2009/2010 Crop

ARGENTINE WHEAT

Institutional Quality Report

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Elaborated by:

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- **Federación Argentina de la Industria Molinera.**
  Argentine Federation of Milling Industry.
- **Federación de Centros y Entidades Gremiales de Acopiadores de Cereales.**
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- **Ministerio de Agricultura, Ganadería y Pesca (MAGyP).**
  Ministry of Agriculture, Livestock and Fishery.
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- **Chacra Experimental Integrada Barrow (Convenio INTA – MAA, Bs. As.)**
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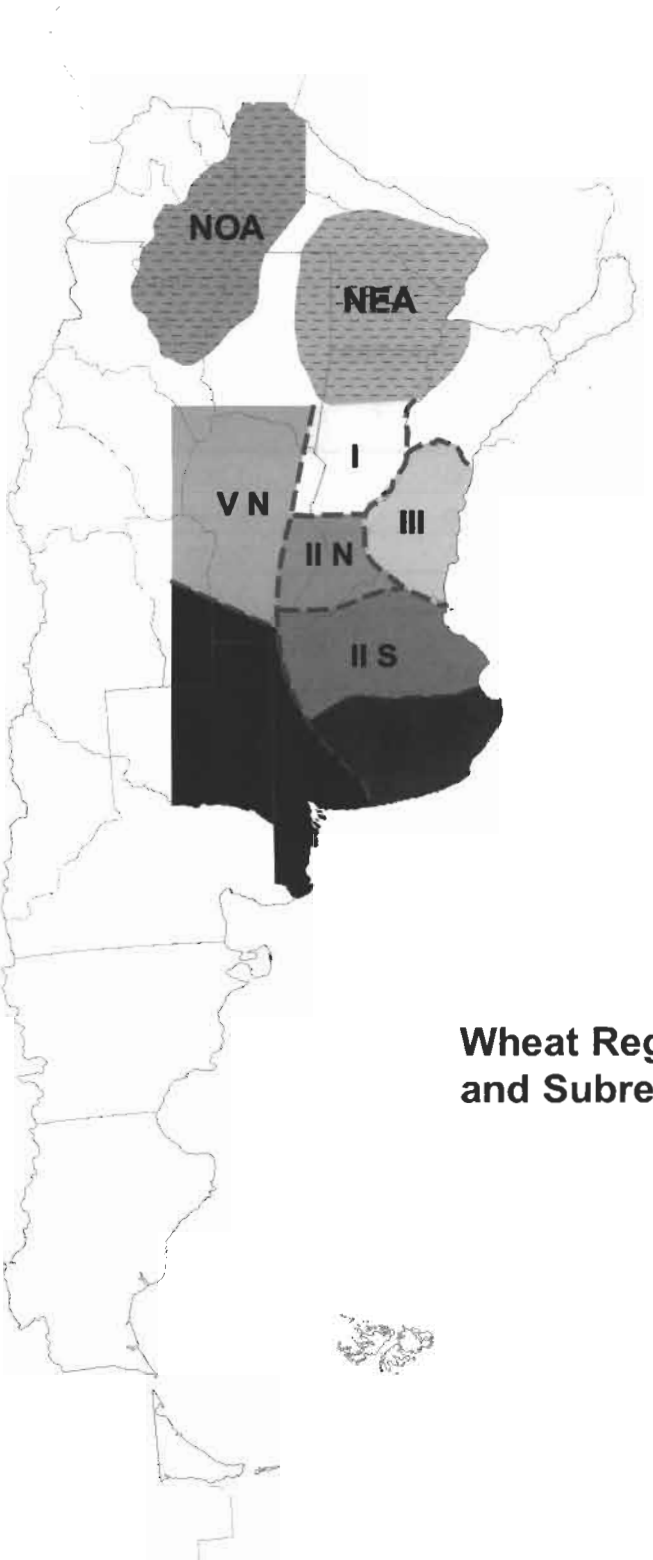
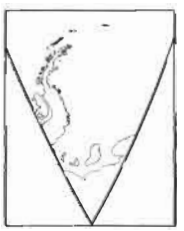


Wheat Region and Subregions



BREAD WHEAT

Triticum aestivum

Introduction

Estimates for the national wheat production would be in the order of 7,37 million tons (against 8,36 in the previous year and 16,18 in 07/08 campaign) for a cultivated surface of 2,94 million hectares, showing an important reduction compared to 4,27 million in the previous year. The average yield would be around 2,51 ton/ha (compared to 1,96 in the previous year). Yields showed a decreasing tendency from east to west, with maximum values of around 60 ql/ha and minimum ones of 4 ql/ha.

Sowed, harvested area, yields and production per sub-region

Subregion	Sowed Area (ha)	Harvested area (ha)	Yield (Kg/ha)	Production (tn)
I	138,700	138,700	1,965	258,290
II North	256,100	235,100	3,139	738,149
II South	514,150	514,060	3,231	1,661,210
III	335,500	326,950	3,774	1,234,006
IV	782,140	762,480	3,153	2,404,482
V North	124,100	111,850	1,139	127,410
V South	842,102	491,982	1,183	582,145
NOA	411,730	362,385	995	360,800
NEA	3,700	3,700	1,050	3,900
National	**3,408,222**	**2,947,207**	**2,510**	**7,370,392**

Based on data from the Ministry of Agriculture, Livestock and Fishery. Crop 2009 - 2010

The final wheat production in the core-central zone of the country is expected to be around 1 million tons versus 1,5 million tons in the previous harvest and much lower than 2,8 million tons obtained in 07/08 campaign.

Environmental conditions were variable between regions even inside the same sub region, giving way to a great deal of scattered yields.

In the center-south of the province of Santa Fe and Entre Rios and north of Buenos Aires yields were good compared to the poor yields obtained in Cordoba, north of Santa Fe and in the northern provinces. In some areas of the wheat sub regions II North and V North, due to accumulated effects caused by drought, damages by frost, hail and grain scorching because of high temperatures and windy weather in grain fill, electrolytic weight and thousand- grain weight were affected with direct consequences on yield and commercial quality.

There was a low incidence of foliar diseases and insects as well as fusarium head blight; since they were not severe it was not necessary to use chemical treatments.

In general, environmental conditions during harvest were good except in sub region III, in Entre Rios area, where abundant rainfall affected the industrial quality and due to high yields obtained, there was a fall in protein and gluten content.

Organization and Methodology:

Sampling structure

It was agreed to obtain samples which represent about 4,000 tons each, reaching a total of 156 analysis to be performed.

The sampling was planned proportionally to the territorial division (district or department) sown area, and the average yield registered the last three years, according to the ex-Secretariat of Agriculture, Livestock and Fishery data. In accordance with the estimated production resulting, the composite sample number to be obtained by each district or department was determined to achieve a proportional representativeness of each locality.

The Argentine Cooperatives Association, the Federation of Country Elevators Association, Argentine Federated Farmers and the Argentine Federation of Milling Industry, through the cooperatives, country elevators and mills selected for each locality, submitted the primary operations samples (trade samples of farmer deliveries) which were starting points to make the locality composite samples, according to instructions given to those in charge of the sampling.

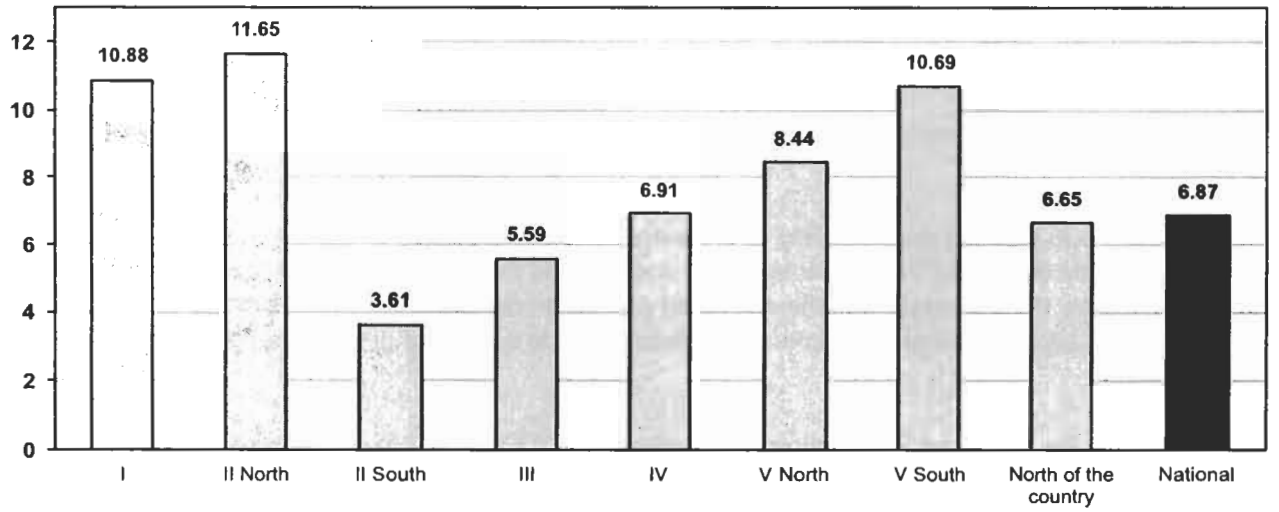
Likewise the Coordination of Offices in the interior of the country of MAGyP bring the support in the sampling.

Subregion	Locality Composite	Sampling (tn)	Production (tn)	Production Sampled (%)
I	10	28,110	258,290	10.9
II North	24	86,000	738,149	11.7
II South	15	60,000	1,661,210	3.6
III	19	69,008	1,234,006	5.6
IV	44	166,035	2,404,482	6.9
V North	8	10,752	127,410	8.4
V South	30	62,242	582,145	10.7
North of the country	6	24,000	364,700	6.6
TOTALS	**156**	**506,147**	**7,370,392**	**6.87**

Based on data from the Ministry of Agriculture, Livestock and Fishery. Crop 2009 - 2010

These primary samples had to represent between 100 and 250 ton, and be selected so they reflected the zone production conditions as well as possible, being 2,435 samples used for this sampling program, in such a way a sampled tonnage of 6.87% of the national wheat production, which amounted to 7,370,392 tons, was reached.

% Porcentage of the Production Represented in Sampling Program (%) per subregion



Procedure

The primary samples were sent to the respective Arbitration Chambers Laboratories according to the wheat subregion of origin. The Santa Fe Arbitration Chamber received samples from the Subregion I and the NE of the country, the Rosario Chamber those from the Subregion II N, the Buenos Aires Chamber those from the Subregions II S, IV and NOA, the Entre Ríos Chamber those from the Subregion III, the Bahía Blanca Chamber those from the Subregions IV and V S, and the Córdoba Chamber those from the Subregion V N.

These Arbitration Chambers made **Locality Composite Samples** of 4 kg of wheat, representative of 4000 tons each one. These ones performed the commercial analysis (grade), weight of 1000 kernels, and ash .

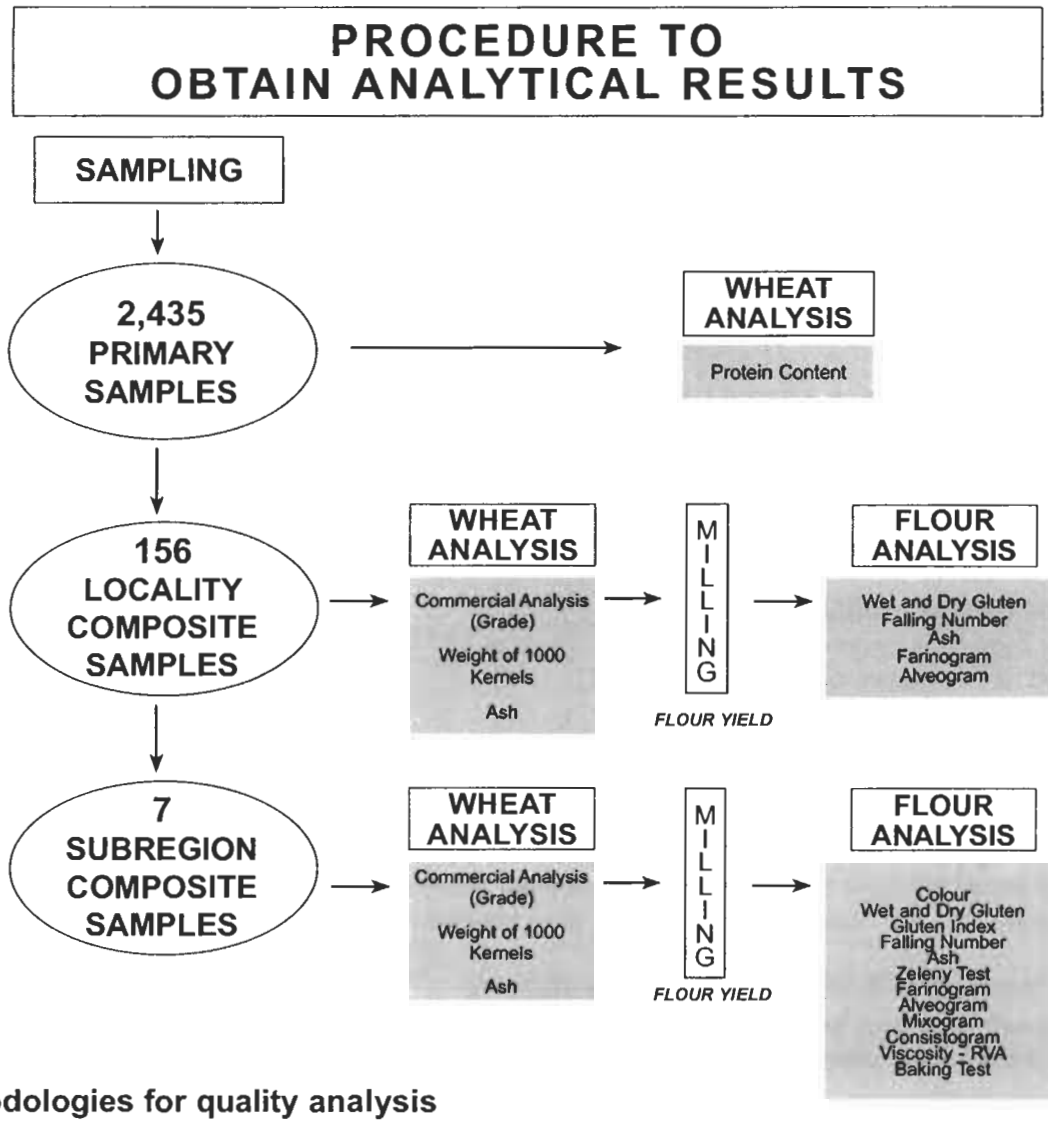
The composite samples were sent to the SENASA Laboratory to carry out the Bühler grinding, reserving a part in order to prepare the Subregion Composite Samples. It was decided to use only one mill for all the composite samples by locality, so as to minimize differences in the flour features due to the grinding.

With the flour resulting from the grinding, the Arbitration Chambers, in this case Buenos Aires, Bahía Blanca and Rosario, carried out the analyses of Falling Number, Gluten, Alveogram, Farinogram and Ash.

Prior to performing the analysis a ring test was carried out among the participating laboratories so that the results could be comparative.

On the other hand, with the locality composite samples portions kept apart, and in proportion to their representativeness, The Arbitration Chambers made the **Composite Sample of each Subregion**, 7 in total, weighing 4 kg each one, and performing Test Weight, Proteins, Ash and Weight of 1000 kernels in wheat. These samples were used by the SENASA to perform the grinding in Bühler mill and then, The Marcos Juarez Experimental Station of INTA carried out the following analyses in flour: Falling Number, Gluten, Ash, Zeleny Test, Alveogram, Farinogram, Mixogram and Baking Test.

The present report was coordinated by the Agrifood Quality Direction of the SENASA.



Methodologies for quality analysis

In order to evaluate the industrial quality of wheat, characteristics of grain, its behavior in milling, different analytical values, alveographic and farinographic curves, and bread quality, are taken into consideration. Agricultural and weather conditions can easily affect quality, and even the most remarkable varieties can present a questionable quality. Consequently any qualitative abnormality must be observed in different environments or periods of cultivation in order to assure that the result is due tothe variety.

Grain characteristics are prominent quality factors in wheat appraisal. To a low test weight corresponds an unsatisfactory milling, low flour yield and inferior quality.

Behavior in the milling is another important aspect in the quality criterion. Wheat of low extraction of flour or high ash content constitutes a real problem. While some areas are favorable for the highest amount of minerals, there are certain varieties which have lower ash content in the grain and, therefore, in the flour.

The quantity and quality of flour proteins are essential to determine the bread quality. Rheologic analysis include indirect determinations of quality such as alveographic, mixographic and farinographic curves which provide the necessary information to evaluate bread force, time for dough development, water absorption and stability or behavior during kneading.

Bread quality of wheat is determined by flour absorption of water, time of kneading, dough aspect, volume of bread, porosity and whiteness of the crumb. All those characteristics constitute the bread value of wheat, being some of them considered in a subjective way and others through equipement.

The volume of bread is one of the most important factors of flour potential force, since it demonstrates the gluten capacity of expansion through gas produced by the contact between yeast and sugars, and at the same time, the ability to hold the gas during the whole expansion.
Wheat with a low loaf volume, or with a high one, but with huge alveolus or holes inside, are not desired, as they are the evidence of weak flours. It is essential to know the flour protein content during baking, since at a low level there will be less expansion and final volume, which is not due to the quality but to the quantity of proteins.

WHEAT

Test Weight (SAGPyA 1262/04 Resolution)
It is an important quality factor around the world and it is influenced by grain shape, uniformity, density and size. The content of foreign material and broken kernels have also an influence on it. To a high Test weight in a certain wheat corresponds high flour yield. It is defined as the weight of 100 litres wheat volume, as is, expressed in kg/hl. It is determined by the use of a Schopper balance.

Moisture (IRAM* 15850)
This test is carried out by previous milling and then drying at 130° C +/- 3° C under normal pressure in an oven with forced air circulation, during an hour.

Foreign material (SAGPyA 1262/04 Resolution)
All kernels or pieces of kernels, other than wheat, and any other inert material.

Total damaged kernels (SAGPyA 1262/04 Resolution)
Kernels or pieces of wheat kernels that are substantially altered in their structure, such us: heat damaged, green, frozen, sprouted, calcinated and germ or insect chewed kernels.

Smutty kernels (SAGPyA 1262/04 Resolution)
Wheat kernels that have been changed into a black mass due to fungus (Tilletia spp.) attack. Kernel external appearance is often round and gray.

Shrunken and broken kernels (SAGPyA 1262/04 Resolution)
Kernels or pieces of kernels that have readily passed through a 1,6 x 9,5 mm oblong-hole sieve. This determination shall be done after separating foreign material, damaged and smutty kernels.

Yellow berry kernels (SAGPyA 1262/04 Resolution)
Kernels with starchy endosperm in more than a half of their structure, showing a yellowish appearance.

Protein Content - 13.5% moisture basis (SAGPyA 1262/04 Resolution - Chemist Method from ICC N° 105 – IRAM* 15852)
Proteins are complex organic compounds containing nitrogen. Flour proteins are responsible for obtaining gluten, once this one and water were put in contact. Proteins were determined in flour by the Kjeldahl method, while they were quantified in grain by rapid methods based on reflectance and transmittance (NIR - NIRT).

Weight of 1000 kernels (IRAM* 15853)
Its value is related to the quantity of flour that is possible to obtain from a wheat. This analysis is carried out by the counting of kernels using an electronic seed counter, and weighing them. Broken kernels and foreing material are previously removed from the sample by hand-picking.

Ash (Method from ICC N° 104 – IRAM* 15851)

Ash determination conforms one of the best methods to measure the milling process efficiency. The ash content of certain flour can give an idea about the percentage of bran or minerals that it has.
The mineral matter is found in the residue that remains when the flour is ignited. The organic matters, such as starch, proteins, sugars (carbon hydrates), etc., are ignited, but the mineral matter remains as ash.
Ash content is determined by ignition at 900° C +/- 25° C using furnace until a constant weight is reached.

MILLING (IRAM* 15854 - Part I and II)

Grain must be prepared to reach 15,5 % of moisture, which is the appropriated state to mill, in order to separate the bran from the endosperm. The milling is performed in an automatic experimental MLU–202 Bühler mill.

FLOUR

Moisture (IRAM* 15850)

This test is carried out by drying at 130° C +/- 3° C under normal pressure conditions in an oven with forced air circulation, during an hour.

Gluten (AACC 3812 - IRAM* 15864 3rd edition)

Gluten is a plastic - elastic substance with a yellowish colour wich is isolated by washing the dough with a solution of sodium chloride and subsequently centrifugation to remove the starch and the soluble proteins (albumins and globulins), remaining the insoluble (gliadins and glutenins), which constitute wet gluten and dry gluten. The result is expressed in percentage .
The gluten main characteristic is the coherence and the agglutination that it gives to starch cells. During baking gluten is the one that retains gases, which are originated during the fermentation due to yeast effect.
The methodology is carried out using the "Glutomatic" system.

Zeleny Test (AACC N° 56-61-IRAM* 15875)

This is an orientation test on the quality of a protein, estimating the gluten strength. It is associated with the quantity and the quality of proteins. The isopropyl alcohol in a slightly acid media (lactic acid solution) acts on the gluten (proteins) producing a swelling. The bigger this swelling is, the more precipitate volume will be obtained, and consequently the volume of bread will be better.

Falling Number (Hagberg – Perten Method - AACC N° 56-81-IRAM* 15862)

This test measures flour alpha amylase activity, from which depends the fermentative capacity of dough during baking. These enzymes activity in wheat is variable, being affected by climate harvest conditions.
Wet and hot conditions contribute to an increase in the enzymes activity, especially in germinated kernels, making the dough more liquid and obtaining sticky - crumbed breads. In order to know the alpha amylase activity, the Falling Number is used. A general idea of the enzyme activity is obtained through this method, according to the falling time in seconds. It is determinated on a 7g of flour with 15% of moisture.

Colorimeter (Minolta Chroma Meter CR-410)

It is used to determine the color of flour in an objective, easy and fast way since this is a very important parameter for the milling and bakery industry.
It is expressed through a tristimulus method, Hunter-Lab and measures:
L: brightness. L=100 white, L=0 black. The nearest to 100, the whiter the flour is.
a and b= express color values. +a: green, -a: red, +b: yellow, -b: blue. For white flour it should be between +/- 1 or 2 and b below 10. A value above 10 expresses a yellowish color.

RHEOLOGY

Farinogram (Brabender Farinograph - ICC N° 115 – IRAM* 15855)

It is used to prove dynamically dough properties in order to evaluate the quality of flour and the properties of dough process. The parameters recorded during the analysis show the behavior in the kneading, the water absorption capacity, the time that dough takes to get the best consistency and the stability or flour tolerance to mixing.

Mixogram (Swanson Mixograph - AACC N° 54-40)

It determines the time of mixing or development (DT), and stability through a graphic drawn by the equipment due to the resistance of dough. Low value of DT is evidence of a bad bakery quality.

Alveogram (Chopin Alveograph - ICC N° 121 – IRAM* 15857). Chopin Manufacturer's Method. Boulogne, France.

The alveograph test simulates graphically the dough behavior during the fermentation process, imitating the dough alveolus formation due to CO2 produced by yeast action in large scale. By air inflation, this test measures the resistance to deformation and extensibility of test pieces from the dough with a certain thickness, thus obtaining curves called alveograms, where the area under it suggests the bakery strength (W). The maximum over pressure, which is related to the resistance of dough to deformation (P) is the tenacity, and the abscissa at the rupture point expresses the curve length (L), extensibility or index of swelling (G). P/L or P/G curve configuration ratios designs the dough equilibrium.

Consistograph (Chopin Alveograph NG Consistograph)

The consistograph makes it possible to carry out consistograph measurements as well as alveograph with adapted hydration. In a first test at constant hydration, water absorption in flour is measured and then, the test is carried out at adapted hydration. In this way, the dough behavior is evaluated during mixing. The parameters measured are:

TPr Max: time to reach the peak of Maximum Pressure.
Tol: tolerance, time when pressure is superior to PrMax-20%.
D250: weakening of dough to 250 seconds.
D450: weakening of dough to 450 seconds.
WAC: hydration equivalent to 1700 mb based at 15% H2O.
HYDRA: hydration equivalent to 2200 mb based at 15% H2O.

Rapid Visco Analyser (RVA viscoanalyiser- Newport Scientific-Standard ICC 162)

It quantifies the viscosity, determines the resistance of dough with basic of starch when subjected to a constant stirring action, incorporating time and temperature conditions. The sample is subjected to a classical cooking cycle (preheating-heating-stand) where the viscosity records a behavior that depends mainly on the starch origin and properties. It measures the following:

Maximum viscosity: maximum level of water absorption of the granules which produce a peak of viscosity.
Medium viscosity: granules break down due to stirring and polymers leach giving a decrease in viscosity.
End viscosity: in this period of temperature decrece, starch retro gradation takes place, this phenomenon gives way to the formation of gel and the amylose is the main responsible. Here, a new increase of viscosity occurs, reaching the final point of the test.
Dough T°: increase of viscosity which corresponds to the beginning of gelatinization of starch granules.
Break down: difference between maximum and medium viscosity. It makes it possible to know the stability of the granule to cooking.
Set Back: difference between maximum and end viscosity, associated to dough retro gradation.

BAKING TEST (Official Method modified by EEA Marcos Juárez Laboratory) IRAM* 15858-1

Is the most representative test of wheat industrial quality since, in a small scale, is a direct testing in which the flour aptitude to make a bread with good characteristics is evaluated. It allows to value the different stages in dough manufacturing, noticing the time it takes to develop and gain consistence, its behavior during fermentation, the bread volume and its inner and outer appearance.

The outcoming values reflect the behaviour of the flour in an experimental method with short fermentation terms, while in industrial bread-making, with longer fermentation terms, such results can be different.

* References: IRAM: Instituto Argentino de Normalización y Certificación (Argentine Standards and Certification Institute).

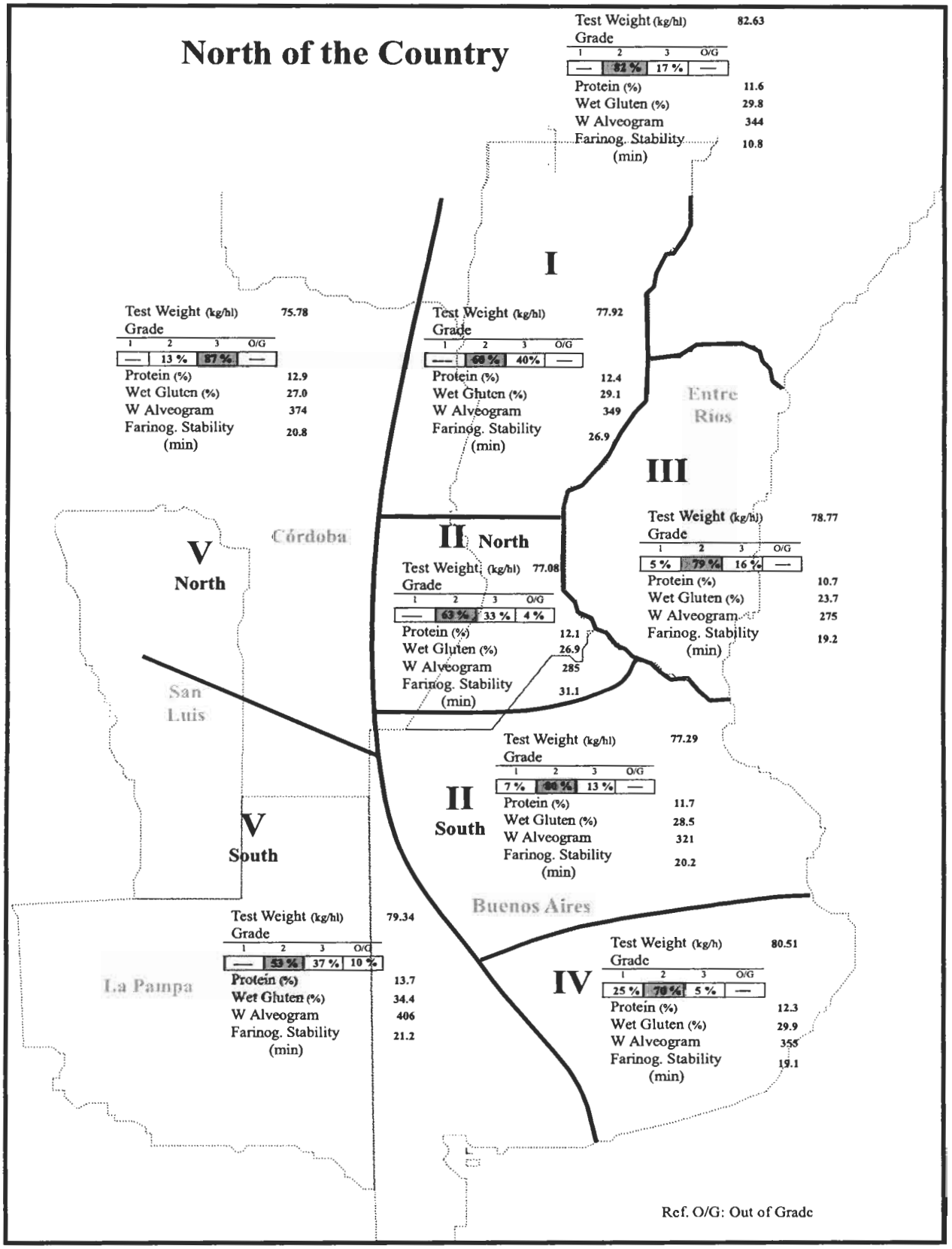
SAGPyA N° 1262 / 04
ARGENTINE STANDARD FOR WHEAT

GRADE	Bonus and Discounts per Grade %	Minimum Test Weight per hectolitre Kg/hl	PERCENTS MAXIMUM LIMITS OF						Insect Bored Kernels %	Sweet clover seeds (Melilotus sp.) Seeds/ 100 g	MOISTURE Max %	Live Insects and arachnids	PROTEIN CONTENT Bonus and Discounts (for each percentage or proportional fraction of the protein content)
			Foreign Material %	Damaged Kernels: Heat Damaged Kernels %	Damaged Kernels: Total %	Smutty Kernels %	Yellow Berry Kernels %	Shrunken and Broken Kernels % (1)					
1	+1.5	79.00	0.20	0.50	1.00	0.10	15.00	0.50	0.50	8	14.0	FREE	More than 11.0 %: Bonus 2 % 11.0 %: - 10.0-10.9 %: Discount 2 % 9.0-9.9 %: Discount 3 % Less than 9.0 %: Discount 4 %
2	-	76.00	0.80	1.00	2.00	0.20	25.00	1.20					
3	-1.0	73.00	1.50	1.50	3.00	0.30	40.00	2.00					

(1) All Wheat kernels or pieces of them that pass through a sieve with 1,6 mm wide and 9,5 mm long holes, excluding damaged kernels.

Protein content: basis 11 % (moisture basis of 13,5 %)
According to protein content there will be bonus or discounts. Those lots which test weight is under 75 Kg/hl are excluded of bonus.

Argentine Wheat
Main Quality Parameters



Subregion I
Background for the crop

In subregion I there was lack of humidity for the sowing of long and intermediate cycle wheat (low content of humidity in the profile). Many hectares were cultivated towards the end of July- beginning of August due to rainfalls of 50 mm. Intermediate and short cycle wheat were late sown with little rain in July. They started with scarce water in the soil profile (80 mm in the best lots).

Tillering was good in long cycle wheat grown on time. Short cycle wheat sown late did not tiller and compensated with a higher sowing density.

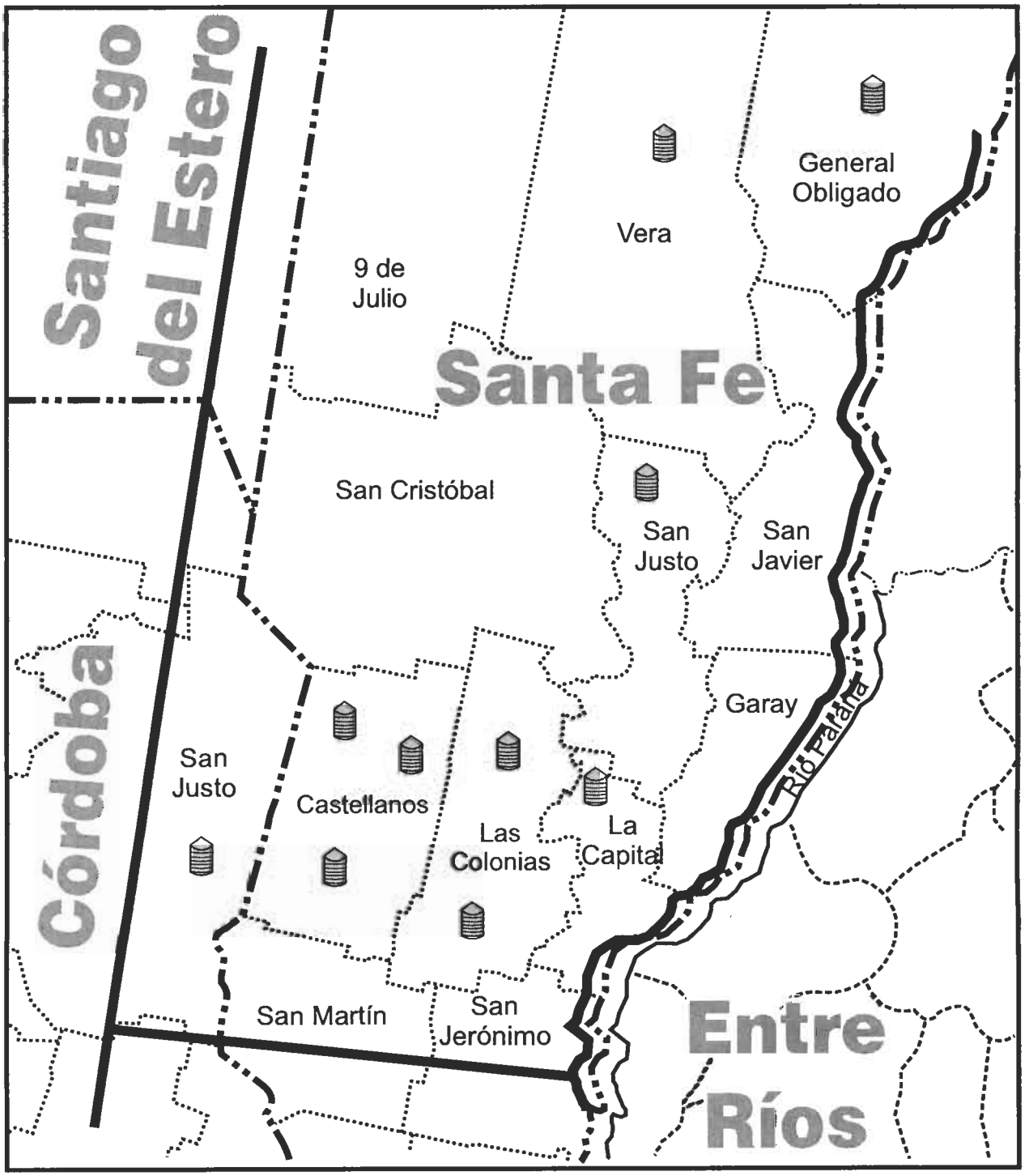
In early sown wheat earing was affected by late freeze mainly in low parts of lots. Late sown wheat, towards the end of July-beginning of August, was scorched by heat towards the end of October (5 running days with temperatures of 35 ° C).

Rainfalls began during earing but tillers were lost due to stress and towards the end of October, at grain fill, important stress was again present which resulted in few grains with ears and low electrolytic weight due to sun scorching, which favored the level of proteins.

Harvest was normal without rainfall problems from Route 19 to the south and with difficulties from Route 19 to the north, which caused an important delay by rainfalls in this period. Lots with high content of humidity were harvested (16-18%). Habitually wheat is harvested dry and driers do not have to be used in the whole wheat campaign. In this campaign there was an important delay due to rainfalls in this period. Lots with high content of humidity were harvested (16-18%). Most of the products were wet.

There was scarce presence of foliar diseases such as rust and yellow spot. There was an important aphid attack in the wheat ears which made fumigation necessary in many lots.

Yields were between 700 and 3.500 kg/ha according to lots and areas.



Each reference represents near 4,000 tns sampled.

Subregion I Wheat

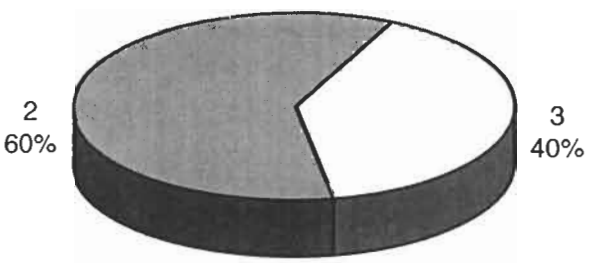
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	74.80	81.90	77.92	2.03	0.03
Total Damaged Kernels (%)	0.10	0.60	0.32	0.16	0.49
Foreign Material (%)	0.08	0.84	0.30	0.20	0.67
Shrunken and Broken Kernels (%)	0.52	2.30	1.14	0.55	0.48
Yellow Berry Kernels (%)	0.60	9.40	4.63	2.96	0.64
Protein (13,5% Moisture) (%)	10.5	14.3	12.4	1.1	0.09
Weight of 1000 Kernels (gr.)	24.90	37.70	29.48	4.08	0.14
Ash (% dry basis)	1.780	2.420	1.978	0.189	0.10

Total damaged kernels includes 0,06% green kernels, 0,03% sprouted kernels, 0,15% insect chewed kernels and 0,04% calcinated kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	23.5	35.7	29.1	3.4	0.12
	Dry Gluten (%)	8.2	12.8	10.4	1.1	0.11
	Falling Number (sec.)	354	436	400	24	0.06
	Flour Yield (%)	61.6	70.1	66.9	2.4	0.04
	Ash (dry basis) (%)	0.581	0.892	0.691	0.080	0.12
FARINOGRAM	Water Absorption (14% H°) (%)	56.3	63.2	59.9	1.8	0.03
	Development Time (min.)	9.4	24.0	18.0	4.6	0.25
	Stability (min.)	12.7	34.9	26.9	5.4	0.20
	Degree of Softening (12 min.)	19	46	29	9	0.31
ALVEOGRAM	P (mm)	98	125	111	7	0.06
	L (mm)	52	100	80	15	0.19
	W Joules x 10-4	232	418	349	51	0.15
	P / L	1.05	2.40	1.39	0.37	0.26

These results were elaborated with 10 composite samples prepared proportionally from 64 primary samples (farmer deliveries)

Subregion Data

In this subregion the wheat production was 258,290 tons., the 3.5% of the national total. Were sampled 28,110 tons., the 10.9 % of the subregion production.

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS								
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
1	Gral. Obligado	2320	2	81.90	0.60	0.08	0.64	0.00	11.9	35.8	1.780
2	Castellanos	2870	3	77.90	0.40	0.18	1.42	2.50	12.3	26.6	2.080
3	Castellanos	3020	2	80.00	0.36	0.10	1.16	0.00	12.5	27.3	1.960
4	Castellanos	2980	3	77.30	0.22	0.28	1.54	0.60	12.4	25.7	2.140
5	Las Colonias	3780	2	78.70	0.16	0.22	0.54	5.20	12.6	29.9	1.790
6	Las Colonias	3620	3	75.80	0.10	0.38	1.52	0.00	13.8	24.9	2.010
7	San Justo (Sta Fe)	2550	2	76.00	0.56	0.28	0.84	9.40	10.5	32.2	1.940
8	La Capital	2300	2	77.80	0.26	0.28	0.62	6.30	10.9	34.0	1.820
9	Vera	1990	2	80.20	0.28	0.38	0.52	0.00	12.2	37.7	1.780
10	San Justo (Córdoba)	2680	3	74.80	0.42	0.84	2.30	0.00	14.3	26.9	2.420

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
1	Gral. Obligado	32.1	11.1	389	68.2	63.2	9.5	26.2	46	104	99	359	1.05	0.581
2	Castellanos	29.2	10.7	420	68.0	60.0	16.8	25.3	28	115	75	354	1.53	0.632
3	Castellanos	29.7	10.4	413	70.1	59.7	20.9	30.5	19	106	100	418	1.06	0.602
4	Castellanos	30.4	11.0	371	69.0	59.7	24.0	34.9	21	105	90	373	1.17	0.707
5	Las Colonias	29.5	10.2	436	66.9	59.0	20.5	29.8	20	113	67	322	1.69	0.716
6	Las Colonias	23.7	9.4	389	65.6	59.3	20.1	29.3	28	112	82	366	1.37	0.726
7	San Justo (Sta Fe)	28.4	9.5	354	66.3	58.5	16.9	24.1	36	125	52	285	2.40	0.687
8	La Capital	23.5	8.2	396	64.3	56.3	13.1	20.0	31	98	59	232	1.66	0.661
9	Vera	30.4	10.5	401	69.2	61.7	9.4	12.7	46	108	92	338	1.17	0.672
10	San Justo (Córdoba)	35.7	12.8	413	61.6	62.6	21.8	28.5	24	117	85	414	1.38	0.892

Subregion II North
Background for the crop

The total rainfall recorded in the crop period was 410 mm, 115% higher than 2008 and 6% lower than the historic values in 1951–2007.

Crops cultivated at the end of May and beginning of June presented poor initial development due mainly to scarce rainfalls occurred from beginning of June to mid July with a total of 5,3 mm added to the fact that in the first 100 cm depth there was only 71 mm.

Due to this situation an important proportion of lots intended to wheat were sown alter the rainfalls of July (58,4 mm), with a predominance of intermediate to short cycle cultivars.

Temperatures (minimum and maximum) in average, from emergence to tiller period and in the grain fill period were lower than 2008. Such thermal conditions together with greater hydric availability determined the increase of yields in some areas compared to the previous campaign.

Solar radiation and specifically photo synthetically active radiation (PAR) is a necessary source of energy for crops to grow and produce, however it was not the most important element in yield determination.

During this campaign the percentage of severity of foliar diseases was very low and in average lower than 5%. Yellow spot was the disease with highest incidence.

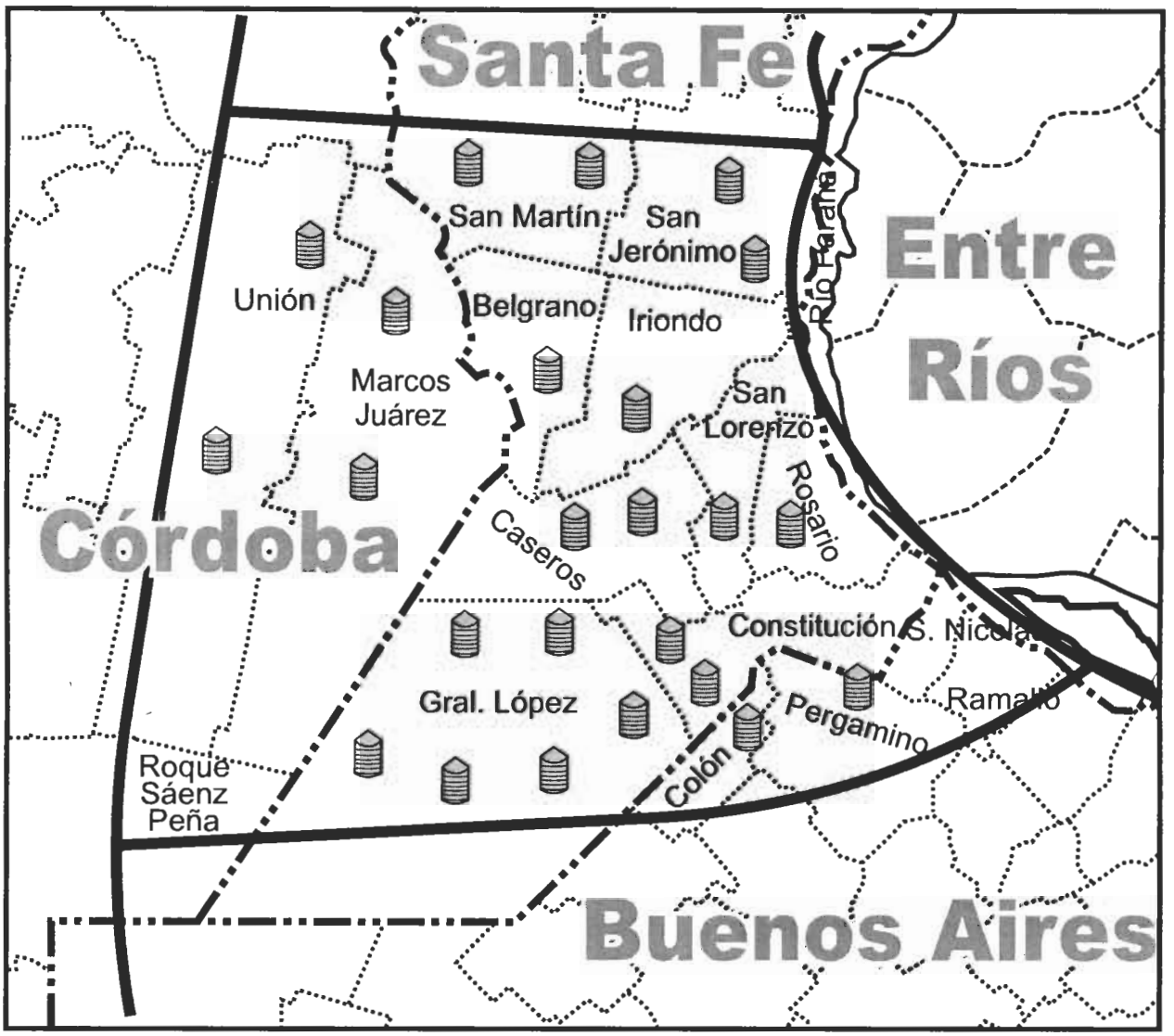
Wheat crop yield was good in the district area of EEA Oliveros, mainly in those genotypes of short cycle. This was mainly due to important rainfalls recorded during the period known as critical for the crop and favorable temperatures during tillering and grain fill, as well as the low incidence and severity of foliar diseases.

In some areas of the wheat subregion II North due to accumulated effects caused by drought, damages by freeze, hail and scorching of the grain by high temperatures and windy weather during grain fill, electrolytic weight and the weight of thousand grains were affected as direct consequences on yield and commercial quality.

In the departments of Marcos Juárez and Unión, yields were between 4 a 16 ql/ha in many lots and they were only higher in the town of Marcos Juárez with 20 to 25 ql/ha and Corral de Bustos with some lots up to 35-40 ql/ha.

The final wheat production in the core area was of 1 million ton versus 1, 5 million ton in the previous harvest and below the 2, 8 million ton produced in 07/08 campaigns.

Subregion II North Wheat



Each reference represents near 4,000 tns sampled.

Subregion II North Wheat

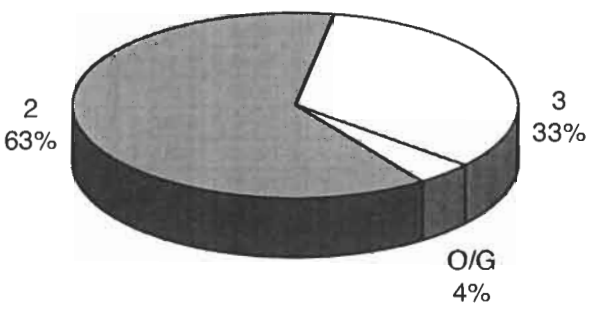
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	73.00	80.90	77.08	1.96	0.03
Total Damaged Kernels (%)	0.40	4.20	1.17	0.83	0.71
Foreign Material (%)	0.10	1.00	0.24	0.18	0.75
Shrunken and Broken Kernels (%)	0.20	1.30	0.60	0.24	0.41
Yellow Berry Kernels (%)	0.00	0.70	0.05	0.16	3.09
Protein (13,5% Moisture) (%)	11.0	13.7	12.1	0.7	0.06
Weight of 1000 Kernels (gr.)	28.60	34.79	31.72	1.42	0.04
Ash (% dry basis)	1.782	2.114	1.915	0.092	0.05

Total damaged kernels includes 0.77% sprouted kernels, 0.14% calcinated kernels and 0.25% insect chewed kernels.

Grade Distribution



O/G: Out of Grade

Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	23.4	32.3	26.9	2.7	0.10
	Dry Gluten (%)	7.9	10.8	9.1	0.9	0.10
	Falling Number (sec.)	251	473	408	42	0.10
	Flour Yield (%)	65.1	73.3	69.5	2.3	0.03
	Ash (dry basis) (%)	0.529	0.720	0.609	0.044	0.07
FARINOGRAM	Water Absorption (14% H°) (%)	53.6	59.7	56.4	1.6	0.03
	Development Time (min.)	10.0	26.8	17.2	4.0	0.23
	Stability (min.)	14.9	59.3	31.1	9.4	0.30
	Degree of Softening (12 min.)	1	60	21	11	0.54
ALVEOGRAM	P (mm)	67	129	94	16	0.17
	L (mm)	42	109	83	19	0.23
	W Joules x 10-4	216	429	285	53	0.19
	P / L	0.63	2.86	1.13	0.53	0.42

These results were elaborated with 24 composite samples prepared proportionally from 285 primary samples (farmer deliveries)

Subregion Data

In this subregion the wheat production was 738,149 tons., the 10% of the national total. Were sampled 86,000 tons., the 11.7% of the subregion production.

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS								
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
101	San Martín	3000	3	80.20	0.70	0.30	1.30	0.00	12.5	30.21	2.047
102	San Martín	3000	2	80.30	0.50	0.30	0.50	0.30	11.2	32.40	1.913
103	San Jerónimo	3000	2	78.40	0.40	0.10	0.40	0.00	11.5	32.24	1.879
104	San Jerónimo	3000	2	80.90	0.40	0.10	0.60	0.00	11.0	32.30	1.870
105	Caseros	3000	2	78.50	1.40	0.10	0.70	0.50	11.0	33.92	1.901
106	Caseros	3000	3	75.40	1.30	0.10	0.40	0.70	11.3	32.06	1.931
107	Belgrano	4000	O/G	78.60	4.20	0.20	0.40	0.00	12.6	30.95	1.988
108	Iriondo	4000	2	76.10	0.50	0.10	0.40	0.00	11.7	30.28	1.901
109	San Lorenzo	4000	3	74.70	1.20	0.20	0.40	0.00	12.3	30.84	1.887
110	Rosario	4000	2	76.20	1.70	0.10	0.20	0.00	11.4	31.03	1.851
111	Constitución	3000	3	74.10	2.20	1.00	0.90	0.00	13.7	29.88	2.114
112	Constitución	3000	3	73.00	0.40	0.30	0.30	0.00	11.8	32.11	1.927
113	General López	4000	3	74.50	0.50	0.10	0.60	0.00	12.1	34.24	1.881
114	General López	4000	2	78.70	0.50	0.20	0.80	0.00	11.4	31.73	1.882
115	General López	4000	2	78.50	1.90	0.20	0.60	0.00	12.5	33.97	2.039
116	General López	4000	2	77.30	1.00	0.20	0.50	0.00	12.6	30.91	1.782
117	General López	4000	3	74.80	0.80	0.20	0.40	0.00	11.8	32.57	1.810
118	General López	4000	2	77.20	0.80	0.10	0.70	0.00	12.0	32.08	1.798
119	Marcos Juárez	4000	3	75.70	0.90	0.30	0.80	0.00	12.9	28.60	1.981
120	Marcos Juárez	4000	2	76.10	1.00	0.50	0.60	0.00	12.8	29.97	2.042
121	Unión	4000	2	78.00	0.90	0.40	0.70	0.00	13.2	32.13	2.055
122	Unión	4000	2	77.70	1.50	0.30	1.10	0.00	13.2	32.05	1.899
123	Pergamino	4000	2	78.40	1.70	0.30	0.60	0.00	11.6	31.92	1.786
124	Colon	2000	2	78.20	1.00	0.10	0.40	0.00	11.1	34.79	1.787

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
101	San Martín	29.8	10.2	451	67.4	57.4	24.3	51.4	2	100	78	318	1.28	0.558
102	San Martín	23.8	8.3	428	65.5	55.3	24.9	46.0	10	106	67	292	1.58	0.533
103	San Jerónimo	23.9	8.0	471	67.6	55.9	24.6	59.3	1	102	71	288	1.44	0.617
104	San Jerónimo	23.4	7.9	444	67.4	57.8	26.8	47.0	11	120	42	216	2.86	0.668
105	Caseros	24.4	8.3	400	69.4	56.2	20.1	36.4	13	105	73	288	1.44	0.529
106	Caseros	24.5	8.5	409	69.1	57.7	20.2	34.6	15	106	70	281	1.51	0.606
107	Belgrano	28.6	9.5	391	69.3	57.7	18.1	30.7	20	96	101	359	0.95	0.594
108	Iriondo	24.4	8.5	423	68.9	57.6	20.1	33.3	16	111	47	220	2.36	0.588
109	San Lorenzo	28.3	9.6	421	69.0	57.3	13.5	22.7	31	84	105	310	0.80	0.563
110	Rosario	23.9	8.2	473	71.5	53.6	20.0	34.9	15	101	53	225	1.91	0.575
111	Constitución	31.6	10.6	405	65.1	58.7	12.1	19.4	41	96	93	320	1.03	0.651
112	Constitución	27.5	8.9	251	69.5	55.4	10.0	14.9	60	67	107	238	0.63	0.581
113	General López	24.5	8.3	388	73.3	56.1	13.8	26.8	21	94	71	243	1.32	0.612
114	General López	26.3	8.6	398	72.0	53.7	17.2	28.9	28	87	75	237	1.16	0.601
115	General López	27.6	9.4	390	71.2	56.2	16.3	28.2	22	94	83	288	1.13	0.720
116	General López	26.8	8.9	406	71.7	55.4	13.6	24.9	22	79	90	259	0.88	0.589
117	General López	24.7	8.4	381	73.1	55.0	14.8	26.9	26	77	84	233	0.92	0.648
118	General López	25.9	8.6	366	71.3	54.3	14.6	26.2	25	73	103	262	0.71	0.576
119	Marcos Juárez	30.0	10.4	462	67.6	56.4	16.5	33.0	18	84	109	313	0.77	0.632
120	Marcos Juárez	30.6	10.5	404	68.4	57.1	16.5	28.3	24	85	106	327	0.80	0.604
121	Unión	32.3	10.8	429	66.6	59.7	15.0	28.9	16	129	87	429	1.48	0.650
122	Unión	30.0	10.2	424	67.2	59.0	14.9	24.3	27	120	80	362	1.50	0.672
123	Pergamino	26.2	8.9	375	72.4	55.9	15.5	25.3	29	70	104	251	0.67	0.604
124	Colon	25.1	8.4	374	71.5	54.3	15.1	26.8	2	76	90	241	0.84	0.626

Subregion II South
Background for the crop

In Sub region II South, which comprises centre-north of Buenos Aires province, the decrease of planted surface was similar to the one at national level. This loss was in part compensated by the high yields obtained per hectare, with an approximate average of 4000 kg./ ha; with exceptional lots of 7000 – 7500 kg./ha.

Sowings were carried out at the beginning of June favored by a timely rainfall towards the end of May and in those lots with a good stubble cover during July and first half of August with the sowing of short cycle varieties. Rainfalls in July were higher than the historic average. Accumulated humidity enabled the normal germination of short cycle wheat in late sowing and it also enabled that long cycle wheat with early sowing dates, in June, could initiate a good tillering.

August was in general dry but in September it rained around 100 millimeters which favored a good tillering and spiking. Rainfalls were very abundant in October but at an appropriate time for the crop, in this way we arrived at November with abundant and well distributed rainfalls which resulted in a good grain formation and fill.

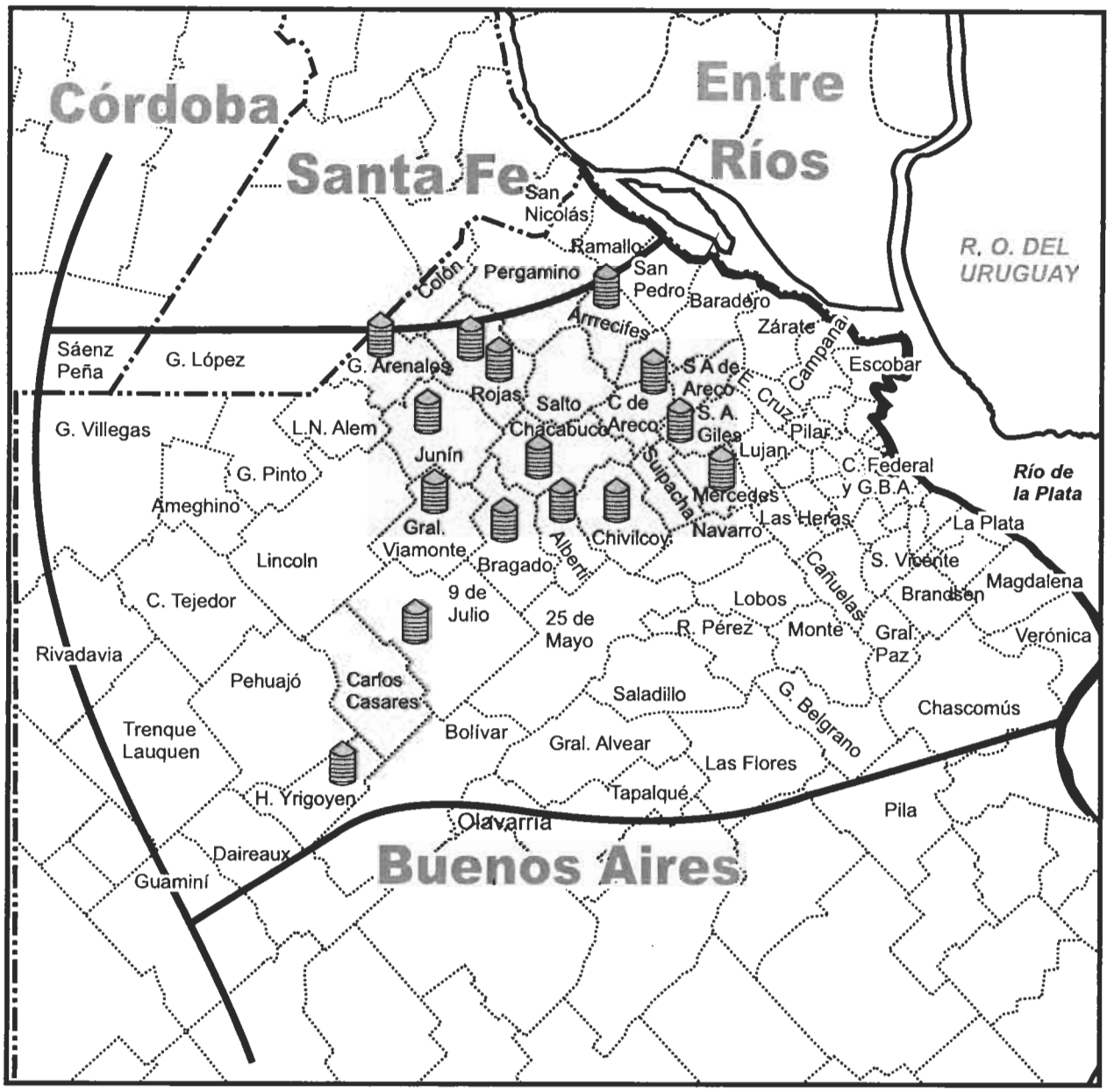
Low temperatures recorded during days 7, 8 and 15 of October and heat stress with temperatures over 30°C in days 25, 26 and 27 of October affected the flower and spike formation and grain fill.

Very low incidence of diseases and insects was observed and towards the end of the crop cycle it the presence of "Fusarium of the ear" could be observed. Chemical treatments were carried out in many lots which were considered unnecessary due to the little seriousness of the diseases.

In December it rained 343 millimeters which caused the lengthening of the reproductive cycle in some lots, delay in harvest date and grain washing.

Harvest was delayed between 8 and 10 days and was carried out with some difficulties due to continuous and intense rainfalls affecting the commercial quality with a decrease of the Electrolytic Weight and the Weight of 1000 grains compared to the previous campaign. It was observed grain washing and sprouting in some lots.

Subregion
II South
Wheat



Each reference represents near 4,000 tns sampled.

Results of the Analyses

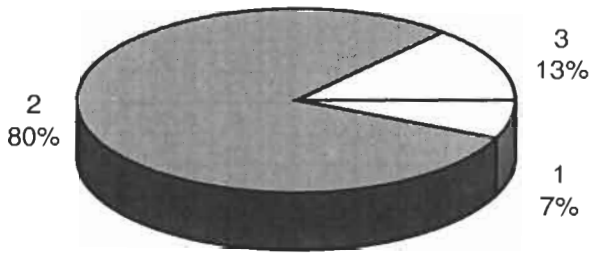
Composite Samples by Locality. Averages were weighted by Tonnage.

Subregion II South Wheat

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	73.65	79.45	77.29	1.33	0.02
Total Damaged Kernels (%)	0.28	1.81	0.93	0.45	0.49
Foreign Material (%)	0.12	0.84	0.38	0.22	0.59
Shrunken and Broken Kernels (%)	0.28	0.76	0.49	0.16	0.32
Yellow Berry Kernels (%)	0.00	5.36	2.24	1.78	0.80
Protein (13,5% Moisture) (%)	10.8	13.0	11.7	0.6	0.06
Weight of 1000 Kernels (gr.)	30.43	36.16	32.93	1.60	0.05
Ash (% dry basis)	1.531	2.025	1.745	0.105	0.06

Total damaged kernels includes 0.01% green kernels, 0.01% frosty kernels, 0.30% sprouted kernels, 0.24% calcinated kernels, 0.32% insect chewed kernels and 0.05% germ-chewed kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	25.4	33.2	28.5	1.9	0.07
	Dry Gluten (%)	9.4	12.3	10.5	0.7	0.07
	Falling Number (sec.)	338	493	400	35	0.09
	Flour Yield (%)	68.9	72.87	71.3	1.2	0.02
	Ash (dry basis) (%)	0.568	0.685	0.627	0.039	0.06
FARINOGRAM	Water Absorption (14% H°) (%)	55.1	62.9	57.9	1.7	0.03
	Development Time (min.)	4.4	20.0	8.6	4.6	0.53
	Stability (min.)	15.0	32.9	20.2	4.0	0.20
	Degree of Softening (12 min.)	16	40	26	7	0.26
ALVEOGRAM	P (mm)	80	115	93	10	0.11
	L (mm)	79	145	106	17	0.16
	W Joules x 10-4	257	400	321	36	0.11
	P / L	0.56	1.38	0.88	0.21	0.24

These results were elaborated with 15 composite samples prepared proportionally from 378 primary samples (farmer deliveries)

Subregion Data

In this subregion the wheat production was 1,661,210 tons., the 22.6% of the national total. Were sampled 60,000 tons., the 3,6% of the subregion production.

Subregion II South Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS									
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
200	Rojas	4000	2	77.00	1.12	0.16	0.60	4.4	11.3	33.73	1.887
201	Rojas	4000	2	76.35	1.24	0.36	0.64	1.4	12.0	33.10	1.714
202	Chacabuco	4000	2	77.45	0.48	0.20	0.36	1.2	11.6	33.10	1.650
203	Gral. Arenales	4000	2	76.10	1.24	0.76	0.68	3.5	10.8	32.60	1.734
204	Junin	4000	2	77.90	1.81	0.36	0.52	4.1	11.1	31.20	1.720
205	Gral. Viamonte	4000	3	77.45	1.52	0.84	0.76	0.0	12.1	31.20	1.704
206	Arrecifes	4000	2	77.70	0.84	0.32	0.28	3.0	10.9	30.43	1.793
207	Alberti	4000	2	76.80	0.28	0.28	0.32	0.8	12.2	31.48	1.762
208	9 de Julio	4000	2	77.25	1.18	0.16	0.36	1.1	13.0	32.68	1.764
209	Chivilcoy	4000	2	79.45	0.50	0.28	0.74	4.4	11.4	35.32	1.753
210	Bragado	4000	2	78.15	1.40	0.12	0.40	5.4	11.5	34.20	1.752
211	San Andrés de Giles	4000	2	77.25	0.84	0.60	0.32	0.0	11.0	36.16	1.699
212	Carmen de Areco	4000	3	73.65	0.44	0.64	0.52	0.0	12.3	32.98	2.025
213	Mercedes / Suipacha	4000	1	79.45	0.52	0.16	0.48	3.4	11.8	31.20	1.693
214	Hipólito Yrigoyen	4000	2	77.45	0.48	0.44	0.36	1.0	12.7	34.56	1.531

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
200	Rojas	26.4	9.8	371	70.9	56.4	15.1	23.6	29	109	79	319	1.38	0.587
201	Rojas	28.4	10.5	374	70.5	57.9	13.6	20.9	35	95	108	350	0.88	0.646
202	Chacabuco	28.4	10.5	425	72.0	57.4	5.0	19.5	16	88	111	308	0.79	0.599
203	Gral. Arenales	26.6	9.9	356	72.3	62.9	5.0	15.0	31	94	95	299	0.99	0.652
204	Junín	26.9	10.0	493	72.3	56.4	4.4	16.8	24	81	107	284	0.76	0.568
205	Gral. Viamonte	29.8	11.0	338	72.1	56.9	4.7	21.2	16	80	131	331	0.61	0.663
206	Arrecifes	25.4	9.4	426	72.0	55.1	20.0	32.9	22	92	86	296	1.07	0.583
207	Alberti	28.8	10.7	389	69.3	58.4	11.3	20.4	32	98	108	344	0.91	0.681
208	9 de Julio	33.2	12.3	392	71.8	58.3	8.0	21.2	23	81	145	359	0.56	0.685
209	Chivilcoy	29.1	10.8	423	72.7	58.0	8.4	18.3	30	89	94	270	0.95	0.664
210	Bragado	27.4	10.1	390	71.7	57.7	5.3	20.1	20	115	92	351	1.25	0.652
211	San Andrés de Giles	27.5	10.2	401	72.9	57.3	5.0	16.5	24	90	86	257	1.05	0.635
212	Carmen de Areco	29.7	11.0	401	70.9	58.2	5.2	17.6	26	91	105	313	0.87	0.633
213	Mercedes / Suipacha	28.8	10.7	400	69.4	57.5	11.3	19.0	40	84	121	333	0.69	0.579
214	Hipólito Yrigoyen	30.5	11.3	416	68.9	59.4	6.3	19.6	18	103	117	400	0.88	0.576

Subregion III
Background for the crop

Climatic conditions in 2009 were favorable regarding rainfalls as well as radiation and temperature.

With reference to rainfalls, although they were not abundant they occurred with a good frequency and at adequate moments for the crop cycle. Average temperatures in critical period, where the number of grains and yield are defined, were lower than the historic mean especially in the last ten days of September. Radiation, during the above mentioned period, was in general above average. Photo thermal ratio, which is directly proportional to radiation and inversely proportional to temperature and an indicator of potential yield of the crop, showed excellent values in the critical period, mainly in the last ten days of September where they were above the corresponding historic average.

Cool temperature conditions in spring with moderate humidity levels avoided the development of important diseases, therefore, only specific cases of low intensity were recorded for the common diseases of the area such as rust and yellow spot.

The level of fertilization used was low compared to previous years, most between 30 and 70 kg/ha of diamonic phosphate and 100-110 kg/ha of nitrogen fertilizers in vegetative state according to the data from Entre Rios Grain Exchange. However, drought conditions in the previous campaign enabled the companies to use fertilizers incorporated in the previous campaign.

The surface used by cultivars according to their cycle was 27% for long cycles, 18% for intermediate and 55% for short cycles (Entre Rios Grain Exchange).

Average yields of the region were excellent with an average of 3.643 kg/ha for the Subregion III of 3.643 kg/ha, level which has never been reached before.

Abundant rainfall conditions during harvest together with the high yields reached resulted in protein and gluten fall, therefore the industrial quality was lower than expected.

Each reference represents near 4,000 tns sampled.

Subregion III Wheat

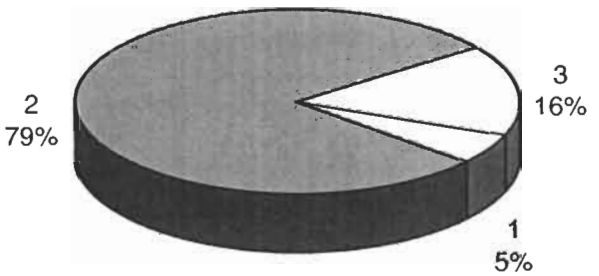
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Análisis de Grano	Mínimo	Máximo	Promedio	Desvío Estándar	Coeficiente Variación
Test Weight (kg/hl)	76.60	80.90	78.77	1.16	0.01
Total Damaged Kernels (%)	0.04	2.90	0.92	0.77	0.83
Foreign Material (%)	0.04	0.48	0.24	0.14	0.58
Shrunken and Broken Kernels (%)	0.11	1.24	0.39	0.20	0.51
Yellow Berry Kernels (%)	5.37	22.80	16.88	5.17	0.31
Protein (13,5% Moisture) (%)	10.0	11.8	10.7	0.4	0.04
Weight of 1000 Kernels (gr.)	34.80	39.00	36.84	1.21	0.03
Ash (% dry basis)	1.290	1.580	1.427	0.065	0.05

Total damaged kernels includes 0.01% green kernels, 0.68% sprouted kernels, 0.15% insect chewed kernels, 0.05% germ-chewed kernels and 0.03% calcinated kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	20.3	27.6	23.7	2.2	0.09
	Dry Gluten (%)	7.0	10.5	8.5	1.1	0.12
	Falling Number (sec.)	228	443	380	59	0.16
	Flour Yield (%)	67.0	71.6	70.7	1.0	0.01
	Ash (dry basis) (%)	0.486	0.735	0.584	0.054	0.09
FARINOGRAM	Water Absorption (14% H°) (%)	56.1	59.8	57.9	1.1	0.02
	Development Time (min.)	9.6	35.0	15.7	7.4	0.47
	Stability (min.)	12.1	30.2	19.2	4.3	0.22
	Degree of Softening (12 min.)	19	61	40	11	0.27
ALVEOGRAM	P (mm)	106	129	116	7	0.06
	L (mm)	42	73	60	7	0.12
	W Joules x 10-4	239	319	275	19	0.07
	P / L	1.45	3.00	1.93	0.36	0.18

These results were elaborated with 19 composite samples prepared proportionally from 398 primary samples (farmer deliveries)

Subregion Data

In this subregion the wheat production was 1,234,006 tons., the 16.8% of the national total. Were sampled 69,008 tons., the 5.6% of the subregion production.

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS								
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
300	Paraná	3980	2	80.20	0.68	0.28	0.16	14.40	10.7	38.00	1.380
301	Paraná	4010	2	80.90	0.37	0.29	0.35	14.50	10.3	38.00	1.290
302	Paraná	2110	1	79.60	0.48	0.07	0.45	9.69	11.0	37.50	1.340
303	Diamante	4020	2	78.50	0.67	0.04	0.30	16.07	10.6	36.40	1.480
304	Diamante	4180	2	79.90	1.00	0.36	0.61	22.80	10.7	35.20	1.470
305	Diamante	2175	3	78.80	0.28	0.24	1.24	10.00	11.3	34.80	1.380
306	La Paz	3970	2	77.70	0.81	0.26	0.26	5.37	11.1	39.00	1.480
307	La Paz	4005	3	76.60	2.90	0.07	0.30	12.30	11.8	36.20	1.500
308	Gualeguay	4000	2	78.30	0.83	0.45	0.23	22.50	10.0	37.00	1.490
309	Gualeguay	4145	2	79.20	0.60	0.48	0.56	21.50	10.7	37.20	1.410
310	Nogoyá	4000	2	78.20	0.04	0.13	0.52	18.50	10.7	37.40	1.370
311	Nogoyá	3960	2	80.30	1.70	0.10	0.40	20.10	11.0	37.40	1.390
312	Gualeguaychú	3910	2	77.80	0.23	0.16	0.53	21.00	11.0	35.20	1.400
313	Gualeguaychú	3995	3	77.80	2.52	0.40	0.32	19.30	10.3	35.40	1.400
314	C. del Uruguay	4120	2	77.10	0.92	0.04	0.32	21.50	10.6	35.00	1.400
315	R. del Tala	4030	2	78.50	0.17	0.34	0.38	8.24	11.0	38.20	1.480
316	San Salvador	2198	2	79.10	0.82	0.36	0.11	20.30	10.1	38.20	1.350
317	Victoria	4200	2	79.50	1.29	0.21	0.36	20.40	10.2	37.00	1.490
318	Victoria	2000	2	79.60	0.32	0.18	0.27	16.40	10.5	37.00	1.580

Subregion III Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
300	Paraná	27.6	10.5	353	67.0	56.9	10.5	14.9	48	117	59	265	1.98	0.585
301	Paraná	26.4	10.1	420	71.1	58.0	14.6	21.0	42	123	57	287	2.16	0.558
302	Paraná	25.6	8.8	428	71.6	58.5	11.7	16.4	47	115	65	296	1.77	0.735
303	Diamante	24.7	9.3	441	71.5	58.9	14.0	18.8	47	129	51	272	2.53	0.626
304	Diamante	22.5	7.4	443	70.9	56.1	20.2	30.2	22	107	52	239	2.06	0.716
305	Diamante	24.4	9.2	428	70.4	57.7	20.6	28.5	29	126	42	239	3.00	0.631
306	La Paz	25.8	9.6	287	71.0	58.7	10.0	15.1	61	106	73	293	1.45	0.576
307	La Paz	26.9	9.5	228	70.0	57.5	9.6	16.9	49	108	66	290	1.64	0.573
308	Gualeguay	23.7	8.6	288	71.6	56.8	35.0	22.4	30	128	48	267	2.67	0.551
309	Gualeguay	25.6	9.5	342	71.5	59.6	34.0	12.1	19	119	56	264	2.13	0.583
310	Nogoyá	21.0	7.4	418	70.6	56.8	14.1	19.2	51	110	62	277	1.77	0.486
311	Nogoyá	22.4	7.8	414	70.9	58.2	13.3	18.9	46	122	66	319	1.85	0.580
312	Gualeuaychú	23.6	8.2	392	70.8	58.1	12.2	20.1	32	107	72	284	1.49	0.576
313	Gualeguaychú	21.1	7.5	383	70.0	58.1	13.6	19.9	36	119	62	282	1.92	0.582
314	C. del Uruguay	20.3	7.0	415	70.8	56.2	15.3	22.9	32	111	57	255	1.95	0.575
315	R. del Tala	23.5	8.1	399	71.3	59.8	10.5	16.0	45	116	65	289	1.78	0.560
316	San Salvador	22.3	7.6	382	70.5	57.2	13.9	19.0	43	115	57	269	2.02	0.494
317	Victoria	21.1	7.4	398	71.0	58.9	10.4	16.6	38	110	63	264	1.75	0.590
318	Victoria	22.7	7.8	434	70.6	57.7	12.2	18.0	38	110	62	265	1.77	0.558

Subregion IV
Background for the crop

As it happened in previous years, the environmental conditions were again a variable among areas inside this sub region, giving place to different yield values which can be considered from acceptable to very good, mainly determined by quantity and distribution of rainfalls received by crops.

In the south of the subregion, composed by the districts of Tres Arroyos, Gonzales Chaves, San Cayetano and Necochea, there was in general lack of humidity during the whole cycle, since the monthly rainfalls recorded were lower than their respective historic averages, except in November which were near to the average.

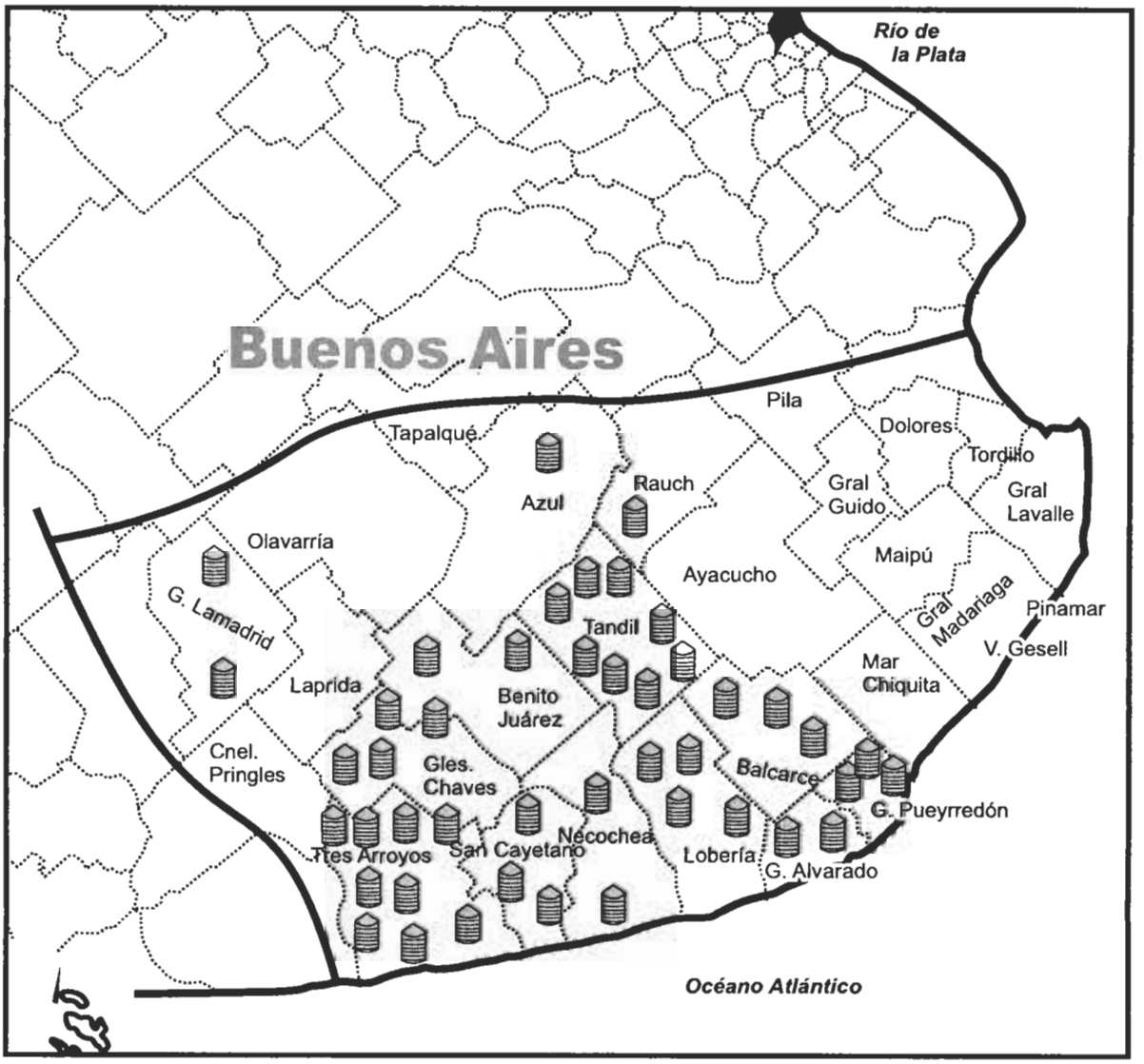
Temperatures from June to October were lower than the average, except in August where days with higher temperatures than expected were present, reaching 2,4° C above the historic average. However, the predictable effect of bringing forward the vegetative cycle was counteracted by cool temperatures in September and October which delayed the earing to its most adequate period, counteracting also, the tendency to shorten the cycle produced by scarce rainfalls. Lots sown in appropriate period for each cycle reached a full earing towards the end of October and beginning of November.

The mean temperature was adequate in November, with few windy days, so that little humidity available was well used and yields suffered less than in previous cycles. Yields were from normal to good in this part of the subregion, with adequate electrolytic weight values.

In the rest of the subregion crops developed better throughout their cycle due to better humidity levels because of more abundant and frequent rains.

Within this context, an intermediate situation with good to very good yields took place in the area of Balcarce and Lobería, while in the rest of the subregion, in the districts of Tandil, Azul, Olavarría and the ones towards the north, yields were in general from very good to excellent.

Subregion
IV
Wheat



Each reference represents near 4,000 tns sampled.

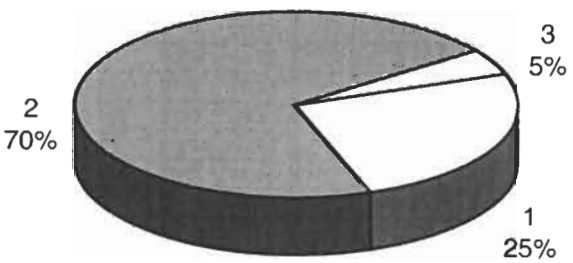
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	74.55	85.05	80.51	1.57	0.02
Total Damaged Kernels (%)	0.10	1.42	0.36	0.25	0.71
Foreign Material (%)	0.06	0.70	0.28	0.18	0.64
Shrunken and Broken Kernels (%)	0.16	1.22	0.50	0.22	0.44
Yellow Berry Kernels (%)	0.00	7.60	1.11	1.35	1.22
Protein (13,5% Moisture) (%)	10.9	13.6	12.3	0.7	0.05
Weight of 1000 Kernels (gr.)	30.90	37.61	34.35	1.68	0.05
Ash (% dry basis)	1.433	1.829	1.616	0.100	0.06

Total damaged kernels includes 0.12% sprouted kernels and 0.24% insect chewed kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	25.6	34.6	29.9	2.3	0.08
	Dry Gluten (%)	8.9	11.7	10.6	0.6	0.06
	Falling Number (sec.)	287	491	419	33	0.08
	Flour Yield (%)	58.6	73.1	68.3	3.7	0.05
	Ash (dry basis) (%)	0.468	1.606	0.661	0.182	
FARINOGRAM	Water Absorption (14% H°) (%)	54.6	61.1	58.9	1.3	0.02
	Development Time (min.)	5.2	21.7	10.6	4.2	0.40
	Stability (min.)	7.7	41.5	19.1	6.8	0.36
	Degree of Softening (12 min.)	9	67	32	13	0.41
ALVEOGRAM	P (mm)	72	135	97	15	0.15
	L (mm)	66	129	109	13	0.12
	W Joules x 10-4	244	459	355	45	0.13
	P / L	0.59	1.61	0.89	0.24	0.26

These results were elaborated with 44 composite samples prepared proportionally from 819 primary samples (farmer deliveries)

Subregion Data

In this subregion the wheat production was 2,404,482 tons., the 32.6% of the national total. Were sampled 166.035 tons., the 6.9% of the subregion production.

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS									
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
400	Balcarce	4000	2	81.70	0.46	0.34	0.30	3.30	12.2	36.36	1.569
401	Loberia	4000	2	80.80	0.29	0.12	0.64	0.00	12.5	33.91	1.518
402	Gral. Alvarado	4000	1	81.25	0.40	0.10	0.18	1.60	11.1	35.64	1.433
403	Balcarce	4000	2	81.05	0.40	0.14	0.54	0.00	12.4	33.57	1.606
404	Tandil	4000	2	80.60	0.48	0.38	0.64	1.36	11.4	35.24	1.573
405	Tandil	4000	1	80.60	0.46	0.08	0.26	3.72	11.5	35.93	1.608
406	Tandil	4000	2	79.45	0.78	0.26	0.60	0.00	12.4	33.88	1.644
407	Gral. Pueyrredón	4000	2	79.90	0.58	0.46	0.30	0.84	11.8	34.93	1.480
408	Gral. Alvarado	4000	1	81.25	0.18	0.10	0.34	0.88	12.0	33.73	1.571
409	Tandil	4000	2	82.40	0.48	0.66	0.32	3.00	11.3	35.83	1.572
410	Loberia	4000	1	79.90	0.18	0.06	0.44	0.72	11.7	36.23	1.529
411	Balcarce	4000	1	79.90	0.36	0.06	0.26	2.90	11.9	34.82	1.550
412	Loberia	4000	2	79.25	0.32	0.38	0.42	0.00	12.9	33.27	1.607
413	Azul	4000	1	80.15	0.42	0.08	0.26	1.68	11.3	37.05	1.543
414	Gral. Pueyrredón	4000	1	81.70	0.10	0.06	0.16	3.78	10.9	36.41	1.482
415	Necochea	4000	1	81.05	0.12	0.18	0.24	3.28	12.3	36.06	1.446
416	Tandil	4000	2	85.05	0.26	0.26	0.34	2.64	11.9	35.30	1.588
417	Rauch	4000	2	83.95	0.34	0.26	0.20	0.00	12.1	37.61	1.574
421	Gral. Pueyrredón	4000	1	81.95	0.30	0.18	0.46	0.00	12.3	35.09	1.505
422	Loberia	4000	2	81.05	0.18	0.24	0.45	2.18	11.5	34.40	1.509
500	Benito Juarez	4000	2	79.00	0.24	0.30	0.40	0.60	12.9	36.20	1.537
501	Benito Juarez	3996	2	78.15	0.88	0.58	0.72	0.40	13.2	34.40	1.595
502	General Lamadrid	4000	2	79.00	1.42	0.46	0.92	0.40	13.4	31.00	1.629
503	General Lamadrid	3425	3	74.55	0.90	0.22	0.88	1.80	12.6	31.60	1.687
504	Gonzales Chaves	4000	2	80.35	0.52	0.38	0.68	0.80	12.9	31.00	1.756
505	Gonzales Chaves	3500	2	81.25	0.18	0.28	0.54	0.30	13.2	30.90	1.804
506	Gonzales Chaves	5100	2	79.90	0.36	0.12	0.76	0.20	13.1	31.00	1.757
507	Gonzales Chaves	1631	3	80.15	0.20	0.32	1.22	1.40	13.5	30.90	1.789
509	Necochea	4500	2	81.50	0.22	0.26	0.40	0.40	12.5	35.30	1.582
510	San Cayetano	4373	2	81.25	0.52	0.08	0.62	0.60	12.5	34.30	1.656
511	San Cayetano	4000	2	81.05	0.14	0.70	0.32	0.20	12.6	35.30	1.685
512	San Cayetano	750	2	80.15	0.24	0.26	0.54	1.20	12.5	35.00	1.607
515	Tandil	4005	2	81.05	0.20	0.70	0.62	0.30	12.1	33.70	1.487
516	Tandil	2107	2	79.45	0.30	0.42	0.38	7.60	11.3	34.50	1.651
517	Tandil	4000	2	81.25	0.22	0.46	0.66	0.20	11.8	33.00	1.708
518	Tres Arroyos	3929	2	80.80	0.12	0.36	0.38	0.30	12.5	32.90	1.795
519	Tres Arroyos	3510	2	79.90	0.24	0.40	0.74	0.30	12.9	34.50	1.706
520	Tres Arroyos	4000	1	81.25	0.20	0.14	0.48	0.00	13.6	34.30	1.829
521	Tres Arroyos	3800	2	79.25	0.12	0.28	0.30	0.70	12.6	34.00	1.594
522	Tres Arroyos	4007	2	78.15	0.24	0.18	0.76	0.80	12.2	35.10	1.642
523	Tres Arroyos	2152	2	79.00	0.24	0.38	0.98	0.60	13.2	31.90	1.736
524	Tres Arroyos	4000	2	79.45	0.20	0.20	0.76	0.00	12.6	33.60	1.729
525	Tres Arroyos	4000	2	81.05	0.22	0.64	0.62	0.60	12.9	34.40	1.730
526	Tres Arroyos	3250	1	79.90	0.20	0.12	0.48	0.30	12.6	34.90	1.700

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
400	Balcarce	28.2	10.4	386	66.3	58.2	20.0	30.2	22	118	102	421	1.16	0.517
401	Lobería	30.7	11.4	444	64.8	58.9	20.3	28.6	31	131	102	459	1.28	0.484
402	Gral. Alvarado	26.7	9.9	448	65.5	57.6	7.4	27.2	9	100	101	333	0.99	0.498
403	Balcarce	27.7	10.3	400	59.1	57.7	18.5	28.0	22	107	101	370	1.06	0.495
404	Tandil	26.4	9.8	411	58.6	57.2	13.8	23.2	27	92	116	351	0.79	0.493
405	Tandil	28.0	10.4	287	60.3	56.9	13.5	19.2	49	93	103	324	0.90	0.468
406	Tandil	27.3	10.1	380	66.7	57.7	11.8	18.7	37	110	82	326	1.34	0.471
407	Gral. Pueyrredón	28.6	10.6	427	67.6	57.8	9.9	23.5	18	114	118	434	0.97	0.509
408	Gral. Alvarado	28.1	10.4	400	67.0	59.1	5.6	16.5	30	103	102	357	1.01	0.546
409	Tandil	27.0	10.0	395	64.3	58.0	14.9	21.6	41	113	94	361	1.20	0.578
410	Lobería	27.2	10.1	417	67.9	57.9	7.6	20.3	18	99	95	326	1.04	0.570
411	Balcarce	28.4	10.5	441	69.6	58.6	6.1	19.2	28	97	115	382	0.84	0.541
412	Lobería	31.2	11.6	436	71.7	59.9	10.1	20.5	27	95	127	395	0.75	0.554
413	Azul	27.4	10.1	386	69.5	58.7	6.1	17.6	27	90	125	348	0.72	0.519
414	Gral. Pueyrredón	25.6	9.5	414	71.2	57.2	8.1	24.8	13	123	79	356	1.56	0.550
415	Necochea	31.0	11.5	436	68.3	58.0	10.5	23.4	20	94	117	372	0.80	0.521
416	Tandil	28.7	10.6	416	62.3	60.9	17.2	22.5	34	135	97	453	1.39	0.576
417	Rauch	29.2	10.8	437	60.6	60.4	21.7	41.5	14	116	102	410	1.14	0.557
421	Gral. Pueyrredón	28.3	11.1	404	64.7	58.0	16.2	31.6	20	101	109	366	0.93	0.519
422	Lobería	28.3	10.5	473	68.5	57.7	15.1	23.5	29	110	93	355	1.18	0.547
500	Benito Juarez	30.9	10.6	368	70.9	59.1	8.5	12.2	39	76	111	295	0.69	0.685
501	Benito Juarez	31.1	10.7	387	70.6	60.4	7.5	13.0	36	89	118	332	0.75	0.754
502	General Lamadrid	32.2	11.1	421	70.9	59.7	8.4	12.5	37	77	125	313	0.62	0.616
503	General Lamadrid	29.8	10.1	393	72.8	54.6	6.5	8.8	60	75	100	244	0.75	0.750
504	Gonzales Chaves	31.5	10.9	416	70.3	59.4	12.8	20.6	24	86	125	363	0.69	0.688
505	Gonzales Chaves	32.7	11.3	418	68.7	60.5	8.3	15.2	37	90	114	354	0.79	0.789
506	Gonzales Chaves	32.3	11.1	432	70.7	59.1	8.7	17.5	21	80	112	316	0.72	0.714
507	Gonzales Chaves	33.3	11.5	412	69.9	60.8	8.4	16.5	28	88	123	368	0.71	0.715
509	Necochea	31.5	10.7	442	72.0	59.4	10.2	17.6	24	93	114	367	0.82	0.816
510	San Cayetano	32.3	11.1	454	71.5	60.6	8.0	11.3	55	94	116	352	0.81	0.810
511	San Cayetano	32.8	11.3	471	71.3	59.7	7.4	11.1	47	76	129	317	0.59	0.589
515	Tandil	30.0	10.2	446	68.3	60.6	9.2	18.2	30	99	104	368	0.96	0.952
516	Tandil	25.7	8.9	420	70.2	58.2	10.2	19.2	20	106	66	271	1.61	1.606
517	Tandil	27.3	9.4	396	70.7	57.8	8.9	18.5	22	84	95	284	0.89	0.884
518	Tres Arroyos	30.7	10.6	433	71.6	59.1	10.7	18.6	23	91	111	351	0.82	0.820
519	Tres Arroyos	32.4	10.9	427	69.7	59.5	8.5	14.4	31	96	111	371	0.87	0.865
520	Tres Arroyos	34.6	11.7	491	70.6	61.1	8.7	14.5	33	87	129	380	0.68	0.674
521	Tres Arroyos	32.0	10.7	412	70.9	60.2	9.5	12.7	35	96	100	344	0.96	0.960
522	Tres Arroyos	30.0	10.0	401	73.1	57.3	5.2	7.7	67	72	116	259	0.62	0.621
523	Tres Arroyos	33.2	11.3	449	68.2	59.1	10.2	19.0	25	88	129	403	0.68	0.682
524	Tres Arroyos	31.8	10.7	419	72.0	59.0	7.7	12.6	50	104	104	380	1.00	1.000
525	Tres Arroyos	33.0	11.1	441	69.7	60.6	8.0	12.7	46	94	123	392	0.76	0.764
526	Tres Arroyos	32.1	10.7	427	70.0	59.9	6.3	9.4	55	83	124	333	0.67	0.669

Climatology 2009/2010

Climate and Wheat crop 2009 - 2010 in Argentina

Juan A. Forte Lay – José L. Aiello.

The climatic behavior during the 2009-2010 wheat campaign is described once again resorting to the use of a method to calculate the water reserves in the soil and its anomalies. These, which we call "Soil Moisture Classification", were calculated as a monthly average during the whole wheat cycle, although they come from a daily analysis and express the degree of separation from the habitual conditions for each region and period of the year. Moisture classification is an adequate climatic indicator because it summarizes the behavior of the most relevant climatic variables, such as spatial and temporal distribution of rainfalls and its interaction with the evapotranspiration which in turn depends on the environmental temperature, solar radiation, wind and atmospheric humidity.

Maps, which are used in an operational way and for any period of time, in this case are monthly and con-tain the political subdivision by districts, which can be associated to the known wheat regions of the country showing here only the pampeana provinces. The sequence of maps of soil moisture classifica-tion and a description of its behavior give the reader the possibility to have a clear idea of the climatic evolution of the wheat campaign, since the agronomic considerations are described in another section of this document. It is important to clarify that not always habitual or normal conditions are the most adequate for the crop in all the regions and periods of the year; so that in winter and beginning of spring, normal conditions could result in hydric deficit in regions located towards the west and northwest of the area such as North V wheat area, while these same conditions could result in situations of soil water excess in the central east and southeast of the wheat region.

MAY 2009

At the beginning of the wheat campaign, it can be observed, as in the previous year, a highly deficient panorama regarding edaphic humidity availability. The northeast and central southeast of the wheat re-gion were the most affected and detrimental to early first sowings which in general are not carried out. It has rained more in Entre Rios and central-southeast of Buenos Aires, without normalizing the soil situa-tion, in the rest of the wheat region; rainfalls have been poor and insufficient

JUNE 2009

Conditions improved in Entre Rios and especially on the northeast and central-southeast of Buenos Aires province where water reserves in soil were increased, although they did not reach normality it was enough to face up to the next sowings with success. The situation got worse towards the west, especially in Cordoba, La Pampa and west of Buenos Aires where rainfalls have been practically none. Wheat sowings have been carried out leaving the northeast of the wheat region aside due to the advanced season, resulting in one of the poorest wheat campaigns in the last decades.

JULY 2009

Rainfalls were abundant in the east of pampeana region and practically null in the west extreme, edaphic humidity continued to be in bad conditions in the central-west of Cordoba, in La Pampa and west of Buenos Aires provinces. In the east strip, where there was more cultivation, the last rainfalls benefited the crops, but in Cordoba deficit conditions prevailed specially towards the southeast and some damages were recorded due to frost on leaves. The situation continued to be highly deficient in La Pampa as well as in the west of Buenos Aires, there was improvement towards the southern extremes of both prov-inces thanks to snowfall which allowed some sowings.

AUGUST 2009

The situation remained similar to previous years though some moderate rainfall recorded from the last day of the month, which reached regions on the west, improved superficial moisture so necessary for the affected wheat of those areas that was starting to shoot with few tillers and scarce development. However little wheat was sown in the west half of the region and it is probable that many crops have suffered irreparable loss. The situation in the east wheat region continues to be reasonable.

SEPTEMBER 2009

There was hydric improvement in the soil towards the west of the region (except in the northeast and southeast extremes) which enabled to stop the deterioration of winter crops in a timely moment, specially for wheat although it was little sown in that area, and in some cases the previous drought had already produced irreversible damages in crops, some semi –late frosts constituted as an adverse factor special-ly for wheat in the south east sector of the region. The east sector of the Pampeana region continued to be in excellent conditions for winter crops which promise good yields, though there are zones with ex-cessive humidity.

OCTOBER 2009

The most significant topic was the new decline in the hydric situation of soils towards the west of the region which had had some improvement in September. Drought and extreme hot weather produced even more deterioration in crops especially in the central-west of Cordoba. The little wheat that could be done in this region was extremely deteriorated with many losses. In La Pampa and southeast of Buenos Aires wheat developed with great difficulty and early spiking which predicted low yields, but in the whole east area of pampeana region, development was normal with timely rainfalls in October and especially on the first days of November in the southeast of Buenos Aires province.

NOVEMBER 2009

The positive extended anomaly of soil water reserves in the east becomes moderate towards the south of El Salado, and a negative movement is shown in the costal districts. Azul, Tandil and Ayacucho have had better reserves than their southern neighbors during the whole cycle. There are areas in Balcarce, Lobería and Necochea where the yield prospect is not encouraging, in addition to the effect of some late frosts. Although there was some improvement in the west, especially in the south of Cordoba, north of La Pampa and northeast of Buenos Aires, such improvement arrived late to stop the deterioration of crops and the first harvest yields are poor, on the contrary in the northeast of pampeana region there were good results though hindered by water excess recorded mainly in Entre Ríos.

DECEMBER 2009

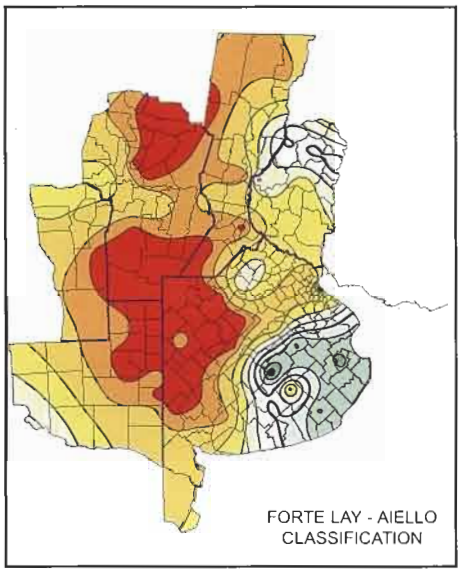
Due to the fact that it is a harvest month in the center and north of the region, positive anomalies in soil moisture are not always favorable, however taking advantage of good days for wheat harvest in the north of Buenos Aires and south of Santa Fe, it was regular to normal with problems of water excess, the same situation occurred in areas of Entre Ríos where it was excellent and with good results in the southeast of Buenos Aires province.

JANUARY 2010

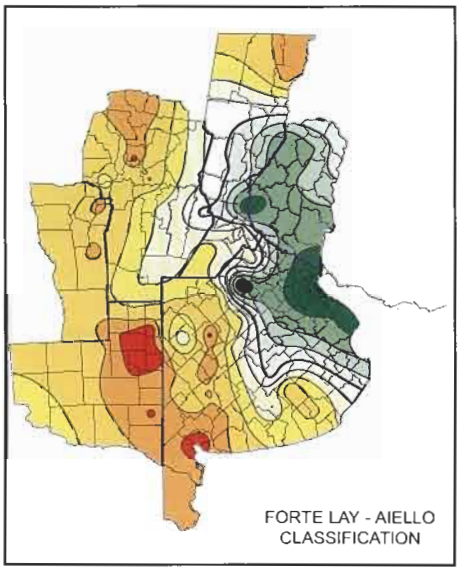
The average hydric situation of this month is added to the map since it is still a harvest period in the southeast extreme of the wheat area. However, excessive edaphic humidity affected the core and neighboring areas which has already been cultivated and the situation was almost normal in the south-east region.

2009/2010 WHEAT CROP

JULY 2009

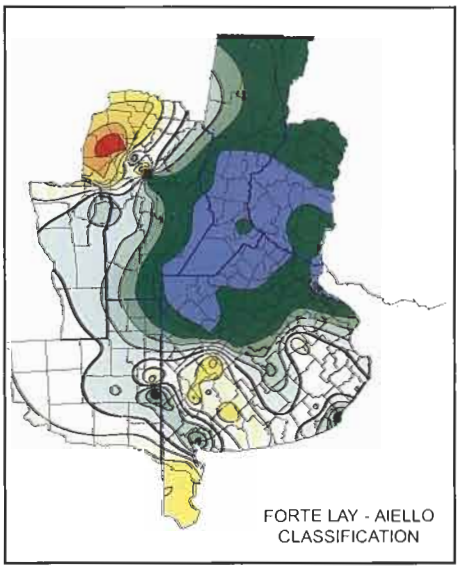


OCTOBER 2009



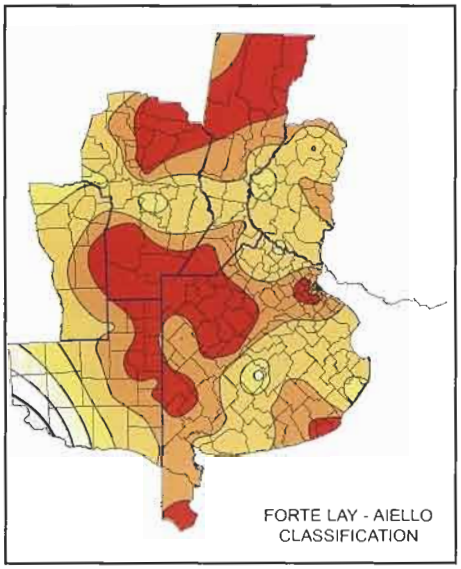
Extremely wetter than usual.
Much wetter than usual.
Wetter than usual.
Approximately normal for the season.
Drier than usual.
Much drier than usual.
Extremely drier than usual.

JANUARY 2010

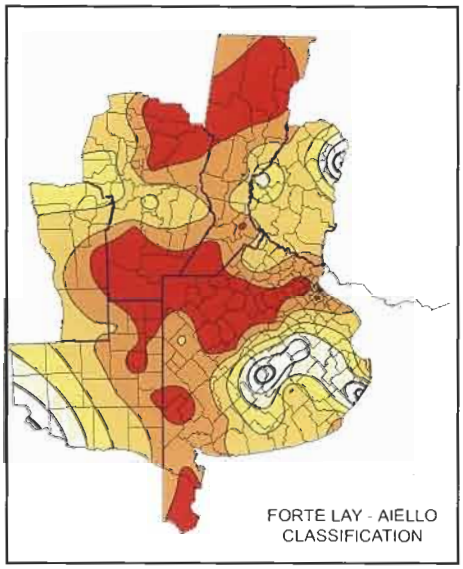


SOIL HUMIDITY CLASSIFICATION

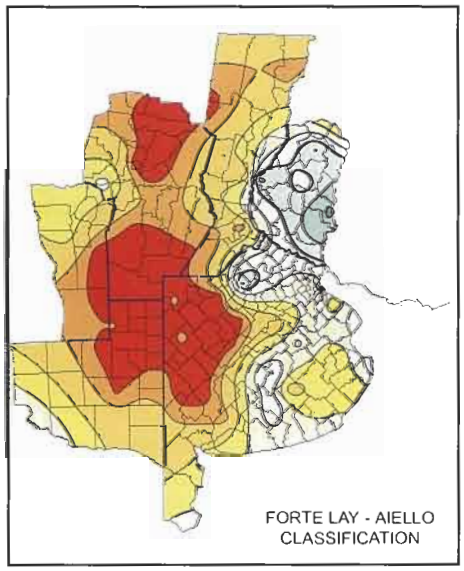
MAY 2009



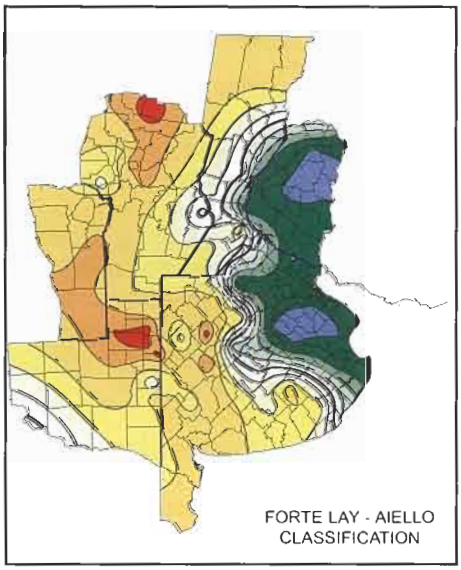
JUNE 2009



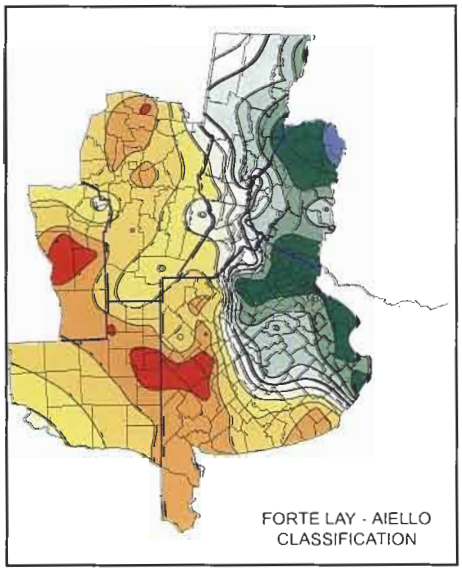
AUGUST 2009



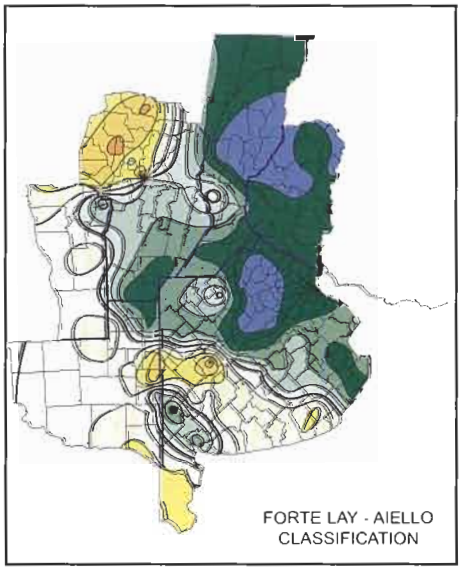
SEPTEMBER 2009



NOVEMBER 2009



DECEMBER 2009



Subregion V North
Background for the crop

The 2009 wheat campaign in region V North was characterized by a drastic fall of the cultivated area which has been observed since 2008, with a considerable decrease in volume of the grains produced.

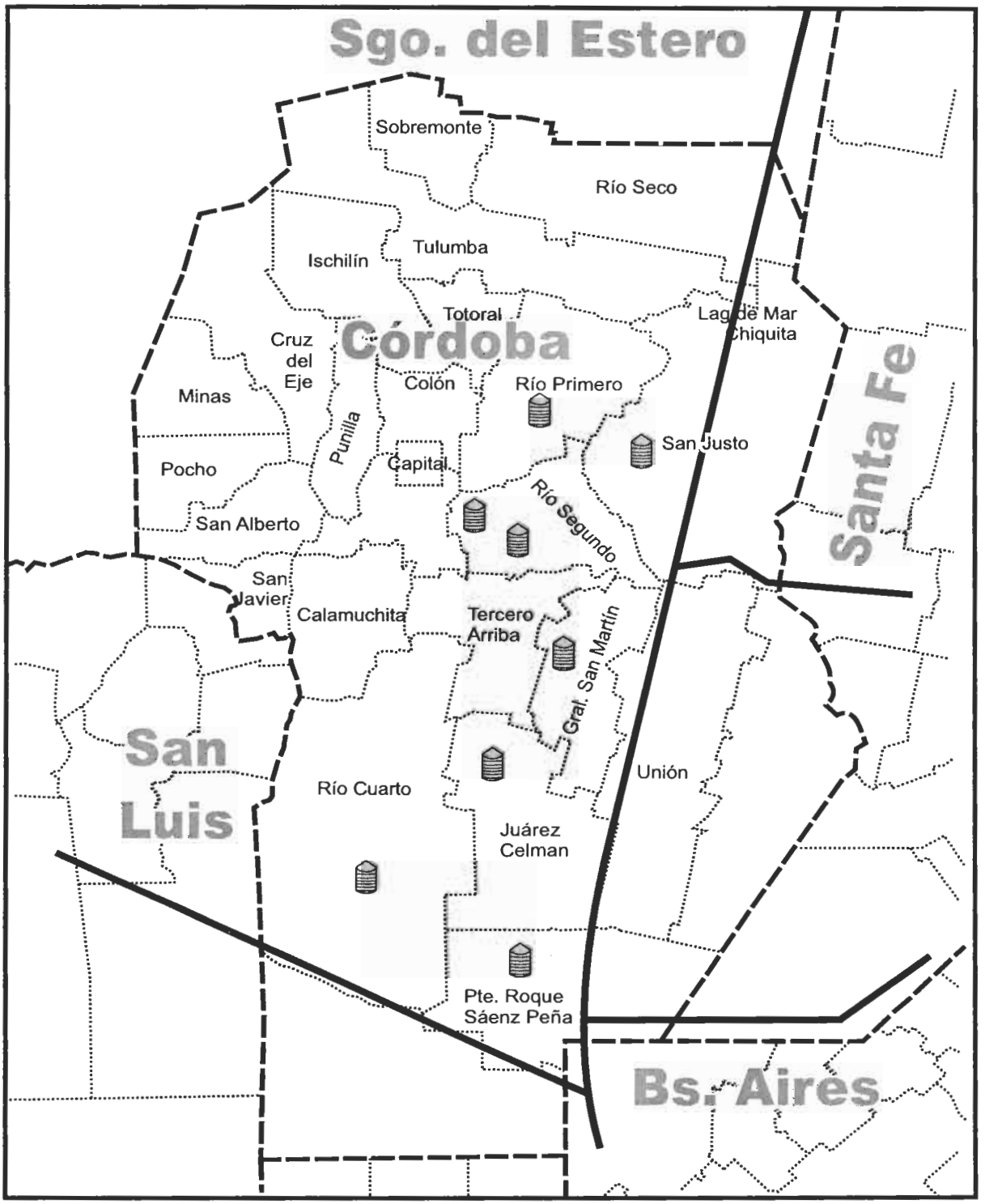
The main reasons for a low motivation in sowing were the scarce accumulation of water in the soil profile at the moment of planting (the greatest drought in the last 30 years took place in 2009), being this the main determining factor for yields and the low predictability of prices for wheat futures which hindered the planning of profitable margins in advance.

Within this context the cultivated surface was lower than 30 % of the average in the last years and most of the cultivated lots were done with low levels of inputs either in genetics, seed treatments, agrochemicals or fertilizers.

Sowings were mainly carried out in May, although towards the north of the region there were some anticipated sowings of long cycle varieties in April to take advantage of superficial water availability for the crop planting.

Low yields were obtained in dry conditions which fluctuated between 5 and 12 ql/ha, while in lots with supplementary irrigation or in the presence of groundwater, good fertilization and adequate choice of the variety yields between 35 and 45 ql/ha were reached. There was no presence of foliar diseases such as rust and yellow spot due to dry weather and in general fungicide controls were not carried out.

As a conclusion, the combination of scarce water availability in soil profile at the moment of sowing and the uncertainty in cereal prices contributed to a decrease in wheat cultivated area in 2009 campaign, while the low technological level used and the exceptional drought of this year determined the expression of high yields.



Each reference represents near 4,000 tns sampled.

Subregion V North Wheat

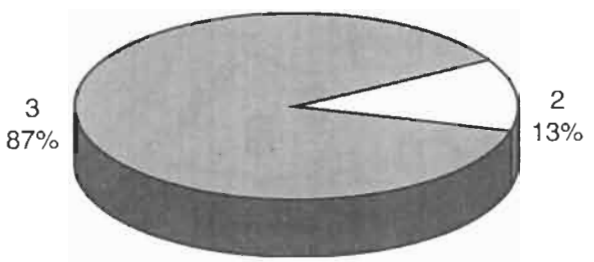
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	72.50	79.00	75.78	1.96	0.03
Total Damaged Kernels (%)	0.59	2.40	1.57	0.56	0.36
Foreign Material (%)	0.21	0.88	0.49	0.24	0.50
Shrunken and Broken Kernels (%)	0.57	1.63	1.05	0.28	0.27
Yellow Berry Kernels (%)	0.00	0.30	0.11	0.15	1.30
Protein (13.5% Moisture) (%)	11.3	14.5	12.9	1.1	0.09
Weight of 1000 Kernels (gr.)	22.53	32.29	26.29	3.10	0.12
Ash (% dry basis)	1.580	2.200	1.893	0.200	0.11

Total damaged kernels includes 0.10% green kernels, 0.12% frosty kernels, 0.82% sprouted kernels, 0.07% calcinated kernels, 0.23% insect chewed kernels and 0.23% germ-chewed kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	21.8	34.1	27.0	3.8	0.14
	Dry Gluten (%)	8.0	11.5	9.5	1.2	0.13
	Falling Number (sec.)	229	467	371	81	0.22
	Flour Yield (%)	65.1	70.0	67.8	1.6	0.02
	Ash (dry basis) (%)	0.553	0.842	0.634	0.071	0.11
FARINOGRAM	Water Absorption (14% H°) (%)	57.5	62.6	59.7	1.3	0.02
	Development Time (min.)	10.0	18.8	14.9	3.5	0.23
	Stability (min.)	15.1	29.7	20.8	5.3	0.25
	Degree of Softening (12 min.)	19	56	38	15	0.39
ALVEOGRAM	P (mm)	94	130	115	7	0.06
	L (mm)	70	98	81	8	0.10
	W Joules x 10-4	290	498	374	58	0.15
	P / L	1.16	1.62	1.42	0.13	0.09

These results were elaborated with 8 composite samples prepared proportionally from 42 primary samples (farmer deliveries)

Subregion Data

In this subregion the wheat production was 127,410 tons., the 1.7% of the national total. Were sampled 10,752 tons., the 8.4% of the subregion production.

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS									
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
600	Gral. San Martín	550	3	74.10	1.00	0.65	0.91	0.00	14.5	26.82	2.010
601	Río II	1570	3	76.10	0.83	0.88	1.06	0.00	13.2	24.37	2.010
602	Río II	1875	3	75.90	0.99	0.64	1.17	0.00	13.8	23.61	2.050
603	Juárez Celman	2000	3	75.90	2.09	0.22	1.28	0.30	11.9	26.81	1.720
604	Río Cuarto	2000	2	79.00	1.94	0.21	0.95	0.30	11.3	32.29	1.580
605	Roque Saenz Peña	1650	3	72.50	1.82	0.45	0.57	0.00	13.8	24.46	2.000
606	San Justo	831.5	3	74.75	2.40	0.62	1.63	0.00	14.2	24.74	2.200
607	Río Primero	275	3	75.00	0.59	0.76	0.63	0.00	11.5	22.53	1.880

Subregion V North Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
600	Gral. San Martín	34.1	11.5	386	69.5	60.9	16.9	15.3	36	111	84	389	1.31	0.657
601	Río II	28.0	10.1	436	67.4	60.1	17.6	29.7	19	119	87	418	1.36	0.615
602	Río II	29.4	10.4	467	67.4	60.6	16.8	24.7	20	117	89	417	1.32	0.677
603	Juárez Celman	21.8	8.0	229	65.1	59.0	10.0	15.1	56	113	70	313	1.62	0.553
604	Río Cuarto	23.0	8.0	350	68.4	58.0	11.3	15.5	53	108	76	315	1.42	0.562
605	Roque Saenz Peña	30.2	10.6	351	69.8	59.8	18.8	22.6	40	119	76	378	1.57	0.701
606	San Justo	30.8	10.2	449	69.4	62.6	17.6	22.2	35	130	98	498	1.32	0.730
607	Río Primero	27.9	9.6	394	70.0	57.5	10.9	19.2	29	94	81	290	1.16	0.842

Subregion V South
Background for the crop

Despite being historically the greatest wheat cultivated area in surface, a significant drought resulted in the complete loss of some cultivated areas and some other areas could be harvested under a very low yield which only covered the production costs.

Humidity was scarce throughout all stages of crop development. Lots with high technology, sown through direct drilling systems survived until harvest. A snowfall on July 22 encouraged some producers to jeopardize the sowing at an inadequate season for the Subregion VS.

Some fungi problems, which usually appear in dry years, were observed at the foot of the wheat plant.

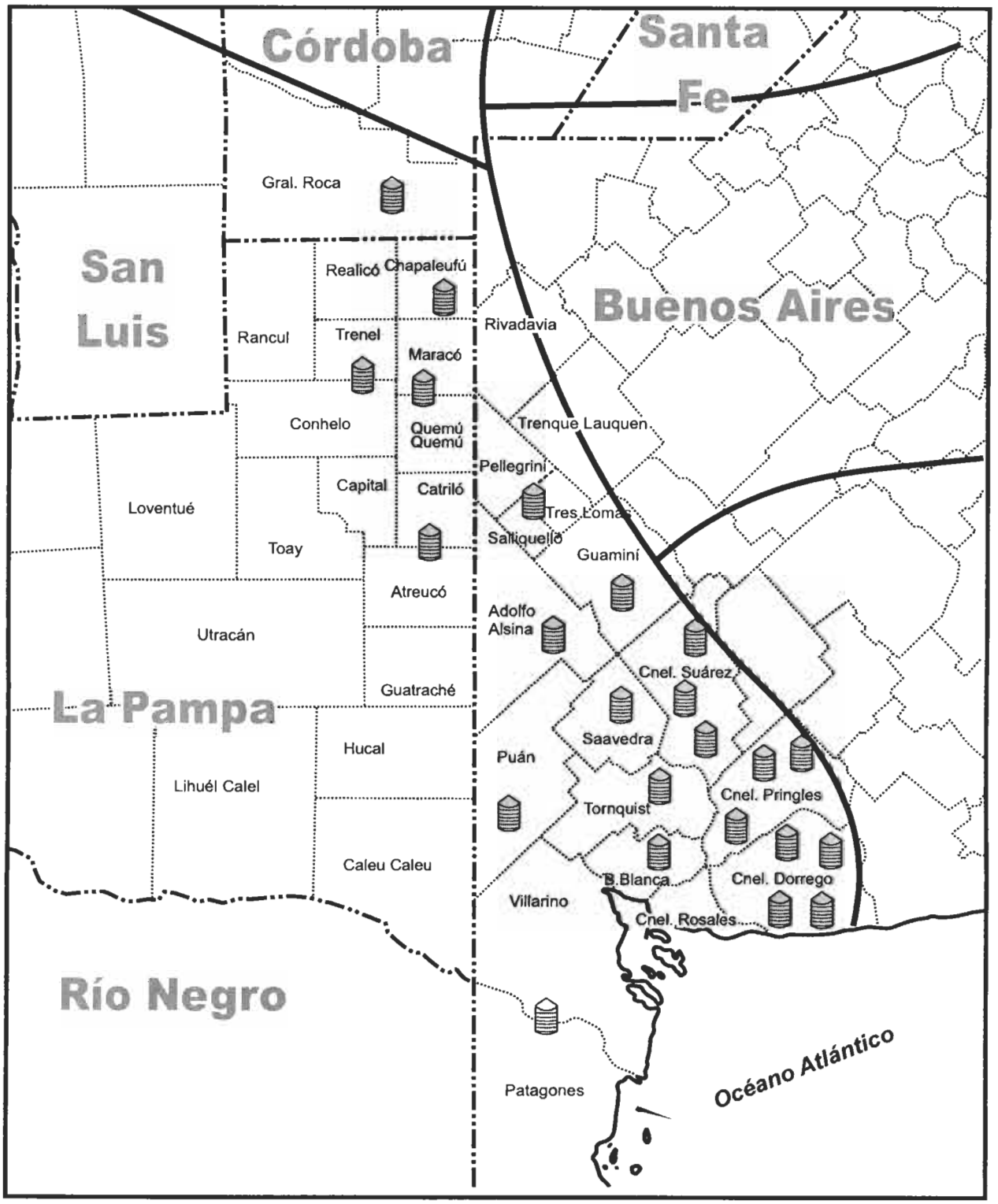
The use of technological inputs such as fertilizers as well as other chemical products was reduced to the minimum.

Yields were very low in general at a minimum of 400 kg/ha and a maximum of 2.500 kg/ha, resulting in an average between 1.300 and 1.600 kg/ha according to the regions.

The quality of harvest was not very good resulting in poor grain fill and semi empty ones.

The final production is mainly stored in farm silos or silo bags.

Subregion V South Wheat



Each reference represents near 4,000 tns sampled.

Results of the Analyses

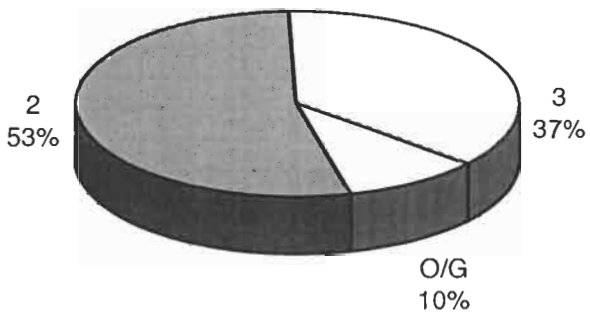
Composite Samples by Locality. Averages were weighted by Tonnage.

Subregion V South Wheat

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	74.55	83.05	79.34	1.35	0.02
Total Damaged Kernels (%)	0.10	1.52	0.48	0.35	0.73
Foreign Material (%)	0.22	1.60	0.54	0.26	0.48
Shrunken and Broken Kernels (%)	0.36	3.60	0.83	0.34	0.40
Yellow Berry Kernels (%)	0.00	13.80	1.03	2.19	2.13
Protein (13,5% Moisture) (%)	10.7	16.4	13.7	1.1	0.08
Weight of 1000 Kernels (gr.)	27.00	38.40	31.43	2.00	0.06
Ash (% dry basis)	1.616	1.953	1.789	0.099	0.06

Total damaged kernels includes 0.02% green kernels, 0.17% sprouted kernels, 0.18% insect chewed kernels and 0.11% germ-chewed kernels.

Grade Distribution



O/G: Out of Grade

Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	25.8	38.7	34.4	3.2	0.09
	Dry Gluten (%)	8.7	13.1	11.7	1.1	0.10
	Falling Number (sec.)	297	469	399	43	0.11
	Flour Yield (%)	62.3	72.5	65.2	2.2	0.03
	Ash (dry basis) (%)	0.488	0.742	0.584	0.057	0.10
FARINOGRAM	Water Absorption (14% H°) (%)	58.7	64.5	61.3	1.8	0.03
	Development Time (min.)	7.1	32.2	13.7	8.0	0.59
	Stability (min.)	9.6	39.4	21.2	9.0	0.42
	Degree of Softening (12 min.)	8	50	28	10	0.37
ALVEOGRAM	P (mm)	74	126	95	10	0.11
	L (mm)	73	170	123	17	0.14
	W Joules x 10-4	303	535	406	57	0.14
	P / L	0.44	1.73	0.77	0.20	0.25

These results were elaborated with 30 composite samples prepared proportionally from 429 primary samples (farmer deliveries)

Subregion Data

In this subregion the wheat production was 582,145 tons., the 7.9% of the national total. Were sampled 62,242 tons., the 10.7% of the subregion production.

Subregion V South Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS								
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
700	Atreucó	416	O/G	79.00	0.62	1.08	2.26	0.70	13.4	29.00	1.943
701	Catriló	80	O/G	78.15	0.18	0.22	3.60	2.60	13.6	28.70	1.766
703	Chapaleufú	206	O/G	74.55	0.28	1.60	1.68	0.00	16.4	31.90	1.869
704	Conhelo	80	3	80.15	0.24	0.96	1.04	0.20	13.8	28.50	1.917
705	Maracó	137	3	75.45	0.22	1.04	1.34	0.00	13.9	29.30	1.740
707	Quemú-Quemú	180	3	78.35	0.64	0.64	1.30	1.40	12.9	28.30	1.744
708	Trenel	49	3	77.45	1.52	0.50	1.44	0.80	13.6	31.10	1.940
709	Adolfo Alsina	1657	3	79.00	0.10	0.28	1.58	0.80	14.3	27.20	1.829
710	Adolfo Alsina	1415	3	79.45	0.24	0.56	1.64	0.00	14.5	27.00	1.877
711	Bahía Blanca	4008	2	77.45	0.18	0.52	0.76	0.20	13.0	32.80	1.649
712	Coronel Dorrego	4000	2	79.90	0.82	0.44	0.94	0.20	13.9	30.70	1.736
713	Coronel Dorrego	3817	3	81.05	0.32	1.16	0.56	0.30	12.6	33.50	1.635
714	Coronel Dorrego	3259	2	79.90	0.60	0.46	0.66	0.60	12.9	31.90	1.715
715	Coronel Dorrego	2061	2	80.60	0.26	0.54	0.48	1.60	12.9	31.80	1.616
716	Coronel Pringles	4021	2	80.35	0.88	0.32	0.52	0.00	15.1	31.90	1.896
717	Coronel Pringles	4009	3	79.00	0.36	0.82	1.02	0.80	14.3	31.10	1.895
718	Coronel Pringles	4002	2	79.45	0.18	0.24	0.76	0.20	13.7	32.10	1.834
719	Coronel Suárez	3969	2	79.00	0.44	0.48	0.62	0.00	14.9	30.70	1.800
720	Coronel Suárez	4000	2	79.00	0.46	0.38	0.74	0.00	14.8	30.30	1.888
721	Coronel Suárez	4001	2	79.45	0.18	0.46	0.96	0.30	14.8	29.70	1.757
722	Guaminí	1622	2	79.90	0.68	0.52	0.54	1.40	13.1	32.00	1.760
723	Patagones	1375	2	80.35	0.12	0.50	0.36	13.80	10.7	36.30	1.693
724	Puán	2142	3	79.25	0.82	0.96	1.36	0.60	13.6	29.90	1.774
725	Saavedra	2987	2	79.45	0.20	0.42	0.96	4.40	12.5	32.40	1.719
726	Saavedra	1000	2	78.15	0.18	0.64	1.10	1.20	14.4	29.30	1.923
727	Salliqueló	691	3	79.45	0.46	0.54	1.46	0.20	13.5	30.60	1.799
728	Tornquist	904	3	79.00	0.40	1.26	1.32	0.00	14.4	30.50	1.878
729	Tres Lomas	533	2	79.90	0.36	0.54	0.70	0.90	14.1	31.60	1.914
730	Villarino	1821	2	83.05	0.54	0.40	0.56	3.20	11.0	38.40	1.700
731	General Roca (Córdoba)	3800	2	76.10	1.50	0.34	0.62	1.40	13.7	30.70	1.953

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
700	Atreucó	34.0	11.5	413	72.5	61.0	8.8	12.3	40	81	136	361	0.60	0.729
709	Adolfo Alsina	35.4	12.1	425	65.4	60.3	8.7	18.8	22	83	148	427	0.56	0.643
710	Adolfo Alsina	35.8	12.3	431	70.9	60.3	8.2	16.3	38	74	170	404	0.44	0.742
711	Bahía Blanca	31.8	10.8	390	70.0	58.7	7.5	10.3	50	80	115	312	0.70	0.617
712	Coronel Dorrego	35.6	12.1	358	66.1	60.8	7.7	17.9	31	93	127	418	0.73	0.582
713	Coronel Dorrego	30.2	10.3	366	67.1	60.1	8.0	13.5	33	95	113	376	0.84	0.596
714	Coronel Dorrego	31.3	10.6	396	64.5	59.1	10.2	18.8	29	95	107	367	0.89	0.540
715	Coronel Dorrego	31.7	10.7	387	63.4	59.1	11.0	20.0	22	94	116	392	0.81	0.515
716	Coronel Pringles	38.7	13.0	379	63.6	64.2	9.4	20.3	25	91	140	415	0.65	0.700
717	Coronel Pringles	37.8	12.7	348	66.0	62.4	7.7	11.4	32	81	131	339	0.62	0.641
718	Coronel Pringles	34.7	11.8	411	67.0	62.7	12.2	23.0	23	103	117	418	0.88	0.568
719	Coronel Suárez	38.5	13.1	469	63.3	64.1	28.7	30.8	40	104	133	503	0.78	0.535
720	Coronel Suárez	36.5	12.7	463	63.0	63.3	31.0	35.5	23	97	140	490	0.69	0.575
721	Coronel Suárez	37.5	12.8	444	62.3	60.6	18.7	37.6	8	91	121	420	0.75	0.552
722	Guaminí	33.9	11.5	437	63.4	60.6	10.0	12.9	33	95	119	387	0.80	0.489
723	Patagones	25.8	8.7	384	66.3	59.5	8.5	12.5	32	92	100	303	0.92	0.552
724	Puán	32.1	11.2	421	64.5	61.8	32.2	39.4	21	112	117	489	0.96	0.575
725	Saavedra	30.5	10.2	397	65.6	59.4	11.5	19.5	20	100	99	373	1.01	0.488
726	Saavedra	36.7	12.4	425	64.1	64.5	16.3	27.8	8	112	136	535	0.82	0.550
727	Salliqueló	34.3	11.5	392	64.8	61.0	13.8	20.4	24	94	123	418	0.76	0.586
728	Tornquist	37.1	12.7	430	63.8	62.1	17.9	34.6	11	97	145	502	0.67	0.577
729	Tres Lomas	36.3	12.4	437	66.6	60.7	8.7	16.0	26	81	143	404	0.57	0.576
730	Villarino	27.8	9.4	402	64.2	64.3	7.1	9.6	21	126	73	327	1.73	0.590
731	General Roca (Córdoba)	34.1	11.7	297	64.5	60.3	11.0	16.6	42	98	117	407	0.84	0.582

Nortwest of the Country (NOA)
Background for the crop

Wheat campaign 2009, in the province of Tucumán, had 176.280 Hectares, showing a decrease of around 18% compared to the previous campaign as it happened in the wheat area at a national level.

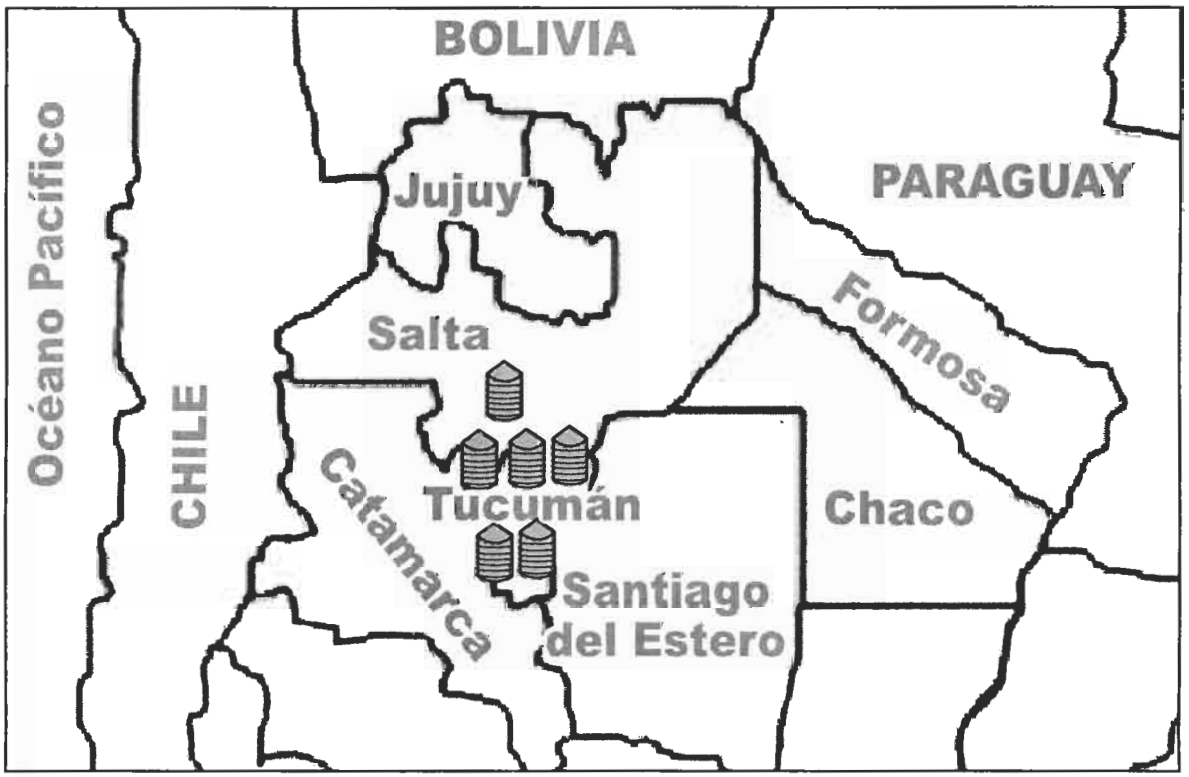
The sowing period extended from late April to mid May and was characterised by a high hydric variability in the soil profile as well as a lower soil recharge with regard to last year. This initial condition of scarce humidity was accompanied by the absence of hydric contribution during the whole crop cycle so that only the early sowings at the end of April and beginning of May could establish an acceptable planting.

Temperatures were neither ideal for a good expression of the crop since they were very high towards the end of June speeding up the phenological phases and frosts were also present during the most sensitive period.

Regarding the general sanitary status of the crop, important pest attacks were not recorded so that applications of agrochemicals were reduced in most lots. With reference to foliar diseases, damages were only detected in early stages of the crop which did not happen to prevail.

Yields were variable and not exceeding average values of 1700 kg/ha in least damaged areas, with an average in the province of around 850 kg/ha and placing itself again below the historic mean with total loss in many lots.

North of the Country



Each reference represents near 4,000 tns sampled.

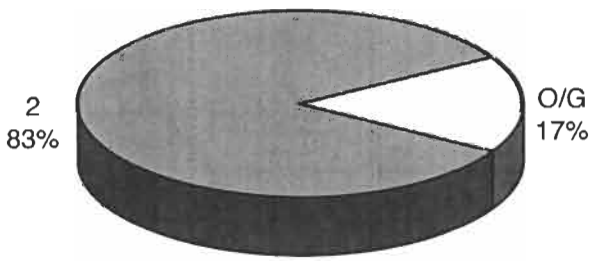
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	77.70	84.60	82.63	2.26	0.03
Total Damaged Kernels (%)	0.03	0.92	0.26	0.30	1.17
Foreign Material (%)	0.28	2.28	0.73	0.71	0.97
Shrunken and Broken Kernels (%)	0.52	1.20	0.78	0.25	0.32
Yellow Berry Kernels (%)	0.00	3.00	1.30	1.05	0.81
Protein (13,5% Moisture) (%)	10.9	13.2	11.6	0.8	0.07
Weight of 1000 Kernels (gr.)	28.31	32.70	31.58	1.48	0.05
Ash (% dry basis)	1.766	1.980	1.827	0.074	0.04

Total damaged kernels includes 0.19% green kernels, 0.04% frosty kernels and 0.03% insect chewed kernels.

Grade Distribution



O/G: Out of Grade

Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	28.2	32.8	29.8	1.4	0.05
	Dry Gluten (%)	10.4	12.1	11.0	0.5	0.05
	Falling Number (sec.)	407	487	448	30	0.07
	Flour Yield (%)	61.35	71.61	66.8	3.6	0.05
	Ash (dry basis) (%)	0.617	0.784	0.664	0.057	0.09
FARINOGRAM	Water Absorption (14% H°) (%)	60.3	65.9	64.2	1.8	0.03
	Development Time (min.)	2.0	10.9	8.2	2.9	0.36
	Stability (min.)	9.5	12.5	10.8	1.0	0.09
	Degree of Softening (12 min.)	44	67	55	7	0.13
ALVEOGRAM	P (mm)	101	145	134	16	0.12
	L (mm)	59	125	80	22	0.27
	W Joules x 10-4	287	396	344	42	0.12
	P / L	0.81	2.44	1.67	0.53	0.29

These results were elaborated with 6 composite samples prepared proportionally from 20 primary samples (farmer deliveries)

Subregion Data

In this subregion the wheat production was 360,800 tons., the 4.9% of the national total. Were sampled 24,000 tons., the 6.7% of the subregion production.

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS								
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
1	Burruyacu	4000	2	83.70	0.12	0.56	0.60	0.96	11.1	32.7	1.824
2	Burruyacu	4000	2	83.50	0.03	0.28	0.52	2.24	10.9	32.1	1.770
3	La Cocha	4000	2	83.05	0.12	0.60	1.20	1.28	11.6	32.0	1.766
4	Cruz Alta	4000	2	84.60	0.92	0.28	1.04	0.30	11.3	32.3	1.841
5	Leales	4000	2	83.25	0.12	0.36	0.72	3.00	11.5	32.1	1.783
6	Metan /Rosario de la Frontera	4000	O/G	77.70	0.24	2.28	0.60	0.00	13.2	28.3	1.980

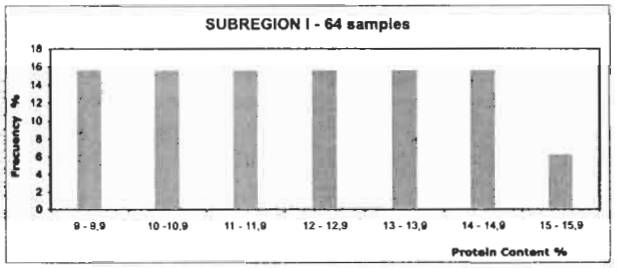
SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
1	Burruyacu	29.1	10.8	407	71.6	65.9	7.6	9.5	57	129	69	287	1.87	0.784
2	Burruyacu	28.2	10.4	438	67.8	65.0	9.1	10.1	58	144	59	301	2.44	0.621
3	La Cocha	29.5	10.8	413	67.15	64.7	9.9	11.7	50	145	66	333	2.20	0.617
4	Cruz Alta	29.6	11.0	471	62.78	64.5	9.6	11.0	55	137	89	393	1.54	0.674
5	Leales	29.8	11.0	470	69.8	64.9	2.0	10.2	44	145	73	356	1.99	0.642
6	Metan /Rosario de la Frontera	32.8	12.1	487	61.35	60.3	10.9	12.5	67	101	125	396	0.81	0.643

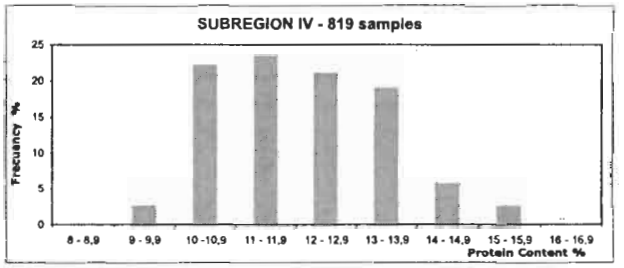
Protein Content Wheat

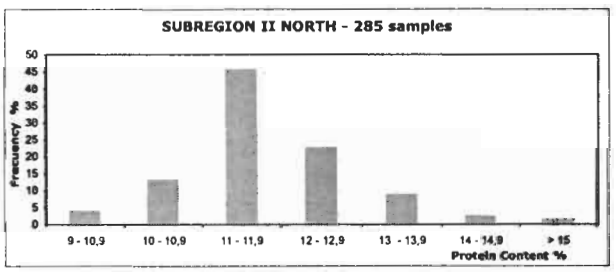
Protein Content

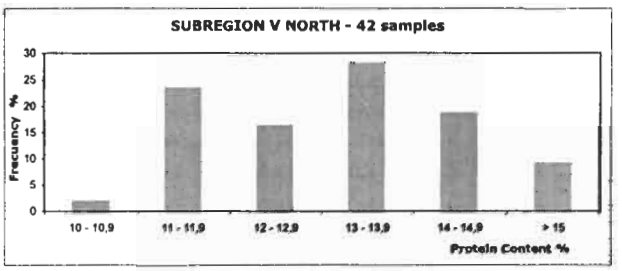
Distribution by ranges

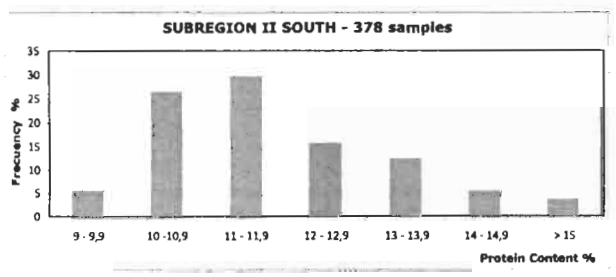
Results obtained on 2,435 Primary Samples

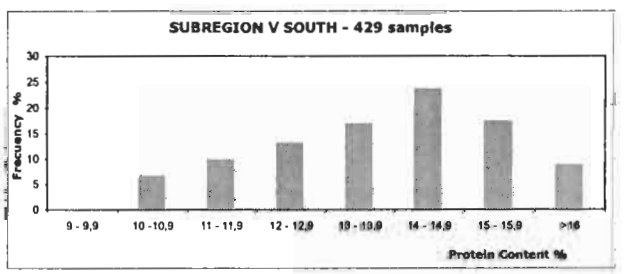


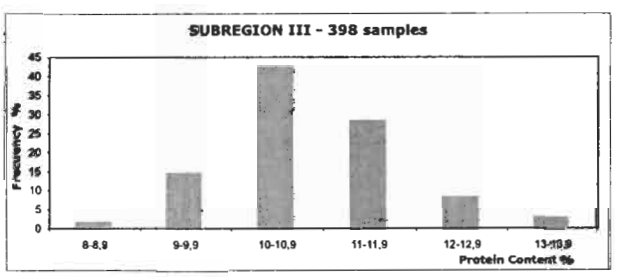


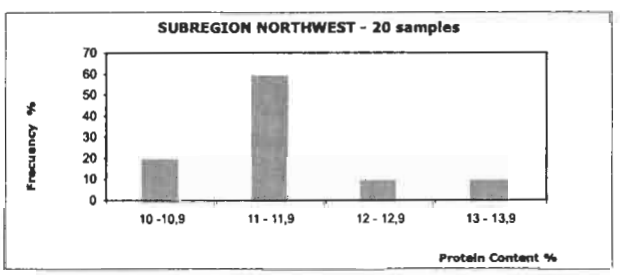


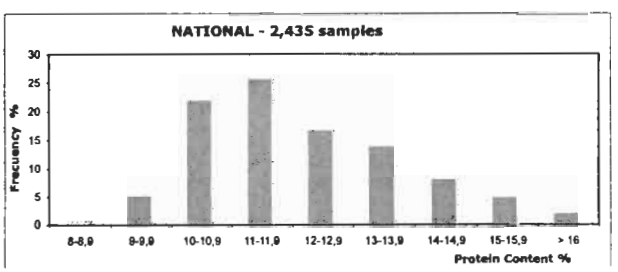












Wheat National Averages

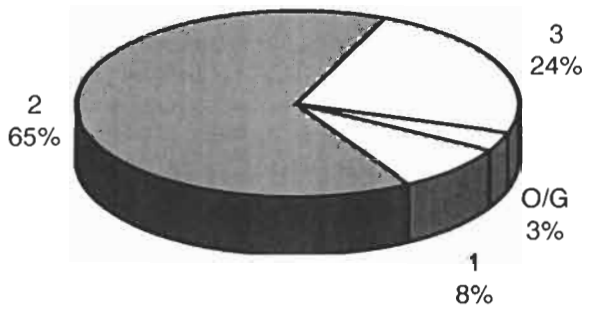
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

National Averages Wheat

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	72.50	85.05	79.02	2.30	0.03
Total Damaged Kernels (%)	0.03	4.20	0.67	0.63	0.94
Foreign Material (%)	0.04	2.28	0.34	0.28	0.82
Shrunken and Broken Kernels (%)	0.11	3.60	0.60	0.33	0.55
Yellow Berry Kernels (%)	0.00	22.80	3.35	6.02	1.80
Protein (13,5% Moisture) (%)	10.0	16.4	12.1	1.1	0.09
Weight of 1000 Kernels (gr.)	22.53	39.00	33.14	2.90	0.09
Ash (% dry basis)	1.290	2.420	1.714	0.195	0.11

Grade Distribution



O/G: Out of Grade

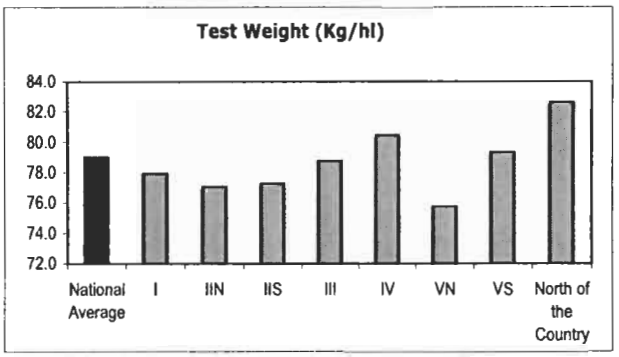
Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	20.3	38.7	28.8	3.8	0.13
	Dry Gluten (%)	7.0	13.1	10.2	1.3	0.13
	Falling Number (sec.)	228	493	406	45	0.11
	Flour Yield (%)	58.6	73.3	68.7	3.3	0.05
	Ash (dry basis) (%)	0.468	1.606	0.629	0.118	0.19
FARINOGRAM	Water Absorption (14% H°) (%)	53.6	65.9	58.8	2.4	0.04
	Development Time (min.)	2.0	35.0	12.9	6.3	0.48
	Stability (min.)	7.7	59.3	21.6	8.5	0.39
	Degree of Softening (12 min.)	1	67	31	14	0.44
ALVEOGRAM	P (mm)	67	145	101	17	0.16
	L (mm)	42	170	96	25	0.26
	W Joules x 10-4	216	535	334	61	0.18
	P / L	0.44	3.00	1.06	0.52	0.44

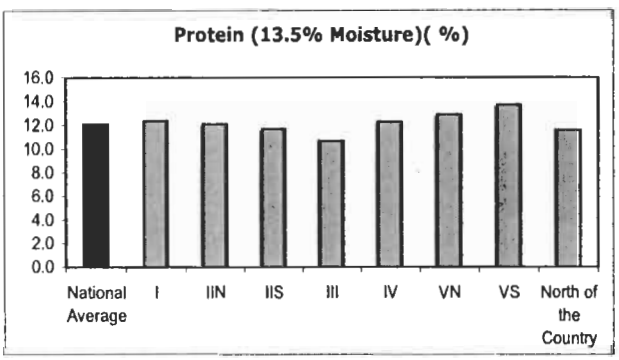
National Averages Wheat

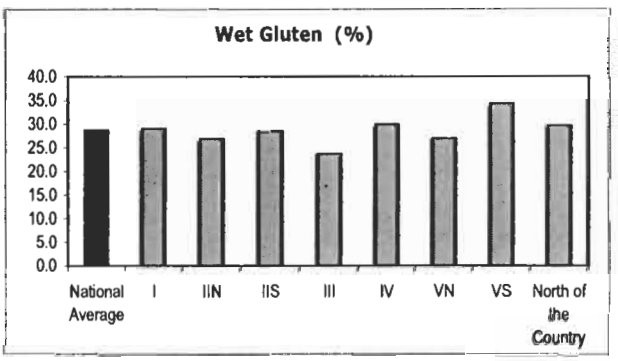
Wheat National and Subregions Averages

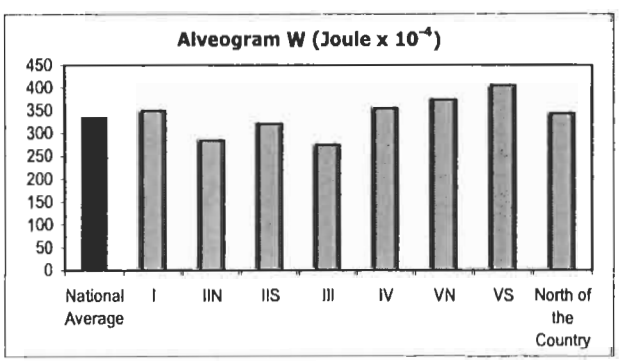
Comparative Graphics

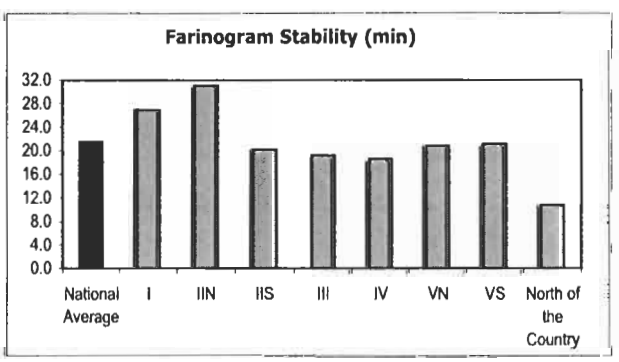
Composite Samples by Locality. Averages were weighted by Tonnage.











Mean Comparison among Subregions:

An analysis of the variation of the measured data was carried out (ANAVA) among the wheat subregions. Taking into account that the amount of points of sampling was different in each subregion (unbalanced), a comparison test of means was applied that permits to compare them although they are based on different number of data.

The obtained results are reliable because we could demonstrate if there were differences among the subregions with a very small experimental error. This was due to the fact that the averages were calculated with a high sampling intensity.

The interpretation of the results should be carried out observing the letters that figure to the right of each value in the variables. Those subregions named with the same letter did not show any significant difference.

All the opposing difference have a probable error of 5 %. All the likeness was accepted with a level of confidence close to 50 %.

Subregion	N° Samples	Test Weight	Subregion	Total Damaged Kernels		Subregion	Foreign Material		Subregion	Shrunken and Broken Kernels	
North Country	6	82.63	a	North Country	0.26	a	III	0.23	a	III	0.40	a
IV	44	80.45	b	I	0.34	ab	II North	0.24	a	II South	0.49	a
V South	30	79.04	bc	IV	0.35	ab	IV	0.29	a	IV	0.51	a
III	19	78.82	bc	V South	0.47	ab	I	0.30	ab	II North	0.60	ab
I	10	78.04	c	III	0.88	abc	II South	0.38	ab	North Country	0.78	abc
II South	15	77.29	cd	II South	0.93	bc	V North	0.55	bc	V North	1.03	bc
II North	24	77.15	cd	II North	1.14	c	V South	0.63	bc	V South	1.10	c
V North	8	75.41	d	V North	1.46	c	North Country	0.73	c	I	1.11	c

Subregion	Yellow Berry Kernels		Subregion	Protein		Subregion	Weight 1000 Kernels		Subregion	Ash	
II North	0.06	a	V South	13.7	a	III	36.85	a	III	1.425	a
V North	0.08	a	V North	13.0	ab	IV	34.29	ab	IV	1.620	b
IV	1.18	a	I	12.3	bc	II South	32.93	bc	II South	1.745	bc
V South	1.26	a	IV	12.3	bc	II North	31.80	bcd	V South	1.805	cd
North Country	1.30	a	II North	12.1	bc	North Country	31.58	cd	North Country	1.827	cd
II South	2.24	ab	II South	11.7	cd	V South	30.97	cd	II North	1.915	de
I	4.80	b	North Country	11.6	cd	I	30.09	d	V North	1.931	de
III	16.57	c	III	10.7	d	V North	25.70	e	I	1.972	e

Subregion	Wet Gluten		Subregion	Dry Gluten		Subregion	Falling Number		Subregion	Flour Yield	
V South	34.1	a	V South	11.6	a	V North	383	a	II South	71.31	a
IV	29.9	b	North Country	11.0	ab	III	384	a	III	70.69	a
North Country	29.8	b	IV	10.6	abc	I	398	ab	II North	69.43	ab
I	29.3	b	II South	10.5	abc	II South	400	ab	V North	68.37	abc
II South	28.5	b	I	10.4	bc	V South	404	ab	IV	68.35	abc
V North	28.2	b	V North	9.8	cd	II North	407	ab	I	66.90	bc
II North	26.8	bc	II North	9.1	de	IV	419	ab	North Country	66.76	bc
III	23.7	c	III	8.5	e	North Country	448	b	V South	65.53	c

Statistical Analysis Wheat

Subregion	Water Absorption(%)		Subregion	D.T. (min.)		Subregion	Stability (min.)		Subregion	Degree Softening	
II North	56.4	a	North Country	8.2	a	II North	31.6	a	II North	21	a
II South	57.9	ab	II South	8.6	ab	I	26.1	ba	II South	26	ab
III	57.9	ab	IV	10.5	abc	V South	20.7	b	V South	27	ab
IV	58.9	bc	V South	13.1	abcd	V North	20.5	b	I	30	ab
V North	59.8	bcd	V North	15.0	bcd	II South	20.2	b	IV	32	ab
I	60.0	cd	III	15.6	cd	III	19.3	bc	V North	36	b
V South	61.3	d	I	17.3	d	IV	19.0	bc	III	40	b
North Country	64.2	e	II North	17.4	d	North Country	10.8	c	North Country	55	c

Subregion	P		Subregion	L		Subregion	W		Subregion	P/L	
II South	93	a	III	60	a	V South	408	a	V South	0.79	a
II North	94	ab	I	80	b	V North	377	ab	II South	0.91	ab
V South	95	ab	North Country	80	b	IV	355	ab	IV	0.92	ab
IV	97	ab	V North	83	b	I	346	b	II North	1.25	bc
I	110	bc	II North	83	b	North Country	344	bc	V North	1.39	cd
V North	114	c	II South	106	c	II South	321	bcd	I	1.45	cd
III	116	c	IV	109	c	II North	283	cd	North Country	1.81	de
North Country	134	d	V South	124	c	III	275	d	III	1.98	e

Subregion	Flour Ash	
III	0.586	a
V South	0.588	a
II North	0.608	a
II South	0.627	a
North Country	0.664	a
V North	0.667	a
IV	0.673	a
I	0.688	a

Analysis of Variables by Ranges

The charts show the summary of an analysis carried out to four variables: protein in grain, wet gluten, strength measured by Alvegraph and Farinograph stability.

Each variable was divided in ranges (first column), they were calculated the averages of each range corresponding to each one of the remaining variables (central column), the percentages are also shown from each range to national level.

PROTEIN RANGE	Average Gluten W Stability	% Country
10 - 10,9	24.2 272 18.6	11.97
11 - 11,9	**26.4** **304** **22.8**	**31.70**
12,0 - 12,9	29.9 345 22.0	30.28
13,0 - 13,9	32.1 380 19.7	16.90
14,0 - 14,9	36.2 442 24.2	9.15

WET GLUTEN RANGE	Average Proteína W Stability	% Country
21 - 24,9	11.1 271 26.9	17.45
25 - 27,9	11.4 298 20.5	21.48
28 - 31,9	**12.4** **356** **21.2**	**37.58**
32 - 34,9	13.2 376 17.2	15.44
> 35,0	14.5 439 24.6	8.05

Alveograph W RANGE	Average Gluten Protein Stability	% Country
190 - 249	25.0 11.5 27.3	8.05
250 - 299	25.6 11.1 21.7	24.16
300 - 349	29.1 12.2 18.6	22.15
350 - 400	**30.4** **12.6** **19.7**	**27.52**
> 400	33.3 13.6 26.1	18.12

Farinograph STABILITY RANGE	Average Gluten Proteína W	% Country
1 - 9,9	29.8 11.9 290	3.36
10,0 - 19,9	**29.4** **12.2** **332**	**46.97**
20 - 29,9	28.6 12.3 346	34.90
30 - 39,9	29.5 12.6 365	11.41
40 - 49,9	26.0 11.7 305	3.36

Subregion Composite Samples Wheat

Composite Sample of each Subregion

Results of the Analyses

Along with the analisis of samples corresponding to different localities, a further evaluation was performed in order to analyze Composite Samples of each Subregion directly, which were made proportionally from the composite samples corresponding to each locality, such as it is detailed in Organization and Methodology.

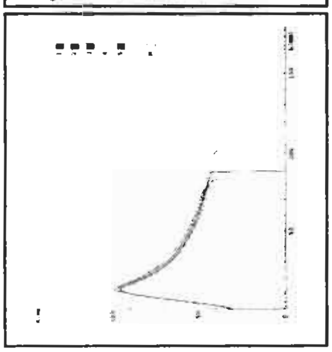
		Subregions							* Pondered Average	Average last Quinquenio	Average Decade
		I	II N	II S	III	IV	V N	V S			
WHEAT	Test Weight (kg/hl)	78.50	78.60	78.15	78.50	80.80	74.55	79.25	78.75	80.17	80.10
	Weight of 1000 Kernels (gr.)	30.40	31.53	33.10	36.85	34.13	24.70	30.30	31.96	33.10	33.73
	Ash (dry basis) (%)	2.040	1.865	1.701	1.420	1.610	1.940	1.781	1.739	1.761	1.809
	Protein (13.5% Moisture) (%)	12.4	12.1	11.4	10.7	12.2	12.2	13.7	12.2	11.8	11.4
MILLING	Flour Yield (%)	65.9	71.8	66.2	70.8	65.9	61.5	66.4	66.93	69.62	68.40
	Ash (dry basis) (%)	0.708	0.623	0.582	0.547	0.529	0.567	0.584	0.579	0.595	0.581
	Colour										
	L	87.06	87.41	88.38	87.88	88.46	87.63	87.73	87.96	-----	----
	a	-1.12	-1.13	-1.08	-1.24	-1.23	-1.01	-1.03	-1.12	-----	----
	b	8.03	8.69	7.76	8.6	8.62	8.31	8.41	8.36	-----	----
FLOUR	Moisture (%)	11.26	13.4	14.43	13.46	13.8	12.36	12.3	13.3	13.3	13.6
	Proteins (%)	11.6	10.8	10.4	10.0	11.5	12.4	13.1	11.4	11.2	11.2
	Wet Gluten (%)	29.8	26.5	26.4	22.5	29.1	30.8	32.2	28.3	27.5	26.1
	Dry Gluten (%)	10.0	9.0	9.2	7.6	9.6	10.3	11	9.6	9.5	9.25
	Index Gluten (%)	98	98	96	98	94	97	98	97	96	96
	Falling Number (sec.)	480	402	385	468	450	459	413	426	391	385
	Zeleny Test (cc)	47	40	41	40	48	43	48	44	40	38
	FARINOGRAM										
	Water Absorption (%)	61.5	57.7	58.8	59.3	58.7	59.3	59.6	59.0	59.2	59.0
	Development Time (min.)	11.5	18.1	7.0	10.1	7.0	10.9	9.2	10.0	8.8	8.5
	Stability (min.)	24.4	30.7	15.0	17.1	18.4	19.2	17.9	19.9	18.3	16.0
	Degree of Softening	11	20	43	38	28	34	30	31	31	39
	Quality Number	258	348	165	173	196	216	211	220	214	209
	MIXOGRAM										
	Development Time (min.)	5.74	7.40	5.70	6.98	4.88	5.58	4.86	5.72	4.98	4.75
	ALVEOGRAM										
	P (mm)	107	96	91	99	99	105	83	95	97	97.59
	L (mm)	88	85	85	71	95	86	139	96	89	84.35
	G	20.9	20.5	20.9	18.8	21.7	20.6	26.2	22	21	20.50
	W (Joules x 10^{-4})	349	314	279	256	326	352	397	325	306	291.70
	P/L	1.22	1.13	1.07	1.39	1.04	1.22	0.60	1.04	1.14	1.20
	Ie %	62.9	64.9	59.5	56.6	58.7	66.7	65.6	61.8	60.5	50.44
	W (40) (Joules x 10-4)	188	172	158	168	173	190	149	168	----	----
	CONSISTOGRAM										
	WA 1700 (%) (Base 15%)	58.3	55.4	55.9	55.8	57.4	57.3	55	56.3	-----	-----
	WA 1700 (%) (Base 14%)	60.2	57.2	57.7	57.7	59.3	59.2	59.3	58.5	-----	-----
	HYD2200 (%) (Base 15%)	54.8	52.6	53.2	52.9	53.9	54.3	55.5	53.8	-----	-----
	PrMax (mb)	2369	2242	2222	2267	2351	2290	2086	2,252	-----	-----
	PrMax Time (Seg)	183	204	212	185	181	160	172	188	-----	-----
	Tolerance (Seg)	335	303	284	287	261	266	270	280	-----	-----
	Weakening 250 (mb)	77	39	46	91	126	164	118	92	-----	-----
	Weakening 450 (mb)	573	738	745	667	888	840	660	759	-----	-----
	RVA										
	Maxim Viscosity (RVU)	179.17	186.17	168.25	187.08	80.42	170.08	166.25	151.44	-----	-----
	Minimun Viscosity (RVU)	115.25	103.75	95.17	111.42	105.33	97.25	97.50	101.87	-----	-----
	Final Viscosity (RVU)	208.83	198.67	178.58	201.58	191.5	188.25	181.50	189.67	-----	-----
	BAKING										
	Absoprtion (%)	62.5	62.0	62.0	62.0	62.5	63.0	63.0	62.4	62.4	62.2
	Development Time (min.)	4'00	3'30	4'00	3'30	4'00	4'00	4'00	3'50	3' 20	3' 25
	Fermentation Time (min.)	160'	160'	160'	160'	160'	160'	160'	160'	160'	160'
	Loaf Volume (cc)	650	615	720	610	730	695	715	691	671	681
	Specific Volume	4.8	4.7	5.4	4.5	5.4	5.2	5.4	5.2	5.0	5.1

* Weighting bassis: Tonnage of the production sampled by Subregion, according to chart data on page 7.

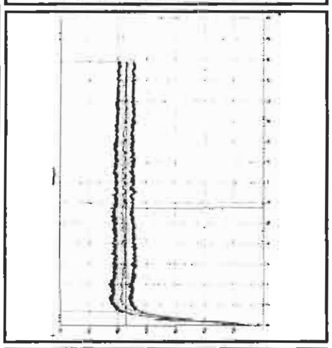
Results of the Analyses

Subregion I

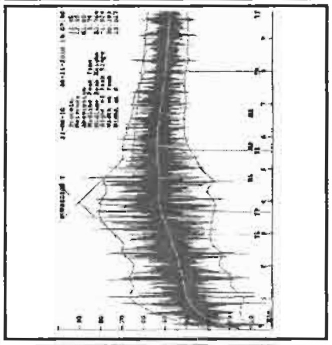
Alveogram



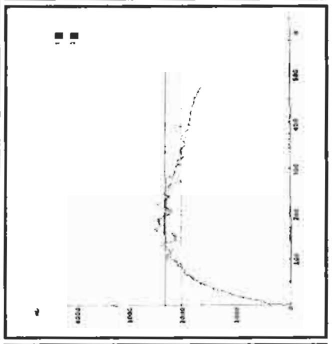
Farinogram



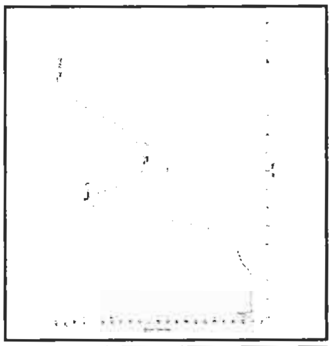
Mixogram



Consistogram

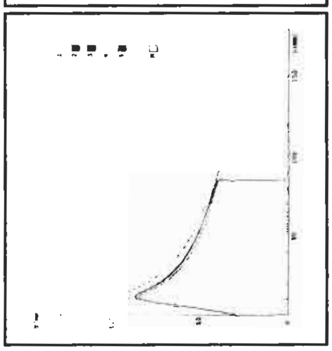


RVA



Subregion II North

Alveogram



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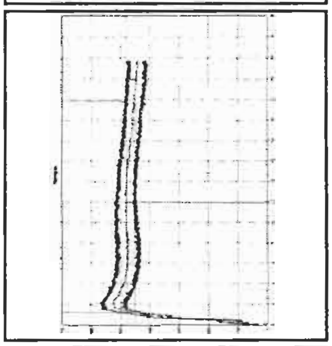

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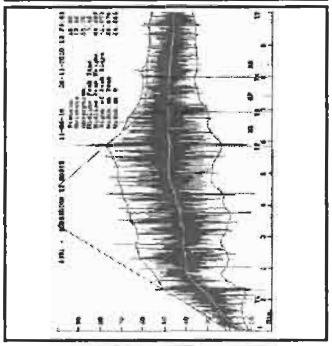

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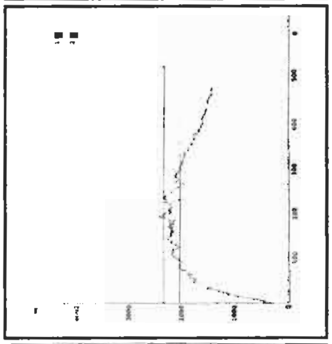
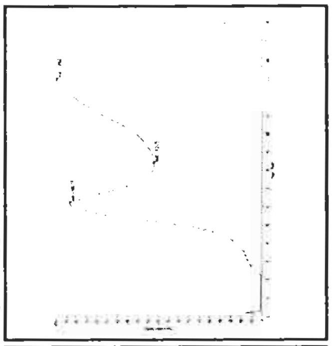
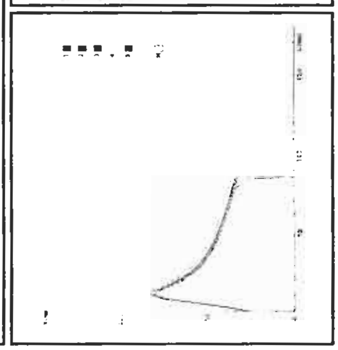


RVA

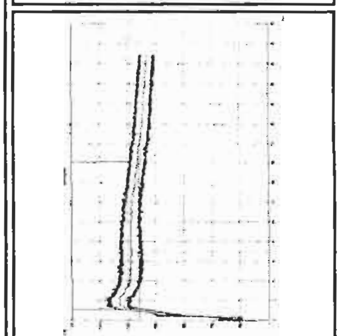


Subregion II South

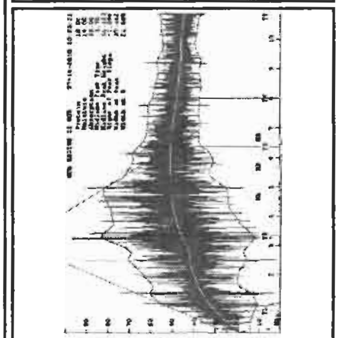
Alveogram



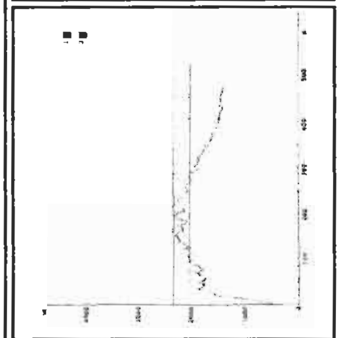
Farinogram



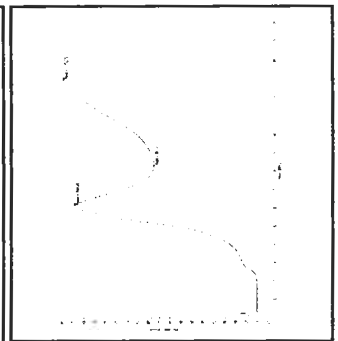
Mixogram



Consistogram

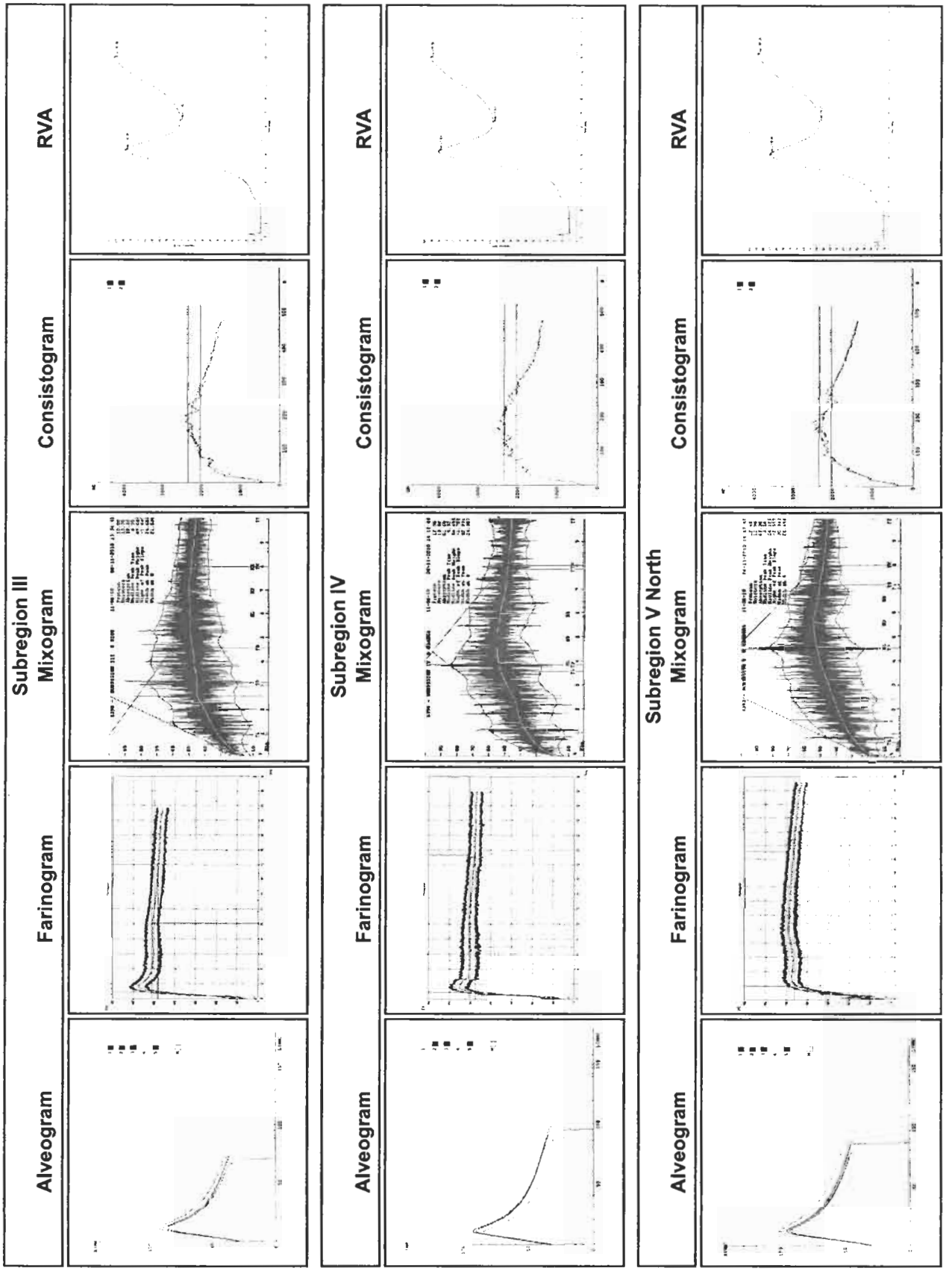


RVA



Subregion Composite Samples Wheat

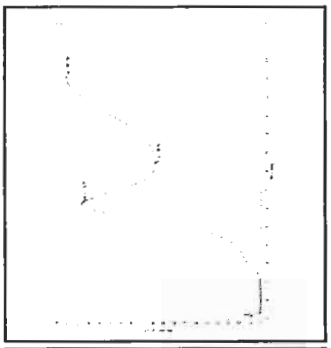
Results of the Analyses



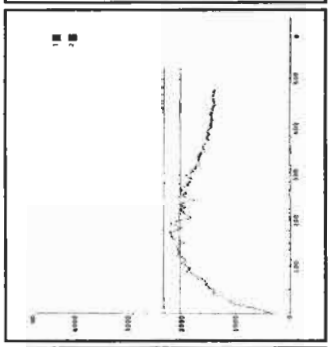
Results of the Analyses

Subregion V South

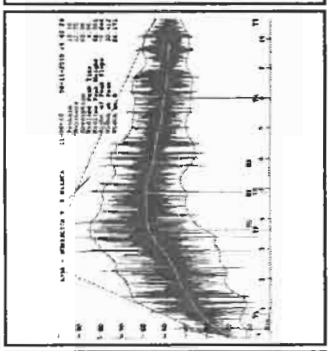
RVA



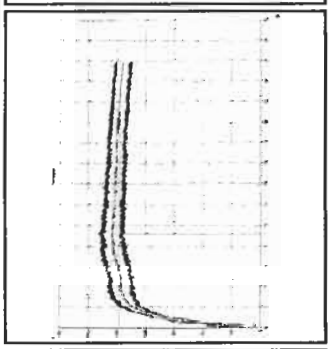
Consistogram



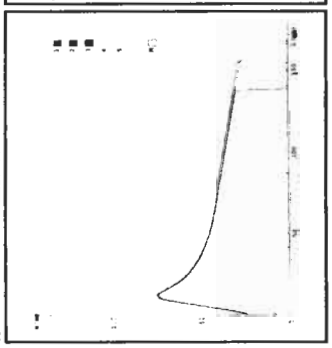
Mixogram



Farinogram



Alveogram



DURUM WHEAT

Triticum turgidum vd. Durum L.

Organization and Methodology

Although durum wheat production is minor compared with wheat (Triticum aestivum), and its area is very localized (from SE to SW of Buenos Aires Province and the east part of La Pampa Province , it is still a traditional alternative for an interesting number of farmers.

09/10 Crop

Sown Area (ha)	65,092
Harvested Area (ha)	57,072
Average Yield (Kg/ha)	1,760
Production (tn)	100,446

Source: MAGyP

Sampling Structure

Because of the specific conditions under which most durum wheat is produced, where farmers and industries agree on a contract, the samples were requested from the industries receivals, obtaining 48 composite samples.

They were organized according to theirs origin region, mainly in the Subregions II South, IV and V South.

Procedure

Composite samples were sent to Bahía Blanca and Buenos Aires Arbitration Chamber Laboratories, where the commercial analysis (grade), ash and weight per 1000 kernels were performed.

Afterward, composite samples were referred to Grain Quality Laboratory of Chacra Experimental Integrada Barrow to carry out grinding in a Buhler 202 D mill. In the semolina obtained, Falling Number, Gluten, Color and Farinogram were analyzed.

Methodology

The evaluation of the industrial quality of durum wheat is based on grain characteristics, milling,behavior in milling, gluten quality, semolina color and rheological properties of dough.

Some traits like protein content and vitreous kernels percentage are affected by agricultural and weather conditions. Percentage of hard vitreous kernels is an important grading factor in durum wheat. Industry prefers vitreous kernels because of theirs high correlation with protein content, semolina yield and cooking quality.

On the other hand, gluten quality (measured as Gluten Index), semolina color and rheological characteristics, are strongly influenced by genotype.

The reasons why durum wheat produces good quality pasta are the following:
- Its yellow pigment content doubles the wheat (Triticum aestivum).
- Durum gluten is stronger and more cohesive than wheat (Triticum aestivum).
- Due to its kernel hardness,semolina yield is superior to other wheats. Durum semolina has many advantages with regard to wheat flour in the manufacturing of pasta: it requires less water to form a dough; consequently, drying cycle is cheaper.
- The main difference between durum and wheat (Triticum aestivum) is that pasta elaborated with durum semolina has more stability when cooked, doesn't disintegrate when boiling and stands overcooking.

Methodology for durum wheat includes some of the tests regularly used for wheat (Resolution SAGPyA 557/97) plus the following specific ones:

GRAIN

Vitreous Kernels Percentage (Resolution N° 1075/94 – Standard XXI - Ex. SAGyP)
Percent in weight of vitreous kernels present in the sample, being vitreous the ones that are completely translucid, without points, opaque stains or bleached grains.

MILLING (Experimental Milling Buhler 202-D)

Grain is dampered to 15.8 % humidity and tempered during 20 hours. Semolina yield (Particle size between 125- 355 microns) is reported.

SEMOLINA

Color (Minolta Chromameter CR-310, Manufacturer's Method)
Spaghetti color is due to a balance between pigment content (carotenes and xanthophylls) and lipoxigenasic activity which destroys color.
Lightness (L), redness (a) and yellowness (b) of Hunter data are determined using the tristimulus method, with Minolta CR-310 reflectance colorimeter.

Gluten Index (Glutomatic Perten 2200). Manufacturer's Registry.
Once the wet gluten test is done, the centrifuge forces the gluten to pass through a sieve that has been specially designed. The amount of gluten that goes through the sieve is a measure of gluten characteristics. This method is done as follows: both fractions, the one that passes through the sieve, and the one which is retained in it, are gathered and weighed, obtaining, thus, a percentage.

FARINOGRAM (Brabender's Farinograph)

The method in use is described by Irvine, Bradley and Martin's technique (Cereal Chemistry, Vol 38, N° 2, 1961), using fixed water absortion (45 %), fixed time of kneeding (8 min) and small stainless steel bowl (50 g). The following data are reported:

Dough development time (min)
Energy Level= Max Height (UF) / 20+ Area (cm2)
Tolerance Index (%)= Max Height - Final Height / Max Height.

Argentine Standard for Durum Wheat

(Resolution N°1075/94 - Standard XXI. Ex Secretariat of Agriculture, Livestock and Fishery)

GRADE	Test Weight Min. (Kg/hl)	PERCENT MAXIMUM LIMITS OF: Foreign Material (%)	Damaged Kernels: Heat Damaged Kernels (%)	Damaged Kernels: Total (%)	Shrunken and Broken Kernels (1) (%)	Smutty Kernels (%)	Insect Bored Kernels Max. (%)	Sweet Clover Seeds Melilotus spp Seeds/ 100 g. Max.	MOISTURE Max. (%)	Wheat (Triticum aestivum) Max. (%)	Vitreous Kernels Min (%)
1	78	0.75	0.50	1.00	1.50	0.10					
2	76	1.50	1.00	2.00	3.00	0.20	0.50	8	14.0	3.00	40
3	72	3.00	1.50	3.00	5.00	0,30					

VITREOUS KERNELS

Bonifications		Discounts	
51 a 55%	0,5 %	46 a 49%	1,0%
56 a 60%	1,0%	41 a 45%	3,0%
61 a 65%	1,5%	36 a 40%	5,0%
66 a 70%	2,0%	31 a 35%	7,0%
71 a 75%	3,0%	26 a 30%	9,0%
76 a 80%	4,0%	21 a 25%	11,0%
81 a 85%	5,0%	16 a 20%	13,0%
86 a 90%	6,0%	11 a 15%	15,0%
91 a 95%	7,0%	6 a 10%	17,0%
96 a 100%	8,0%	0 a 5%	19,0%

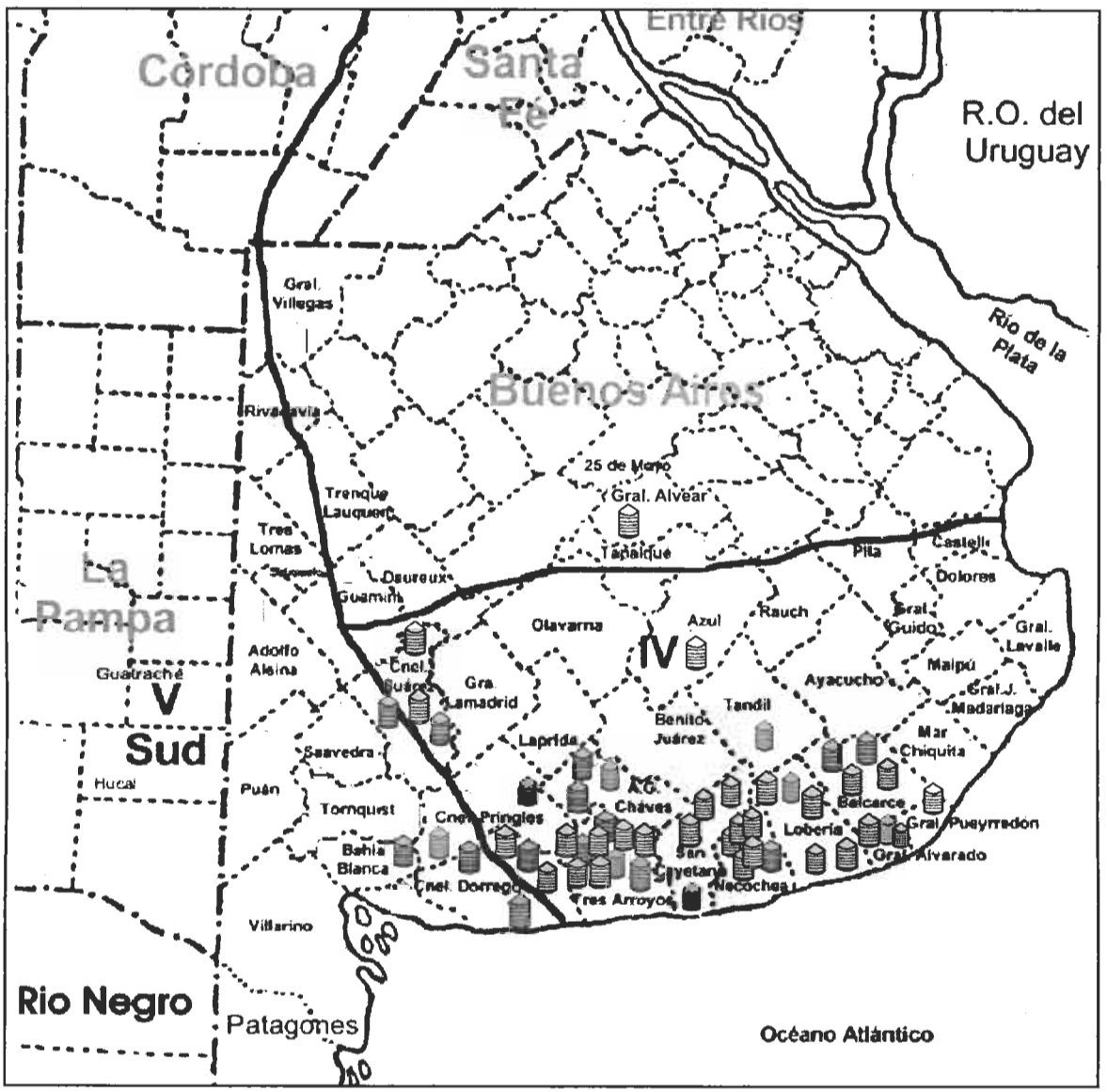
PROTEIN

More than 11% (moisture basis 13,5 %) there will be bonifications of 2 % for each % or fraction

Less than 10% (moisture basis 13,5 %) there will be discounts of 2 % for each % or fraction

LIVING INSECTS AND ARACHNIDS: FREE

(1) All Durum Wheat kernels or pieces of them that pass through a sieve with 1,6 mm wide and 9,5 mm long holes, excluding damaged kernels.


Córdoba
Santa Fé
Entre Ríos
R.O. del Uruguay
Río de la Plata
Buenos Aires
La Pampa
Rio Negro
Patagones
Océano Atlántico
Gral. Villegas
Rivadavia
Trenque Lauquen
Tres Lomas
Daireaux
Guaminí
25 de Mayo
Gral. Alvear
Tapalque
Olavarría
Azul
IV
Rauch
Pila
Castelli
Dolores
Gral. Guido
Gral. Lavalle
Maipú
Ayacucho
Gral. J. Madariaga
Mar Chiquita
Balcarce
Gral. Pueyrredón
Gral. Alvarado
Loberia
Necochea
Tandil
Benito Juárez
Laprida
Chaves
Pringles
San Cayetano
Tres Arroyos
Cnel. Dorrego
Bahía Blanca
Tornquist
Saavedra
Puán
Adolfo Alsina
Guaminí
Cnel. Suárez
Gra. Lamadrid
Guaraché
V
Sud
Hucal
Villarino

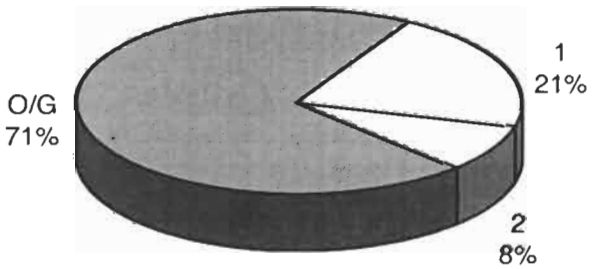
Durum Wheat Averages

Results of the Analysis

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.10	82.60	79.23	1.44	0.02
Total Damaged Kernels (%)	0.06	3.36	0.45	0.47	1.05
Foreign Material (%)	0.06	1.44	0.47	0.38	0.82
Shrunken and Broken Kernels (%)	0.12	2.98	1.00	0.62	0.62
Vitreous Kernels (%)	3	70	35	16	0.46
Wheat (Triticum aestivum) (%)	0.46	32.56	2.75	4.56	1.66
Proteins (13,5% Moisture) (%)	11.7	15.3	13.4	0.8	0.06
Weight of 1000 Kernels (gr.)	37.70	53.50	45.15	3.22	0.07
Ash (% dry basis)	1.318	1.855	1.587	0.121	0.08

Total damaged kernels includes 0,01% frosty kernels, 0,16% sprouted kernels, 0,18% insect chewed kernels, 0,09% germ-chewed kernels y 0,01% calcinated kernels.

Grade Distribution



O/G: Out of Grade

Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec.)	441	633	532	45.5	0.09
	Color (b)	18.3	24.7	21.3	1.5	0.07
	Wet Gluten (%)	30.5	43.7	36.2	3.3	0.09
	Gluten Index (%)	4	88	53	17	0.33
FARINOGRAM	Energy Level	26.9	42.4	32.8	3.8	0.12
	Degree Softening (%)	25	39	31	3	0.09

These results were elaborated with 48 composite sample.

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS									
Sample Number	Subregion	Locality, district or department	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Materials Kernels (%)	Shrunken and Broken Kernels (%)	Vitreous Kernels (%)	Wheat (Triticum aestivum) (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
1	IV	Azul	1	79.00	0.66	0.34	0.82	44	0.92	11.8	44.40	1.650
2	IV	Balcarce	1	78.15	0.30	0.38	0.52	70	1.52	13.2	43.50	1.690
3	IV	Balcarce	1	80.80	0.50	0.18	0.70	59	1.92	12.4	43.10	1.477
4	IV	Balcarce	O/G	79.90	0.64	0.32	1.64	32	1.46	12.3	48.70	1.516
5	IV	Barrow	O/G	79.00	0.44	0.20	0.68	21	1.34	13.6	42.90	1.814
6	IV	Claromecó	1	79.45	0.50	0.10	1.10	64	1.38	13.3	51.60	1.533
7	IV	Copetonas	1	80.80	0.28	0.06	0.34	50	0.46	13.8	49.90	1.654
8	IV	Coronel Dorrego	O/G	80.35	0.20	0.38	0.52	23	1.76	13.2	49.60	1.635
9	IV	Coronel Pringles	2	76.80	0.24	1.32	0.70	46	1.18	14.8	42.90	1.855
10	IV	Coronel Suárez	O/G	77.25	0.52	0.38	0.92	39	2.06	14.7	40.90	1.738
11	IV	Coronel Suárez	2	76.10	0.12	1.18	1.70	50	0.66	15.2	37.70	1.805
12	IV	Energía	O/G	79.25	0.42	0.74	1.38	31	2.18	13.7	45.60	1.427
13	IV	General Alvarado	O/G	79.00	0.66	0.30	0.74	31	1.74	12.8	43.30	1.600
14	IV	General Alvarado	O/G	81.70	0.20	1.44	0.44	45	5.24	12.5	45.60	1.492
15	IIS	General Alvear	O/G	76.10	3.36	0.12	0.62	19	4.52	13.9	47.10	1.674
16	IV	General Pueyrredón	2	76.80	0.46	0.70	0.36	63	1.90	12.8	44.50	1.634
17	IV	Gonzáles Cháves	O/G	78.60	0.26	0.10	0.74	23	1.12	14.1	46.10	1.709
18	IV	Juan N. Fernández	O/G	79.00	0.20	0.30	1.66	10	1.24	13.9	43.30	1.565
19	IV	Lobería	1	80.15	1.00	0.42	1.00	48	1.90	12.9	46.10	1.541
20	IV	Lobería	1	79.90	0.34	0.38	1.24	54	1.40	12.8	47.10	1.566
21	IV	Lobería	O/G	80.35	0.72	0.06	1.12	38	1.16	12.6	44.60	1.517
22	IV	Lobería	1	79.90	0.18	0.10	0.86	49	1.92	12.8	44.20	1.560
23	IV	Miramar	O/G	81.50	0.34	0.16	0.24	36	1.56	12.5	50.20	1.493
24	VS	Molinos	O/G	78.35	0.56	0.50	0.40	20	3.36	13.3	45.20	1.644
25	IV	Necochea	O/G	79.90	0.48	0.56	0.76	36	2.04	13.0	44.00	1.561
26	IV	Necochea	O/G	81.25	0.64	0.54	1.24	33	2.92	12.9	42.10	1.406
27	IV	Ochandio	O/G	81.25	0.28	0.16	1.32	33	1.08	13.4	49.40	1.459
28	IV	Oriente	O/G	80.60	0.18	0.10	0.12	19	0.48	14.1	45.50	1.500
29	IV	Pieres	O/G	77.25	0.70	0.14	2.18	3	1.76	11.7	45.30	1.449
30	IV	Quequén	O/G	78.60	0.46	0.14	2.26	22	1.30	12.6	40.40	1.501
31	IV	San Cayetano	O/G	80.35	0.26	0.08	2.48	9	1.46	13.5	43.10	1.603
32	IV	San Cayetano	O/G	79.45	0.16	0.18	0.90	27	2.50	13.3	45.50	1.699
33	IV	San Mayol	O/G	79.90	0.58	0.16	2.98	15	0.90	13.6	46.00	1.569
34	IV	Santa Marina	O/G	78.15	0.20	0.22	0.96	15	0.62	13.3	41.20	1.639
35	IV	Tandil	1	79.90	0.58	0.24	0.54	42	1.82	12.6	42.50	1.603
36	IV	Tres Arroyos	O/G	78.60	0.06	0.28	0.60	32	1.32	13.7	45.40	1.652
37	IV	Tres Arroyos	O/G	78.15	0.28	0.58	0.50	37	3.90	13.8	43.40	1.837
38	VS	Bahía Blanca - Coronel Pringles	2	78.15	0.16	0.92	1.02	56	2.50	15.3	41.10	1.537
39	IV	Balcarce	1	82.60	0.24	0.52	0.50	62	2.58	12.8	53.50	1.445
40	IV	Coronel Dorrego	O/G	78.15	0.50	0.98	0.88	45	3.82	14.5	45.20	1.377
41	IV	El Perdido (Cnel. Dorrego)	O/G	79.70	0.28	1.36	0.32	47	4.20	14.5	47.20	1.567
42	IV	Gonzáles Cháves	O/G	79.00	0.58	1.02	1.22	45	5.10	14.7	40.00	1.617
43	IV	Lobería	O/G	80.35	0.52	0.22	2.20	11	3.32	14.4	44.20	1.593
44	IV	San Cayetano	O/G	78.35	0.30	1.02	0.92	21	4.86	13.6	42.90	1.513
45	IV	Tres Arroyos	O/G	78.15	0.32	0.74	0.78	24	1.80	14.5	46.60	1.776
46	IV	Tres Arroyos	O/G	79.45	0.26	1.06	1.14	27	3.76	13.7	46.40	1.689
47	IV	Tres Arroyos	O/G	78.15	0.12	0.56	1.08	33	1.72	12.9	46.00	1.454
48	IV	Tres Arroyos	O/G	79.45	0.28	0.44	0.56	22	32.56	12.9	52.00	1.318

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			SEMOLIN ANALYSIS					
Sample Number	Suregion	Locality, district or department	Falling Number (sec.)	Color (b)	Wet Gluten (%)	Gluten Index (%)	Farinogram Energy Level	Farinogram Degree of Softening (12 min.)
1	IV	Azul	479	23.1	30.5	34	27.0	33
2	IV	Balcarce	520	22.3	34.2	65	38.4	29
3	IV	Balcarce	495	22.4	31.6	81	31.9	29
4	IV	Balcarce	551	23.2	31.6	69	31.5	27
5	IV	Barrow	534	21.2	38.9	49	28.8	29
6	IV	Claromecó	633	20.9	37.5	50	31.7	32
7	IV	Copetonas	530	22.8	40.0	55	38.0	32
8	IV	Coronel Dorrego	475	19.8	37.0	18	28.8	33
9	IV	Coronel Pringles	620	20.6	39.8	54	32.4	32
10	IV	Coronel Suárez	563	19.8	42.5	43	32.5	30
11	IV	Coronel Suárez	608	21.1	43.7	54	28.1	30
12	IV	Energía	547	20.3	37.3	45	26.9	32
13	IV	General Alvarado	522	21.0	34.0	56	31.3	26
14	IV	General Alvarado	445	21.5	30.8	77	36.8	30
15	IIS	General Alvear	441	19.8	37.9	49	28.6	36
16	IV	General Pueyrredón	495	21.3	31.8	72	33.7	29
17	IV	Gonzáles Cháves	551	19.2	38.2	31	27.5	29
18	IV	Juan N. Fernández	518	19.6	36.7	45	27.8	31
19	IV	Lobería	513	21.5	34.9	56	30.3	30
20	IV	Lobería	503	21.2	34.2	50	29.3	34
21	IV	Lobería	487	23.2	33.2	58	31.8	32
22	IV	Lobería	548	22.9	33.8	60	36.3	30
23	IV	Miramar	519	21.4	33.8	88	35.4	32
24	VS	Molinos	483	21.6	33.0	78	34.7	28
25	IV	Necochea	484	23.0	35.3	58	33.9	31
26	IV	Necochea	514	22.6	34.7	51	33.7	31
27	IV	Ochandio	510	20.9	38.0	35	29.5	35
28	IV	Oriente	535	21.3	36.9	34	29.1	33
29	IV	Pieres	602	22.3	30.8	81	33.3	29
30	IV	Quequén	543	24.7	32.3	76	32.7	25
31	IV	San Cayetano	533	19.1	38.0	62	28.8	31
32	IV	San Cayetano	478	22.0	35.2	69	31.9	29
33	IV	San Mayol	495	19.0	37.4	4	28.9	31
34	IV	Santa Marina	539	24.2	34.3	62	31.0	29
35	IV	Tandil	507	24.1	31.6	59	32.1	29
36	IV	Tres Arroyos	601	22.8	34.6	57	32.3	29
37	IV	Tres Arroyos	590	21.9	37.7	58	31.7	27
38	VS	Bahía Blanca - Coronel Pringles	566	19.2	38.6	82	42.4	30
39	IV	Balcarce	462	20.6	37.8	42	35.5	35
40	IV	Coronel Dorrego	565	21.8	42.0	45	38.6	36
41	IV	El Perdido (Cnel. Dorrego)	488	21.2	41.8	47	41.9	30
42	IV	Gonzáles Cháves	582	21.4	40.1	50	40.5	33
43	IV	Lobería	519	20.6	40.4	44	33.8	32
44	IV	San Cayetano	585	20.8	36.8	44	35.2	32
45	IV	Tres Arroyos	559	19.8	40.2	24	34.6	39
46	IV	Tres Arroyos	570	19.6	38.2	23	32.6	38
47	IV	Tres Arroyos	583	21.3	35.2	62	35.6	32
48	IV	Tres Arroyos	522	18.3	34.6	54	34.9	34

Country elevators, Cooperatives and Mills that contributed in the sampling

LOCALITY	DENOMINATION
BUENOS AIRES PROVINCE	
Adolfo Alsina	Ganadera Salliquelló S.A.
Adolfo Alsina	Agrícola Ganadera de Maza S.A.
Adolfo Alsina	Aleroce S.A.
Adolfo Alsina	Unigran S.A.
Alberti	Rivara S.A.
Ascensión	Coop.Agr.Ganad.Ltda. de Ascensión
Azul	H.J. Navas y Cía. S.A.
Balcarce	P.A.I.S. S.A.
Balcarce	Scorziello y Galella S.C.
Balcarce	Siagro S.R.L.
Balcarce	Acopio Balcarce S.A.
Benito Juárez	Campoamor Hnos. S. A.
Bordeu	Acopio A.C.A.
Bragado	CDC A.C.A. Bragado
Cabildo	Coop. Agrícola Ganad. e Ind. Sombra de Toro Ltda.
Carabelas	Coop. Agrop. Ltda. Carabelas
Carhué	Coop. Agrícola Ganad. Ltda. de Adolfo Alsina
Carhué	Agopecuaria Millagro S.A.
Carlos María Naón	CDC A.C.A. Naon
Carlos Tejedor	Ramón Rosa e Hijo. S.A.
Chacabuco	Coop.Defensa de Agricultores Ltda.
Chacabuco	Coop.Agrop. Granjeros Unidos Ltda.
Chivilcoy	Coop. Agrícola Ganadera de Chivilcoy Ltda.
Coronel Dorrego	Perez Raúl Horacio - Agronomía
Coronel Dorrego	Casa Balda S.A.
Coronel Dorrego	Syngenta Agro S.A.
Coronel Dorrego	Don Ramón S.A.
Coronel Dorrego	Pelayo Agronomía S.A.
Coronel Pringles	López y Ramos S.C.
Coronel Pringles	Pucará S.A.
Coronel Suárez	Coop. Agropecuaria General San Martín Ltda.
Coronel Suárez	Agro El Renacer S.A. de Kopelson
Coronel Suárez	Agroservicios Ottino S.R.L.
Coronel Suárez	Agronomía Álvarez
Coronel Suárez	Bertolami Cereales S.A.
Darregueira	La Emancipación Sociedad Coop. Mixta de Consumo Ltda.
Darregueira	Cooperativa Agropecuaria Darregueira Ltda.
Dudignac	Coop. Agrícola Ganadera de Dudignac Ltda.
General Arenales	Junarsa S.A.
General Belgrano	Barensi S.A.
General Lamadrid	Productores de General Lamadrid Ltda.

LOCALITY	DENOMINATION
BUENOS AIRES PROVINCE	
Guaminí	Cooperativa Agrícola Ganadera Guaminí Ltda.
Guaminí	Cooperativa Agrícola Ganadera de Garré Ltda.
Guaminí	Arada S.R.L
Guaminí	La Julia de Ocampo S.R.L.
Guaminí	Santa Teresa Agropecuaria
Guaminí	Tierras S.A.
Guaminí	Ganadera Salliquelló S.A.
Huanguelén	Acopio A.C.A.
Junín	Liga Agricola Ganadera Coop.Ltda.Junín
Junín	Junarsa S.A..
Lartigau	Cooperativa Agrícola Ganadera de Lartigau Ltda.
Licenciado Matienzo	Cantabria S.A.
Lincoln / L. N. Alem	Juan Ricardo Rosa e Hijo S.A.
Lobería	Baron y Cía. S.A.
Lobería	Forner Hnos. y Cía S.A.
Lobería	Marzu S.A.
Lobos	Aggollia Hnos. S.H.
Micaela Cascallares	Cooperativa Agrícola Ltda. de Micaela Cascallares
Monte	Barensi S.A.
Navarro	Bruno S. A.
Necochea	Cooperativa Agropecuaria General Necochea Ltda.
Nueve de Julio	La Bragadense S.A.
Patagones	Coop. Agríc. Ganad. e Ind. de Patagones y Viedma Ltda.
Patagones	Benito Fibiger S.R.L.
Patagones	Novick y Cía. S.R.L.
Patagones	Sucesión de Ángel Martín Recondo Cereales
Pergamino	AFA Pergamino
Pigüé	La Alianza Coop. Agrícola Ganadera Ltda.
Puan	Coop. Agrícola Ganadera Limitada de Puan
Puan	Bertín y Cía. S.C.A.
Puan	Torre Hnos. S.A.
Rojas	Agric. Fed. Arg.SCL Rojas
Roque Perez	Regueira y Cía. S.A.
Saavedra	Coop. Agrícola Ganadera de Espartillar Ltda.
Saavedra	Los Grobo Agropecuaria S.A.
Salliquelló	Ganadera Salliquelló S.A.
Salliqueló	Agronomía del Sudoeste S.A.
Salliqueló	Los Celos S.C.A.
Salliqueló	Los Flornales S.R.L.
Salliqueló	Adrián A. Iglesias

LOCALITY	DENOMINATION
BUENOS AIRES PROVINCE	
Salliqueló	Alfredo Scheschco
Salliqueló	Establecimiento el Cholo
Salliqueló	Jesús E. Andrés
Salliqueló	Julio O. Nocetti
Salliqueló	María Rivada
Salliqueló	Raúl E. Fernández
Salliqueló	Roberto Benítez
Salliqueló	Rubén Cavalli
Salliqueló	Sandra Gómez
Salliqueló	Sucesión Conrado Hernández
Salliqueló	Vázquez Roberto J.
San Andrés de Giles	Punte S.A.
San Andrés de Giles	Cereales Puggioni SA
San Antonio de Areco	Coop. Agrop. Ltda .C.de Areco
San Miguel Arcangel	Cooperativa Agrícola Ganadera Ltda. San Miguel
Stroeder	Cooperativa Agr. Gan. e Ind. de Patagones y Viedma (Deleg.Stroeder) Ltda.
Suipacha / Mercedes	Coincer S.A.
Tandil	Ceres Tolvas S.A.
Tandil	Cooperativa Agrícola Ganadera de Tandil y Vela Ltda.
Tornquist	Vittori Cereales S.R.L.
Tornquist	Los Vascos Cereales S.A.
Tres Arroyos	Cooperativa Agraria Tres Arroyos Ltda.
Tres Arroyos	Cooperativa Rural Limitada Alfa
Tres Arroyos	Agarraberes Oscar Pedro
Tres Arroyos	Agro Cereales de Tres Arroyos
Tres Arroyos	Agro El Carretero S.A.
Tres Arroyos	Agrooriente
Tres Arroyos	Agronomía Raúl Horacio Pérez S.A.
Tres Arroyos	Agroservicios Sudeste S.A.
Tres Arroyos	Barcellandi Agropecuaria, Enrique Javier
Tres Arroyos	Bellingeri e Hijos S.A., Francisco
Tres Arroyos	Bellingeri Horacio Atilio
Tres Arroyos	Cerealera Tres Arroyos S.A.
Tres Arroyos	Ciancaglini Germán
Tres Arroyos	Goñi, Jesús Héctor Cereales y Semillas
Tres Arroyos	Maciel César Leonardo
Tres Arroyos	Menna Cereales José Angel.
Tres Arroyos	Molina, Lucas
Tres Arroyos	Nemihuen S.A.
Tres Arroyos	Oostdijk, Fabián
Tres Arroyos	Pecker, Pedro Eduardo
Tres Arroyos	Sucesión Antonio Moreno S.A.C.A.I.F.I.
Tres Arroyos	Sur Agropecuaria S.A.
Tres Arroyos	Taraborelli, Mario Jesús
Tres Lomas	Agopecuaria San Carlos S.R.L.
Tres Lomas	Carlos A. Luengo
Tres Lomas	Carlos A. Gorjón
Tres Lomas	Carlos Montero

LOCALITY	DENOMINATION
BUENOS AIRES PROVINCE	
Tres Lomas	El Pino S.R.L.
Tres Lomas	José Méndez e Hijos S.R.L.
Tres Lomas	Mario Martín
Tres Lomas	Morero Semillas y Cereales S.A.
Tres Lomas	Rafael García
Tres Lomas	Ramón A. Sena
Tres Lomas	Rodolfo A. Cobo
Tres Lomas	Ganadera Salliquelló S.A.
Veinticinco de Mayo	La Bragadense SA
Veinticinco de Mayo	Cereales 25 de mayo S.A.
Villarino	Criadero Cabildo
Villarino	Molino Algarrobo S.R.L.
Villarino	Novick y Cía. S.R.L.
Villarino	Tomás Hnos. y Cía S.A.
	Centro de Acopiadores de Cereales
	Centro de Acopiadores de Daireaux
	Centro de Acopiadores de la Zona Oeste de la Pcia. de Bs .As.
	Sociedad de Cerealistas del Norte de la Pcia. de Bs. As.
	Centro de Acopiadores del Noroeste Bonaerense
	Centro de Acopiadores de Cereales Zona Puerto Quequén
	Sociedad de Acopiadores de Cereales Zona Bahía Blanca
	Centro de Acopiadores de Cereales de Tres Arroyos
CÓRDOBA PROVINCE	
Arroyito	Ctro. Desarrollo Coop. ACA Arroyito
Arroyo Cabral	Lorenzatti y Ruesch S.A.
Arroyo Cabral	Coop. Agr. Ganad. Arroyo Cabral Ltda.
Bell Ville	El Carmen Cereales
Carrilobo	Logrando Amigos S.R.L.
Colazo	Comercial Rossi S.A.
Colazo	Casa Siravegna S.C.C.
El Tío	AFA El Tío S.C.L.
Etruria	Etruria Cereales S.A.
Freyre	Coop. Agr.Gan. y de Cons. de Freyre Ltda.
General Levalle	Caligran S.A.
Hernando	Coop. La Vencedora Ltda.
Juárez Celman	Deleg. Min. Agr.
La Cesira	Molinos Florencia S.A.
La Laguna	Rostagno-Saretti S.R.L.
La Playosa	Agro La Playosa S.R.L.
Laboulaye	Molinos Florencia S.A.

LOCALITY	DENOMINATION
CÓRDOBA PROVINCE	
Laboulaye	Deleg. Min. Agr.
Las Junturas	Molino Cuassolo S.A.
Las Junturas	Cereales Las Junturas S.A.
Luque	Coop. Agr. Gan. Luque Ltda.
Marcos Juárez	Coop. Gral Paz Ltda.
Marcos Juárez	AFA Marcos Juarez
Matorrales	Agro Matorrales S.A.
Melo	Cargill S.A.
Monte Cristo	Miguel Gazzoni e Hijos S.R.L.
Morteros	Coop. Agric.Gan. de Morteros Ltda.
Oliva	Coop. La Federación de Oliva Ltda.
Porteña	Coop.Gan.Agric.y Cons.Porteña Ltda
Pozo del Molle	Cooperativa Agropecuaria Pozo del Molle Ltda.
Río Cuarto	Deleg. Min. Agr.
Río Segundo	Aguirre Cereales S.A.
Serrano	Molinos Florencia S.A.
Tránsito	Zanoy Agro y Servicios S.R.L.
Villa del Rosario	Molino Viada S.A.
Villa del Rosario	ACA Villa del Rosario
Villa del Rosario	Teumaco Cereales S.A.
Villa Rossi	Agroveterinaria Sur
	Sociedad de Acopiadores de Granos de la Pcia. de Córdoba
ENTRE RIOS PROVINCE	
Crespo	La Agrícola Regional Coop. Ltda.
Diamante	Agromoya SRL
Galarza	Coop. La Protectora Ltda.
Gualeguay	Maribey SA
Gualeguaychú	Unión Cerealera SRL
Hasenkamp	Ultragrain S.A
Hasenkamp	León Rabey e Hijos S.A.
La Paz	Coop. La Paz
Larroque	Tierra Greda S.A.
Lucas González	Coop. El Progreso Ltda.
Maria Luisa	Héctor Bolzan y Cía.
Ramírez	Coop. La Ganadera Gral. Ramírez Ltda.
Sauce Pinto	Dellizzotti Hnos. SRL
Urdinarrain	Coop. Fed. Ag. Gan. de Urdinarrain
Viale	Santiago D. Trocello S.A.
Victoria	Granero SRL
Villa Fontana	Cereales Bolzan SRL
Villaguay	Semillas y Cereales SRL
	Centro de Acopiadores de Granos de Entre Ríos

LOCALITY	DENOMINATION
LA PAMPA PROVINCE	
Alta Italia	Cooperativa Agr. E. Piacenza Ltda
Anguil	Trabajadores Unidos Cooperativa Mixta Ltda.
Atreucó	Casa Alarcia S.A.C.I.F.I.A.G.
Castex	C.D.C. ACA Eduardo Castex
Catriló	Lartirigoyen y Cía. S.A.
Chapaleufú	Cargill S.A.
Embajador Martini	Cooperativa Emb Martini Ltda.
General Pico	Cereales del Norte
General Pico	Pelayo Agronomia S.A.
General Pico	Cargill S. A.
General San Martín	Soc. Cooperativa Agríc. Ganad. Ltda. de General San Martín
Hucal	Molisud S.A.
Intendente Alvear	Grainco Pampa S.R.L.
Miguel Riglos	Trimag S.A.
Quemú Quemú	Cereales Quemú S.A.
Santa Rosa	Pelayo Agronomía S.A.
Winifreda	C.D.C. ACA Winifreda
	Centro de Acopiadores de Cereales de La Pampa y Limítrofes
SANTA FE PROVINCE	
Angélica	Naciente Cereales S.R.L.
Arroyo Ceibal	Quatrin S.A.
Avellaneda	Unión Agric. de Avellaneda Coop. Ltda.
Bigand	AFA Bigand
Bigand	ACA Bigand
Bombal	AFA Bombal
Bouquet	Coop. Agr. Ganad. Ltda. de Bouquet
Cañada de Gómez	AFA Cañada de Gómez
Cañada de Gómez	CDC Cañada de Gómez
Cañada Rosquín	A.F.A. Cañada Rosquin
Carlos Pellegrini	Coop. Agr. Ganad. Carlos Pellegrini
Casilda	AFA Casilda
El Trebol	Coop. Agr. Gand. El Trébol Ltda.
Emilia	Coop.Agrop. Santa Lucía Ltda.
Eusebia	Comercial Eusebia S.R.L.
Gobernador Crespo	Coop. Agr. Gan. de Gob. Crespo Ltda.
Humberto Primo	Humberto Primo Cereales S.R.L.
Humboldt	Coop. A.F.A. Agencia Humboldt
Humboldt	Agroservicios Humboldt
Irigoyen	Coop. Agrop. Mixta de Irigoyen Ltda.
J. B. Molina	AFA J B. Molina
Las Rosas	A.F.A. Las Rosas
Llambi Campbell	Lainatti Hnos SA

LOCALITY	DENOMINATION
SANTA FE PROVINCE	
Llambi Campbell	Coop. Agr. Gan. 26 de Agosto Ltda
López	Coop. Agrop. de López Ltda.
Los Cardos	A.F.A. Los Cardos
Maciel	A.F.A. Maciel
Malabrigo	Coop. Malabrigo Ltda.
Margarita	Coop. Agric. Mixta de Margarita Ltda.
María Juana	Coop. A.F.A. Agencia María Juana Ltda.
María Susana	Coop. Fed. Agr. Ganad. de Maria Susana Ltda.
Máximo Paz	Coop. Agrop. Ltda. de Maximo Paz
Montes de Oca	A.F.A. Montes de Oca
Pilar	Coop. Agr. Gan. Ltda. Guillermo Lehmann
Pujato	Rogelio Rogani SRL
Ramona	Cereales Ramona SRL
Reconquista	Industrias Molineras y Afines de Norte (Molino IMAN)
Recreo	Cia de Cereales La Pelada S.A.
Recreo	Semillería Denis Stamatti S.R.L.
Salto Grande	A.F.A. Salto Grande
San Genaro	CDC San Genaro
San José de la Esquina	CDC San José de la Esquina
San Martín de las Escobas	A.F.A. San Martín de las Escobas
San Vicente	Coop. A.F.A. Agencia San Martín de las Escobas - Of. San Vicente
San Vicente	Coop. Colonias Unidas de San Vicente Ltda.
Santa Clara de Buena Vista	Coop. Agr. Gan. La Unión Ltda.
Sargento Cabral	CDC Sargento Cabral
Serodino	A.F.A. Serodino
Sta. Clara de Saguier	Bartolo J. Pons y Cia S.C.C.
Timbúes	CDC Timbues
Tortugas	A.F.A. Tortugas
Totoras	A.F.A. Totoras
Videla	Coop. Agr. Gan. de Videla Ltda.

LOCALITY	DENOMINATION
SANTA FE PROVINCE	
Villa Amelia	A.F.A Villa Amelia
Villa Eloisa	A.F.A. Villa Eloisa
Zenón Pereyra	Gaviglio Comercial S.A.
	Centro de Acopiadores de Cereales y Oleaginosas de Santa Fe
	Sociedad Gremial de Acopiadores de Granos (Rosario)
SALTA PROVINCE	
Metán	Molino Panamericano S.A.
Rosario de la Frontera	Molino Panamericano S.A.
Rosario de la Frontera	Molino Cañuelas S.A.C.I.F.I.A.
TUCUMAN PROVINCE	
Banda Río Salí	Molino Emilio Luque
La Cocha	Servicios y Negocios S.A.
	Centro de Acopiadores de Granos del NOA
WHEAT DURUM	
Bahía Blanca	Manera Virgilio S.A.C.I.F.
	Molinos Río de la Plata S.A.
Tres Arroyos	Kraft Foods Argentina S.A.
	Cargill S.A.

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