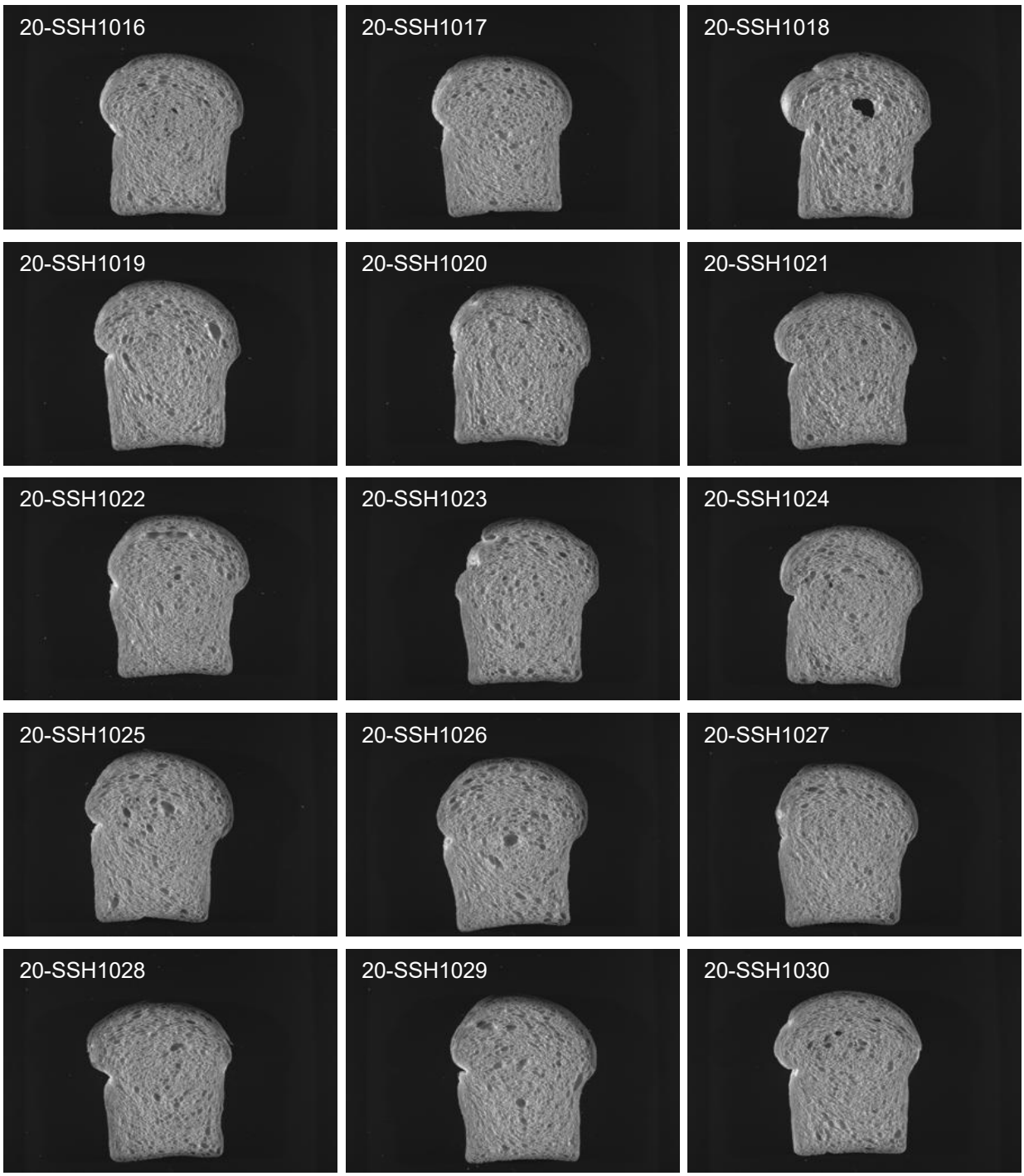
	Flour		Mix Time		Dough					
	Protein	Water Abs.	As-is	Corrected	Weight	Proof Height	Crumb Grain	As-Rec'd.	Specific Volume	Loaf Volume Potential
Line	(%)	(%)	(min)	(min)	(g)	(cm)		(cc)	(cc/g)	(cc/%)
Kharkof	12.6	63.3	5.00	5.00	172.3	7.7	4.0	895	6.0	62
Scout66	12.5	66.4	4.00	4.00	176.2	7.9	3.5	985	6.4	72
TAM-107	12.3	64.3	4.25	4.25	173.9	7.8	3.5	1005	6.7	76
Jagalene	12.0	63.4	4.50	4.50	172.8	7.5	3.0	970	6.5	74
K19U7124R10	13.1	67.4	5.25	5.25	176.9	8.1	2.5	1080	7.1	77
K19U7126R37	12.4	67.4	6.75	6.75	176.5	7.6	5.0	980	6.5	73
KS15H137-2	12.0	64.3	6.25	6.25	173.8	7.3	4.5	950	6.3	72
KS17H17	12.5	63.4	5.38	5.38	172.8	7.4	3.5	955	6.4	69
KS17H91-1	11.5	63.4	6.50	6.08	172.3	7.3	3.5	995	6.8	82
TX15M8024	11.2	63.4	5.25	4.73	172.9	7.1	4.0	865	5.7	69
TX16A001183	11.4	62.9	8.25	7.65	172.6	7.4	3.5	965	6.6	79
TX16A001193	11.6	65.2	7.00	6.66	174.2	7.4	4.0	865	5.7	66
TX16A001205	12.0	63.3	4.75	4.73	173.0	7.5	3.5	960	6.4	74
TX16A001289	12.4	64.4	5.13	5.13	173.3	7.5	3.5	880	5.8	62
TX16A001405	11.1	62.2	6.50	5.81	171.2	7.4	3.5	885	5.9	72
TX16M9216	12.1	64.4	6.25	6.25	174.2	7.1	3.5	925	6.0	69
TX16M9315	11.6	62.3	4.00	3.83	171.9	7.4	4.0	895	5.9	69
ON1366277	12.3	64.4	4.13	4.13	174.4	7.8	2.5	980	6.5	73
ON13P016	11.9	64.5	5.00	4.93	174.3	7.7	3.0	965	6.4	75
19CP010066	11.7	59.4	4.88	4.68	168.6	7.4	3.0	885	6.1	68
19CP010063	11.7	64.5	7.00	6.73	174.3	7.5	3.5	875	5.8	66
19CP010068	12.6	65.0	3.63	3.63	174.9	7.7	4.0	945	6.2	67
19CP010057	12.3	62.0	4.75	4.75	171.6	7.9	2.5	955	6.5	70
BASF 1	12.5	65.1	8.75	8.75	173.8	7.3	4.0	920	6.2	65
BASF 2	12.5	65.0	5.38	5.38	174.4	7.6	4.0	980	6.5	71
LCH17-3481	12.8	64.1	4.00	4.00	174.2	8.0	4.0	1010	6.7	72
LCH17-5221	11.9	64.1	5.00	4.95	173.7	7.3	5.0	910	6.1	68
LCH17-5660	12.4	60.9	3.75	3.75	170.8	7.4	2.5	895	6.1	64
LCH17-4196	11.7	61.2	4.25	4.10	170.8	7.6	3.5	960	6.5	76
LCH18-7071	11.2	62.7	6.38	5.78	172.1	7.5	4.0	935	6.2	77
CO15D098R	11.6	63.2	5.75	5.50	172.4	7.6	4.0	960	6.5	76
CO14A136-135	11.8	63.1	9.00	8.75	171.4	7.5	5.0	980	6.6	77
CO14A055-258	10.9	62.6	7.38	6.43	172.6	7.3	4.0	930	6.2	79
CO16SF065	12.2	63.0	4.88	4.88	172.4	7.7	3.5	970	6.4	73
CO16SF070	11.7	62.2	4.75	4.57	171.2	7.7	4.5	935	6.3	73
KS12DH0090-172	13.2	65.1	4.75	4.75	174.6	7.9	4.0	955	6.4	65
KS12DH0156-88	11.7	62.0	4.75	4.55	171.4	7.7	3.5	935	6.5	73
KS13DH0041-35	13.1	63.0	4.00	4.00	172.2	8.2	4.0	1010	6.8	70
KS13DH0030-28	11.3	62.7	3.25	2.96	172.3	7.5	2.5	865	5.8	68
OK16729W	11.6	61.8	3.25	3.09	171.4	7.4	3.0	940	6.3	74
OK16D101089	12.6	64.2	5.00	5.00	174.0	7.4	4.5	975	6.5	71
OK168512	11.1	62.2	6.38	5.68	171.3	6.9	3.0	815	5.4	63
OK188608	12.1	67.1	6.50	6.50	176.2	8.2	4.0	1040	6.8	81

	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/%)
OK15MASBx7 ARS 8-1	12.2	65.9	17.00	17.00	173.9	7.4	3.0	925	6.2	68
OK16D101105	12.8	64.5	2.00	2.00	174.6	6.9	1.5	830	5.4	54
NE16562	12.1	63.1	5.00	5.00	173.0	7.8	4.0	980	6.5	75
NI17410	12.4	64.7	6.75	6.75	173.5	7.6	3.5	1030	6.9	78
NE17433	12.1	64.9	7.00	7.00	173.9	7.6	4.0	1025	6.9	80
NHH17450	12.2	62.7	4.38	4.38	172.0	7.6	4.0	965	6.5	73
NHH17612	12.0	63.7	6.75	6.74	174.0	7.5	4.5	950	6.3	72

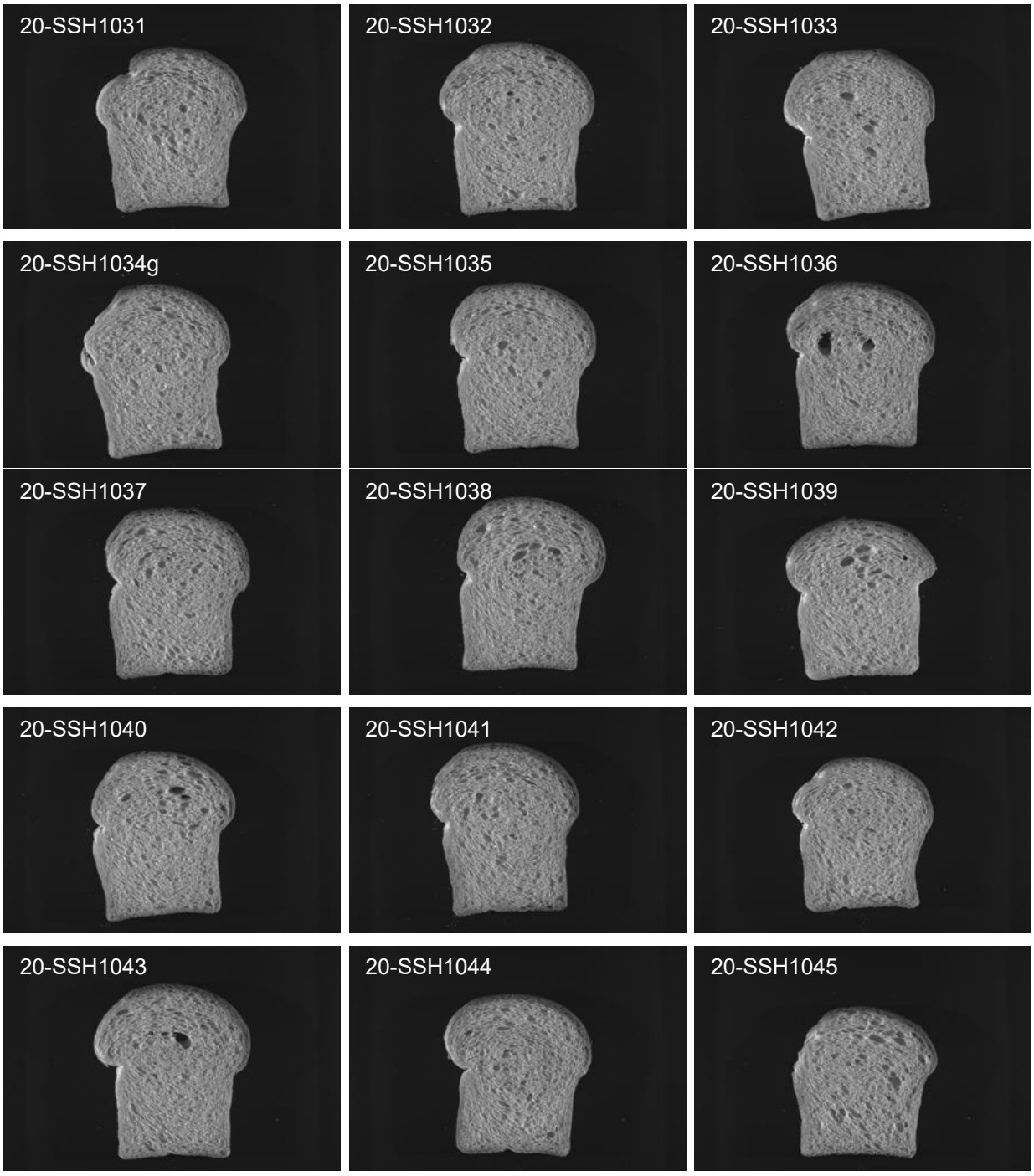
2020 SRPN Intraregional Production Zone
Southern High Plains



2020 SRPN Intraregional Production Zone
Southern High Plains



2020 SRPN Intraregional Production Zone
Southern High Plains



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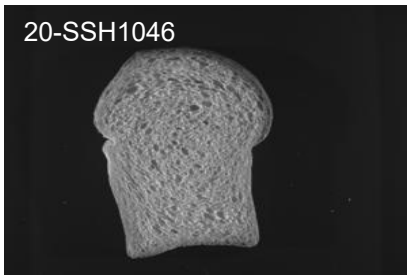
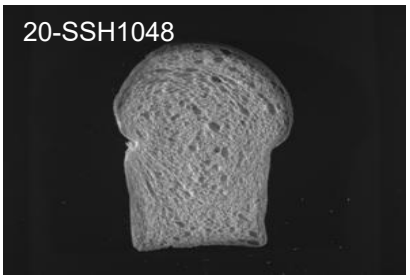
Southern High Plains





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
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Thank you for reviewing this report on milling and baking data of 2020 Regional Performance Nursery samples. The report with data can be also viewed at https://www.ars.usda.gov/plains-area/lincoln-ne/wheat-sorghum-and-forage-research/docs/hard-winter-wheat-regional-nursery-program/research/. Please let me know if you have any comments on this report. I can be reached at (785) 776-2750 or by email, Richard.chen@usda.gov