



ARGENTINE WHEAT

INSTITUTIONAL REPORT ON QUALITY

2014 | 2015 CROP

trigoargentino.com.ar

WHEAT (TRITICUM AESTIVUM)

2014/2015 GROWING SEASON

FINAL CONSIDERATIONS AND SAMPLING STRUCTURE

2014/2015 growing season in Argentina saw a significant increase in wheat acreage, with a total production of 13.8 Mt, up 25% from the previous season. Acreage was 5.04 million hectares, up from 3.65 million hectares. Average yield was 2,915 kg/ha.

Temperatures were above normal, followed by heavy frosts. There were losses due to stem damage in some wheat varieties and plots. The presence of foliar diseases, predominantly wheat leaf rust and, to a lesser extent, yellow leaf spot and Septoria leaf blotch required up to two treatments. Some regions were affected by wheat aphids. There was some fusarium ear blight in sub-regions I, II, IIN and IIS.

The intense heat of October negatively impacted on grain

filling, chiefly in later plots, and led to smaller grains. Test weight and 1000-grain weight were lower, due to shorter grain filling, which cause harvest to start earlier. Weather conditions and diseases affected yields. Based on initial plot conditions and farmers' expectations, yields were expected to be higher.

Nitrogen assimilation in the soil was not efficient, neither was nitrogen translocation from the leaves to the grain. This affected yield and industrial quality with generally low protein and gluten content.

Sub-region IV, the major wheat growing area in the country, featured mid to high yields. Differences depended upon rainfall, disease control and technologies applied. Yields ranged from 3,000 to 6,000 kg/hectare, with different test weights, good 1000-grain weight and nice color.

PLANTED ACREAGE, HARVESTED ACREAGE, PRODUCTION AND YIELD, BY SUB-REGIONS

Based on data from the MAGyP. 2014-2015 Crop

SUBREGION	AREA PLANTED (HA)	AREA HARVESTED (HA)	YIELD (KG/HA)	PRODUCTION (TN)
I	540.000	522.600	2.694	1.407.920
II North	628.650	617.400	3.306	2.041.278
II South	591.340	559.770	3.487	1.951.713
III	318.000	313.800	2.646	830.205
IV	594.810	536.610	3.466	1.860.101
V North	636.450	625.760	3.007	1.881.430
V South	1.428.065	1.376.715	2.601	3.581.351
NEA	140.020	95.025	1.164	110.650
NOA	161.150	83.770	1.554	130.220
NATIONAL	5.038.485	4.731.450	2.915	13.794.868

SAMPLING

3.564 PRIMARY SAMPLES

WHEAT ANALYSIS

246 LOCATY COMPOSITE SAMPLES

WHEAT ANALYSIS

FLOUR ANALYSIS

9 SUBREGION COMPOSITE SAMPLES

WHEAT ANALYSIS

FLOUR ANALYSIS

SAMPLING STRUCTURE

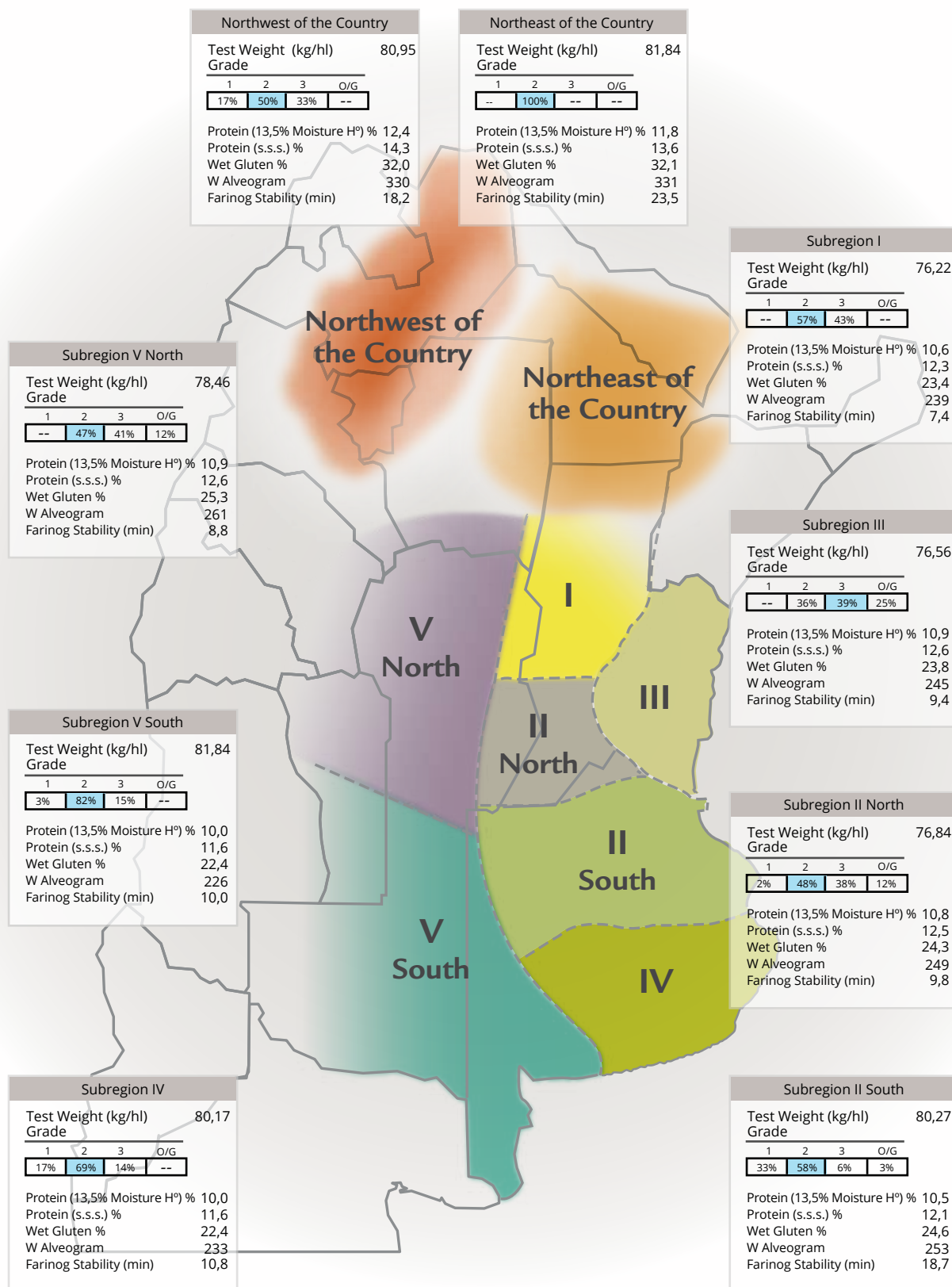
SUBREGION	LOCALITY COMPOSITE	SAMPLING (TONS)	PRODUCTION (TONS)	PRODUCTION SAMPLED (%)
I	15	56.550	1.407.920	4,02
II North	52	208.000	2.041.278	10,19
II South	33	105.000	1.951.713	5,38
III	27	106.005	830.205	12,77
IV	29	109.297	1.860.101	5,88
V North	17	74.838	1.881.430	3,98
V South	62	217.561	3.581.351	6,07
NEA	5	20.000	110.650	18,08
NOA	6	19.000	130.220	14,59
TOTALS	246	916.251	13.794.868	6,64

ARGENTINE WHEAT

Main Quality Parameters

Main Quality Parameters

Wheat



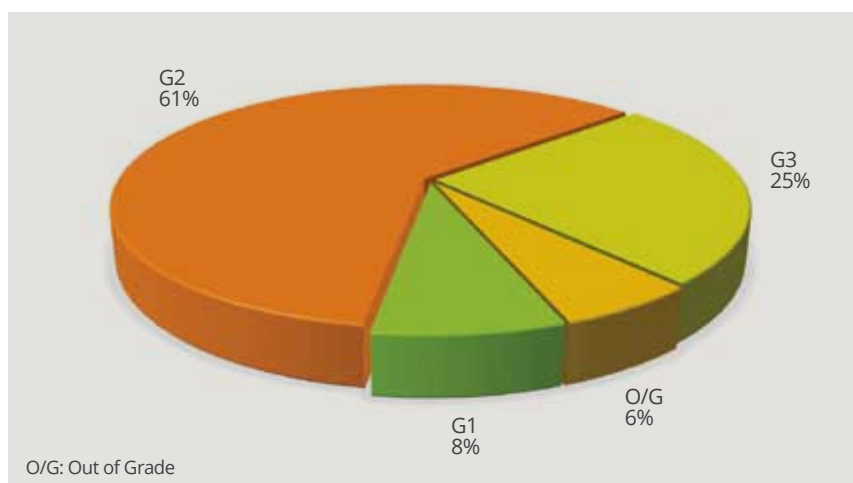
NATIONAL AVERAGES

*Weighted averages by tons
produced in each region*

*National Averages
Wheat*

WHEAT ANALYSIS	Minimum	Maximum	Average
Test Weight (kg/hl)	68,20	84,85	79,29
Total Damaged Kernels (%)	0,00	8,00	0,60
Foreign Material (%)	0,06	1,70	0,38
Shrunken and Broken Kernels (%)	0,12	2,46	0,81
Yellow Berry Kernels (%)	0,00	18,60	3,15
Protein (13,5% Moisture) (%)	8,9	14,2	10,5
Protein (s.s.s.) (%)	10,3	16,4	12,1
Weight of 1000 Kernels (gr.)	24,42	41,30	32,22
Ash (% dry basis)	1,320	2,205	1,830

GRADE DISTRIBUTION



FLOUR ANALYSIS		Minimum	Maximum	Average
MILLING	Wet Gluten (%)	17,7	34,4	23,3
	Dry Gluten (%)	6,2	12,7	8,3
	Falling Number (sec.)	233	480	406
	Flour Yield (%)	67,1	75,3	70,8
	Ash (dry basis) (%)	0,469	0,855	0,656
FARINOGRAM	Water Absorption (14% H°) (%)	53,3	63,3	57,4
	Development Time (min.)	1,4	41,7	5,0
	Stability (min.)	1,2	43,6	10,9
	Degree of Softening (12 min.)	9	98	48
ALVEOGRAM	P (mm)	62	135	97
	L (mm)	38	123	69
	W Joules x 10-4	165	354	238
	P / L	0,53	3,39	1,52

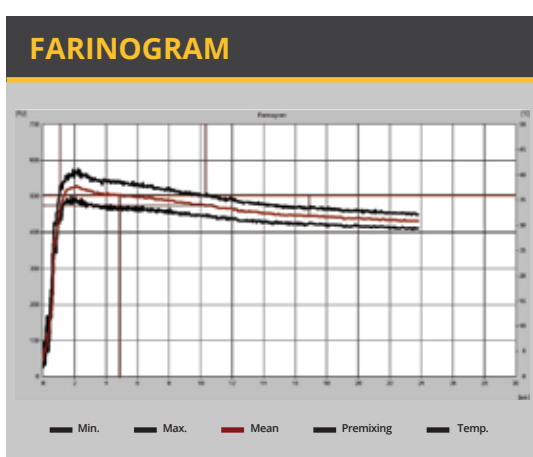
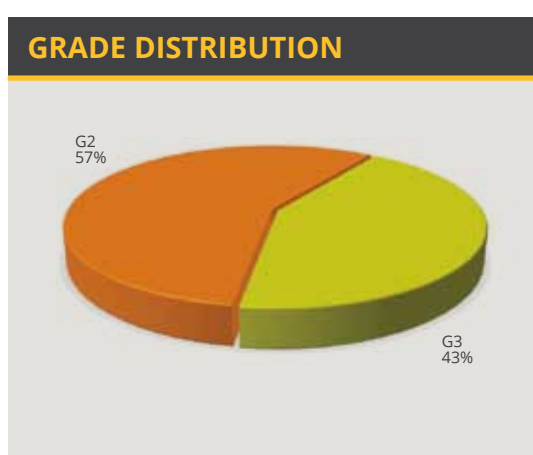
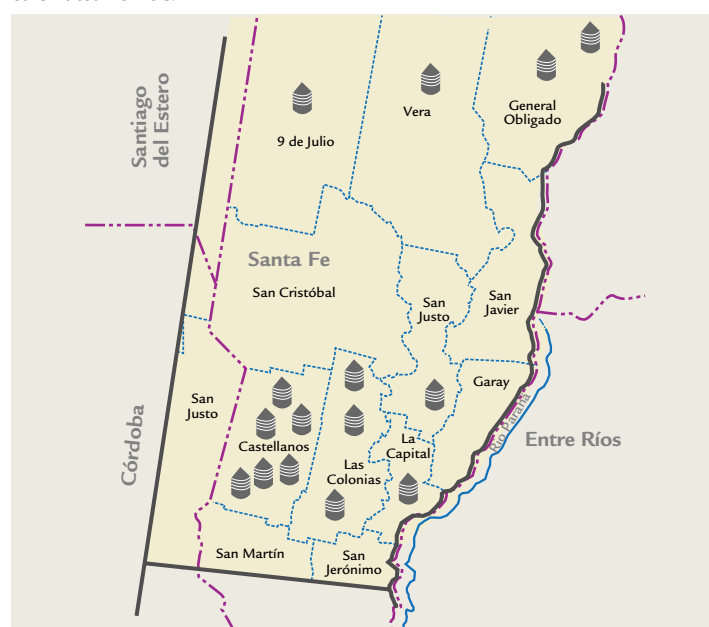
SUBREGION I – ANALYSIS RESULTS

Weighted averages by tons of sample sets per location

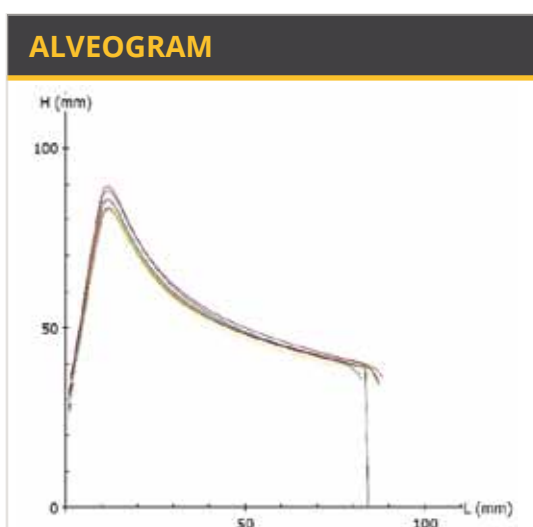
Wheat

WHEAT ANALYSIS	Minimum	Maximum	Average
Test Weight (kg/hl)	68,20	79,60	76,22
Total Damaged Kernels (%)	0,38	1,38	0,83
Foreign Material (%)	0,12	0,46	0,25
Shrunken and Broken Kernels (%)	0,66	1,34	1,04
Yellow Berry Kernels (%)	3,10	12,80	7,51
Protein (13,5% Moisture) (%)	9,9	12,6	10,6
Weight of 1000 Kernels (gr.)	25,70	31,60	28,20
Ash (% dry basis)	1,695	1,985	1,838

Total damaged kernels includes 0,09% green kernels, 0,18% frosty kernels, 0,21% sprouted kernels, and 0,15% insect chewed kernels and 0,20% calcinated kernels.



FLOUR ANALYSIS		Minimum	Maximum	Average
MILLING	Wet Gluten (%)	19,9	26,4	23,4
	Dry Gluten (%)	7,4	9,8	8,7
	Falling Number (sec.)	282	404	365
	Flour Yield (%)	69,6	72,8	71,1
	Ash (dry basis) (%)	0,654	0,855	0,749
FARINOGRAM	Water Absorption (14% H°) (%)	55,7	57,7	56,8
	Development Time (min.)	1,8	9,7	3,1
	Stability (min.)	2,0	22,6	7,4
	Degree of Softening (12 min.)	23	85	62
ALVEOGRAM	P (mm)	71	111	87
	L (mm)	60	100	82
	W Joules x 10-4	199	272	239
	P / L	0,72	1,85	1,06



These results were elaborated with 15 composite samples prepared proportionally from 349 primary samples (farmer deliveries)

SUBREGION II NORTH – ANALYSIS RESULTS

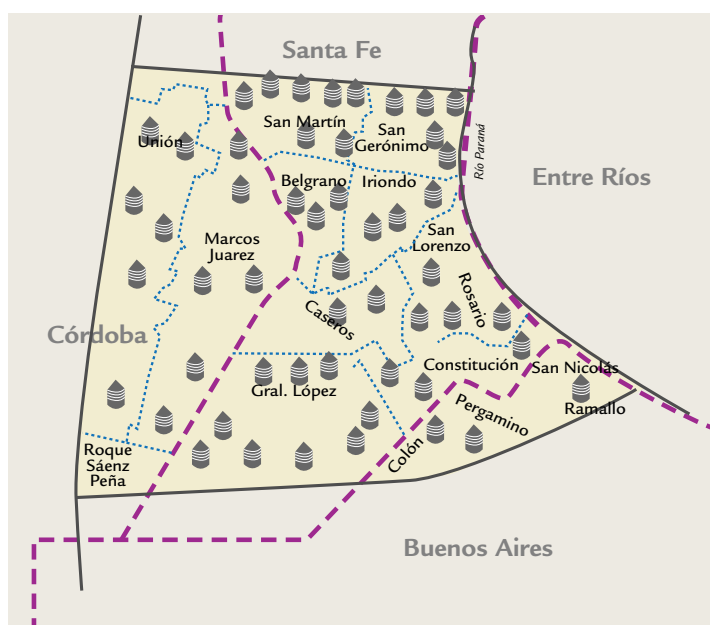
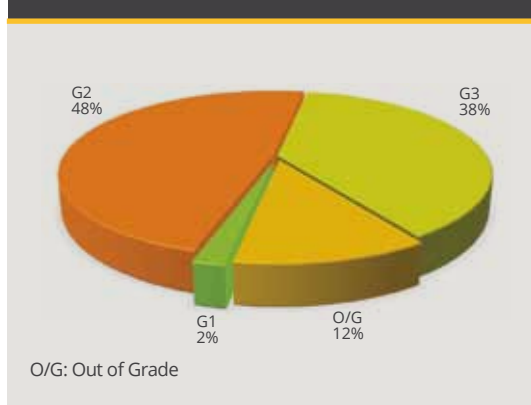
Weighted averages by tons of sample sets per location

Wheat

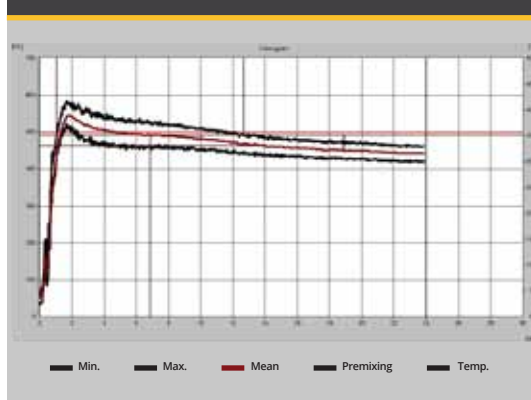
WHEAT ANALYSIS	Minimum	Maximum	Average
Test Weight (kg/hl)	69,60	80,70	76,84
Total Damaged Kernels (%)	0,10	8,00	1,34
Foreign Material (%)	0,10	1,20	0,39
Shrunken and Broken Kernels (%)	0,30	2,00	0,89
Yellow Berry Kernels (%)	0,00	1,20	0,28
Protein (13,5% Moisture) (%)	9,5	11,9	10,8
Protein (s.s.s.) (%)	11,0	13,8	12,5
Weight of 1000 Kernels (gr.)	24,80	32,60	29,46
Ash (% dry basis)	1,735	2,205	1,939

Total damaged kernels includes 0,23% sprouted kernels, 0,07% calcinated kernels, 0,11% insect chewed kernels and 0,92% nibbled in the bud

GRADE DISTRIBUTION

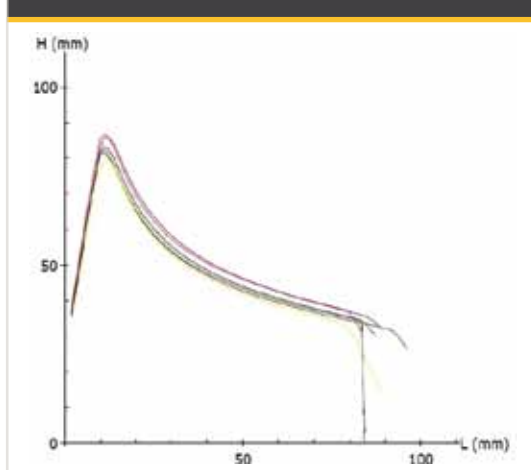


FARINOGRAM



FLOUR ANALYSIS		Minimum	Maximum	Average
MILLING	Wet Gluten (%)	20,4	27,6	24,3
	Dry Gluten (%)	7,3	9,3	8,3
	Falling Number (sec.)	233	480	411
	Flour Yield (%)	68,4	73,8	70,9
	Ash (dry basis) (%)	0,485	0,805	0,652
FARINOGRAM	Water Absorption (14% H°) (%)	53,4	59,1	56,0
	Development Time (min.)	1,5	16,8	4,5
	Stability (min.)	1,9	36,5	9,8
	Degree of Softening (12 min.)	15	85	51
ALVEOGRAM	P (mm)	65	113	86
	L (mm)	55	120	84
	W Joules x 10-4	182	329	249
	P / L	0,55	2,05	1,03

ALVEOGRAM



These results were elaborated with 52 composite samples prepared proportionally from 407 primary samples (farmer deliveries)

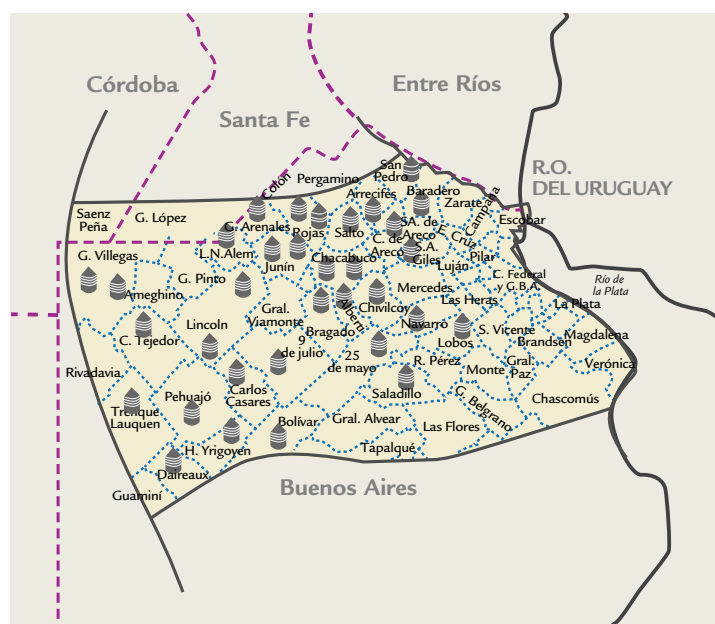
SUBREGION II SOUTH – ANALYSIS RESULTS

Weighted averages by tons of sample sets per location

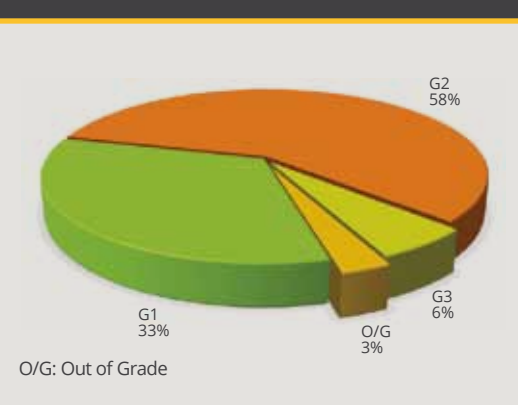
Wheat

WHEAT ANALYSIS	Minimum	Maximum	Average
Test Weight (kg/hl)	77,70	82,60	80,27
Total Damaged Kernels (%)	0,04	0,88	0,28
Foreign Material (%)	0,06	1,70	0,29
Shrunken and Broken Kernels (%)	0,14	1,22	0,46
Yellow Berry Kernels (%)	0,00	6,02	1,49
Protein (13,5% Moisture) (%)	9,5	11,9	10,5
Protein (s.s.s.) (%)	10,9	13,7	12,1
Weight of 1000 Kernels (gr.)	29,39	39,05	33,13
Ash (% dry basis)	1,610	1,967	1,729

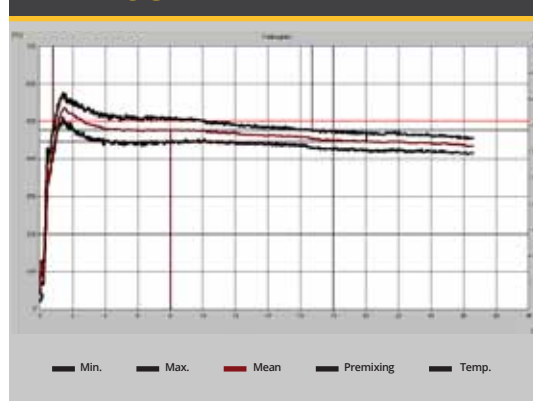
Total damaged kernels includes 0,03% frosty kernels, 0,06% sprouted kernels, 0,08% calcinated kernels, 0,11% insect chewed kernels and 0,09% germ-chewed kernel.



GRADE DISTRIBUTION

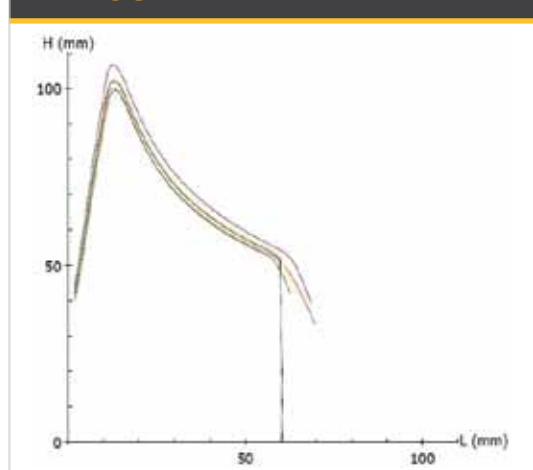


FARINOGRAM



FLOUR ANALYSIS		Minimum	Maximum	Average
MILLING	Wet Gluten (%)	21,0	32,4	24,6
	Dry Gluten (%)	7,8	12,0	9,1
	Falling Number (seg.)	338	478	411
	Flour Yield (%)	68,8	74,1	72,2
	Ash (dry basis) (%)	0,469	0,713	0,627
FARINOGRAM	Water Absorption (14% H ^o) (%)	55,4	60,3	57,5
	Development Time (min.)	1,7	20,0	8,6
	Stability (min.)	2,1	35,1	18,7
	Degree of Softening (12 min.)	9	86	32
ALVEOGRAM	P (mm)	82	125	104
	L (mm)	43	85	64
	W Joules x 10-4	206	333	253
	P / L	0,96	2,72	1,64

ALVEOGRAM



These results were elaborated with 33 composite samples prepared proportionally from 547 primary samples (farmer deliveries)

SUBREGION III – ANALYSIS RESULTS

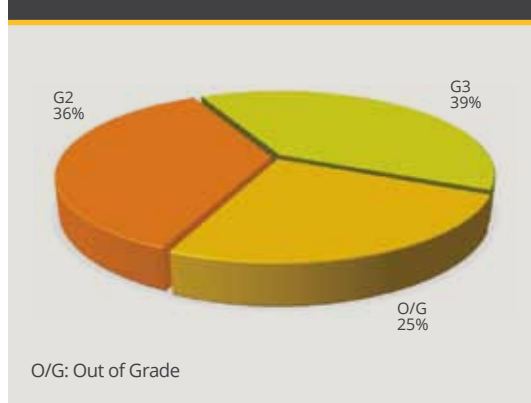
Weighted averages by tons of sample sets per location

Wheat

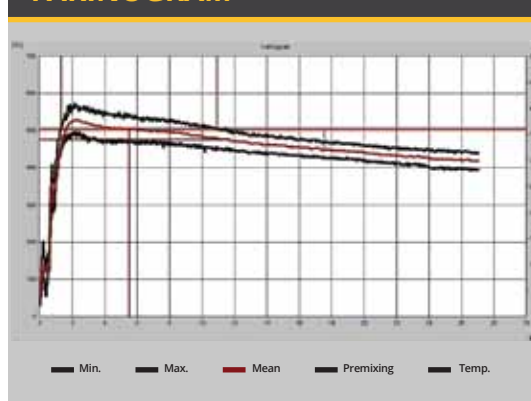
WHEAT ANALYSIS	Minimum	Maximum	Average
Test Weight (kg/hl)	73,50	79,30	76,56
Total Damaged Kernels (%)	0,47	4,89	1,97
Foreign Material (%)	0,09	0,80	0,35
Shrunken and Broken Kernels (%)	0,3	2,12	1,09
Yellow Berry Kernels (%)	0,90	5,15	2,72
Protein (13,5% Moisture) (%)	10,3	11,3	10,9
Protein (s.s.s.) (%)	11,9	13,1	12,6
Weight of 1000 Kernels (gr.)	27,40	36,16	31,35
Ash (% dry basis)	1,320	1,860	1,612

Total damaged kernels includes 0,14% green kernels, 1,13% sprouted kernels, 0,05% insect chewed kernels and 0,61% calcinated kernels.

GRADE DISTRIBUTION

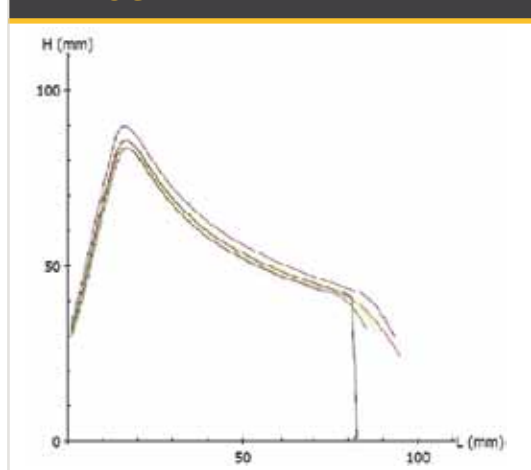


FARINOGRAM



FLOUR ANALYSIS		Minimum	Maximum	Average
MILLING	Wet Gluten (%)	18,6	28,0	23,8
	Dry Gluten (%)	7,0	10,4	8,8
	Falling Number (seg.)	271	403	367
	Flour Yield (%)	68,3	74,2	71,2
	Ash (dry basis) (%)	0,602	0,775	0,685
FARINOGRAM	Water Absorption (14% H ² O) (%)	53,3	59,3	56,2
	Development Time (min.)	1,9	8,6	3,5
	Stability (min.)	3,8	18,7	9,4
	Degree of Softening (12 min.)	30	88	49
ALVEOGRAM	P (mm)	63	110	84
	L (mm)	54	116	86
	W Joules x 10-4	188	288	245
	P / L	0,57	1,75	0,97

ALVEOGRAM



These results were elaborated with 27 composite samples prepared proportionally from 549 primary samples (farmer deliveries).

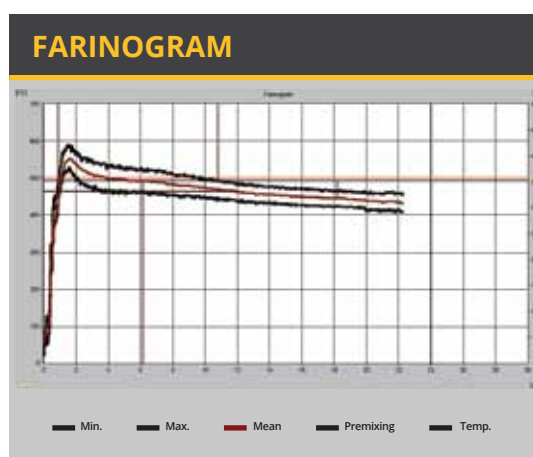
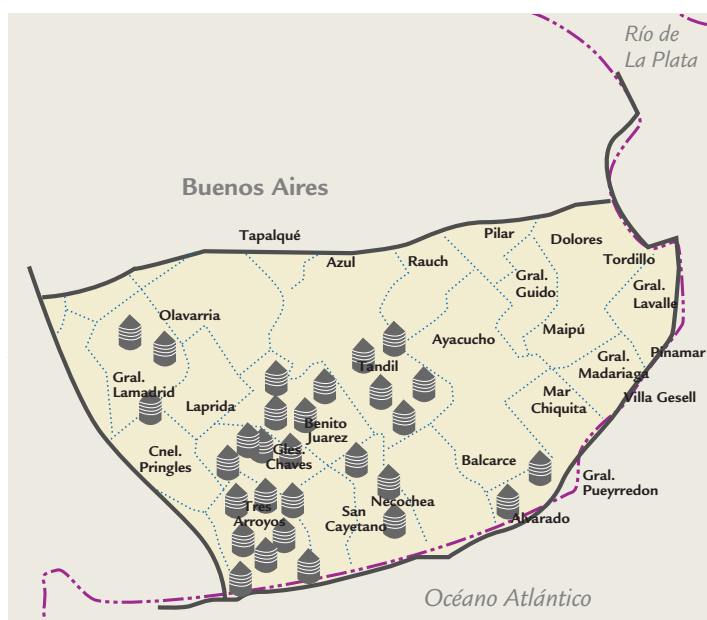
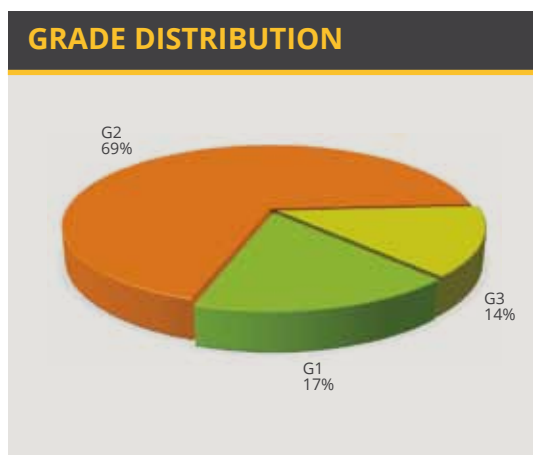
SUBREGION IV – ANALYSIS RESULTS

Weighted averages by tons of sample sets per location

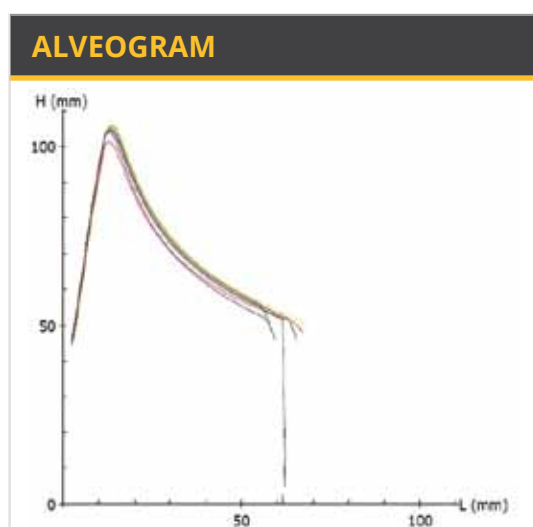
Wheat

WHEAT ANALYSIS	Minimum	Maximum	Average
Test Weight (kg/hl)	76,10	83,50	80,17
Total Damaged Kernels (%)	0,00	2,42	0,23
Foreign Material (%)	0,06	1,08	0,44
Shrunken and Broken Kernels (%)	0,20	1,56	0,50
Yellow Berry Kernels (%)	0,00	10,60	2,95
Protein (13,5% Moisture) (%)	9,4	11,0	10,0
Protein (s.s.s.) (%)	10,9	12,7	11,6
Weight of 1000 Kernels (gr.)	29,40	41,30	35,00
Ash (% dry basis)	1,589	1,885	1,775

Total damaged kernels includes 0,01% green kernels, 0,01% sprouted kernels, 0,08% calcinated kernels 0,05% insect chewed kernels and 0,12 chewed kernels germ.



	FLOUR ANALYSIS	Minimum	Maximum	Average
MILLING	Gluten Húmedo (%)	20,2	25,1	22,4
	Gluten Seco (%)	7,1	9,2	8,1
	Falling Number (seg.)	287	473	415
	Rto. Harina (%)	67,1	75,3	71,1
	Cenizas (s.s.s.) (%)	0,508	0,715	0,608
FARINOGRAM	Absorción de Agua (14 %H°) (%)	55,8	60,5	57,8
	Tiempo de Desarrollo (min.)	1,5	41,7	5,2
	Estabilidad (min.)	1,2	43,6	10,8
	Aflojamiento (12 min.)	14	83	49
ALVEOGRAM	P (mm)	85	131	107
	L (mm)	38	80	57
	W Joules x 10-4	168	315	233
	P / L	1,29	3,39	1,88



These results were elaborated with 29 composite samples prepared proportionally from 443 primary samples (farmer deliveries).

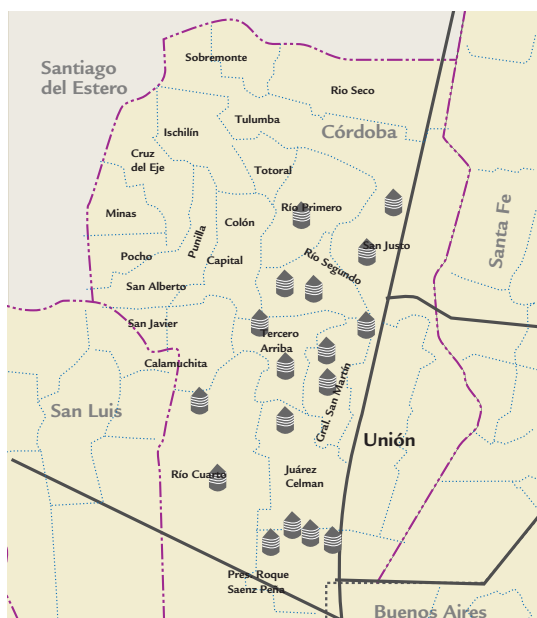
SUBREGION V NORTH – ANALYSIS RESULTS

Weighted averages by tons of sample sets per location

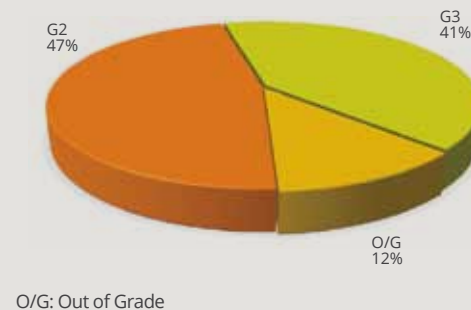
Wheat

WHEAT ANALYSIS	Minimum	Maximum	Average
Test Weight (kg/hl)	75,65	79,70	78,46
Total Damaged Kernels (%)	0,27	0,90	0,54
Foreign Material (%)	0,13	0,48	0,29
Shrunken and Broken Kernels (%)	0,51	2,46	1,23
Yellow Berry Kernels (%)	0,00	4,90	2,51
Protein (13,5% Moisture) (%)	9,3	12,5	10,9
Protein (s.s.s.) (%)	10,8	14,5	12,6
Weight of 1000 Kernels (gr.)	24,42	34,04	30,26
Ash (% dry basis)	1,610	2,040	1,827

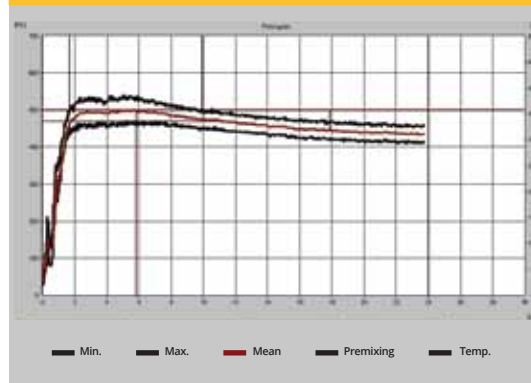
Total damaged kernels includes 0,05% green kernels, 0,02 % frosty kernels, 0,12% sprouted kernels, 0,04% calcinated kernels 0,17% insect chewed kernels and 0,14 chewed kernels germ.



GRADE DISTRIBUTION

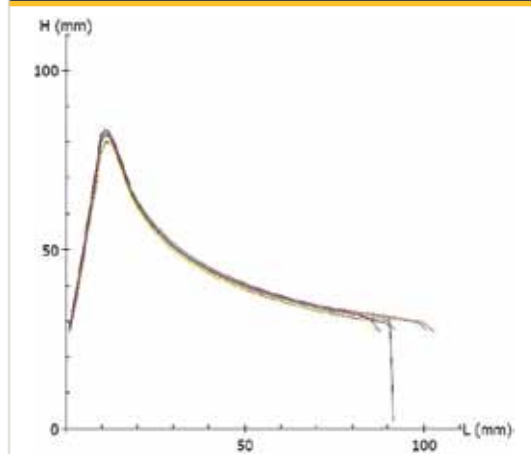


FARINOGRAM



FLOUR ANALYSIS		Minimum	Maximum	Average
MILLING	Wet Gluten (%)	20,2	29,3	25,3
	Dry Gluten (%)	7,5	10,9	9,4
	Falling Number (seg.)	315	437	383
	Flour Yield (%)	69,6	74,8	71,6
	Ash (dry basis) (%)	0,540	0,783	0,663
FARINOGRAM	Water Absorption (14% H°) (%)	54,9	58,8	57,1
	Development Time (min.)	1,5	8,1	3,0
	Stability (min.)	1,7	19,4	8,8
	Degree of Softening (12 min.)	27	89	50
ALVEOGRAM	P (mm)	62	101	87
	L (mm)	55	123	91
	W Joules x 10-4	208	302	261
	P / L	0,53	1,84	0,98

ALVEOGRAM



These results were elaborated with 17 composite samples prepared proportionally from 180 primary samples (farmer deliveries).

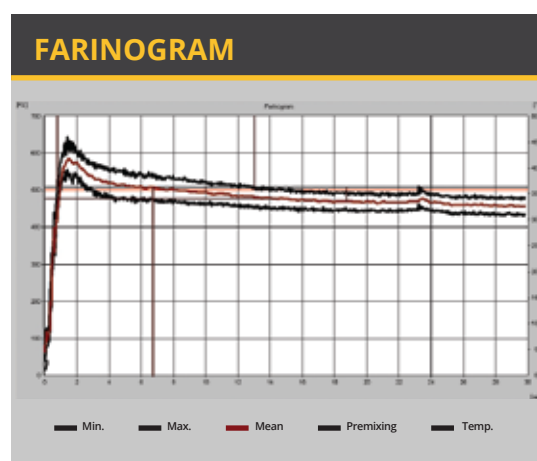
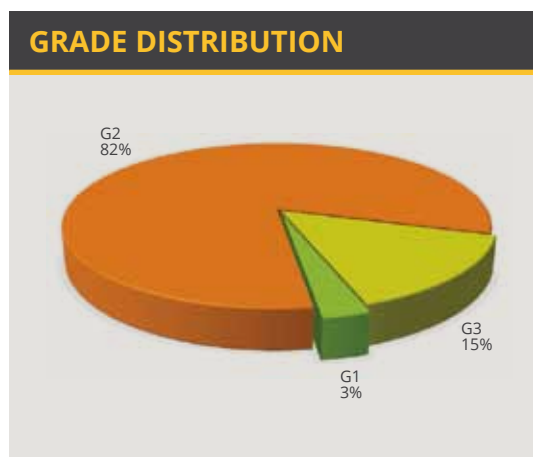
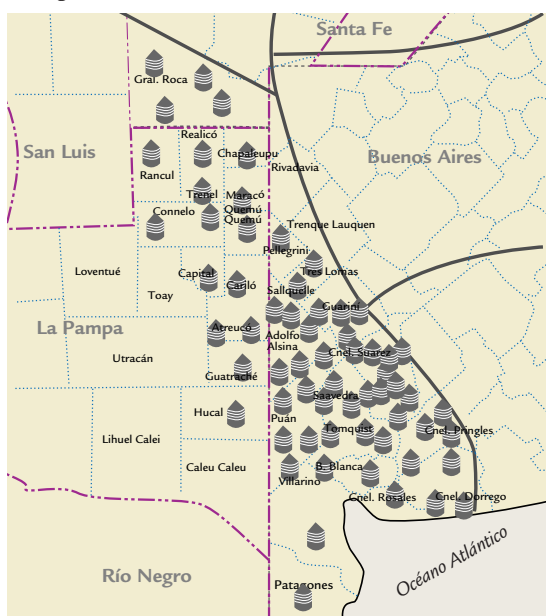
SUBREGION V SOUTH – ANALYSIS RESULTS

Weighted averages by tons of sample sets per location

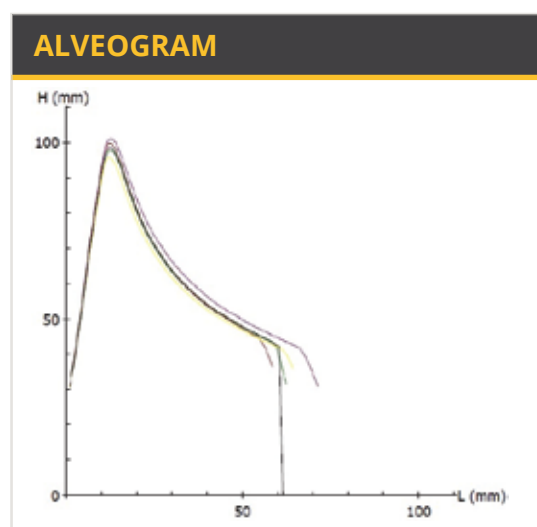
Wheat

WHEAT ANALYSIS	Minimum	Maximum	Average
Test Weight (kg/hl)	78,15	84,85	81,84
Total Damaged Kernels (%)	0,00	0,58	0,19
Foreign Material (%)	0,12	1,08	0,49
Shrunken and Broken Kernels (%)	0,12	1,36	0,74
Yellow Berry Kernels (%)	0,30	18,60	4,62
Protein (13,5% Moisture) (%)	8,9	11,3	10,0
Protein (s.s.s.) (%)	10,3	13,1	11,6
Weight of 1000 Kernels (gr.)	31,00	41,30	34,84
Ash (% dry basis)	1,703	1,992	1,879

Total damaged kernels includes 0,05% green kernels, 0,02 % frosty kernels, 0,12% sprouted kernels, 0,04% calcinated kernels, 0,07% insect chewed kernels and 0,06 chewed kernels germ.



FLOUR ANALYSIS		Minimum	Maximum	Average
MILLING	Wet Gluten (%)	17,7	25,3	22,4
	Dry Gluten (%)	6,2	8,9	7,8
	Falling Number (seg.)	362	475	411
	Flour Yield (%)	67,9	74,43	70,0
	Ash (dry basis) (%)	0,548	0,788	0,667
FARINOGRAM	Water Absorption (14% H°) (%)	55,6	62,5	58,3
	Development Time (min.)	1,4	9,7	4,9
	Stability (min.)	1,2	25,0	10,0
	Degree of Softening (12 min.)	14	98	49
ALVEOGRAM	P (mm)	76	135	101
	L (mm)	40	88	60
	W Joules x 10-4	165	288	226
	P / L	0,86	3,38	1,68



These results were elaborated with 62 composite samples prepared proportionally from 953 primary samples (farmer deliveries).

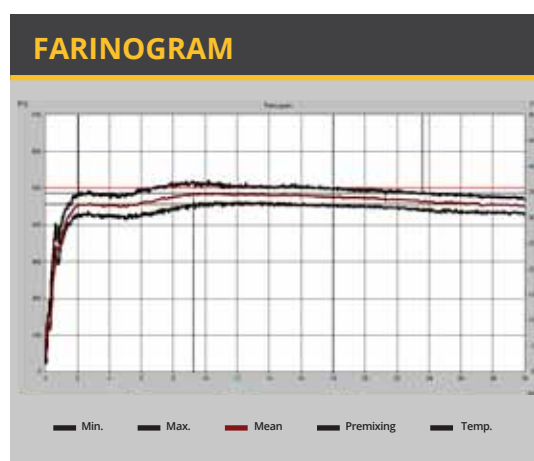
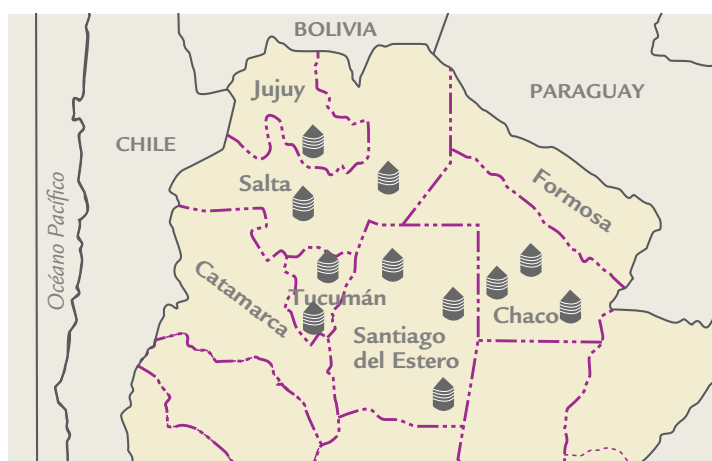
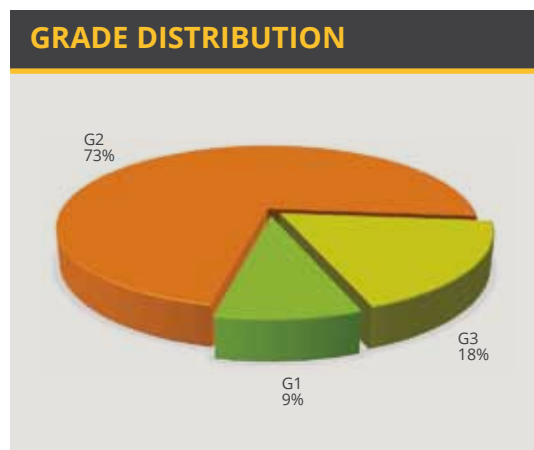
NORTH OF THE COUNTRY – ANALYSIS RESULTS

Weighted averages by tons of sample sets per location

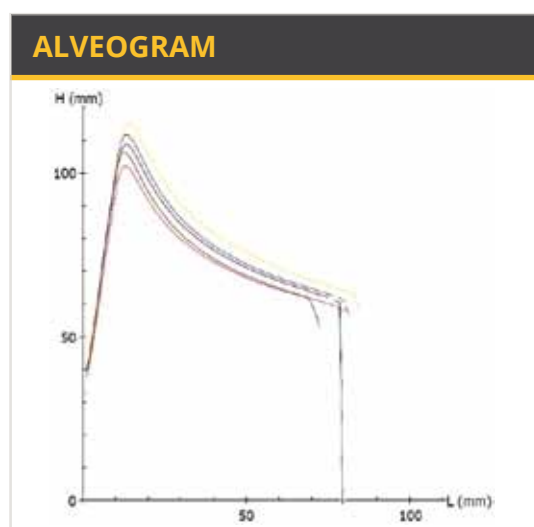
Wheat

WHEAT ANALYSIS	Minimum	Maximum	Average
Test Weight (kg/hl)	76,35	84,40	81,41
Total Damaged Kernels (%)	0,01	1,70	0,48
Foreign Material (%)	0,08	1,48	0,34
Shrunken and Broken Kernels (%)	0,18	1,22	0,76
Yellow Berry Kernels (%)	0,30	3,90	1,38
Protein (13,5% Moisture) (%)	11,8	14,2	12,1
Protein (s.s.s.) (%)	13,6	16,4	14,0
Weight of 1000 Kernels (gr.)	28,26	31,51	29,81
Ash (% dry basis)	1,637	2,171	1,924

Total damaged kernels includes 0,05% green kernels, 0,03 % frosty kernels, 0,17% sprouted kernels, 0,22% insect chewed kernels and 0,02% calcinated kernels.



FLOUR ANALYSIS		Minimum	Maximum	Average
MILLING	Wet Gluten (%)	27,3	34,4	32,1
	Dry Gluten (%)	10,1	12,7	11,9
	Falling Number (seg.)	388	455	415
	Flour Yield (%)	68,3	72,8	70,5
	Ash (dry basis) (%)	0,544	0,743	0,672
FARINOGRAM	Water Absorption (14% H°) (%)	56,8	63,3	59,1
	Development Time (min.)	7,9	20,0	14,5
	Stability (min.)	14,0	32,4	20,9
	Degree of Softening (12 min.)	17	58	41
ALVEOGRAM	P (mm)	103	133	112
	L (mm)	61	100	79
	W Joules x 10-4	281	354	330
	P / L	1,05	2,18	1,45



These results were elaborated with 11 composite samples prepared proportionally from 136 primary samples.

DURUM WHEAT – NATIONAL AVERAGES

Analysis Results

Averages
Durum Wheat

WHEAT ANALYSIS	Minimum	Maximum	Average
Test Weight (kg/hl)	67,80	84,15	78,29
Total Damaged Kernels (%)	0,00	2,8	0,59
Foreign Material (%)	0,14	2,4	0,73
Shrunken and Broken Kernels (%)	0,18	1,92	0,67
Vitreous Kernels (%)	2	97	37
Wheat (Triticum aestivum) (%)	0,44	11,76	4,25
Protein (13,5% Moisture) (%)	9,2	13,5	11,6
Protein (s.s.s.) (%)	10,6	15,6	13,4
Weight of 1000 Kernels (gr.)	32,90	53,90	38,83
Ash (% dry basis)	1,609	2,137	1,890

Total damaged kernels includes 0.01% green kernels, 0,16% sprouted kernels, 0,07% insect chewed kernels and 0,18% germ-chewed and 0,10 calcinated kernels.

2014/2015 CROP

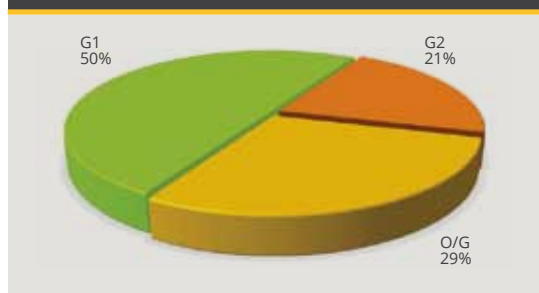
Planted Area (ha)	79.965
Harvested Area (ha)	74.085
Average Yield (kg/ha)	2.880
Production (tn)	213.347

O/G: Out of Grade

Observation: O/S (Out Standard) for condition:

G1: 86%; G2: 100%; O/G: 100%

GRADE DISTRIBUTION



SEMOLIN ANALYSIS

	Minimum	Maximum	Average
Falling Number (sec.)	431	683	514
Color (b)	17,7	24,1	20,9
Wet Gluten (%)	23	34,7	29,2
Gluten Index (%)	4	86	54
Farinogram Energy Level	22,6	37,2	27,3
Farinogram Degree Softening (%)	23	38	29

These results were elaborated with 42 composite samples.



NATIONAL SUMMARY BY SUBREGIONS

Results of all the analyzed variables

Wheat

	SUBREGIONS									PONDERED AVERAGE
	I	II N	II S	III	IV	V N	V S	NEA	NOA	
Test Weight (kg/hl)	76,22	76,84	80,27	76,56	80,17	78,46	81,84	81,84	80,95	79,29
Weight of 1000 Kernels (gr.)	28,20	29,46	33,13	31,35	35,00	30,26	34,84	29,41	30,22	32,22
Ash (dry basis) (%)	1,838	1,939	1,729	1,612	1,775	1,827	1,879	2,018	1,826	1,830
Protein (13.5% Moisture) (%)	10,6	10,8	10,5	10,9	10,04	10,9	10,0	11,8	12,4	10,5
Protein (s.s.s.) (%)	12,3	12,5	12,2	12,6	11,6	12,6	11,6	13,6	14,3	12,1
Flour Yield (%)	71,1	70,9	72,2	71,2	71,1	71,6	70,0	71,6	69,3	71,0
Ash (dry basis) (%)	0,749	0,652	0,627	0,685	0,608	0,663	0,667	0,676	0,668	0,656
Color										
L	87,60	87,59	88,22	88,03	88,73	87,53	88,37	87,51	87,01	88,05
a	-1,60	-1,38	-1,64	-1,62	-1,69	-1,34	-1,77	-1,30	-1,40	-1,59
b	8,78	8,54	9,16	9,09	8,85	8,60	9,14	8,36	9,10	8,89
Moisture (%)	12,35	12,86	13,66	11,71	12,42	12,53	12,25	12,18	14,50	12,60
Proteins (%)	9,6	9,8	9,7	10,1	9,0	10,4	9	11	11,7	9,6
Wet Gluten (%)	23,4	24,3	24,6	23,8	22,4	25,3	22,4	32,1	32,0	23,7
Dry Gluten (%)	8,7	8,3	9,1	8,8	8,1	9,4	7,8	11,9	11,9	8,5
Index Gluten (%)	99	99	99	97	99	99	99	99	97	99
Falling Number (sec.)	365	411	411	367	415	383	411	420	409	400
Zeleny Test (cc)	34	36	35	38	35	38	37	38	42	36
FARINOGRAM										
Water Absorption (%)	56,8	56,0	57,5	56,2	57,8	57,1	58,3	57,6	60,6	57,4
Development Time (min.)	3,1	4,5	8,6	3,5	5,2	3,0	4,9	14,7	14,2	5,0
Stability (min.)	7,4	9,8	18,7	9,4	10,8	8,8	10,0	23,5	18,2	11,0
Degree of Softening	62	51	32	49	49	50	49	32	51	48
Quality Number	108	140	201	117	120	113	145	220	272	141
MIXOGRAM										
Development Time (min.)	6,42	5,28	5,15	6,51	4,29	6,61	4,64	6,25	5,77	5,35
ALVEOGRAM										
P (mm)	87	86	104	84	107	87	101	111	113	96
L (mm)	82	84	64	86	57	91	60	78	80	72
G	22	20	19	20	19	22	19	19	22	20
W (Joules x 10-4)	239	249	253	245	233	261	226	331	330	243
P/L	1,06	1,03	1,64	0,97	1,88	0,98	1,68	1,43	1,41	1,40
le %	55,2	58,4	61,1	66,1	52,0	56,3	57,2	60,0	63,9	57,5
W (40) (Joules x 10-4)	116	149	175	130	157	138	145	172	183	147
CONSISTOGRAM										
WA 1700 (%) (Base 15%)	55,2	58,0	55,7	56,1	54,0	56,8	53,7	56,9	57,5	55,4
HYD2200 (%) (Base 15%)	52,7	55,5	53,1	53,6	51,5	54,3	51,2	54,4	55	52,9
PrMax (mb)	2.139	2.330	2.218	2.293	2.145	2.327	1.972	2.345	2.254	2.174
PrMax Time (Sec)	123	145	114	129	157	129	170	155	178	144
Tolerance (Sec)	291	277	313	216	320	252	389	329	292	312
Weakening 250 (mb)	132	206	145	367	107	311	40	106	101	156
Weakening 450 (mb)	658	830	685	927	578	832	424	639	631	655
RVA										
Maxim Viscosity (RVU)	163,50	168,25	206,25	136,42	180,75	176,92	182,67	185,08	200,92	178,28
Minimum Viscosity (RVU)	96,33	96,08	136,92	70,75	112,08	105,17	109,92	121,33	129,33	107,87
Final Viscosity (RVU)	183,50	183,42	236,42	144,42	205,00	189,42	203,92	220,50	232,08	198,39
BAKING										
Absorption (%)	61,0	61,0	62,0	61,0	61,0	62,0	61,0	62,0	63,0	61,0
Development Time (min.)	03:00	03:00	03:30	03:00	03:00	03:30	03:00	03:30	04:00	03:38
Fermentation Time (min.)	160	160	160	160	160	160	160	160	160	160
Loaf Volume (cc)	580	560	625	590	535	570	530	560	635	564
Specific Volume	4,1	4,1	4,6	4,3	3,8	3,8	3,7	4,1	4,8	4,0

ANALYSIS OF VARIABLES, BY RANGES

Wheat

Tables summarize the analysis of four variables: protein in grain, wet gluten, strength determined by alveograph measurement and farinographic stability.

Each variable was separated in ranges (first column). Averages were estimated for each range for each remaining variables (center column). This last column shows the percentage that corresponds to each range nationwide.

PROTEIN RANGE	Gluten W Stability	Percentage Country
9,0 - 9,9	21,6 214 7,8	22,00
10,0 - 10,9	23,7 245 11,1	55,00
11,0 - 11,9	26,4 270 16,1	21,00
12,0 - 12,9	28,7 295 12,9	2,00

W RANGE	Gluten Protein Stability	Percentage Country
190 - 249	22,7 10,2 9,6	60,90
250 - 299	24,8 10,8 12,5	30,90
300 - 349	29,4 11,4 21,8	7,30
350 - 399	34,3 13,2 16,9	0,80

GLUTEN RANGE	Protein W Stability	Percentage Country
18,0 - 20,9	9,9 204 5,9	11,80
21,0 - 24,9	10,3 238 11,2	59,80
25,0 - 27,9	11,1 262 12,4	21,50
28,0 - 31,9	11,4 306 17,2	3,70
32,0 - 34,9	12,1 342 24,4	3,20

STABILITY RANGE	Gluten Protein W	Percentage Country
1,0 - 9,9	22,9 10,3 234	46,00
10,0 - 14,9	24,4 10,7 244	21,00
15,0 - 19,9	24,4 10,6 252	19,00
20,0 - 29,9	25,6 10,8 267	12,00
30,0 - 39,9	26,3 11,0 289	2,00





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