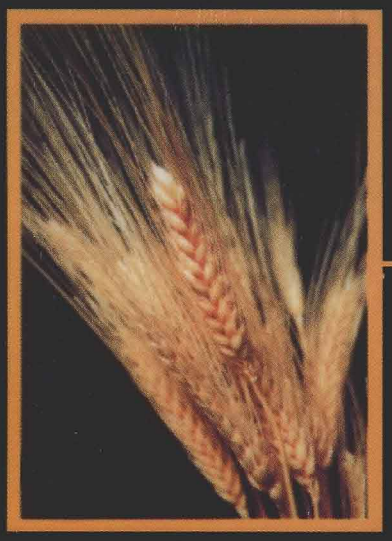


2003/2004 Crop

ARGENTINE WHEAT

Institutional Quality Report

http://www.trigoargentino.com.ar

Argentine Wheat

Institutional Quality Report

2003/2004 Crop

Argentine Wheat

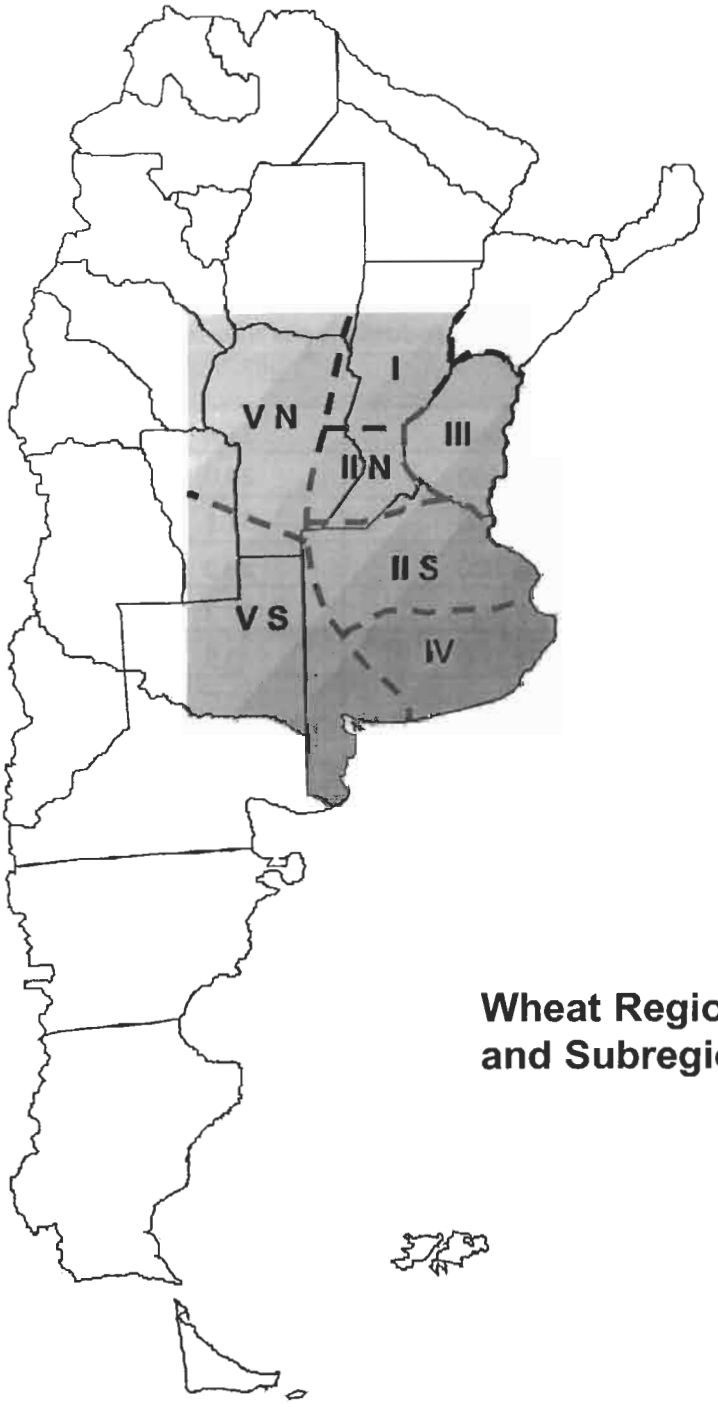
Institutional Quality Report
2003/2004 Crop

Elaborated by:

- **Asociación de Cooperativas Argentinas Cooperativa Limitada.**
  Argentine Cooperatives Association LTD Coop.
- **Bolsa de Cereales de Bahía Blanca.**
  Bahía Blanca Grain Exchange.
- **Bolsa de Cereales de Buenos Aires.**
  Buenos Aires Grain Exchange.
- **Bolsa de Comercio de Rosario.**
  Rosario Stock Exchange.
- **Cámara Arbitral de Cereales de Bahía Blanca.**
  Bahía Blanca Grain Arbitration Chamber.
- **Cámara Arbitral de Cereales de Entre Ríos.**
  Entre Ríos Grain Arbitration Chamber.
- **Cámara Arbitral de Cereales de la Bolsa de Comercio de Rosario.**
  Rosario Stock Exchange Grain Arbitration Chamber.
- **Cámara Arbitral de Cereales de la Bolsa de Comercio de Santa Fe.**
  Santa Fé Stock Exchange Grain Arbitration Chamber.
- **Cámara Arbitral de la Bolsa de Cereales de Buenos Aires.**
  Buenos Aires Grain Exchange Arbitration Chamber.
- **Bolsa de Cereales y Cámara de Cereales y Afines de Córdoba Tribunal Arbitral.**
  Córdoba Grain Exchange and Arbitration Chamber.
- **Centro de Exportadores de Cereales.**
  Grain Exporters Association.
- **Comisión Nacional de Actividades Espaciales.**
  National Committee of Space Activities.
- **Federación Argentina de la Industria Molinera.**
  Argentine Federation of Milling Industry.
- **Federación de Centros y Entidades Gremiales de Acopiadores de Cereales.**
  Federation of Country Elevators Association.

- **Secretaría de Agricultura, Ganadería, Pesca y Alimentos (SAGPyA).**
  Secretariat of Agriculture, Livestock, Fishery and Food.
- **Instituto Nacional de Tecnología Agropecuaria (INTA).**
  Argentine Institute for Agricultural Technology.
- **Servicio Nacional de Sanidad y Calidad Agroalimentaria (SENASA).**
  National Agrifood Healt and Quality Service.
- **Chacra Experimental Integrada Barrow (Convenio INTA – MAAyP, Bs. As.)**
  Barrow Experimental Station.

Argentine Wheat
Institutional Quality Report
2003/2004 Crop



Wheat Region and Subregions

BREAD WHEAT

Triticum aestivum L.

Introduction

The 2003/04 campaign was characterized by presenting higher yields than those projected in accordance with the state of the crops in the main Argentine wheat regions (Center and South zone). According to a SAGPyA report, a national production of approximately 14,534,471 tons was estimated for a harvested area of 5,619,300 hectares and an average national yield of 25.90 qq/ha (2,590 Kg/ha).

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

Subregion	Sowed Area (ha)	Harvested area (ha)	Yield (qq/ha)	Production (tn)
I	393,000	382,000	24.8	948,050
II North	652,000	635,600	28.0	1,779,576
II South	532,790	510,900	31.1	1,584,113
III	235,000	234,000	28.0	655,180
IV	1,294,400	1,272,000	37.3	4,754,766
V North	670,980	575,000	20.8	1,196,540
V South	1,624,080	1,507,000	20.0	3,019,685
Northeast	344,500	314,200	12.3	385,911
Northwest	266,600	188,600	11.1	210,650
National	6,013,350	5,619,300	25.9	14,534,471

Based on data from the Secretariat of Agriculture, Liverstock, Fishery and Food. 2004

Although variability in yields was very wide, it can be estimated that it was from 17 to 20% higher than the previous year. Important factors such as an adequate humidity at the moment of implantation and at the beginning of the development of the crop, moderate temperatures during the cycle, which, together with a high luminosity, made it possible for a good number of kernels to be fixed by square meter. In addition, there was a low incidence of foliage diseases leading to an excellent ripening.

As a result of the general drought conditions during the development of the crop in all the Argentine wheat area, low yields and high protein levels were expected. This took place, mainly, in the Argentine northeast region (NEA), where very high values of proteins, up to 17% (13,5% humidity) and gluten 45-50% were observed in some cases, and a little lower in the Argentine northwest (NOA), but it did not happen in the center-south zone. Until the end of September, a regular harvest was expected, but then, favorable environmental conditions accompanying the crop during the reproductive period determined very good yields and commercial quality. In general, kernels were very big due to the good ripening, with a higher concentration of starch with regards to the protein, observing, some lots of yellow berry kernels with a low percentage of protein and gluten. The hectoliter weight and the weight of 1000 grains were higher than previous years and the content of ashes lower.

Organization and Methodology:

Sampling structure

It was agreed to obtain samples which represent about 4000 tons each, reaching a total of 338 analysis to be performed.

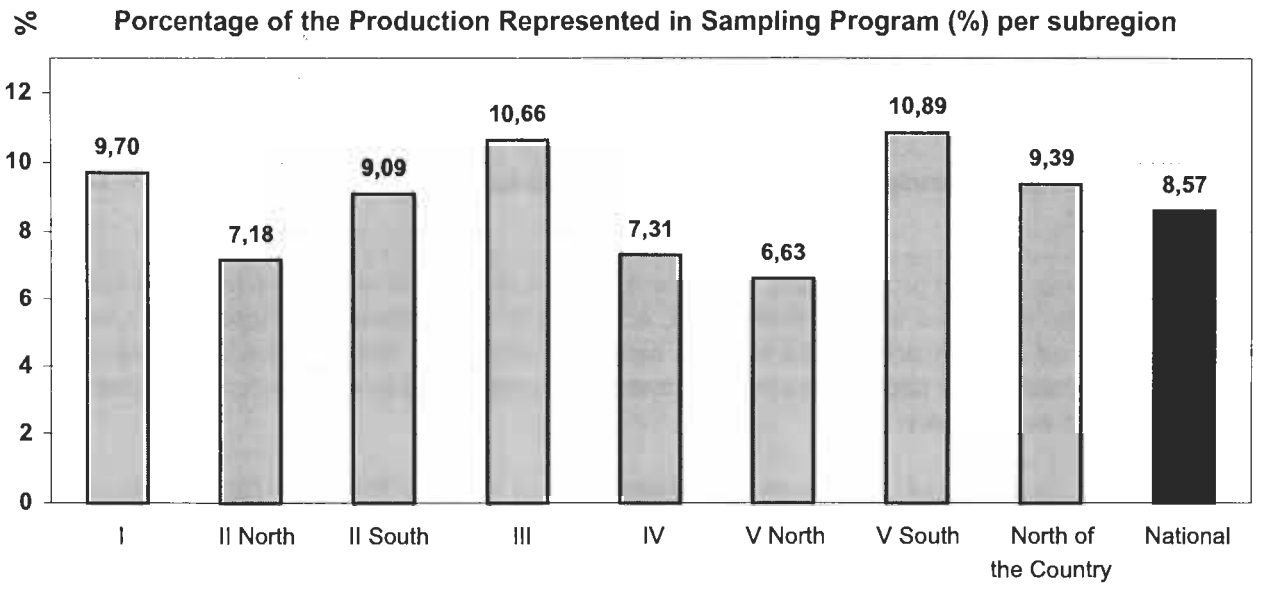
The sampling was planned proportionally to the territorial division (district or department) sown area, and the average yield registered the last three years, according to the Secretariat of Agriculture, Livestock, Fishery and Food data. In accordance with the estimated production resulting, the composite 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 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.

Subregion	Locality Composite	Sampling (tons.)	Production (tons.)	Production Sampled (%)
I	23	92,000	948,050	9.70
II North	47	127,700	1,779,576	7.18
II South	36	144,000	1,584,113	9.09
III	17	69,822	655,180	10.66
IV	91	347,505	4,754,766	7.31
V North	18	79,314	1,196,540	6.63
V South	90	328,832	3,019,685	10.89
North of the Country	16	56,000	596,561	9.39
TOTALS	**338**	**1,245,173**	**14,534,471**	**8.57**

Based on data from the Secretariat of Agriculture, Liverstock, Fishery and Food. 2004

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 9021 samples used for this sampling program, in such a way a sampled tonnage of 8.57 % of the national wheat production, which amounted to 14,534,471 tons, was reached.



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, NOA and NEA, the Buenos Aires Chamber those from the Subregions II S and IV, 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 .

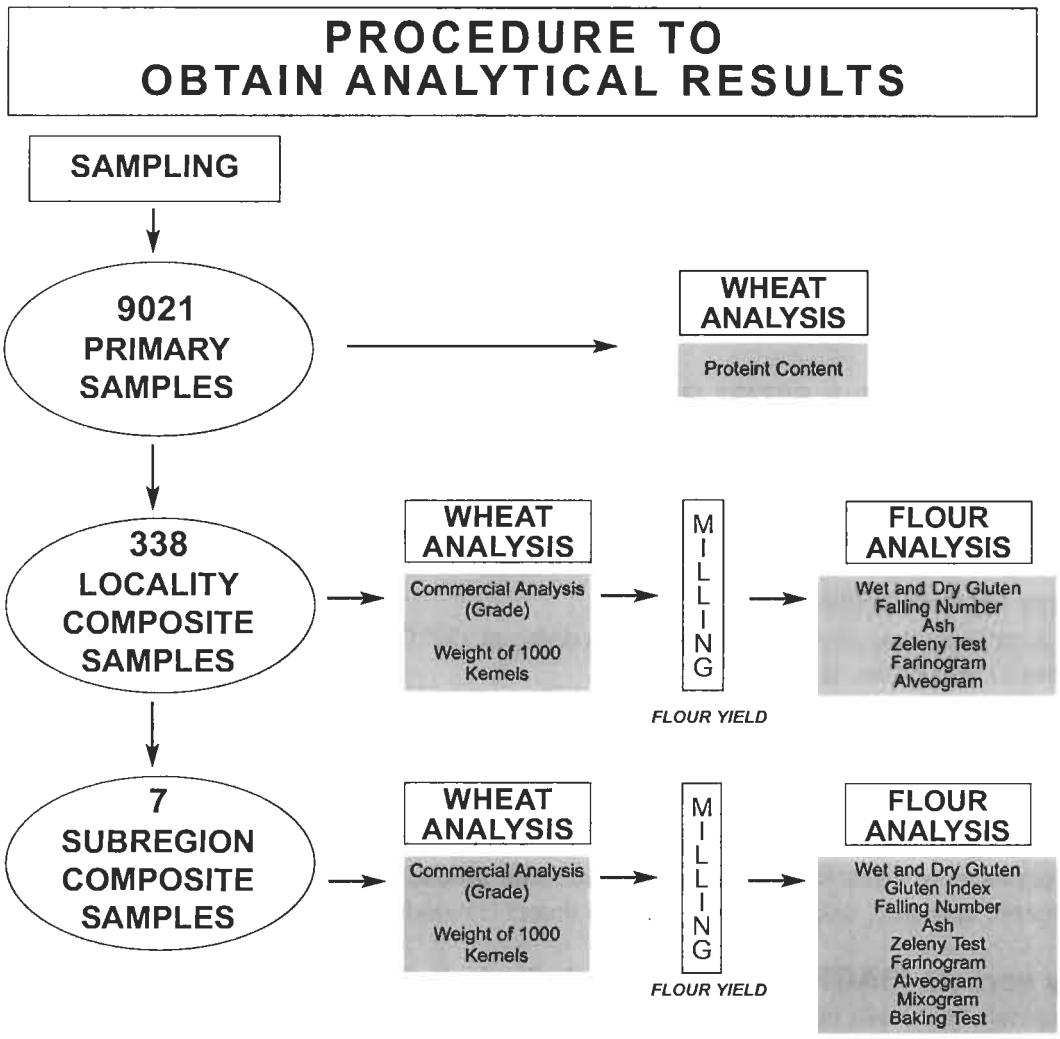
The composite samples were sent to the SENASA Laboratory to carry out the Bühler grinding, reserving a part in order to prepare the Subregion Composite Samples. It was decided to use only one mill for all the composite samples by locality, so as to minimize differences in the flour features due to the 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 557/97 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 557/97 Resolution)
All kernels or pieces of kernels, other than wheat, and any other inert material.

Total damaged kernels (SAGPyA 557/97 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 557/97 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 557/97 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 557/97 Resolution)
Kernels with starchy endosperm in more than a half of their structure, showing a yellowish appearance.

Protein Content - 13.5% moisture basis (SAGPyA 557/97 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 Nº 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 (ICC N° 137 - IRAM* 15864)

Gluten is a plastic - elastic substance with a white - yellowish colour which is obtained from the washing of a dough with a current of water to eliminate 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 Nº 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 Nº 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.

RHEOLOGY

Farinogram (Brabender Farinograph - ICC Nº 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. Mixograms are classified in a scale that goes from 1 (very weak) to 9 (very strong).

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.

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).

Argentine Standard for Wheat

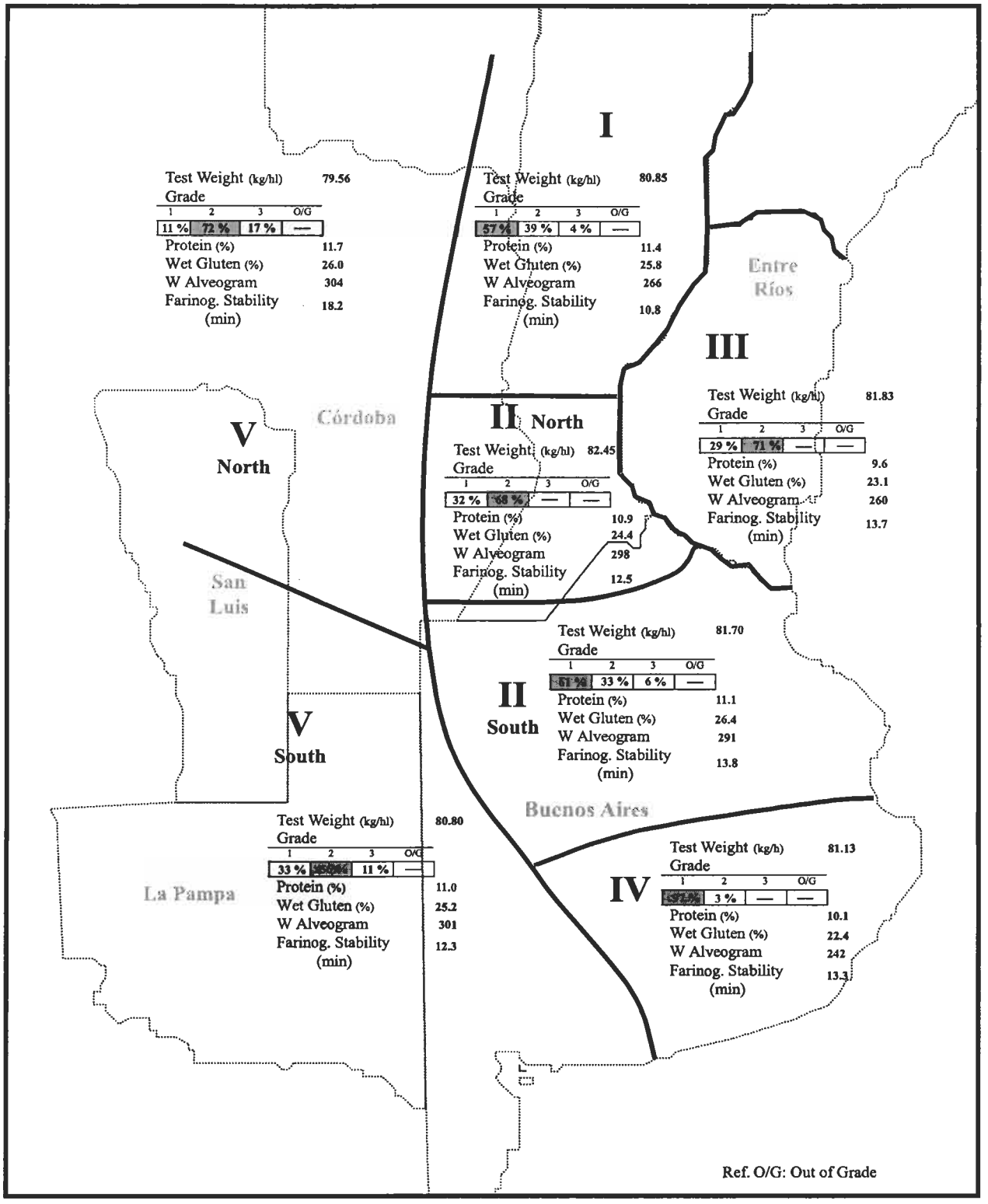
(Resolution Nº 557/97. Secretariat of Agriculture, Livestock, Fishery and Food)

GRADE			1	2	3
Minimum Test Weight per hectoliter (Kg/hl)			79	76	73
PERCENTS MAXIMUM LIMITS OF	Foreign Material %		0.60	1.25	3.00
	Damaged Kernels	Heat Damaged Kernels (%)	0.50	1.00	1.50
		Total (%)	1.00	2.00	3.00
	Smutty Kernels (%)		0.10	0.20	0.30
	Yellow Berry Kernels (%)		15.00	25.00	40.00
	Shrunken and Broken Kernels (1) (%)		1.25	2.50	5.00
Insect Bored Kernels (%)			0.50		
Sweet clover seeds (Melilotus sp.) seeds/100g			8		
MOISTURE %			14.0		
Living Insects and Arachnids			Free		

(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 bonifications or discounts of 2% for each % or fraction. Those lots which test weight is under 76 Kg/hl are excluded.

Argentine Wheat
Main Quality Parameters



Subregion I
Background for the crop

The sowing was carried out with high values of edaphic water being achieved a quick emergency due to superior temperatures than the historical averages.

The tillering occurred with superior rains than the historical average, with high incidence of leaf rust, especially in susceptible varieties and low presence of yellow spot. The temperatures were normal and the rains 65% superiors than the average.

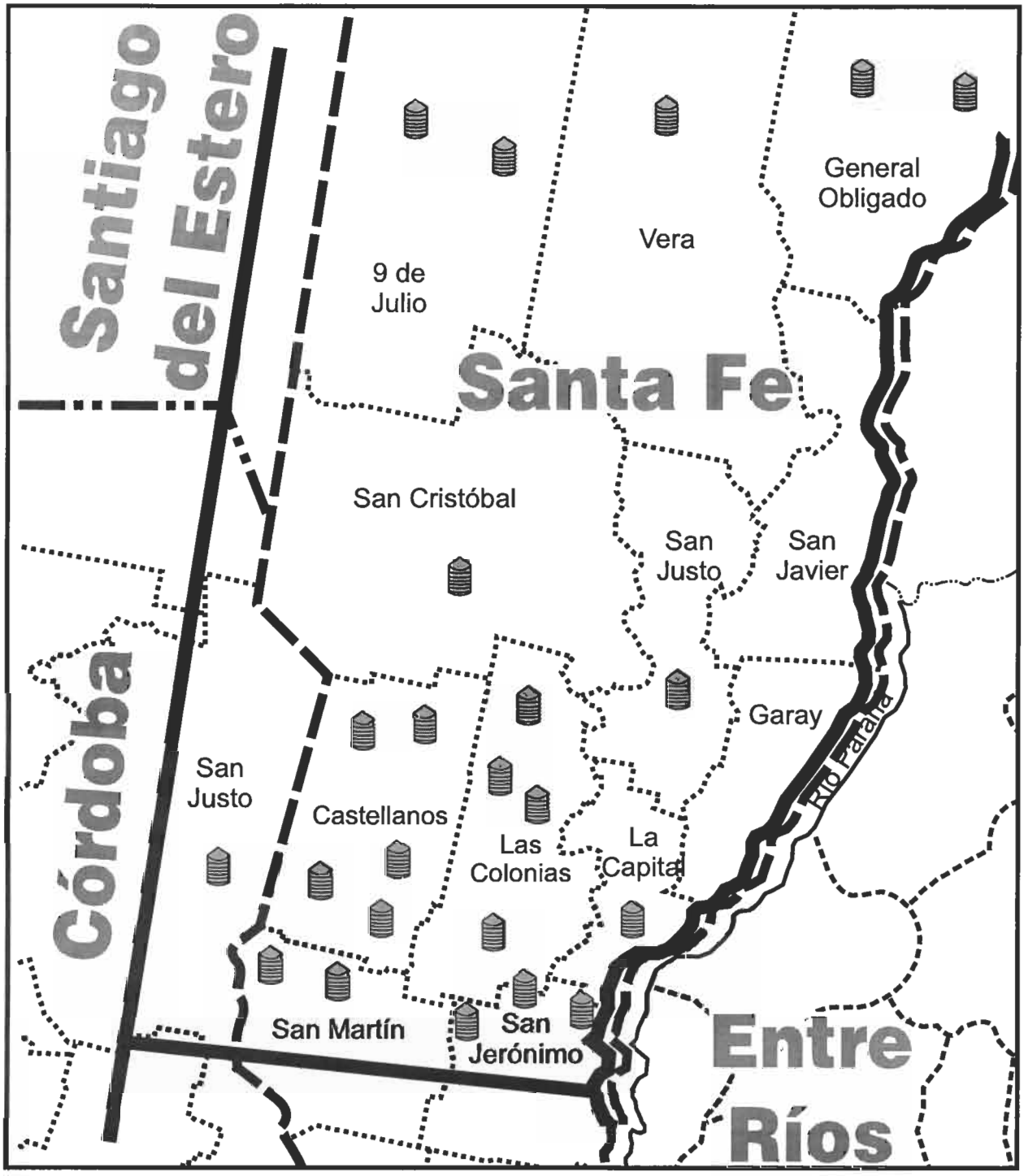
During the anthesis the temperatures went among normal to relatively low and the high precipitations continued. The rust incidence continued and the controls were satisfactory, registering very low infestations in the most resistant crops.

In the grain filling stage, the rains and temperatures were very favorable, with days of excellent solar radiation and fresh nights. At the end of this stage a period of high temperatures and a short period of slight lack of humidity (end of October - beginning of November) were registered and these conditions affected in a light way the quality of the gluten.

As for fertilization, in 80% of the surface some fertilizer type was applied. The main ones were urea, with dose average of 70 kg/ha at the west area and 90 kg/ha at the east area, and diammonic phosphate, with dose average of 50 kg/ha at the east area (practically was not used at west). Gypsum was also used in dose in between 40 and 80 kg/ha (the biggest dose at the west area), and ammonium sulfate in dose in between 30 and 60 kg/ha (the biggest dose at the east area). 70% of the applications were carried out before or during sowing, and the rest at tillering.

The crop was carried out in very dry time, with very long harvest journeys, being able the machines to work the whole day and night, with record registrations per day of trucks entrance to the storing plants. The humidity of the grain was low (inferior value than 12%), for which reason dryings were not used.

The yield averages were of 2,800 kg/ha, with extreme values of 4,600 and 1,900 kg/ha.



Each reference represents near 4,000 tns sampled.

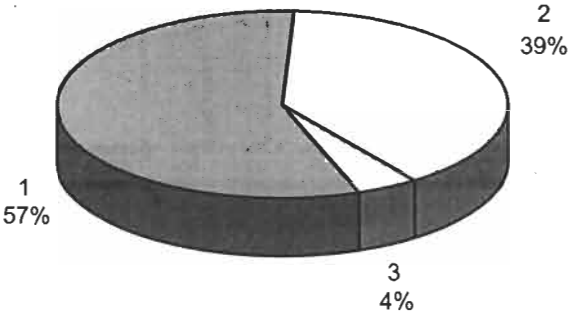
Subregion I Wheat

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)	78.20	82.30	80.85	1.26	0.02
Total Damaged Kernels (%)	0.16	2.90	0.69	0.56	0.80
Foreign Material (%)	0.06	1.00	0.32	0.25	0.80
Shrunken and Broken Kernels (%)	0.44	1.68	1.02	0.31	0.30
Yellow Berry Kernels (%)	0.00	14.40	3.64	3.24	0.89
Protein (13,5% Moisture) (%)	10.0	13.3	11.4	0.9	0.08
Weight of 1000 Kernels (gr.)	26.15	33.45	31.33	1.51	0.05
Ash (% dry basis)	1.540	2.260	1.911	0.195	0.10

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	21.8	31.0	25.8	2.4	0.09
	Dry Gluten (%)	8.3	11.0	9.3	0.8	0.08
	Falling Number (sec.)	394	508	461	31	0.07
	Flour Yield (%)	59.8	72.2	67.5	3.0	0.04
	Ash (dry basis) (%)	0.444	0.680	0.587	0.061	0.104
FARINOGRAM	Water Absorption (14 % H°) (%)	50.5	63.6	59.7	2.8	0.05
	Development Time (min.)	5.2	13.2	8.6	1.9	0.22
	Stability (min.)	3.2	16.5	10.8	3.0	0.28
	Degree of Softening (12 min.)	31	231	67	50	0.74
ALVEOGRAM	P (mm)	82	126	105	11	0.10
	L (mm)	48	108	71	12	0.17
	W Joules x 10^{-4}	183	355	266	38	0.14
	P / L	0.88	2.42	1.48	0.38	0.24

These results were elaborated with 23 composite samples prepared proportionally from 131 original ones.

Subregion Data

In this subregion the wheat production was 948,050 tons., the 6.5% of the national total. Were sampled 92,000 tons., the 9.70% 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	4000	1	82.10	0.96	0.20	1.08	0.00	13.1	31.55	1.650
2	Gral. Obligado	4000	2	81.60	1.06	0.06	0.85	2.60	12.4	31.75	1.800
3	Vera	4000	1	82.20	0.50	0.24	0.62	6.10	11.1	33.45	1.780
4	9 de Julio	4000	1	81.90	0.56	0.20	1.00	1.60	11.4	31.55	1.690
5	9 de Julio	4000	2	78.20	0.82	0.98	0.84	0.00	13.3	32.25	2.050
6	San Jerónimo	4000	2	82.30	0.40	1.00	0.84	0.00	10.9	32.30	1.880
7	San Jerónimo	4000	1	80.80	0.32	0.26	1.00	4.80	10.8	29.50	1.920
8	San Jerónimo	4000	2	81.10	1.14	0.10	0.92	1.60	12.2	32.20	1.910
9	San Martín	4000	2	80.70	0.54	0.68	1.68	3.94	11.2	30.20	1.790
10	San Martín	4000	1	81.20	0.92	0.20	0.44	14.40	11.1	32.00	1.540
11	Castellanos	4000	1	80.60	0.16	0.40	0.86	3.60	10.7	30.06	1.550
12	Castellanos	4000	1	81.00	0.80	0.10	1.20	6.20	10.0	33.25	1.850
13	Castellanos	4000	3	80.50	2.90	0.18	0.66	5.60	11.1	32.50	1.960
14	Castellanos	4000	1	81.00	0.74	0.06	1.00	0.00	11.3	31.60	2.000
15	Castellanos	4000	1	81.40	0.16	0.20	1.22	4.80	10.9	33.10	2.100
16	La Capital	4000	1	82.00	0.40	0.56	0.88	3.20	10.9	31.80	1.850
17	Las Colonias	4000	2	78.40	1.00	0.16	1.60	0.00	12.6	26.15	2.260
18	Las Colonias	4000	1	82.20	0.20	0.18	0.98	5.00	10.8	31.25	2.080
19	Las Colonias	4000	1	80.40	0.36	0.32	0.80	5.20	10.3	31.75	1.890
20	Las Colonias	4000	1	81.30	0.74	0.40	1.10	3.20	10.9	30.35	1.940
21	San Cristóbal	4000	2	78.20	0.20	0.32	1.20	4.80	10.8	30.25	2.250
22	San Justo (Santa Fe)	4000	2	81.70	0.40	0.22	1.68	0.00	12.5	31.20	2.230
23	San Justo (Córdoba)	4000	2	78.80	0.60	0.26	1.00	7.10	11.3	30.50	1.990

Subregion I 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) (%)
1	Gral. Obligado	31.0	11.0	444	68.6	62.2	7.3	9.9	52	108	78	306	1.38	0.603
2	Gral. Obligado	28.3	10.3	394	69.4	62.4	9.5	11.5	50	109	81	310	1.35	0.492
3	Vera	23.6	8.5	472	64.2	59.5	7.2	9.8	59	107	66	254	1.62	0.577
4	9 de Julio	26.5	9.3	442	71.0	61.3	10.0	12.1	58	126	52	256	2.42	0.570
5	9 de Julio	30.9	10.7	417	59.8	63.6	5.2	3.2	231	82	83	204	0.99	0.646
6	San Jerónimo	24.8	8.8	450	65.9	60.5	6.7	7.6	93	98	78	261	1.26	0.533
7	San Jerónimo	26.0	9.3	433	69.5	62.9	5.7	6.0	172	104	60	219	1.73	0.612
8	San Jerónimo	29.0	10.2	471	65.5	60.9	8.8	11.1	42	103	82	300	1.26	0.566
9	San Martín	24.9	9.0	443	70.6	50.5	11.3	14.3	42	112	72	308	1.56	0.536
10	San Martín	25.4	9.3	445	70.0	59.9	10.3	12.9	40	113	69	289	1.64	0.560
11	Castellanos	24.3	9.1	506	72.2	59.7	13.2	16.5	34	125	57	292	2.19	0.578
12	Castellanos	21.8	8.3	486	68.0	61.3	7.5	7.4	160	107	48	183	2.23	0.657
13	Castellanos	24.9	9.0	479	70.4	58.8	8.3	8.5	89	101	70	260	1.44	0.563
14	Castellanos	26.1	9.3	495	63.4	60.3	7.8	10.5	48	93	80	251	1.16	0.504
15	Castellanos	22.6	8.3	497	68.1	57.2	11.1	15.2	41	102	68	269	1.50	0.539
16	La Capital	23.8	8.6	476	71.0	59.4	8.0	12.3	44	107	62	251	1.73	0.444
17	Las Colonias	28.6	10.2	508	64.0	59.1	9.7	11.2	47	95	108	355	0.88	0.660
18	Las Colonias	23.5	8.8	489	67.5	59.6	9.6	14.7	32	116	64	276	1.81	0.662
19	Las Colonias	23.7	8.3	468	67.1	56.3	8.8	12.9	43	96	71	249	1.35	0.603
20	Las Colonias	24.7	8.6	421	69.1	59.4	7.6	10.0	38	105	62	237	1.69	0.624
21	San Cristóbal	25.3	9.0	449	66.9	56.2	6.3	10.8	48	95	70	235	1.36	0.680
22	San Justo (Santa Fe)	27.7	10.0	495	64.0	63.2	9.7	10.4	31	121	70	301	1.73	0.678
23	San Justo (Córdoba)	26.6	9.6	426	66.8	58.1	7.7	10.0	55	89	78	248	1.14	0.608

Subregion II North
Background for the crop

The total rains registered in the period from May to November were of 350 mm, significantly smaller value to those registered in the last three campaigns, an average of 38.5% less and 48 % bigger than the historical series 1951–2002 (INTA Oliveros, Santa Fe).

The crop began with good edaphic humidity in the ground profile, near 90% of the field capacity and rain values of 562 mm accumulated from January to May.

During the months of July, August and October superior rains than the historical series average were registered (between 1,9 and 1,2 times more) but always inferior to the last 3 campaigns.

The consumptions of water were of 439 mm and 392 for the long and short cycle wheat respectively, which determined a deficit of 196 mm for long cycle and 168 mm for short cycle. That quantity of water had to be extracted from ground profile, producing an important draining up to two meters deep. However, the yields could be considered good, for which can be supposed that the roots of the cultivation overcame the two meters deep and extracted water stored below the same one.

Notwithstanding the average temperatures registered along the wheat cultivation cycle were superior to the historical average 1951–2003, mainly from the month of September to November, a reduction in the number of emergency days to earing was not observed in either of the two precocity groups, lengthening in more than 20 days depending on the cultivation, regarding the last campaign. On the other hand, the longitude of the period between earing and physiologic maturity was similar to previous campaigns.

It is important to highlight that the same as in the two previous campaigns, the minimum temperatures as well as the maximum, starting from the first fortnight of July presented a lot of alternation among decades, which impacted negatively in the development rate of some cultivation phases.

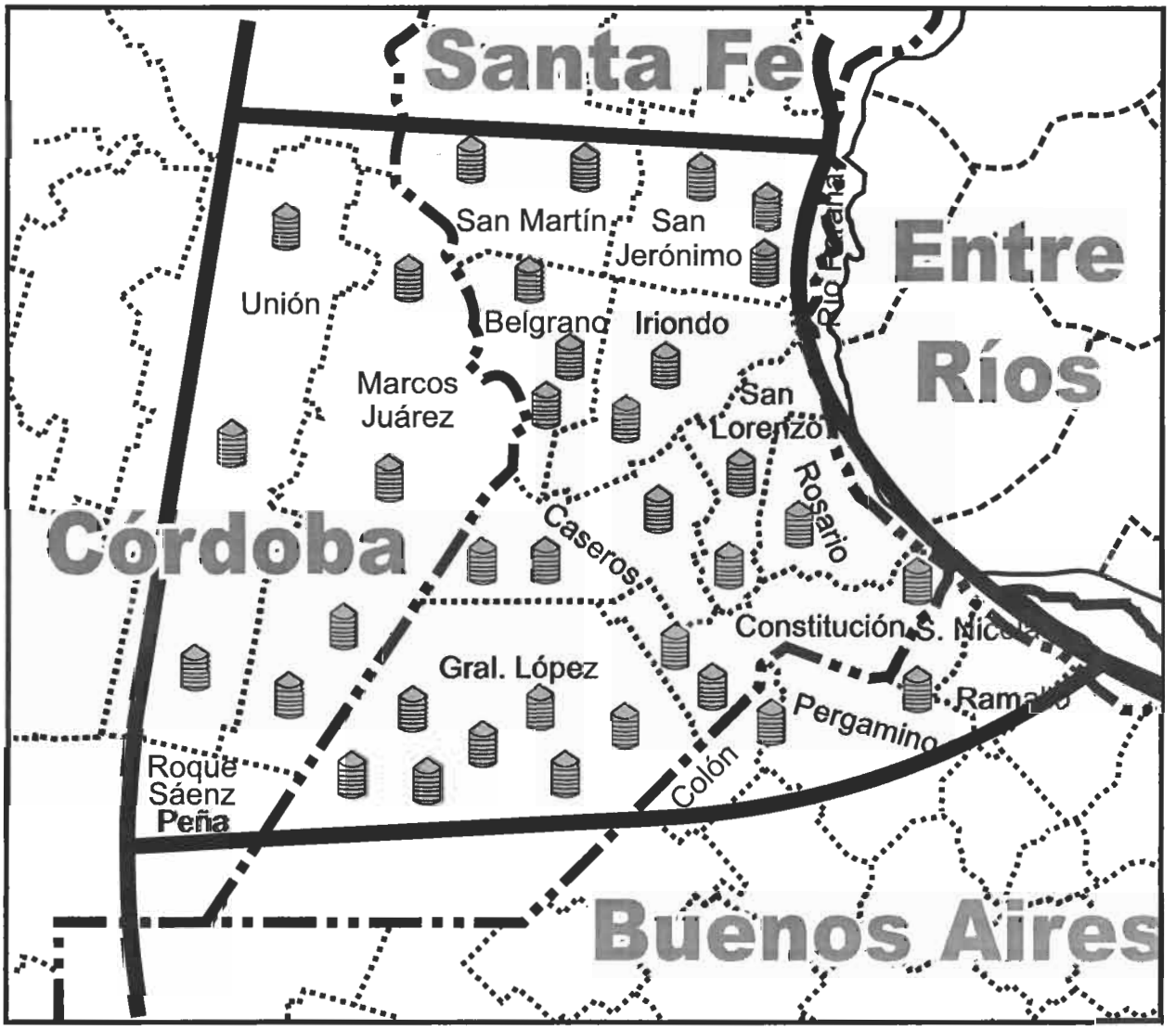
The minimum and maximum temperatures starting from the first ten of October were higher than those of the historical average, approximately in between 2,8 °C and 6,3°C for the maximum and minimum respectively, which produced a reduction of the grain filling period.

Although these values were bigger than the best range of temperatures for an appropriate rate of grain growth, being this of 15 and 18°C during the day and of 10 to 13°C during the night (Chowdhury and Wardlaw, 1978); the weight of the one thousand grains was high, for example for cultivations of long cycle the average was of 34 g with a range from 32 g to 37 g; for those of short cycle the weight average was of 34,7 g with a range from 31 g to 38 g. With regard to the last campaign they overcame the average between 10 and 22% for long and short cycle respectively.

The solar radiation and specifically the active radiation for the photosynthesis, which is the energy source that the cultivations need to grow and yield, was sensibly bigger than in 2002, mainly during the critical period for the grains number definition being decisive in the increase of them. As result, the yields were superior to the previous campaign.

With respect to cultivation health, the percentage of flag leaf severity regarding to the foliages diseases for most varieties was low, not overcoming the 5%. The whole cultivation anthesis for both long and short cycle took place during the second decade of October coinciding with low precipitations (0,4 mm) and inferior to 70% relative humidity, which determined the absence of Fusarium of the spike.

Subregion II North Wheat



Each reference represents near 4,000 tns sampled.

Subregion II North Wheat

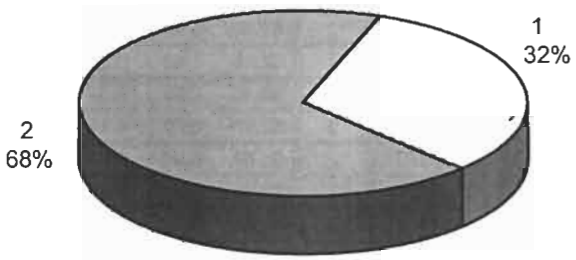
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	80.15	85.50	82.45	0.91	0.01
Total Damaged Kernels (%)	0.25	1.75	0.72	0.32	0.45
Foreign Material (%)	0.10	0.55	0.27	0.12	0.44
Shrunken and Broken Kernels (%)	0.56	2.11	1.33	0.46	0.35
Yellow Berry Kernels (%)	0.00	5.41	2.27	1.09	0.48
Protein (13,5% Moisture) (%)	10.2	12.3	10.9	0.4	0.04
Weight of 1000 Kernels (gr.)	28.87	35.88	32.13	1.67	0.05
Ash (% dry basis)	1.466	2.154	1.814	0.155	0.09

Total damaged kernels includes 0.12% frosty kernels, 0.11% sprouted kernels, 0.04% calcinated kernels, 0.07% insect chewed kernels and 0.36% germen chewed kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	20.7	28.0	24.4	1.6	0.07
	Dry Gluten (%)	7.9	9.9	8.9	0.5	0.06
	Falling Number (sec.)	384	485	430	26	0.06
	Flour Yield (%)	54.2	68.6	62.4	4.1	0.07
	Ash (dry basis) (%)	0.440	0.674	0.560	0.057	0.10
FARINOGRAM	Water Absorption (14 % H°) (%)	56.5	61.9	60.0	1.1	0.02
	Development Time (min.)	1.6	20.0	7.3	4.7	0.64
	Stability (min.)	2.3	17.2	12.5	2.5	0.20
	Degree of Softening (12 min.)	16	50	33	7	0.22
ALVEOGRAM	P (mm)	95	144	116	10	0.08
	L (mm)	47	89	68	9	0.14
	W Joules x 10^{-4}	230	362	298	27	0.09
	P / L	1.10	3.00	1.71	0.38	0.21

These results were elaborated with 47 composite samples prepared proportionally from 3407 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 1,779,576 tons., the 12.2% of the national total. Were sampled 127,700 tons., the 7.18% of the subregion production.

Subregion II North 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) (%)
101	San Martín	4000	2	82.60	0.60	0.31	1.55	1.30	11.1	30.62	1.929
102	San Martín	3000	2	83.50	0.60	0.18	1.69	3.59	11.3	31.01	1.951
103	San Jerónimo	4000	2	82.40	0.66	0.14	1.08	1.82	11.0	29.97	1.883
104	San Jerónimo	3000	1	83.05	0.54	0.31	1.11	1.07	11.2	31.27	1.915
105	San Jerónimo	3000	2	82.40	0.51	0.38	1.47	2.35	10.6	30.85	1.920
106	Belgrano	3000	2	82.15	1.41	0.31	1.57	1.97	11.1	30.42	1.923
107	Belgrano	3000	2	82.15	0.59	0.33	2.11	2.36	11.0	30.47	1.874
108	Belgrano	3000	2	82.40	0.79	0.16	1.81	5.41	10.2	31.72	1.843
109	Iriondo	3000	2	80.80	0.84	0.37	1.72	1.82	10.6	30.63	1.895
110	Iriondo	3000	1	82.85	0.50	0.39	0.78	0.90	11.1	32.02	1.887
111	Caseros	4000	2	83.95	0.53	0.28	1.74	1.12	10.8	32.19	1.810
112	Caseros	4000	2	82.15	0.66	0.19	1.44	3.95	10.5	32.00	1.779
113	Caseros	3000	2	82.40	0.69	0.26	1.53	1.14	10.5	32.60	1.879
114	San Lorenzo	3000	1	82.60	0.89	0.15	1.10	4.40	10.3	32.14	1.792
115	San Lorenzo	3000	1	82.40	0.63	0.21	0.69	0.81	11.2	31.24	1.890
116	Rosario	3000	1	81.25	0.69	0.41	1.08	2.43	10.8	31.34	1.832
117	Constitución	4000	2	81.50	0.83	0.10	1.88	3.22	10.7	34.95	1.870
118	Constitución	4000	2	81.50	1.29	0.28	0.75	2.65	11.1	31.79	1.863
119	Constitución	3000	1	81.70	0.58	0.16	0.85	2.83	11.3	30.79	1.861
120	General López	1500	1	82.40	0.92	0.38	1.15	2.95	10.3	31.00	1.868
121	General López	2000	2	81.95	0.50	0.22	1.85	0.00	12.3	29.40	1.746
122	General López	2000	2	81.70	0.51	0.19	1.63	0.84	10.8	32.63	1.667
123	General López	3000	2	82.60	0.70	0.32	2.05	1.10	10.3	33.82	1.578
124	General López	2000	1	83.50	0.48	0.25	0.76	3.22	10.8	35.88	1.626
125	General López	3200	2	83.25	1.32	0.55	0.78	3.38	10.4	34.10	1.675
126	General López	2000	2	82.60	0.45	0.26	1.45	1.70	10.2	33.86	1.471
127	General López	3000	1	83.05	0.30	0.16	0.94	0.78	11.2	35.44	1.466
128	General López	4000	1	82.60	0.43	0.19	0.85	3.47	11.2	33.48	1.492
129	General López	4000	2	85.50	1.75	0.51	0.71	2.65	11.0	32.81	1.590
130	General López	2000	1	81.25	0.55	0.22	0.56	4.55	10.5	35.47	1.593

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) (%)
131	Marcos Juárez	4000	1	81.70	0.89	0.12	0.63	2.26	10.3	35.11	1.841
132	Marcos Juárez	2000	2	83.25	0.64	0.18	1.65	1.41	11.0	28.87	1.764
133	Marcos Juárez	2000	2	83.05	0.56	0.50	1.47	1.56	10.5	33.14	1.762
134	Marcos Juárez	2000	2	82.15	1.26	0.41	1.58	1.70	11.1	31.21	1.741
135	Marcos Juárez	2000	2	82.40	1.00	0.38	1.95	1.79	11.4	30.07	1.736
136	Marcos Juárez	2000	2	82.15	1.03	0.11	1.68	2.15	11.1	32.47	1.775
137	Marcos Juárez	2000	2	81.50	0.75	0.12	1.89	1.81	11.8	30.34	1.784
138	Unión	2000	2	82.15	0.25	0.31	1.66	2.37	11.3	31.52	1.671
139	Unión	2000	2	83.25	0.51	0.30	1.51	2.50	10.7	32.41	1.674
140	Unión	2000	2	82.60	0.55	0.29	2.11	2.81	10.7	32.60	2.107
141	Unión	2000	2	81.70	0.54	0.22	1.84	1.90	11.0	30.70	2.150
142	Unión	2000	2	82.60	0.64	0.28	1.45	2.57	10.3	32.80	2.040
143	Unión	2000	2	82.40	0.40	0.25	1.49	2.76	10.8	31.05	1.990
144	Colón - Pergamino - Ramallo	2000	1	83.25	0.38	0.11	0.61	1.95	10.7	33.69	2.003
145	Colón - Pergamino - Ramallo	2000	1	80.15	0.41	0.54	0.95	1.41	11.4	32.37	2.154
146	Colón - Pergamino - Ramallo	2000	1	82.85	0.34	0.41	0.93	2.11	11.4	34.27	1.961
147	Colón - Pergamino - Ramallo	2000	2	82.15	0.45	0.20	1.92	1.65	11.5	29.42	1.936

Subregion II 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) (%)
101	San Martín	25.2	9.2	424	68.0	60.3	8.9	15.4	29	118	73	312	1.62	0.619
102	San Martín	26.3	9.5	446	66.9	60.7	7.9	14.7	27	120	67	301	1.79	0.648
103	San Jerónimo	24.7	8.8	439	68.6	60.7	8.9	12.7	33	111	63	265	1.76	0.585
104	San Jerónimo	25.1	9.2	471	63.4	59.9	9.1	12.8	39	111	78	319	1.42	0.576
105	San Jerónimo	21.0	7.9	433	68.1	59.6	1.9	2.3	38	128	52	274	2.46	0.625
106	Belgrano	24.5	8.9	415	64.0	59.5	9.7	12.8	41	110	76	304	1.45	0.567
107	Belgrano	23.8	8.8	485	67.5	60.1	2.0	13.9	34	128	66	330	1.94	0.642
111	Caseros	25.8	9.3	471	63.2	60.2	19.0	14.0	38	119	70	316	1.70	0.574
112	Caseros	23.0	8.4	467	68.5	60.3	1.9	7.7	46	121	63	289	1.92	0.657
113	Caseros	22.9	8.5	474	62.7	59.8	8.5	11.4	41	122	60	287	2.03	0.589
114	San Lorenzo	21.6	8.1	476	68.3	61.1	2.1	9.5	32	144	48	283	3.00	0.621
115	San Lorenzo	25.3	9.0	466	61.2	60.7	9.8	12.4	43	121	59	281	2.05	0.610
116	Rosario	23.5	8.6	435	67.2	60.4	2.1	11.7	27	127	61	291	2.08	0.674
117	Constitución	23.9	8.7	437	61.3	60.4	9.3	13.2	35	122	68	301	1.79	0.551
118	Constitución	26.6	9.5	443	63.8	61.6	7.7	11.5	38	115	67	286	1.72	0.606
119	Constitución	25.8	9.5	438	67.6	59.4	9.7	13.7	37	106	69	274	1.54	0.576
120	General López	24.8	8.8	405	63.1	59.0	1.7	10.3	34	102	71	264	1.44	0.555
121	General López	28.0	9.9	434	59.4	60.5	2.5	11.8	28	108	83	352	1.30	0.455
122	General López	24.0	8.8	418	60.8	60.0	4.3	12.5	36	120	63	298	1.90	0.554
123	General López	24.1	8.8	393	57.2	60.2	2.5	14.0	28	132	60	312	2.20	0.520
124	General López	24.7	8.9	409	61.5	61.9	1.6	13.4	21	132	55	290	2.40	0.543
125	General López	23.8	8.5	418	55.9	61.3	9.1	12.7	33	120	60	278	2.00	0.503
126	General López	23.8	8.4	400	59.1	60.4	1.9	11.1	28	116	66	285	1.76	0.512
127	General López	27.4	9.8	405	56.2	61.1	10.4	9.9	30	116	76	321	1.53	0.480
128	General López	21.1	8.1	401	65.4	56.5	20.0	10.7	34	99	60	230	1.65	0.472
129	General López	25.3	9.2	396	58.4	58.9	9.3	13.4	37	110	78	328	1.41	0.557
130	General López	23.9	8.2	407	68.0	59.1	4.3	11.8	37	121	47	234	2.57	0.472

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) (%)
131	Marcos Juárez	20.7	8.0	430	61.3	59.9	2.2	12.0	26	116	60	272	1.93	0.602
132	Marcos Juárez	25.6	9.5	412	58.1	59.8	8.4	13.1	35	98	77	280	1.27	0.544
133	Marcos Juárez	24.0	8.9	410	60.0	59.2	2.1	11.0	31	121	68	305	1.78	0.572
134	Marcos Juárez	25.2	9.2	408	58.1	58.5	9.5	13.7	36	102	81	299	1.26	0.570
135	Marcos Juárez	25.0	9.1	419	62.0	59.4	2.3	11.0	33	106	67	269	1.58	0.541
136	Marcos Juárez	25.0	9.1	439	60.4	57.4	10.5	13.3	44	98	89	302	1.10	0.522
137	Marcos Juárez	25.9	9.5	416	58.4	59.7	7.8	17.2	21	109	87	362	1.25	0.511
138	Unión	26.1	9.6	420	61.8	60.9	9.1	14.2	24	121	75	344	1.61	0.565
139	Unión	23.8	8.8	423	62.8	59.6	8.8	14.1	16	119	77	335	1.55	0.496
140	Unión	24.7	9.0	416	59.9	60.3	10.2	17.2	24	120	63	288	1.90	0.542
141	Unión	26.1	9.2	421	62.4	59.2	9.9	13.5	19	115	76	318	1.51	0.548
142	Unión	22.9	8.4	384	59.7	58.1	1.6	11.8	30	115	76	318	1.51	0.456
143	Unión	24.8	9.0	400	54.5	58.1	2.1	13.4	20	95	83	294	1.14	0.501
144	Colón - Pergamino - Ramallo	24.0	8.8	399	58.4	60.4	2.1	15.8	19	127	61	307	2.08	0.508
145	Colón - Pergamino - Ramallo	25.4	9.2	409	58.9	59.1	8.7	13.7	24	110	79	320	1.39	0.440
146	Colón - Pergamino - Ramallo	25.9	9.3	414	56.6	59.9	9.5	12.3	50	111	77	316	1.44	0.500
147	Colón - Pergamino - Ramallo	25.1	9.2	464	54.2	60.2	9.9	16.5	33	113	79	341	1.43	0.547

Subregion II South
Background for the crop

The wheat cultivation in the agricultural campaign 2003/04 decreased by approximately 10 to 12% in relation to the previous year. There were several reasons that led the producers to cultivate less wheat, between the most important it can be mentioned the tendency towards the soybean monoculture, the excesses of rains that in the last two campaigns (2001/02 and 2002/03) caused losses by lots flooding and the high development of leaf and ear diseases that made low profitability farming because of the poor yields.

This decrease at the sowed area was compensated by the excellent achieved yields, with a result of 31,5 quintals by hectare, being harvested lots that were over the average of 50 quintals. Whith respect to the cultivation system the adoption of more and more direct sowing was observed and fewer lots were sowed with the conventional system.

The sowed varieties were in their majority of intermediate to long cycle. In comparison with the previous campaign was noticed an increment of short cycles varieties at the sowed area and also the use of new varieties, indicating a variety replacement.

It is considered that the sowed area was 90 % fertilized. Nutrients were nitrogen and phosphorus especially and sulfur was rarely added. The average doses used were in between 50 to 70 kg/ha of commercial product containing phosphate and about 100 kg/ha of nitrogenous fertilizer. In the cases that sulfur was used the doses were in between 5 to 10 kg/ha of sulphureous fertilizer.

The fertilizer was applied totally during sowing, being few cases in which it was added at sprouting.

The abundant humidity accumulated at ground profile because of the rains during the months of February, March and April that overcame 35,3 % the historical average, allowed that the wheat sowed in earlier time, specifically during the month of June, had an excellent germination. The same thing did not occurred in some cases with more precocious cycle varieties sowed during the month of July, in which a more deficient germination was noticed, not due to lack of humidity but due to two intense rains during that month of 50,5 and 57,6 mm that caused in certain lots flooding and ground compactness, harming those varieties that had not germinated. As for the temperatures, can be considered normal for this crop.

The tillering normally evolved, without humidity restrictions, being noticed a high sprouts number by plant, with good foliage development.

During the stalking, at the end of the month of August and during the whole month of September, the lack of rains caused a delay in the foliage development with a remarkable reduction of the height of plants, about 10 to 15 cm less than the usual and causing death in those varieties of intermediate and short cycle.

The reproductive period began with a rapid anthesis, at the middle of October, being observed that wheats sowed late (middle to end of July) were with few days of difference compared with those of early sowing.

Starting from the pollination, although the rains were scarce (51,4% less than the historical average keeping in mind the average of the months of August, September, October and November) there were other climatic factors that favored a good grain development. In October were not registered high daily uniform temperatures, favored by fresh nights. With little rain, no cloudy days, the plant was under favorable conditions to carry out a good photosynthesis, allowing a good accumulation of dry matter.

These conditions of low precipitations, with little environmental humidity and high brightness created a favorable atmosphere so that the diseases were not developed in an important way.

During the month of November the conditions of low environmental humidity and high brightness repeated again. The maximum temperatures had two peaks, one in the first days of November with higher temperatures than 30ºC and the other one specifically the days 21 and 22. These were accompanied by winds from N-NE sector with more speeds than normal. It is considered that these not very favorable parameters advanced the crop but without ending up interrupting the ripening.

The crop was carried out under normal conditions, without being interrupted by rains of importance. Most of the lots were harvested with humidity percentages of 14% or less, for which reason the used of artificially driers was very little.

The commercial quality was very good, with excellent hectoliter weights and of 1000 grains, with superior averages than normal. Were detected lots with yellow berry kernels, which coincided with those of lower averages yields, possibly by the use of low dose of fertilizers.

In summary can be said that the factors that impacted in the expression of the good yields and commercial quality that was achieved in the agricultural campaign 2003/04 in the area of Pergamino, would be the followings:

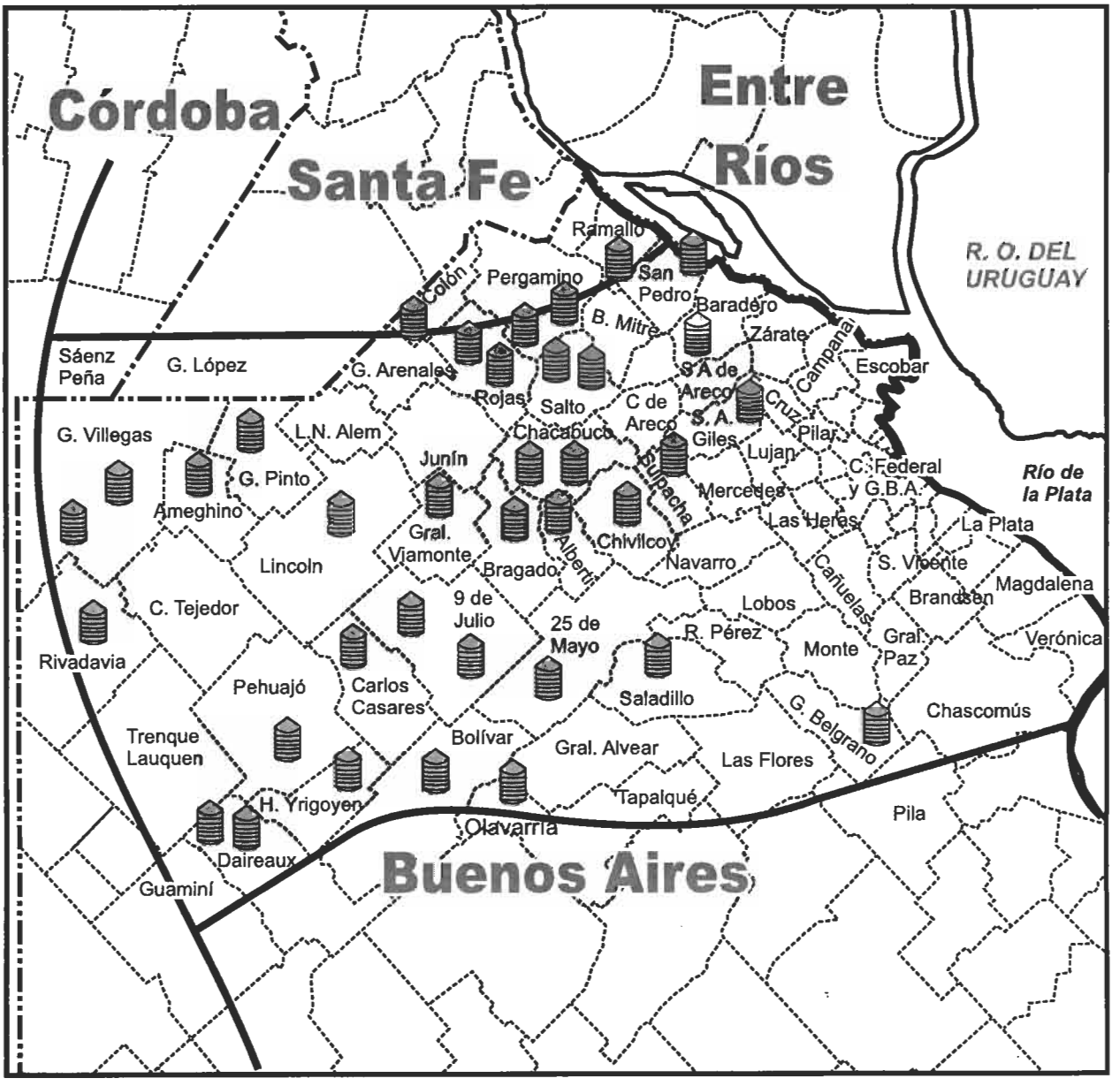
The rains were very scarce but they took place in the moments when the cultivation most needed them, this was also helped by the high phreatic nappas due to the abundant rains that happened at the end of summer months and autumn of this campaign that added to those of the year 2002 was very beneficial for the wheat plant.

The lack of rains made that the nitrogen was not washed, which facilitated the good utilization by the plant of the applied fertilizer.

The moderate day temperatures, with fresh nights and high brightness made in general that the plant quite well completed the ripening.

The climatic conditions previously mentioned, added to the little environmental humidity, made that the diseases were not developed. In the area of influence of the Pergamino EEA, was observed very little orangey leaf rust (Puccinia recóndita Rob.) appeared too late.

Subregion II South Wheat



Each reference represents near 4,000 tns sampled.

Subregion II South Wheat

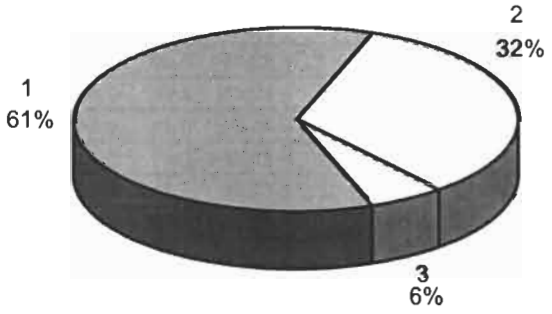
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	79.45	83.5	81.70	1.17	0.01
Total Damaged Kernels (%)	0.08	2.94	0.82	0.75	0.91
Foreign Material (%)	0.06	1.02	0.37	0.23	0.60
Shrunken and Broken Kernels (%)	0.26	0.70	0.46	0.11	0.25
Yellow Berry Kernels (%)	0.00	8.52	1.13	1.73	1.54
Protein (13,5% Moisture) (%)	10.3	12.2	11.1	0.4	0.04
Weight of 1000 Kernels (gr.)	29.75	38.20	34.50	1.67	0.05
Ash (% dry basis)	1.706	1.954	1.802	0.066	0.04

Total damaged kernels includes 0.04% frosty kernels, 0.18% sprouted kernels, 0.08% calcinated kernels, 0.12% insect chewed kernels and 0.40% germen chewed kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	22.7	30.1	26.4	1.5	0.06
	Dry Gluten (%)	8.4	11.1	9.8	0.6	0.06
	Falling Number (sec.)	317	443	368	27	0.07
	Flour Yield (%)	58.0	72.1	65.9	3.1	0.05
	Ash (dry basis) (%)	0.524	0.657	0.567	0.031	0.06
FARINOGRAM	Water Absorption (14 % H°) (%)	55.2	61.6	59.1	1.4	0.02
	Development Time (min.)	6.2	12.7	9.7	1.6	0.17
	Stability (min.)	8.4	21.9	13.8	2.7	0.20
	Degree of Softening (12 min.)	31	80	52	11	0.21
ALVEOGRAM	P (mm)	87	143	110	14	0.12
	L (mm)	48	107	78	14	0.19
	W Joules x 10^{-4}	224	376	291	33	0.11
	P / L	0.81	2.98	1.42	0.48	0.32

These results were elaborated with 36 composite samples prepared proportionally from 740 primary samples (farmer deliveries)

Subregion Data

In this subregion the wheat production was 1,584,113 tons., the 10.9% of the national total. Were sampled 144,000 tons., the 9.09% 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	Baradero	4000	2	80.35	1.08	0.50	0.52	1.30	11.5	32.77	1.838
201	Navarro	4000	1	82.60	0.28	0.44	0.42	2.14	11.2	35.25	1.855
202	San Antonio de Areco	4000	1	82.15	0.43	0.16	0.40	0.00	11.3	34.68	1.818
203	Gral. Belgrano	4000	1	83.05	0.80	0.32	0.38	2.30	10.7	35.29	1.846
204	Saladillo	4000	1	82.85	0.12	0.12	0.42	8.52	10.4	36.81	1.788
205	Gral. Villegas	4000	1	82.15	0.34	0.38	0.62	3.42	11.5	35.07	1.827
206	Gral. Villegas	4000	3	82.15	2.94	0.94	0.68	0.00	11.3	34.78	1.827
207	Gral. Viamonte	4000	2	81.05	0.48	0.84	0.44	0.00	11.1	34.86	1.889
208	Gral. Pinto	4000	1	83.05	0.40	0.14	0.32	0.00	10.3	33.61	1.746
209	Rivadavia	4000	2	81.25	0.24	0.46	0.50	2.30	11.4	35.46	1.913
210	Hipólito Yrigoyen	4000	1	82.15	0.08	0.58	0.38	3.14	11.2	38.20	1.709
211	25 de Mayo	4000	2	82.85	0.28	0.76	0.48	0.00	10.8	35.19	1.812
212	Alberti	4000	1	81.50	0.40	0.20	0.42	5.06	11.1	33.78	1.829
213	Arrecifes	4000	1	80.80	0.15	0.06	0.48	0.56	10.8	32.79	1.707
214	Chivilcoy	4000	1	80.80	0.50	0.42	0.64	2.44	10.8	33.35	1.822
215	Chivilcoy	4000	1	80.80	0.14	0.48	0.60	1.24	10.8	34.94	1.781
216	Daireaux	4000	1	80.35	0.74	0.32	0.48	0.74	11.9	36.22	1.757
217	Daireaux	4000	1	81.95	0.52	0.44	0.42	0.00	11.2	36.51	1.835
218	Bolivar	4000	2	83.05	1.10	0.44	0.56	1.28	10.7	37.31	1.712
219	9 de Julio	4000	2	80.35	0.31	1.02	0.28	0.00	11.4	33.54	1.755
220	9 de Julio	4000	1	83.05	0.36	0.36	0.40	0.00	11.1	35.76	1.818
221	San Andrés de Giles	4000	1	81.70	0.12	0.32	0.60	0.84	11.6	31.62	1.794
222	Carlos Casares	4000	1	83.50	0.14	0.44	0.42	0.00	11.4	36.42	1.706
223	Lincoln	4000	1	82.85	0.18	0.32	0.36	0.00	10.8	35.13	1.800
224	Ramallo	4000	2	80.80	2.41	0.12	0.38	0.00	11.0	33.36	1.754
225	San Pedro	4000	2	81.50	1.98	0.36	0.32	1.20	11.1	33.87	1.758
226	Bragado	4000	2	83.05	1.81	0.18	0.50	0.00	10.8	35.84	1.712
227	Rojas	4000	1	79.45	0.82	0.18	0.34	0.00	12.2	29.75	1.954
228	Rojas	4000	1	80.60	0.94	0.38	0.58	0.00	12.0	33.15	1.906
229	Salto	4000	2	79.90	1.58	0.10	0.50	0.68	11.0	33.79	1.929
230	Salto	4000	2	79.45	1.43	0.18	0.38	0.00	11.0	33.33	1.825
231	Pergamino	4000	3	82.85	2.52	0.32	0.38	0.00	11.5	34.82	1.723
232	Pergamino	4000	2	82.60	1.76	0.14	0.42	0.76	11.3	34.41	1.764
233	Chacabuco	4000	1	82.40	0.95	0.26	0.66	1.44	10.8	34.02	1.743
234	Ameghino	4000	1	82.60	0.56	0.34	0.26	1.14	10.9	34.84	1.747
235	Olavarría	4000	1	79.70	0.70	0.42	0.70	0.00	11.5	31.44	1.881

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	Baradero	28.5	10.6	375	70.9	60.2	7.0	8.7	80	87	107	279	0.81	0.578
201	Navarro	27.4	10.3	369	67.3	57.5	7.3	15.2	47	109	92	337	1.18	0.567
202	San Antonio de Areco	28.0	10.4	356	65.5	58.8	9.0	13.5	50	101	89	282	1.13	0.547
203	Gral. Belgrano	26.0	9.6	348	65.9	59.7	9.4	13.0	63	134	58	287	2.31	0.541
204	Saladillo	25.4	9.4	355	65.9	60.8	8.9	13.9	53	135	53	277	2.55	0.537
205	Gral. Villegas	27.1	10.0	360	65.7	58.9	9.5	14.3	49	109	95	340	1.15	0.572
206	Gral. Villegas	25.4	9.4	355	67.5	58.0	10.3	15.4	44	103	96	323	1.07	0.575
207	Gral. Viamonte	25.8	9.5	371	70.5	58.2	11.8	18.1	37	112	73	276	1.53	0.541
208	Gral. Pinto	24.8	9.2	363	67.4	59.6	9.8	13.0	47	121	71	299	1.70	0.535
209	Rivadavia	27.2	10.1	364	65.3	60.0	8.7	13.5	42	106	98	345	1.08	0.580
210	Hipólito Yrigoyen	27.9	10.3	369	66.1	60.5	6.5	9.9	61	111	96	326	1.16	0.531
211	25 de Mayo	25.8	9.6	366	69.1	60.6	9.3	13.4	55	142	56	301	2.54	0.536
212	Alberti	26.9	10.0	368	68.1	59.8	9.4	13.6	63	143	48	282	2.98	0.584
213	Arrecifes	28.0	10.4	356	66.0	58.8	10.9	15.7	36	121	73	315	1.66	0.531
214	Chivilcoy	25.1	9.3	336	69.3	55.2	12.4	21.9	31	98	84	286	1.17	0.536
215	Chivilcoy	23.6	8.7	317	72.1	57.1	11.2	16.8	46	114	69	292	1.65	0.524
216	Daireaux	28.0	10.4	367	69.8	61.6	9.0	11.9	51	119	91	345	1.31	0.618
217	Daireaux	27.3	10.1	367	67.0	60.4	9.8	14.4	37	125	91	376	1.37	0.630
218	Bolivar	27.3	10.1	359	69.3	60.4	6.2	8.4	76	108	84	277	1.29	0.591
219	9 de Julio	27.2	10.1	381	69.6	60.3	8.2	10.7	54	114	74	295	1.54	0.597
220	9 de Julio	27.2	10.1	376	65.7	60.1	8.2	12.0	69	123	79	330	1.56	0.657
221	San Andrés de Giles	27.0	10.0	369	66.1	57.3	8.0	12.3	55	93	95	284	0.98	0.538
222	Carlos Casares	26.9	10.0	345	64.4	59.5	12.7	14.0	57	104	71	261	1.46	0.581
223	Lincoln	25.9	9.6	408	64.8	60.1	9.0	11.0	51	102	70	248	1.46	0.529
224	Ramallo	25.4	9.4	382	63.7	57.8	9.8	13.8	56	98	73	252	1.34	0.557
225	San Pedro	25.8	9.6	415	67.1	58.6	11.3	15.7	42	112	74	291	1.51	0.561
226	Bragado	24.1	8.9	439	58.0	58.8	11.7	16.6	46	126	61	295	2.07	0.538
227	Rojas	27.8	10.3	412	62.7	60.2	8.5	10.8	64	105	73	269	1.44	0.612
228	Rojas	30.1	11.1	443	63.1	59.8	8.5	10.6	68	109	62	246	1.76	0.595
229	Salto	23.4	8.7	360	60.1	58.4	11.5	16.9	39	108	53	224	2.04	0.599
230	Salto	22.7	8.4	345	64.0	56.3	11.9	16.3	46	93	68	228	1.37	0.588
231	Pergamino	27.6	10.2	334	61.6	59.3	9.4	12.1	59	93	84	270	1.11	0.559
232	Pergamino	27.9	10.3	343	61.7	59.5	9.5	11.9	54	101	76	271	1.33	0.572
233	Chacabuco	26.1	9.6	354	64.2	59.1	11.5	14.7	50	97	87	294	1.11	0.550
234	Ameghino	25.3	9.4	348	61.6	57.0	10.5	17.9	33	97	83	289	1.17	0.558
235	Olavarría	25.4	9.4	357	66.7	58.6	10.9	14.5	51	100	85	288	1.18	0.570

Subregion III
Background for the crop

The wheat cultivation had a very acceptable development since, in general lines; the climatic conditions were favorable practically the whole cycle.

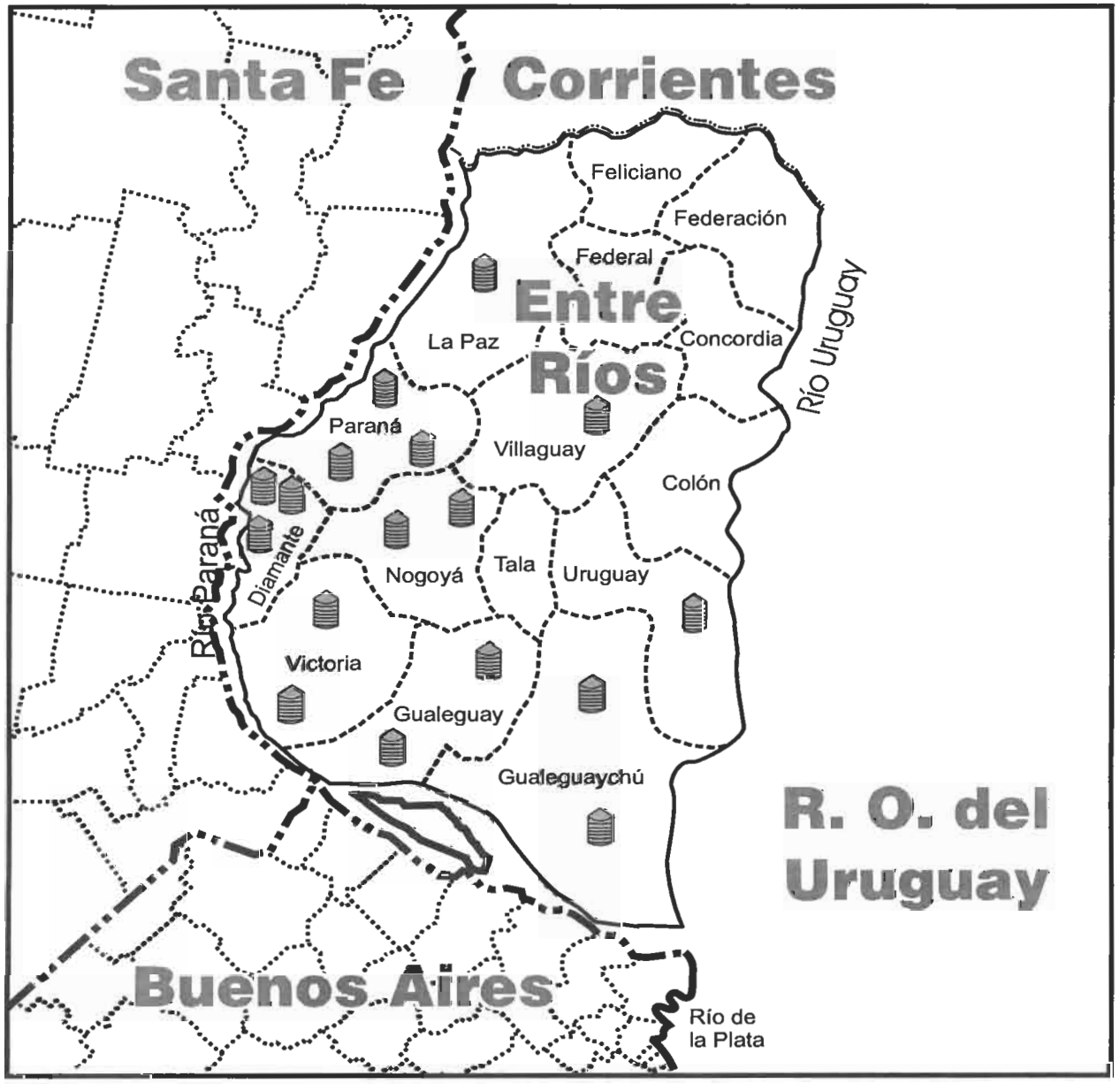
Although the rains had an irregular behavior, there were enough to fill the ground profile in autumn and therefore to create very favorable conditions for the sowing, especially in May or beginning of June for the long cycle cultivars. Important hydric deficiencies were not registered and if there were, these were sporadic and without great impact in the yields.

In general, the average temperatures during the growth and development of the crop were normal for the sub-region. As for frosts, the extension of the danger of occurrence of this climatic adversity and the magnitude of the registered descents of temperature were framed between the values of the historical averages.

With regard to radiation, the conditions were also similar to the average, while with respect to relative humidity atmosphere were observed inferior values to the average in the months of September and October. This low relative humidity diminished the possibilities of diffusion of the more common diseases. The principal was the leaf rust but only with important values in very susceptible varieties. As for the fusariosis of the ear were not registered high infection levels in the whole region.

As for fertilization, although is used in the whole region, the doses are inferior to the cultivation requirements, especially in favorable years when high yields are obtained and the level of grain proteins is diluted.

The yields as well as the grains weight were excellent. This was due to the very good conditions so much in the period when the grains number is defined as in the corresponding to ripening of them.



Each reference represents near 4,000 tns sampled.

Subregion III Wheat

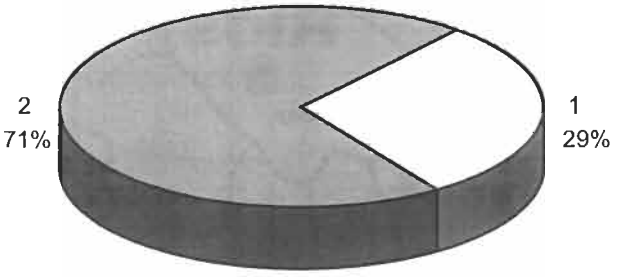
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	78.80	83.50	81.83	0.95	0.01
Total Damaged Kernels (%)	0.20	1.60	0.74	0.42	0.57
Foreign Material (%)	0.10	0.84	0.34	0.22	0.64
Shrunken and Broken Kernels (%)	0.30	0.90	0.60	0.16	0.26
Yellow Berry Kernels (%)	3.98	21.42	10.53	5.63	0.53
Protein (13,5% Moisture) (%)	8.9	10.3	9.6	0.4	0.04
Weight of 1000 Kernels (gr.)	29.70	34.32	31.98	1.23	0.04
Ash (% dry basis)	1.490	1.810	1.634	0.104	0.06

Total damaged kernels includes 0.28% sprouted kernels, 0.04% calcinated kernels, 0.08% insect chewed kernels, 0.31% germen chewed kernels and 0.03% green kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	21.6	25.7	23.1	1.0	0.04
	Dry Gluten (%)	7.8	9.7	8.5	0.5	0.05
	Falling Number (sec.)	343	426	392	21	0.05
	Flour Yield (%)	57.7	66.4	61.7	2.5	0.04
	Ash (dry basis) (%)	0.421	0.547	0.475	0.033	0.07
FARINOGRAM	Water Absorption (14 % H°) (%)	57.2	61.4	58.7	1.1	0.02
	Development Time (min.)	8.3	12.6	9.7	1.0	0.10
	Stability (min.)	11.1	19.2	13.7	1.7	0.12
	Degree of Softening (12 min.)	27	55	44	7	0.16
ALVEOGRAM	P (mm)	83	130	105	11	0.11
	L (mm)	53	87	68	10	0.14
	W Joules x 10^{-4}	237	294	260	17	0.07
	P / L	1.02	2.41	1.55	0.37	0.23

These results were elaborated with 17 composite samples prepared proportionally from 340 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 655,180 tons., the 4.5% of the national total. Were sampled 69,822 tons., the 10.66% 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	4108	1	81.90	0.41	0.60	0.65	10.95	9.5	32.40	1.810
301	Paraná	4030	2	81.70	0.54	0.12	0.57	18.90	9.9	34.32	1.760
302	Paraná	4130	1	81.60	0.61	0.28	0.78	11.93	9.8	31.70	1.810
303	Villaguay	4180	1	82.00	0.47	0.20	0.30	9.42	10.0	31.64	1.510
304	Diamante	4119	2	82.10	0.31	0.37	0.45	20.10	9.2	31.30	1.520
305	Diamante	4159	2	82.10	0.35	0.76	0.50	21.42	9.2	31.30	1.690
306	Diamante	4033	2	82.60	0.43	0.20	0.90	15.70	8.9	31.30	1.710
307	La Paz	4121	2	81.70	0.20	0.84	0.73	5.89	10.3	31.70	1.540
308	Gualeguay	4164	1	81.20	0.57	0.31	0.73	7.55	9.6	31.60	1.490
309	Gualeguay	4154	2	81.40	1.20	0.21	0.54	6.91	9.4	31.10	1.640
310	Gualeguaychú	4152	1	82.30	0.49	0.10	0.38	4.48	9.4	32.90	1.630
311	Gualeguaychú	4071	2	83.50	1.19	0.19	0.63	3.98	9.7	33.40	1.680
312	Nogoyá	4090	2	81.70	1.17	0.20	0.83	5.74	10.0	32.17	1.540
313	Nogoyá	4093	2	78.80	0.55	0.64	0.70	4.98	10.3	29.70	1.580
314	C. del Uruguay	4116	2	81.60	1.05	0.22	0.55	4.57	9.0	30.00	1.500
315	Victoria	4052	2	83.20	1.46	0.27	0.59	13.52	9.2	34.00	1.690
316	Victoria	4050	2	81.80	1.60	0.33	0.46	13.28	9.3	33.30	1.690

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	22.9	8.2	404	64.5	57.9	8.3	11.1	53	90	81	252	1.11	0.457
301	Paraná	24.1	8.6	406	66.4	57.7	9.7	11.7	51	101	64	257	1.58	0.457
302	Paraná	25.7	9.1	411	59.6	58.2	9.8	12.4	49	95	71	246	1.34	0.438
303	Villaguay	23.2	8.6	385	66.2	58.6	9.5	13.6	55	83	81	243	1.02	0.421
304	Diamante	22.4	8.2	416	60.1	58.6	9.1	13.6	47	115	59	263	1.95	0.499
305	Diamante	22.3	8.2	397	62.9	59.3	9.5	13.9	43	116	61	269	1.90	0.484
306	Diamante	21.6	7.8	426	60.8	57.2	9.3	15.3	36	101	62	238	1.63	0.547
307	La Paz	23.3	8.3	401	65.4	59.3	9.3	13.9	39	102	76	272	1.34	0.457
308	Gualeguay	23.2	8.4	409	60.6	60.0	9.8	14.4	36	117	53	237	2.21	0.519
309	Gualeguay	23.5	8.5	379	59.6	59.8	10.3	13.6	39	108	60	250	1.80	0.506
310	Gualeguaychú	23.1	8.5	388	61.1	61.4	10.3	14.1	39	130	54	271	2.41	0.515
311	Gualeguaychú	23.2	9.7	390	59.4	59.3	10.3	13.9	49	113	65	279	1.74	0.477
312	Nogoyá	23.8	8.8	361	58.6	59.1	9.9	13.0	52	108	76	294	1.42	0.480
313	Nogoyá	23.7	8.8	396	62.3	57.2	10.5	13.2	42	89	87	275	1.02	0.429
314	C. del Uruguay	22.2	8.2	394	61.9	58.2	12.6	19.2	27	110	69	285	1.59	0.484
315	Victoria	21.9	8.0	343	57.7	57.8	8.8	12.7	47	103	65	247	1.58	0.452
316	Victoria	21.8	7.9	362	61.7	58.6	8.4	13.1	43	101	65	241	1.55	0.458

Subregion IV
Background for the crop

Lack of rains determined a limited vegetative growing. Nevertheless tillering was adequate because of favorable temperatures during that period. Till the end of September biomass was scarce, in same cases not covering completely the sowing surface.

In general, varieties began stalking at the end of September- beginning of October, around 7-10 days before the common date. Hydric stress caused a reduction of 10 cm in the height of plants.

Environmental conditions had a dramatic change since the last days of September, with rains of 140 mm in October, 80 mm in November and 45 mm in the first half of December, while favorable temperatures continued till the end of the cycle, with the exception of 10 days at the end of November with hydric stress in shallow soils.

Fortunately, temperatures during reproductive period were moderate with only one day with maxim temperature over 30° C in November and 4 days in the first half of December. Neither were there many windy days during grain filling (6 in November and 4 in the first half of December) for which reason the deficit of humidity during the commented period was no so harmful.

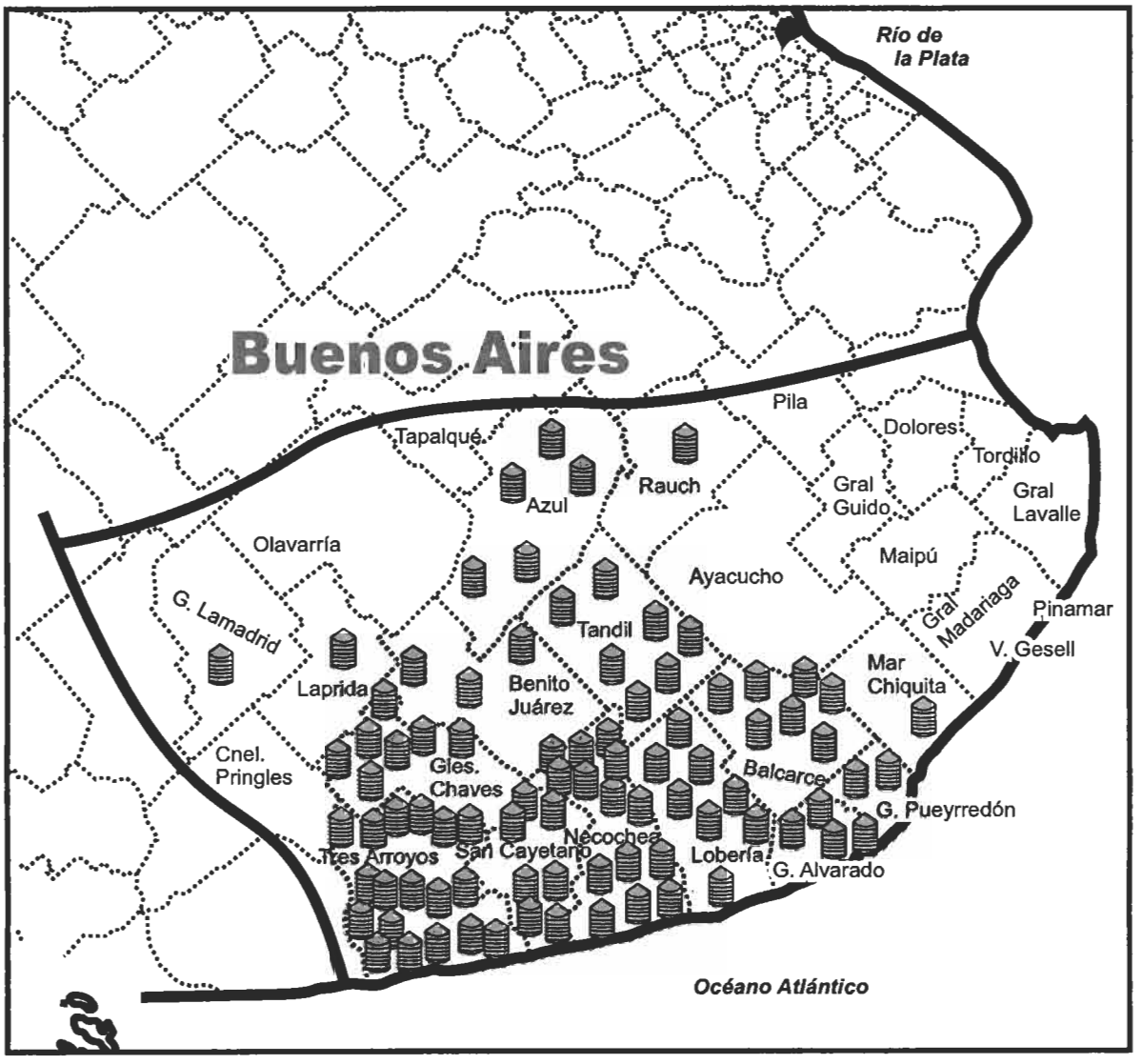
Finally, climatic conditions determined very good yields based in the observed high fertility of the spike. This was negative for some varieties with tendency to shattering, because they were damaged for several windy days occurred at the end of the cycle.

Like in the previous year, the most important leaf diseases were leaf blotch (Septoria tritici) and orange rust (Puccinia triticina). They appeared during heading, but climatic conditions made that the severity increased slowly until November the 10th ; then, both increase their presence due to favorable conditions. This year, again, we observed dryness of flag leaf caused by bacteria blight, but with low incidence.

Decrease of test weight was provoked by the washing of the grain, caused by rains at the end of December, diseases and lack of humidity.

Yields of this crop were the highest since 1997. Like then, long and intermediate cycle varieties generated the best results, as usual, related to its yield potential and sanitary profile.

Subregion IV Wheat



Each reference represents near 4,000 tns sampled

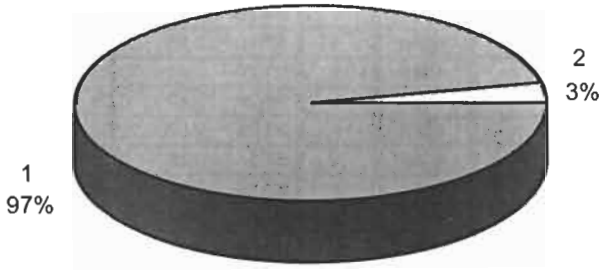
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	79.00	83.50	81.13	0.99	0.01
Total Damaged Kernels (%)	0.00	0.85	0.29	0.22	0.75
Foreign Material (%)	0.10	1.08	0.29	0.15	0.54
Shrunken and Broken Kernels (%)	0.08	1.02	0.41	0.17	0.43
Yellow Berry Kernels (%)	0.38	12.60	4.77	2.70	0.57
Protein (13,5% Moisture) (%)	9.0	11.1	10.1	0.4	0.04
Weight of 1000 Kernels (gr.)	35.04	42.82	39.36	1.59	0.04
Ash (% dry basis)	1.585	1.872	1.715	0.063	0.04

Total damaged kernels includes 0.08% sprouted kernels, 0.08% calcinated kernels, 0.07% insect chewed kernels, 0.05% germen chewed kernels and 0.01% green kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	17.9	27.4	22.4	2.0	0.09
	Dry Gluten (%)	6.1	10.1	7.9	0.9	0.11
	Falling Number (sec.)	333	437	380	21	0.05
	Flour Yield (%)	62.6	74.2	68.4	2.3	0.03
	Ash (dry basis) (%)	0.479	0.654	0.551	0.035	0.06
FARINOGRAM	Water Absorption (14 % H°) (%)	53.0	62.6	57.6	1.6	0.03
	Development Time (min.)	1.4	11.9	8.0	1.7	0.21
	Stability (min.)	1.5	23.9	13.3	3.2	0.24
	Degree of Softening (12 min.)	18	72	44	10	0.23
ALVEOGRAM	P (mm)	66	129	95	12	0.13
	L (mm)	39	111	76	13	0.17
	W Joules x 10^{-4}	146	328	242	36	0.15
	P / L	0.73	2.72	1.26	0.36	0.27

These results were elaborated with 91 composite samples prepared proportionally from 1,727 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 4,754,766 tons., the 32.7% of the national total. Were sampled 347,505 tons., the 7.31% of the subregion production.

Subregion IV 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) (%)
400	Azul	4000	1	80.35	0.44	0.48	0.32	3.44	9.6	40.31	1.648
401	Juarez	4000	1	80.80	0.62	0.29	0.56	3.19	10.5	38.13	1.731
402	Juarez	4000	1	80.80	0.85	0.20	0.47	1.42	10.6	39.16	1.726
403	Juarez	4000	1	80.80	0.69	0.46	0.42	2.26	10.4	38.39	1.743
404	Balcarce	4000	1	80.80	0.38	0.19	0.31	11.07	9.8	42.12	1.728
405	Gral. Alvarado	4000	1	81.70	0.73	0.44	0.22	1.42	10.1	38.20	1.783
406	Rauch	4118	1	80.35	0.29	0.12	0.26	2.76	10.1	39.64	1.755
407	Azul	4056	1	81.25	0.43	0.24	0.43	3.58	9.6	41.22	1.696
408	Azul	4000	1	81.05	0.28	0.20	0.48	1.63	10.9	37.66	1.739
409	Balcarce	4021	1	81.70	0.38	0.13	0.25	2.89	10.1	42.82	1.661
410	Lobería	4050	1	81.70	0.51	0.15	0.28	1.57	10.2	39.92	1.728
411	Lobería	4065	1	81.70	0.41	0.11	0.36	3.96	9.9	40.42	1.663
412	Balcarce	4030	1	81.25	0.47	0.39	0.28	3.41	10.0	40.00	1.791
413	Balcarce	4070	1	81.25	0.58	0.32	0.15	4.82	10.0	41.90	1.872
414	Lobería	4004	1	81.25	0.26	0.15	0.36	4.23	9.7	38.85	1.674
415	Lobería	4070	1	82.15	0.51	0.16	0.26	2.13	9.9	40.10	1.623
416	Azul	4000	1	83.05	0.52	0.19	0.36	0.38	10.7	39.96	1.851
417	Azul	4000	1	83.05	0.78	0.25	0.21	3.15	10.5	40.19	1.754
418	Lobería	4000	1	81.70	0.56	0.26	0.18	1.29	10.4	39.70	1.624
419	Balcarce	4000	1	80.35	0.49	0.43	0.58	3.25	10.1	38.62	1.828
420	Balcarce	4000	1	81.70	0.55	0.34	0.27	4.20	10.6	39.78	1.780
421	Balcarce	4000	1	82.15	0.29	0.28	0.36	3.08	10.4	41.30	1.766
422	Gral. Alvarado	4000	1	81.70	0.46	0.52	0.38	1.98	10.9	39.61	1.830
423	Gral. Alvarado	4000	1	82.60	0.37	0.38	0.41	2.37	10.9	39.30	1.710
424	Gral. Pueyrredón	4000	1	82.60	0.52	0.24	0.14	2.61	10.5	41.88	1.759
425	Gral. Pueyrredón	4000	1	83.05	0.27	0.14	0.28	5.40	10.6	42.10	1.762
426	Mar Chiquita	4000	1	82.15	0.39	0.39	0.36	2.27	10.6	40.62	1.641
427	Gral. Alvarado	4000	1	81.25	0.80	0.46	0.54	3.10	10.6	38.12	1.796
428	Lobería	4000	2	79.25	0.42	0.65	0.39	6.33	9.6	39.83	1.615
429	Lobería	4000	1	79.45	0.24	0.16	0.30	2.10	9.7	39.96	1.759
430	Lobería	4000	1	81.95	0.41	0.24	0.26	0.56	11.0	37.65	1.812
500	General Lamadrid	4000	1	79.70	0.26	0.50	0.74	3.60	11.1	35.04	1.855
501	General Lamadrid	1173	1	79.00	0.14	0.24	0.50	1.80	11.0	37.76	1.813
503	Gonzalez Chaves	3023	1	81.70	0.24	0.48	0.30	3.60	10.4	38.56	1.824
504	Gonzalez Chaves	2560	1	81.25	0.12	0.34	0.68	5.60	9.6	38.32	1.688
505	Gonzalez Chaves	4000	1	81.25	0.60	0.14	0.24	2.80	10.1	40.54	1.707
506	Gonzalez Chaves	4000	1	79.45	0.44	0.26	0.38	5.20	10.1	39.26	1.685
507	Gonzalez Chaves	4002	1	80.80	0.12	0.22	0.08	3.80	10.1	40.74	1.720
508	Gonzalez Chaves	4004	1	79.70	0.24	0.12	0.18	2.20	9.9	39.92	1.738
509	Gonzalez Chaves	4003	1	79.90	0.00	0.20	0.42	6.40	10.1	40.51	1.666
510	Gonzalez Chaves	4002	1	81.25	0.12	0.18	0.38	5.60	10.0	38.24	1.739
511	Laprida	4001	1	79.00	0.74	0.32	0.72	4.20	10.7	38.63	1.793
512	Necochea	4000	1	79.70	0.06	0.22	0.32	7.30	9.9	39.29	1.676
513	Necochea	4000	1	81.70	0.56	0.18	0.62	6.20	10.2	39.67	1.680
514	Necochea	4000	1	81.25	0.18	0.24	0.56	6.20	10.2	39.37	1.773

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) (%)
515	Necochea	4002	1	81.25	0.06	0.20	0.42	0.80	10.8	40.74	1.736
516	Necochea	4001	1	83.50	0.46	0.38	0.50	3.80	10.9	39.45	1.759
517	Necochea	4000	1	81.70	0.60	0.26	0.46	5.20	10.5	39.41	1.750
518	Necochea	4001	1	80.35	0.22	0.20	0.38	4.80	10.0	38.75	1.686
519	Necochea	4000	1	80.35	0.12	0.22	0.54	9.20	9.6	39.72	1.585
520	Necochea	4013	1	81.25	0.00	0.20	0.42	8.40	9.5	40.06	1.670
521	Necochea	4003	1	80.60	0.12	0.30	0.54	8.20	9.3	42.15	1.661
522	Necochea	4008	1	81.25	0.30	0.24	0.42	7.20	9.9	39.94	1.658
523	Necochea	4021	1	80.35	0.00	0.44	0.44	5.40	9.8	40.14	1.654
524	Necochea	4017	1	81.05	0.08	0.22	0.58	6.60	10.2	38.73	1.710
525	Necochea	4016	1	80.35	0.18	0.28	0.14	3.80	10.1	40.29	1.709
526	San Cayetano	4003	1	82.60	0.16	0.36	0.58	2.40	10.1	36.87	1.702
527	San Cayetano	2883	1	80.80	0.06	0.16	0.42	4.00	9.4	39.71	1.682
528	San Cayetano	4000	1	80.35	0.00	0.22	0.16	12.60	9.6	40.51	1.622
529	San Cayetano	4003	1	80.35	0.12	0.36	0.36	8.00	9.8	39.48	1.615
530	San Cayetano	4011	1	80.80	0.24	0.26	0.18	11.20	9.6	41.45	1.633
531	San Cayetano	4001	1	80.80	0.12	0.20	0.36	8.80	9.9	39.78	1.606
532	San Cayetano	4001	1	81.95	0.10	0.18	0.34	6.60	10.1	39.98	1.628
533	San Cayetano	4000	1	82.15	0.16	0.32	0.18	3.40	10.5	41.86	1.653
534	Tandil	4000	1	81.70	0.06	0.24	0.22	5.20	10.1	39.08	1.729
535	Tandil	4000	1	80.80	0.46	0.10	0.28	5.10	10.1	39.94	1.647
536	Tandil	4004	1	79.45	0.22	0.24	0.34	7.10	10.2	39.54	1.688
537	Tandil	4000	1	80.35	0.28	0.26	0.60	6.80	10.1	40.40	1.720
538	Tandil	4005	1	79.00	0.18	0.36	0.66	6.00	10.1	40.91	1.772
539	Tandil	4012	1	81.50	0.00	0.22	0.60	6.80	10.1	39.75	1.688
540	Tandil	1715	1	81.50	0.12	0.30	0.40	5.20	10.5	39.69	1.782
541	Tandil	2004	1	79.00	0.06	0.16	0.26	4.20	9.9	40.49	1.661
542	Tandil	1754	1	79.90	0.52	0.22	0.42	3.20	10.5	40.74	1.861
543	Tres Arroyos	4006	1	81.70	0.00	0.28	0.54	4.20	10.1	36.87	1.774
544	Tres Arroyos	4001	1	80.35	0.06	0.16	0.44	1.20	10.3	36.39	1.676
545	Tres Arroyos	4003	1	80.80	0.26	0.20	0.40	3.80	10.4	37.51	1.725
546	Tres Arroyos	4009	1	81.05	0.12	0.30	0.48	4.20	10.5	35.66	1.751
547	Tres Arroyos	4002	1	82.40	0.00	0.36	0.26	6.80	9.6	38.33	1.676
548	Tres Arroyos	4022	1	81.25	0.24	0.12	0.60	4.40	10.0	39.08	1.726
549	Tres Arroyos	4008	1	82.15	0.00	0.30	0.70	8.20	9.5	38.95	1.704
550	Tres Arroyos	4009	2	82.15	0.12	1.08	0.52	3.60	9.7	39.09	1.669
551	Tres Arroyos	3360	1	81.25	0.28	0.18	0.74	5.40	10.1	38.56	1.689
552	Tres Arroyos	3998	1	82.15	0.06	0.28	0.58	8.20	9.4	35.36	1.766
553	Tres Arroyos	4003	1	80.80	0.00	0.32	0.28	11.00	9.0	39.07	1.626
554	Tres Arroyos	2066	1	81.95	0.34	0.12	0.28	5.80	10.1	36.50	1.785
555	Tres Arroyos	4014	1	83.05	0.08	0.32	0.86	11.60	9.6	35.90	1.761
556	Tres Arroyos	4001	1	80.35	0.36	0.54	0.52	9.40	10.0	37.50	1.672
557	Tres Arroyos	4000	2	79.90	0.14	0.82	1.02	2.20	10.4	35.86	1.693
558	Tres Arroyos	2273	1	80.80	0.24	0.12	0.52	5.60	10.6	37.39	1.756
559	Tres Arroyos	4000	1	81.50	0.00	0.50	0.54	3.80	10.0	37.69	1.713
560	Tres Arroyos	4000	1	81.25	0.42	0.10	0.20	1.80	10.1	40.38	1.655

Subregion IV 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) (%)
400	Azul	22.4	8.3	338	71.3	55.8	8.8	13.5	51	96	71	223	1.35	0.544
401	Juarez	24.4	9.0	378	69.0	57.9	8.2	12.0	55	107	73	257	1.47	0.566
402	Juarez	24.1	8.9	373	67.0	58.0	7.1	11.9	55	104	70	237	1.49	0.560
403	Juarez	24.3	9.0	347	66.3	57.9	8.3	13.7	46	95	88	258	1.08	0.565
404	Balcarce	22.1	8.2	333	69.2	54.6	9.3	17.0	36	106	39	164	2.72	0.507
405	Gral. Alvarado	23.9	8.9	385	67.7	58.9	8.3	12.1	48	114	60	223	1.90	0.610
406	Rauch	22.6	8.4	369	69.8	55.5	9.7	18.7	33	102	71	240	1.44	0.571
407	Azul	21.7	8.0	378	71.2	54.1	6.0	13.8	33	110	56	224	1.96	0.545
408	Azul	25.1	9.3	334	68.5	56.8	11.4	17.2	48	107	82	297	1.30	0.552
409	Balcarce	22.5	8.3	386	69.0	57.6	10.6	16.8	44	129	71	301	1.82	0.533
410	Lobería	24.3	9.0	378	67.5	58.7	8.9	11.7	58	110	87	289	1.26	0.557
411	Lobería	21.8	8.1	370	69.9	57.6	9.0	13.1	49	112	68	251	1.65	0.599
412	Balcarce	23.7	8.8	377	69.2	58.6	9.3	14.0	46	114	66	258	1.73	0.530
413	Balcarce	22.7	8.4	389	68.9	58.3	8.4	13.4	53	120	69	278	1.74	0.565
414	Lobería	23.1	8.6	382	68.7	58.2	7.9	12.7	55	96	92	272	1.04	0.611
415	Lobería	23.9	8.9	413	69.7	58.3	7.1	14.7	45	107	89	298	1.20	0.601
416	Azul	25.1	9.3	431	68.3	57.9	10.9	17.8	43	117	77	297	1.52	0.654
417	Azul	24.6	9.1	395	65.0	59.0	7.4	15.5	40	106	77	273	1.38	0.631
418	Lobería	25.2	9.3	428	70.2	57.0	8.9	15.8	46	92	81	244	1.14	0.600
419	Balcarce	23.3	8.6	394	66.3	57.1	9.8	17.3	40	103	53	199	1.94	0.564
420	Balcarce	23.6	8.7	405	66.4	56.8	11.9	17.7	46	90	96	272	0.94	0.552
421	Balcarce	25.4	9.4	378	66.8	58.9	5.3	12.9	41	98	78	244	1.26	0.549
422	Gral. Alvarado	25.4	9.4	371	66.6	56.8	8.9	17.0	44	94	85	253	1.11	0.595
423	Gral. Alvarado	27.4	10.1	386	67.2	59.6	9.6	13.3	50	96	77	247	1.25	0.574
424	Gral. Pueyrredón	23.7	8.8	382	66.3	58.2	7.7	14.1	47	97	66	219	1.47	0.551
425	Gral. Pueyrredón	25.2	9.3	394	66.0	58.6	8.8	14.2	51	101	68	230	1.49	0.557
426	Mar Chiquita	24.0	8.9	364	67.1	55.9	11.5	19.4	41	95	72	234	1.32	0.533
427	Gral. Alvarado	23.7	8.8	352	67.4	53.9	11.3	23.9	23	96	65	220	1.48	0.595
428	Lobería	20.9	7.7	361	70.1	53.5	1.4	1.5	72	77	53	146	1.45	0.522
429	Lobería	21.8	8.1	358	65.3	54.4	1.7	2.2	59	74	61	151	1.21	0.559
430	Lobería	25.8	9.5	350	65.3	56.8	8.7	14.3	58	80	89	223	0.90	0.538
500	General Lamadrid	25.9	8.8	385	67.0	59.0	6.6	9.2	66	81	111	281	0.73	0.579
501	General Lamadrid	25.5	8.8	365	67.5	58.3	7.7	11.2	48	83	96	267	0.86	0.567
503	Gonzalez Chaves	21.9	7.7	369	67.4	59.1	7.1	12.2	42	101	91	314	1.11	0.560
504	Gonzalez Chaves	20.8	7.1	370	68.7	57.0	6.6	10.3	53	84	81	228	1.04	0.566
505	Gonzalez Chaves	23.4	7.7	388	70.6	57.8	6.7	9.9	58	87	91	254	0.96	0.547
506	Gonzalez Chaves	22.3	7.4	392	71.7	58.8	7.1	11.9	47	88	88	255	1.00	0.582
507	Gonzalez Chaves	23.2	7.8	378	71.9	59.2	7.3	10.0	57	94	83	261	1.13	0.568
508	Gonzalez Chaves	20.4	6.9	382	72.5	58.6	8.0	11.8	45	97	68	231	1.43	0.588
509	Gonzalez Chaves	21.6	7.2	346	72.0	57.7	6.4	10.1	47	90	75	221	1.20	0.571
510	Gonzalez Chaves	21.0	7.1	353	72.6	59.4	8.2	11.2	42	103	69	249	1.49	0.566
511	Laprida	24.4	8.2	385	71.2	58.2	6.9	10.9	56	84	92	263	0.91	0.580
512	Necochea	20.2	6.8	375	71.1	57.4	6.6	12.5	42	96	63	221	1.52	0.586
513	Necochea	22.2	7.4	383	70.4	59.1	7.4	11.3	46	99	77	265	1.29	0.603
514	Necochea	22.5	7.5	437	71.4	59.4	6.0	10.1	50	99	71	245	1.39	0.554

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) (%)
515	Necochea	25.2	8.3	404	70.8	60.1	7.4	11.5	54	105	72	274	1.46	0.562
516	Necochea	25.9	8.7	411	64.3	59.4	8.8	11.8	46	93	98	302	0.95	0.526
517	Necochea	23.3	7.7	380	67.6	58.7	9.6	14.4	42	99	75	271	1.32	0.528
518	Necochea	21.4	7.2	379	67.2	58.2	9.3	13.8	39	92	80	250	1.15	0.547
519	Necochea	20.0	6.7	388	68.2	55.5	9.0	14.1	39	79	78	204	1.01	0.505
520	Necochea	20.5	6.9	399	68.4	56.3	7.9	13.2	39	81	73	199	1.11	0.503
521	Necochea	19.2	6.5	354	69.4	56.4	9.1	15.1	32	90	57	185	1.58	0.492
522	Necochea	20.0	6.8	369	67.6	59.1	7.6	11.3	49	103	56	211	1.84	0.489
523	Necochea	20.2	6.9	380	70.7	57.6	6.4	15.4	27	109	47	202	2.32	0.483
524	Necochea	21.5	7.3	402	70.5	58.0	9.4	15.2	32	104	73	267	1.42	0.504
525	Necochea	20.6	7.1	401	70.5	58.9	8.6	13.8	36	104	68	251	1.53	0.509
526	San Cayetano	22.9	7.7	398	62.6	58.9	9.2	17.0	18	109	65	266	1.68	0.479
527	San Cayetano	19.1	6.6	372	66.0	56.3	7.1	15.2	30	83	74	213	1.12	0.519
528	San Cayetano	20.0	6.9	335	66.5	56.3	7.4	11.6	39	86	64	198	1.34	0.523
529	San Cayetano	20.1	7.0	354	68.6	56.2	8.2	13.6	35	89	54	183	1.65	0.486
530	San Cayetano	19.3	6.7	358	69.3	56.3	8.7	16.4	27	92	62	202	1.48	0.488
531	San Cayetano	20.8	7.1	384	69.8	57.2	8.0	13.0	38	91	72	219	1.26	0.509
532	San Cayetano	20.7	7.1	351	70.5	58.7	5.6	11.2	42	110	55	223	2.00	0.507
533	San Cayetano	23.5	7.9	395	67.5	62.6	8.7	13.7	29	128	73	328	1.75	0.538
534	Tandil	22.2	7.5	383	69.8	58.6	6.2	9.3	60	90	72	223	1.25	0.568
535	Tandil	22.9	7.7	367	71.8	58.4	5.9	10.2	56	85	85	241	1.00	0.569
536	Tandil	23.1	7.9	385	63.9	56.7	5.8	9.0	61	72	94	213	0.77	0.532
537	Tandil	22.0	7.4	368	64.4	57.4	7.3	11.3	47	83	69	201	1.20	0.523
538	Tandil	22.4	7.5	368	65.2	56.7	6.4	10.6	51	77	89	217	0.87	0.528
539	Tandil	22.3	7.5	374	67.6	57.3	7.3	11.4	45	84	82	226	1.02	0.529
540	Tandil	22.7	7.7	404	67.7	58.3	10.7	14.9	33	96	85	277	1.13	0.531
541	Tandil	17.9	6.9	376	73.2	56.1	6.2	10.8	44	79	74	191	1.07	0.523
542	Tandil	22.8	7.7	408	64.8	58.9	7.6	11.2	35	87	84	237	1.04	0.520
543	Tres Arroyos	21.5	7.4	400	69.6	58.7	8.5	14.0	37	98	82	279	1.20	0.573
544	Tres Arroyos	21.8	7.5	407	66.0	56.9	9.3	13.9	45	88	92	281	0.96	0.515
545	Tres Arroyos	22.7	7.6	370	68.2	58.3	9.4	15.2	36	101	75	276	1.35	0.539
546	Tres Arroyos	22.8	7.8	400	69.5	57.8	10.1	17.0	31	93	89	287	1.04	0.512
547	Tres Arroyos	19.1	6.5	374	68.6	58.0	8.5	15.3	31	99	60	223	1.65	0.592
548	Tres Arroyos	21.0	7.2	397	66.5	58.4	8.1	13.8	36	92	82	254	1.12	0.567
549	Tres Arroyos	19.4	6.6	386	66.8	57.2	6.7	11.6	44	93	67	220	1.39	0.564
550	Tres Arroyos	19.9	6.9	396	66.5	56.9	9.4	17.4	29	87	79	238	1.10	0.542
551	Tres Arroyos	20.8	7.2	391	69.4	58.0	8.1	14.6	36	103	75	277	1.37	0.555
552	Tres Arroyos	19.0	6.5	402	69.3	55.1	7.1	12.7	37	75	86	202	0.87	0.556
553	Tres Arroyos	17.9	6.1	363	66.7	53.0	8.8	14.2	33	66	89	182	0.74	0.537
554	Tres Arroyos	20.3	7.2	394	67.7	58.5	9.8	15.6	25	101	85	292	1.19	0.573
555	Tres Arroyos	19.0	6.7	372	65.2	55.7	8.8	17.8	23	78	92	231	0.85	0.528
556	Tres Arroyos	24.1	8.0	385	68.9	56.6	7.5	12.5	38	81	93	239	0.87	0.561
557	Tres Arroyos	21.3	7.2	368	66.7	57.5	8.1	11.7	57	82	91	242	0.90	0.581
558	Tres Arroyos	23.8	7.9	393	67.6	60.0	6.8	9.7	56	97	93	288	1.04	0.598
559	Tres Arroyos	22.2	7.5	395	65.0	56.8	7.4	12.6	50	82	101	268	0.81	0.554
560	Tres Arroyos	21.7	7.3	386	74.2	59.4	7.2	9.9	57	93	75	236	1.24	0.567

Climatology 2003/2004

Climate and Wheat crop 2003 – 2004 in Argentina

Report elaborated in accordance with the terms of the agreement between the National Committee of Space Activities and the Federation of Country Elevators.

Juan A. Forte Lay – José L. Aiello.

We are going to describe the climate behavior during the 2003-2004 wheat crop; for that purpose we will use a method to estimate the water reserves in the soil and its anomalies. The last ones, which we denominate Classification of the Soil Humidity, were figured out as monthly average during the whole wheat cycle, although they come from a daily analysis and express the degree of separation from the habitual conditions particular to each region and period of the year. Humidity classification is a suitable climate indicator, since it summarizes the behavior of the most relevant climate variables, such as the space and time distributions of rain and its interaction with the evaporation and transpiration, which depend in turn on the environment, radiation, the wind and atmospheric humidity.

The maps are monthly in this case, and they contain a political subdivision by district or department, which can be associated with the well known wheat zones of the country and which only represent the five pampas provinces here. The presentation of the sequence of soil humidity map classification, and a description of its behavior let the reader have a clear idea of the climate evolution during the wheat campaign. We must point out that the habitual or normal conditions are not always the most appropriate for the crop in all the regions and seasons of the year; thus, during the winter and beginning of spring, normal conditions could result in hydrological deficiencies in western and north-western areas, such as the V North wheat subregion; instead, those same conditions could be representing situations of certain water excess in the soil to the east-center and south-east of the wheat region.

MAY 2003

The map shows a beginning of the wheat campaign with restrictions in soil moisture in all the southeast of the region and more severe in the southwest of Buenos Aires during plough season and preparation of sowing bed, although in time to carry it out. Almost all the north and northeast sector had normal conditions or soil moisture was above normal. This represented a previous advantage to sowing in the west sector of this zone, marginal regarding wheat, but it was inconvenient to the east of Santa Fe and Entre Ríos, where the situation showed considerable excesses.

JUNE 2003

A similar situation to that of the previous month is observed. The southeast sector of the area had negative anomalies, more intense in the southeast of Buenos Aires, where they caused concern. The situation of the rest of the region was almost normal, with more moisture than normal, particularly in the northeast marginal zone, to the north of Córdoba city, which represented an advantage regarding sowing. Conditions were negative in the southeast of this province, although some rains improved the situation; the same took place in La Pampa, with more negative conditions near the capital of the province. The rest of the region showed a development of soil moisture favorable to preparation tasks and sowing.

JULY 2003

Even when there were heavy rains to the end of the month, which turned to be excessive in the center and north of Buenos Aires, the monthly average of soil moisture was not far away from normal and good weather at the beginning of the month allowed sowing. Rains were insufficient to improve the situation in the southwest of Buenos Aires, although in some zones they moistened the superficial layer which made some sows possible. A negative general situation continued in La Pampa, making sowing tasks more difficult. There was a tendency to normality in the rest of the area.

AUGUST 2003

The negative condition continued in the southwest sector, although some normal rains helped to improve the situation, mostly to the east of the affected zone (Tres Arroyos). The initial development of crops in La Pampa was poor, with an irregular growth in the zone of Santa Rosa. There was good soil moisture in Santa Fé and Entre Ríos, although a little excessive. Normal development in the north, center and east of Buenos Aires.

SEPTEMBER 2003

Sown fields at the northeast of the wheat region continued to develop with normal to superior than normal moisture conditions. The situation was negative in all the southeast, particularly in the southeast of Buenos Aires and in La Pampa. During the sowing season the previously favorable conditions worsen in the center and south of Córdoba, drying winds contributed to increase drought conditions.

OCTOBER 2003

At the beginning of the month the situation improved due to heavy rains in the drought area of the southeast of Buenos Aires and southeast of La Pampa, which allowed for a partial recovery of the crops. A stripe of intense drought in the center and west of the region, in a key moment of wheat, was very unfavorable for crops, which in many cases were lost and used for forage. The situation was worst in the west sector: south of Córdoba, San Luis, north of La Pampa and administrative areas of General Villegas and Rivadavia in the northeast of Buenos Aires, due to low moisture values represented by this deficiency. This same anomaly represented absolute soil moisture values more acceptable for the east. Good water development in the northeast and southeast of the area.

NOVEMBER 2003

The severe deficit in al the south of Córdoba, San Luis, north of La Pampa and neighboring regions continued to damage the last stage of the previously affected crops. The southwest, center and east and southeast of Buenos Aires and southeast of La Pampa had good moisture. Normal to drier than usual conditions in Santa Fé, Entre Ríos and east of Córdoba were beneficial for the beginning of threshing tasks.

DECEMBER 2003

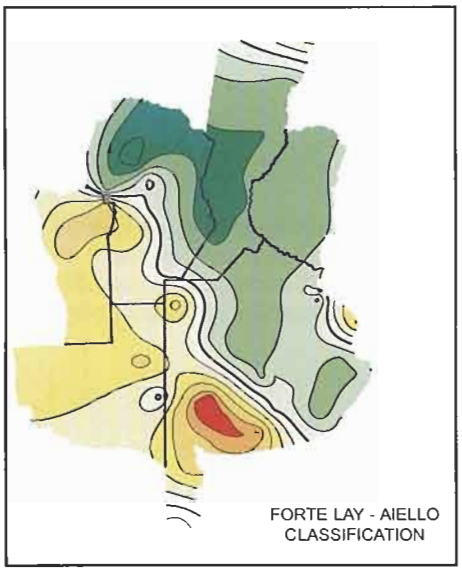
Conditions of more moisture than usual prevailed to the east of the region, particularly in the east-southeast of Buenos Aires, which summed up to the presence of fresh days prevented crop burning in this region, where the harvest is normally mostly delayed. Conditions of generally drier than usual soil in the rest of the wheat area favored ripening and harvest.

JANUARY 2004

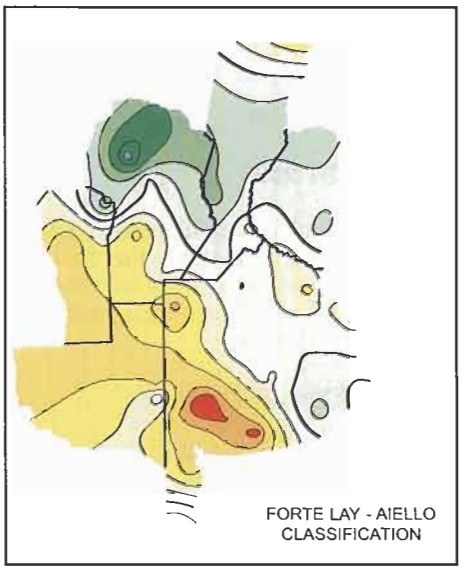
The map of this month average water situation is added as it is a harvest season in the southeast extreme of the area. Normal to drier conditions in this zone favored collection tasks.

SOIL HUMIDITY CLASSIFICATIO

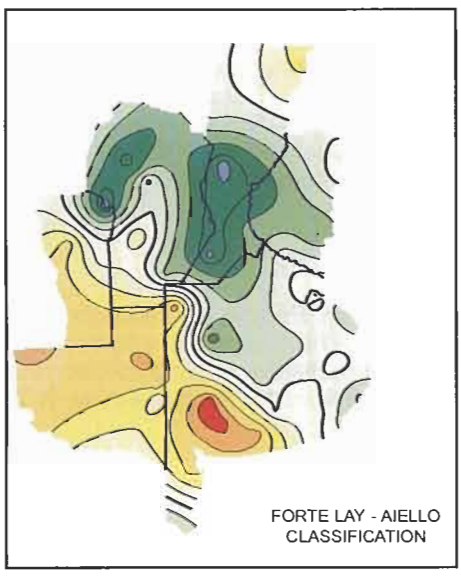
MAY 2003



JUNE 2003



AUGUST 2003



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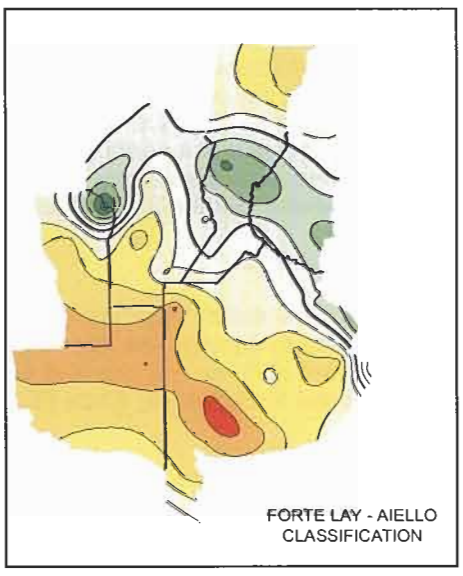

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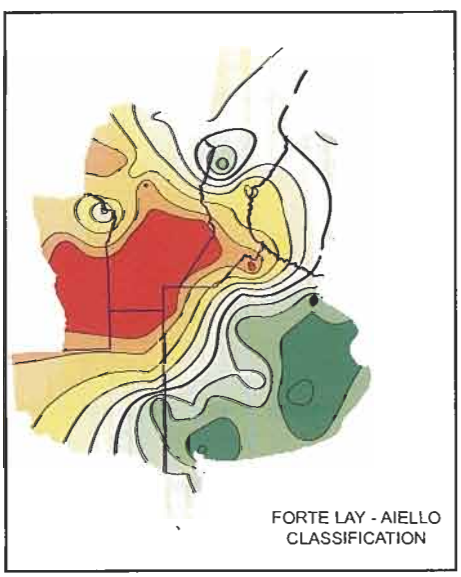

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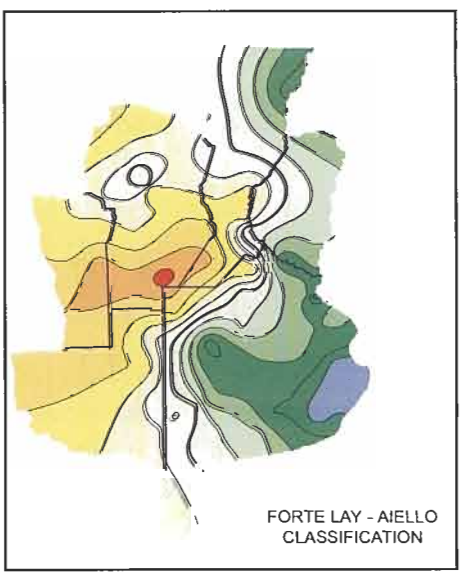
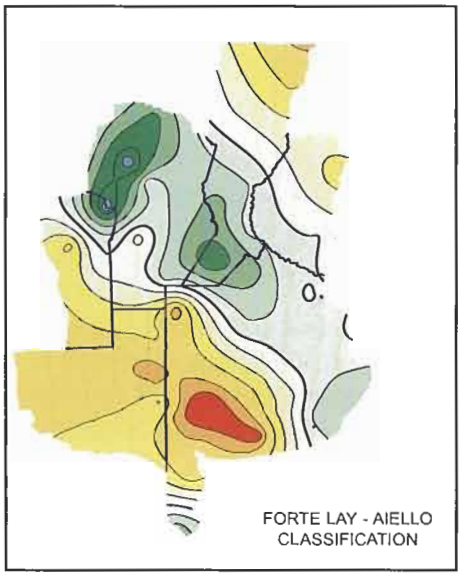
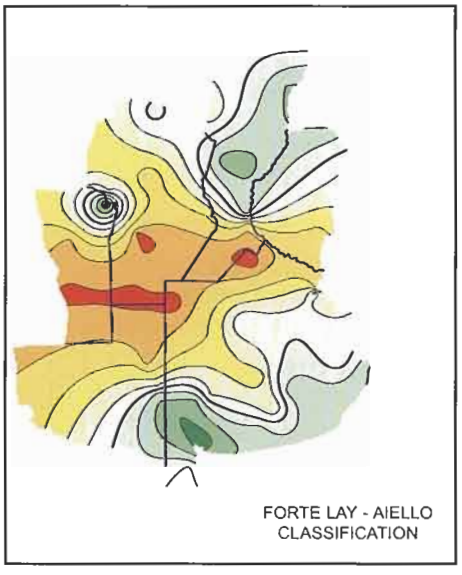


)03/2004 WHEAT CROP

JULY 2003

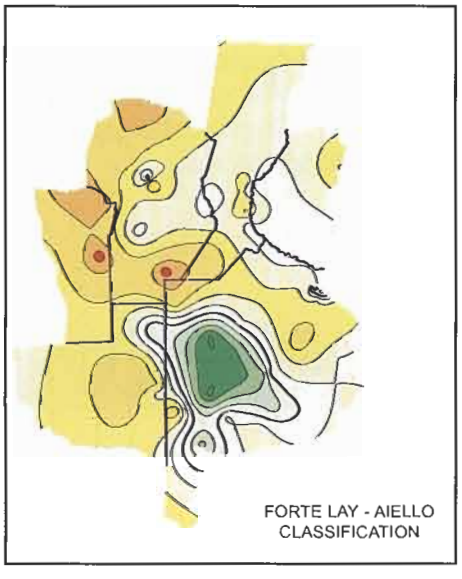


OCTOBER 2003



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 2004



Subregion V North
Background for the crop

The good availability of water at the soil in general determined that many producers turned to carry out a winter cultivation in the month of June, being the second more important intent of wheat sowing registered in the county, after the cycle 2000/2001.

In watering and fertilization conditions like indicators of the environmental potentiality, superior yields to those achieved during the campaign 2002 were observed (6,740 vs. 5,100 kg/ha), according to the Agricultural Sciences University of the UNC data. This would be explained by the values of average temperature registered during the spikes growth period. These were lower than in the campaign 2002 (2°C and 3,2°C in Manfredi and Córdoba respectively) and with similar solar radiation conditions between the two campaigns. The availability of water at sowing time together with the previous mentioned thermal conditions collaborated for the achievement of good yields during the campaign 2003. However, there were low pluviometric registrations during the cultivation cycle, and this stress didn't let to achieve better yields.

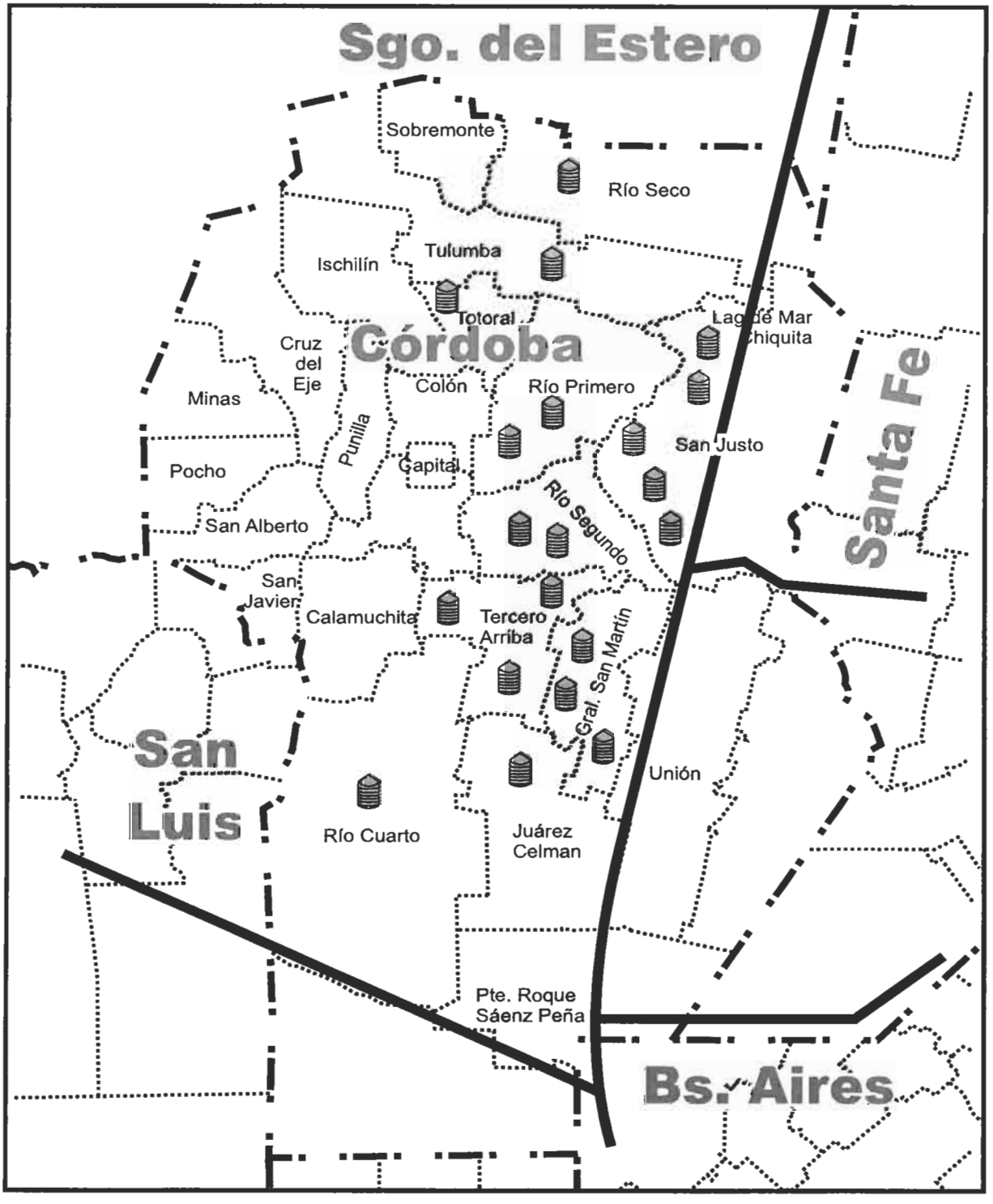
For lack of conditions, there were losses of around 14% of the implanted total surface. The lack of additional water during the spike ripening made an average of 24,1 quintals by hectare was obtained, overcoming the 20,4 quintals average of the last cycle.

In the center-north area of Córdoba, the yields in unirrigated land showed a great disparity. The lots carried out with good technology (top varieties, fertilization) and that had water availability at the moment of the sowing, showed better yields (up to 35 qq), and in lots where the water was not enough, the yields were of 10 qq/ha. In the departments of General Roca and Roque Sáenz Peña the yields did not overcome the 20 qq. In several farms, the sparse wheat served as feed to the bovine livestock.

In spite of the low average yield, the harvested wheat was very good as for quality and health. In most of the situations were achieved bigger hectoliter weight to the grade commercialization basis (76 kg/hl – Grade 2) and some varieties were inside the Grade 1 (>79 kg/hl). The protein was high in general, being placed above the level commercialization base (11%).

With regard to the diseases, it was characterized to present infections of low intensity that did not have economic incidence. This was associated to not very favorable environmental conditions during the cycle. The main detected pathogenic were the causal of Yellow Spot (Drechslera tritici-repentis) and Leaf or Orangey Rust (Puccinia recondita f. sp. Tritici). With regard to the Fusariosis of the spike, although their presence was observed, the climatic conditions during anthesis did not allow its development.

Subregion V North Wheat



Each reference represents near 4,000 tns sampled

Subregion V North Wheat

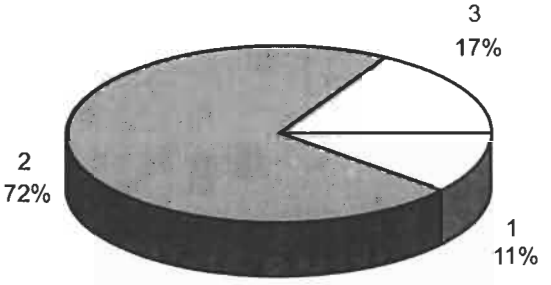
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.10	81.95	79.56	1.72	0.02
Total Damaged Kernels (%)	0.30	2.58	0.66	0.41	0.62
Foreign Material (%)	0.06	0.54	0.23	0.12	0.53
Shrunken and Broken Kernels (%)	0.78	2.60	1.73	0.53	0.30
Yellow Berry Kernels (%)	0.00	2.50	0.30	0.61	2.06
Protein (13,5% Moisture) (%)	10.9	12.6	11.7	0.5	0.04
Weight of 1000 Kernels (gr.)	25.10	31.60	29.42	1.56	0.05
Ash (% dry basis)	1.725	1.882	1.812	0.456	0.25

Total damaged kernels includes 0.06% frosty kernels, 0.09% sprouted kernels, 0.01% calcinated kernels, 0.33% insect chewed kernels and 0.17% green kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	21.0	29.8	26.0	2.4	0.09
	Dry Gluten (%)	7.9	10.6	9.5	0.7	0.08
	Falling Number (sec.)	416	484	452	18	0.04
	Flour Yield (%)	58.9	72.6	63.2	3.6	0.06
	Ash (dry basis) (%)	0.527	0.673	0.602	0.041	0.07
FARINOGRAM	Water Absorption (14 % H°) (%)	54.7	62.2	59.8	1.4	0.02
	Development Time (min.)	6.5	17.2	10.6	2.8	0.26
	Stability (min.)	7.0	40.8	18.2	8.5	0.47
	Degree of Softening (12 min.)	10	68	32	17	0.53
ALVEOGRAM	P (mm)	68	128	111	13	0.12
	L (mm)	56	103	75	11	0.15
	W Joules x 10^{-4}	212	378	304	39	0.13
	P / L	0.66	2.27	1.48	0.37	0.24

These results were elaborated with 18 composite samples prepared proportionally from 81 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 1,196,540 tons., the 8.2% of the national total. Were sampled 79,314 tons., the 6.63% 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	Río IV	3700	2	78.80	1.68	0.36	2.40	0.10	12.2	28.40	1.787
601	Río IV	1000	3	77.90	2.58	0.44	2.04	0.10	11.2	28.00	1.832
602	Totoral	4000	1	81.50	0.84	0.14	0.90	0.00	12.6	31.00	1.879
603	Tulumba	4000	1	81.25	0.50	0.14	0.78	0.00	12.0	31.50	1.854
604	Río Seco	4000	2	80.60	0.58	0.16	1.28	0.00	12.0	31.60	1.865
605	Gral. San Martín	6000	2	81.05	0.46	0.20	1.80	0.40	11.9	29.20	1.830
606	Río II	4000	2	78.15	0.32	0.30	2.34	1.30	11.1	25.10	1.750
607	San Justo	6000	2	79.90	0.54	0.54	2.00	0.00	11.6	29.00	1.882
608	San Justo	6000	2	81.95	0.44	0.30	2.14	0.00	11.4	30.30	1.840
609	Río I	4000	2	79.90	0.36	0.14	1.94	0.10	12.0	30.60	1.771
610	Río I	4000	3	80.60	0.36	0.14	2.60	0.10	11.6	30.10	1.818
611	Juárez Celman	4114	3	79.90	1.32	0.10	2.60	0.30	11.5	28.60	1.877
612	Río II	4500	2	78.60	0.46	0.28	1.80	2.50	10.9	30.20	1.783
613	Gral. San Martín	4000	2	77.45	0.90	0.34	1.20	0.00	12.4	28.70	1.781
614	San Justo	4000	2	81.50	0.94	0.18	1.48	0.10	11.1	29.90	1.755
615	San Justo	4000	2	79.00	0.30	0.06	1.66	0.30	11.1	31.50	1.777
616	Tercero Arriba	6000	2	77.45	0.80	0.28	1.30	0.00	12.2	27.90	1.757
617	Tercero Arriba	6000	2	76.10	0.36	0.14	1.26	0.10	12.1	28.00	1.779

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	Río IV	28.1	10.3	481	61.4	59.4	17.2	25.6	24	114	71	334	1.61	0.573
601	Río IV	27.8	9.9	484	67.0	54.7	8.9	12.1	46	68	103	236	0.66	0.527
602	Totoral	29.8	10.6	424	59.6	60.9	6.8	7.0	68	98	85	285	1.15	0.590
603	Tulumba	29.1	10.3	431	60.3	62.2	8.3	10.1	53	101	101	335	1.00	0.587
604	Río Seco	29.1	10.3	465	61.7	61.5	8.0	9.4	58	104	90	314	1.16	0.599
605	Gral. San Martín	26.5	9.5	449	66.9	60.0	11.4	19.2	20	111	71	293	1.56	0.610
606	Río II	22.5	8.4	466	61.1	58.3	11.9	18.2	31	127	56	285	2.27	0.619
607	San Justo	23.1	8.8	446	60.2	59.9	12.0	40.8	10	124	72	344	1.72	0.645
608	San Justo	23.2	8.8	416	59.1	60.2	8.0	18.6	22	128	69	339	1.86	0.673
609	Río I	27.7	10.1	431	63.4	59.2	6.5	7.2	57	83	80	212	1.04	0.632
610	Río I	26.1	9.4	478	65.6	57.8	8.5	10.3	59	102	77	266	1.32	0.540
611	Juárez Celman	25.1	8.6	454	68.7	60.1	12.2	24.1	16	123	78	352	1.58	0.570
612	Río II	21.0	7.9	462	58.9	57.8	13.2	20.6	22	116	59	271	1.97	0.638
613	Gral. San Martín	28.4	10.3	462	62.9	61.3	15.8	22.1	20	122	82	378	1.49	0.631
614	San Justo	25.2	9.1	478	66.2	60.3	10.5	14.8	35	124	57	280	2.18	0.657
615	San Justo	25.1	9.2	453	72.6	61.3	8.3	11.8	33	115	66	266	1.74	0.553
616	Tercero Arriba	26.8	9.8	454	62.6	60.0	10.2	16.0	32	110	81	315	1.36	0.580
617	Tercero Arriba	27.2	9.9	455	64.6	57.6	12.2	21.8	18	97	81	288	1.20	0.537

Subregion V South
Background for the crop

The great ecological environment of this subregion was developed in general with an unfavorable weather. Annual rainfall ranged between 150 and 200 mm less than the historical averages.

Start of the sowing was delayed due to lack of humidity, although scarce rains allowed sowing, but later on wheat plants tilling was scarce and crops did develop neither in height nor in yield components.

The end of autumn still marked a drier period; September presented some hot days and a high number of days with winds higher than 20 km/h.

These conditions allowed for little to no control of weeds, caused by either lack of herbicides application, or by inefficient applications due to the prevailing climatic situation.

Scarce use of fertilizers could also be highlighted.

A similar situation to the one of this campaign forces one to refer back to the spring of 1995.

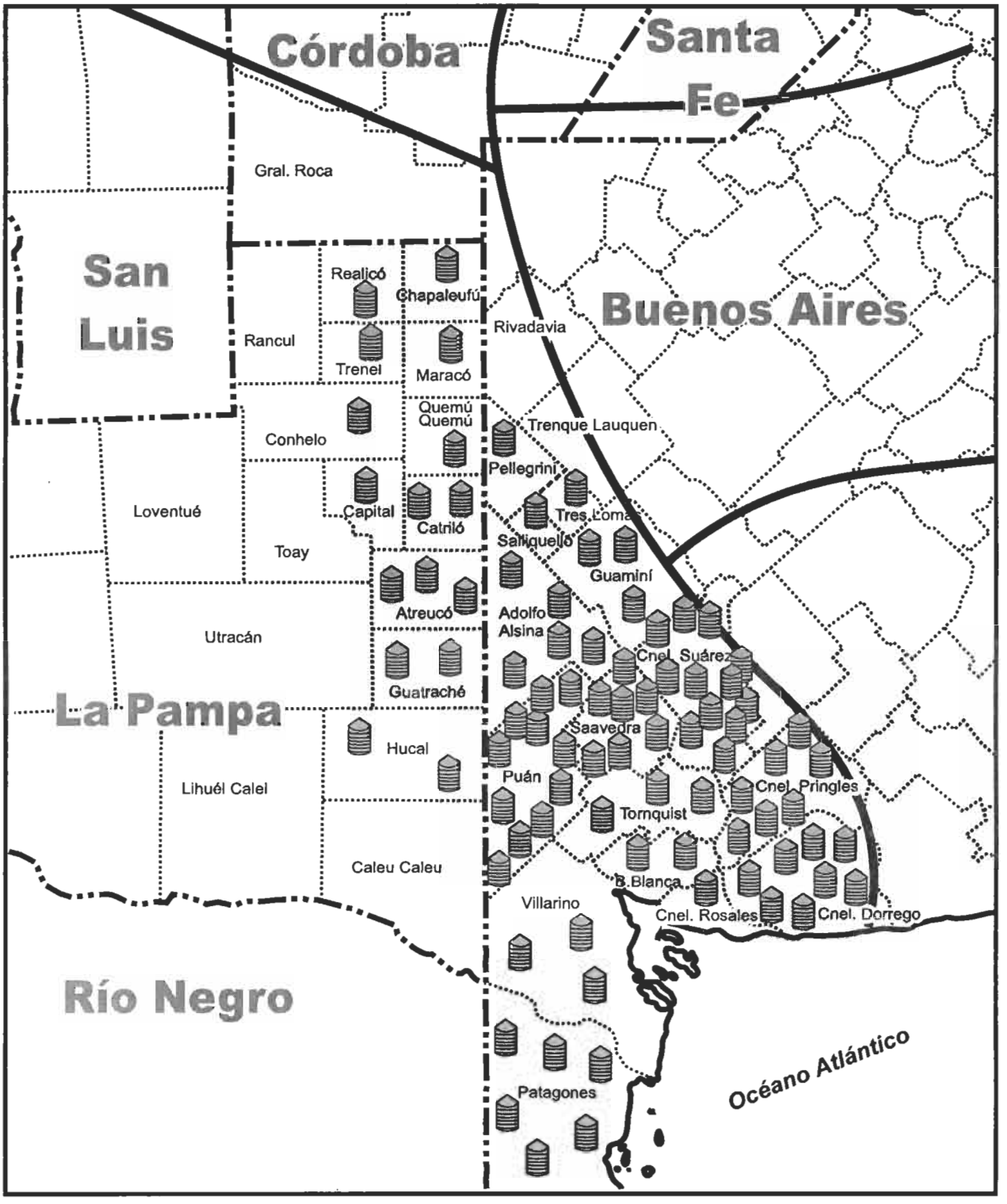
The abundant rains in the first fortnight of October favored the intermediate sowings (from mid - June to mid - July) but were too late for the earliest crops recover.

The availability of soil humidity in October and November caused an extended kernel filling stage. The structure of the plants was not prepared for this, and together with the winds of the end of November threshing took place, with variable intensity according to the varieties.

Problems of diseases were not detected.

The harvest, carried out a little later after than usual, oscillated around 1,200 kg/ha, with extremes of 2,000 kg/ha in the most humid areas, and 700-800 kg/ha in the poorest. No problems of commercial quality have been detected.

Subregion V South Wheat



Each reference represents near 4,000 tns sampled.

Subregion V South Wheat

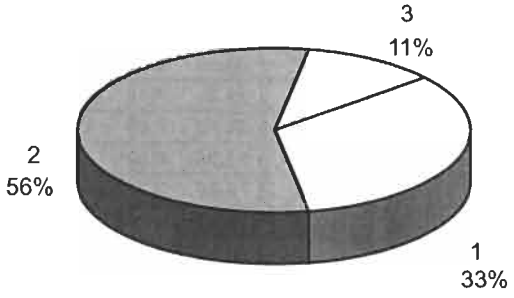
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	77.45	85.30	80.80	1.71	0.02
Total Damaged Kernels (%)	0.00	2.20	0.35	0.40	1.15
Foreign Material (%)	0.14	2.08	0.70	0.38	0.55
Shrunken and Broken Kernels (%)	0.38	2.62	1.02	0.44	0.43
Yellow Berry Kernels (%)	0.20	14.10	3.85	3.13	0.81
Protein (13,5% Moisture) (%)	9.0	13.0	11.0	0.8	0.07
Weight of 1000 Kernels (gr.)	30.33	39.58	35.43	1.95	0.05
Ash (% dry basis)	1.540	2.366	1.859	0.137	0.07

Total damaged kernels includes 0.23% sprouted kernels, 0.04% insect chewed kernels, 0.07% germen chewed kernels and 0.01% green kernels..

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	18.4	33.5	25.2	3.2	0.13
	Dry Gluten (%)	6.3	11.4	8.6	1.1	0.12
	Falling Number (sec.)	332	457	393	28	0.07
	Flour Yield (%)	60.3	72.4	67.6	2.3	0.03
	Ash (dry basis) (%)	0.522	0.678	0.588	0.037	0.06
FARINOGRAM	Water Absorption (14 % H°) (%)	55.6	63.5	59.5	1.5	0.03
	Development Time (min.)	4.7	31.7	7.9	3.1	0.39
	Stability (min.)	7.0	43.5	12.3	4.9	0.40
	Degree of Softening (12 min.)	13	70	46	12	0.26
ALVEOGRAM	P (mm)	70	129	96	10	0.11
	L (mm)	50	135	94	15	0.16
	W Joules x 10^{-4}	204	430	301	43	0.14
	P / L	0.61	2.28	1.02	0.27	0.26

These results were elaborated with 90 composite samples prepared proportionally from 1,778 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 3,019,285 tons., the 20.77% of the national total. Were sampled 328,832 tons., the 10.89% 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) (%)
703	Atreucó	4025	2	81.70	0.18	0.52	1.66	2.70	11.6	32.48	1.889
704	Atreucó	4002	2	81.50	0.44	0.78	1.12	1.20	11.5	35.72	1.924
705	Atreucó	4009	2	79.90	0.12	0.76	1.40	1.20	11.5	34.58	1.893
707	Capital	1402	3	79.90	0.86	1.42	1.46	4.80	11.4	31.90	1.865
709	Catriló	4001	2	79.90	1.22	0.80	0.84	0.80	12.2	35.51	1.933
710	Catriló	4000	1	79.90	0.18	0.48	1.16	8.40	11.1	34.57	1.714
711	Chapaleufú	1816	2	79.70	0.08	0.52	1.62	4.80	10.9	31.88	2.360
712	Conhelo	765	2	79.25	0.12	0.78	2.42	0.80	12.8	33.75	1.968
714	Guatraché	4000	2	80.80	0.00	1.24	0.72	2.10	11.5	33.44	1.782
715	Guatraché	4001	2	81.25	0.12	1.00	1.32	1.80	12.8	32.48	2.259
716	Hucal	4000	2	81.70	0.28	0.86	1.00	2.40	11.7	33.09	1.940
717	Hucal	1942	2	81.25	0.32	0.88	1.60	1.80	12.0	33.13	1.782
718	Maracó	4001	1	79.25	0.06	0.36	0.86	0.90	11.8	34.74	1.941
719	Quemú Quemú	935	2	78.60	0.24	0.78	1.34	2.80	12.1	34.08	1.913
721	Realicó	3585	2	79.00	0.06	0.80	2.30	0.40	12.6	30.33	2.036
723	Trenel	994	3	80.35	0.06	0.48	2.62	2.80	11.8	30.90	1.963
725	Adolfo Alsina	4001	1	81.25	0.80	0.48	0.70	2.20	11.4	35.35	1.817
726	Adolfo Alsina	4001	2	79.25	1.42	1.14	1.32	0.60	11.9	34.07	1.922
727	Adolfo Alsina	4000	3	79.00	1.20	1.54	1.00	1.40	12.2	32.19	1.922
728	Adolfo Alsina	4009	1	80.35	0.20	0.40	0.54	0.20	11.9	35.89	1.924
729	Adolfo Alsina	2250	3	79.90	0.84	1.38	0.94	1.50	11.8	37.36	1.978
730	Adolfo Alsina	2159	1	81.95	0.16	0.40	0.70	2.80	11.7	37.06	1.976
731	Bahía Blanca	4001	2	81.25	0.06	0.92	1.72	4.60	10.3	34.58	1.849
732	Bahía Blanca	4001	2	79.90	0.00	1.18	1.34	5.80	10.4	32.68	1.846
733	Coronel Dorrego	4008	1	84.15	0.00	0.14	0.46	5.40	9.0	37.77	1.562
734	Coronel Dorrego	4001	1	84.15	0.00	0.30	0.60	2.60	9.3	38.40	1.711
735	Coronel Dorrego	4000	1	81.25	0.14	0.36	0.58	3.20	10.0	37.36	1.696
736	Coronel Dorrego	4006	2	81.95	0.12	0.78	1.10	3.20	10.1	35.38	1.552
737	Coronel Dorrego	4005	2	82.40	0.12	0.66	0.84	8.20	9.2	37.46	1.722
738	Coronel Dorrego	4000	2	81.25	0.06	0.78	0.92	5.80	9.8	34.83	1.720
739	Coronel Dorrego	4006	1	81.50	0.16	0.58	0.74	8.00	10.0	36.88	1.661
740	Coronel Dorrego	2905	2	81.70	0.38	0.84	0.78	1.80	10.2	35.92	1.540
741	Coronel Dorrego	3510	1	82.15	0.18	0.36	0.82	5.80	10.5	36.99	1.735
746	Coronel Pringles	4000	2	79.45	0.12	1.16	0.86	2.80	10.2	34.29	1.902
747	Coronel Pringles	4009	2	79.00	0.42	0.72	1.30	3.40	10.5	35.31	1.767
748	Coronel Pringles	4001	1	80.35	0.58	0.36	0.62	0.90	10.7	34.14	1.782
749	Coronel Pringles	4021	1	81.25	0.16	0.28	0.88	2.60	10.8	36.24	2.177
750	Coronel Pringles	4018	3	77.45	0.36	1.52	1.08	5.60	10.5	36.55	2.180
751	Coronel Pringles	4001	1	79.00	0.12	0.48	0.80	2.80	10.4	35.62	1.824
752	Coronel Pringles	4001	2	78.15	0.16	0.90	1.38	4.40	10.4	37.63	1.896

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) (%)
753	Coronel Rosales	1410	3	81.25	0.00	1.54	2.32	3.60	10.9	34.16	1.943
754	Coronel Suárez	4000	3	79.90	2.20	0.44	0.46	0.30	13.0	36.88	1.903
755	Coronel Suárez	4000	1	79.00	1.00	0.32	0.66	2.60	11.3	37.12	1.809
756	Coronel Suárez	4005	1	81.70	0.08	0.16	0.58	5.10	11.0	39.41	1.953
757	Coronel Suárez	4004	1	81.95	0.28	0.22	0.56	1.20	11.4	38.29	1.938
758	Coronel Suárez	4002	1	79.45	0.46	0.26	0.42	6.60	10.9	37.51	1.814
759	Coronel Suárez	4007	1	80.60	0.46	0.32	0.68	4.40	11.0	38.30	1.830
760	Coronel Suárez	4004	1	79.00	0.76	0.16	0.38	4.50	11.0	37.51	1.737
761	Coronel Suárez	4005	1	79.90	0.38	0.40	0.74	3.40	10.9	36.66	1.887
762	Coronel Suárez	4021	1	81.50	0.00	0.30	0.86	2.80	11.5	37.18	1.944
763	Coronel Suárez	4000	2	78.35	0.64	0.62	0.78	4.20	11.0	37.27	1.790
764	Coronel Suárez	4020	1	79.00	0.66	0.20	0.60	3.20	10.9	37.62	1.784
765	Coronel Suárez	4000	2	79.70	1.36	0.54	0.60	5.40	11.1	39.58	1.805
766	Guamini	4000	2	79.70	1.16	0.42	0.72	0.80	12.6	35.91	1.899
767	Guaminí	4011	1	81.70	0.26	0.16	0.44	0.80	11.8	37.10	1.827
768	Guaminí	4007	1	81.95	0.40	0.50	0.68	1.20	11.9	38.70	1.789
769	Patagones	4001	1	84.15	0.06	0.56	0.98	11.80	10.1	34.75	1.752
770	Patagones	4014	2	85.05	0.12	0.26	1.56	12.60	10.0	33.35	1.747
771	Patagones	4010	1	84.15	0.30	0.50	0.96	11.20	10.1	32.65	1.678
772	Patagones	4001	2	85.30	0.00	0.48	2.00	12.40	9.8	31.68	1.694
773	Patagones	4007	2	84.85	0.12	0.60	1.92	8.20	10.1	31.84	1.756
774	Patagones	4003	2	83.70	0.24	0.62	1.36	14.10	10.0	33.24	1.749
775	Pelegrini	1838	2	80.35	0.36	0.64	0.90	1.40	11.8	37.08	1.863
776	Puán	4000	2	80.60	0.10	0.98	1.44	0.20	11.4	35.31	1.948
777	Puán	4000	3	81.70	0.06	2.08	1.10	0.80	11.1	33.79	1.778
778	Puán	4016	2	78.35	0.36	1.24	1.22	1.40	11.6	31.81	1.850
779	Puán	4000	3	80.15	0.26	1.38	1.02	3.20	11.1	34.29	1.822
780	Puán	4000	2	83.05	0.20	0.98	0.96	1.60	11.0	35.44	1.813
781	Puán	4000	2	81.25	0.12	0.76	1.10	3.80	10.9	36.14	1.887
782	Puán	4000	2	80.35	0.00	0.78	0.96	1.80	10.8	34.21	1.916
783	Puán	4002	2	81.70	0.06	0.72	1.12	2.20	10.6	37.00	1.918
784	Puán	3105	2	80.35	0.54	0.96	1.18	4.60	11.1	34.04	1.901
785	Puán	4000	2	80.80	0.20	1.04	1.62	0.80	12.3	34.31	2.366
786	Puán	4005	2	81.50	0.34	1.16	1.18	2.20	10.8	35.42	1.815
787	Saavedra	4000	1	79.00	0.72	0.52	0.46	0.60	10.4	36.76	1.839
788	Saavedra	4000	2	77.70	0.26	0.94	0.68	3.40	10.4	35.55	1.881
789	Saavedra	4000	1	79.45	0.46	0.34	0.60	4.80	10.3	37.16	1.888
790	Saavedra	4000	1	79.00	0.92	0.48	0.46	2.90	10.5	35.96	1.842
791	Saavedra	4004	2	79.90	0.12	0.70	1.06	7.20	10.8	34.70	1.807
792	Saavedra	4005	2	79.25	0.82	0.80	0.82	4.80	11.1	36.28	1.811

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) (%)
793	Saavedra	4002	2	79.90	0.00	0.78	0.70	4.80	11.2	36.30	1.786
796	Salliqueló	4003	2	80.35	0.16	1.16	0.58	0.20	11.9	34.60	2.029
797	Tornquist	4000	2	79.90	0.16	1.22	1.32	5.40	10.5	34.64	1.894
798	Tornquist	2329	2	80.35	0.00	1.06	1.38	3.90	10.7	35.59	1.845
799	Tornquist	4000	3	81.25	0.22	1.26	1.04	4.60	10.7	36.61	1.935
800	Tornquist	1591	2	80.80	0.10	0.80	1.18	8.80	10.2	36.68	1.855
805	Tres Lomas	4001	1	79.45	0.66	0.46	0.90	1.00	11.5	36.91	2.006
806	Villarino	4003	2	83.50	0.12	0.30	1.48	10.80	9.6	35.72	1.913
807	Villarino	4001	2	82.60	0.00	0.40	2.34	5.20	10.9	33.03	1.867
808	Villarino	4003	2	81.25	0.06	1.04	1.62	4.20	11.4	34.57	1.906

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) (%)
703	Atreuco	27.4	9.5	422	72.4	60.5	7.2	9.2	63	89	100	291	0.89	0.620
704	Atreuco	26.9	9.3	392	66.3	59.1	6.7	8.9	62	83	102	275	0.81	0.571
705	Atreuco	27.9	9.2	404	69.7	60.3	6.3	7.6	63	92	84	254	1.10	0.643
707	Capital	28.0	9.7	393	64.2	60.4	7.0	9.2	62	94	99	306	0.95	0.594
709	Catriló	30.5	10.4	356	65.7	62.1	7.0	8.4	56	91	111	317	0.82	0.581
710	Catriló	24.9	8.4	424	71.6	57.1	8.3	13.1	47	94	80	269	1.18	0.671
711	Chapaleufú	26.6	9.1	392	66.7	58.8	8.0	10.5	53	93	91	286	1.02	0.551
712	Conhelo	27.6	9.5	423	63.5	60.2	6.8	9.2	62	90	89	272	1.01	0.575
714	Guatraché	31.4	11.3	421	69.9	62.0	12.8	23.3	13	114	97	419	1.18	0.666
715	Guatraché	32.1	11.0	452	66.2	61.8	9.2	11.6	32	100	119	397	0.84	0.574
716	Hucal	27.6	9.7	437	69.2	59.4	9.2	13.4	40	94	108	342	0.87	0.609
717	Hucal	27.3	9.4	450	66.5	59.0	12.9	36.0	17	89	135	393	0.66	0.553
718	Maracó	27.9	9.9	400	69.3	61.5	8.5	13.1	34	114	88	348	1.30	0.649
719	Quemú Quemú	28.8	9.8	379	66.6	59.7	8.7	10.9	52	94	97	316	0.97	0.610
721	Realicó	29.3	9.9	441	69.2	61.6	14.0	20.2	23	126	89	430	1.42	0.674
723	Trenel	27.0	9.0	381	60.3	61.5	8.2	27.8	22	129	83	395	1.55	0.678
725	Adolfo Alsina	26.0	8.9	395	68.8	60.3	7.8	11.9	45	103	88	310	1.17	0.636
726	Adolfo Alsina	28.4	9.7	371	64.5	61.1	8.3	13.9	32	107	95	354	1.13	0.619
727	Adolfo Alsina	29.2	10.0	381	69.6	61.3	8.2	11.7	43	97	103	334	0.94	0.639
728	Adolfo Alsina	29.2	9.9	419	68.0	61.3	8.2	12.1	41	105	110	383	0.95	0.590
729	Adolfo Alsina	27.9	9.4	393	64.8	60.6	7.5	11.0	50	96	115	362	0.83	0.601
730	Adolfo Alsina	28.5	9.7	381	62.0	61.4	7.7	10.4	37	100	116	368	0.86	0.605
731	Bahía Blanca	22.0	7.6	402	68.7	59.5	7.8	13.7	41	107	78	295	1.37	0.648
732	Bahía Blanca	23.3	7.8	412	66.2	58.1	8.2	12.7	46	93	116	339	0.80	0.585
733	Coronel Dorrego	18.5	6.4	391	67.8	59.7	4.7	9.2	51	96	71	230	1.35	0.669
734	Coronel Dorrego	20.3	6.9	376	65.3	58.7	8.1	11.4	45	96	71	233	1.35	0.604
735	Coronel Dorrego	20.3	7.0	413	68.9	58.9	6.4	11.8	48	104	78	285	1.33	0.617
736	Coronel Dorrego	21.4	7.5	410	67.1	57.7	7.6	16.0	34	94	90	295	1.04	0.596
737	Coronel Dorrego	18.4	6.3	374	69.9	59.2	6.1	8.9	45	114	50	218	2.28	0.629
738	Coronel Dorrego	20.3	7.0	380	67.2	56.9	4.9	13.0	40	92	93	292	0.99	0.585
739	Coronel Dorrego	19.7	6.8	413	68.8	58.0	9.5	14.8	36	101	74	261	1.36	0.541
740	Coronel Dorrego	22.2	7.9	387	64.9	57.7	9.4	15.5	36	90	102	303	0.88	0.528
741	Coronel Dorrego	24.5	8.3	383	69.3	60.3	6.5	9.4	56	97	96	299	1.01	0.571
746	Coronel Pringles	24.2	8.0	399	68.1	59.6	5.7	8.5	62	92	82	251	1.12	0.595
747	Coronel Pringles	22.2	7.6	434	70.2	57.1	8.9	13.8	41	86	88	260	0.98	0.566
748	Coronel Pringles	24.2	8.2	411	65.6	58.7	7.7	13.6	44	98	98	334	1.00	0.550
749	Coronel Pringles	24.8	8.4	408	70.1	60.2	8.1	14.0	38	114	82	331	1.39	0.564
750	Coronel Pringles	23.5	8.0	366	67.6	58.0	7.8	12.7	42	92	87	265	1.06	0.533
751	Coronel Pringles	24.3	8.2	407	69.7	60.0	7.7	12.3	42	105	79	287	1.33	0.584
752	Coronel Pringles	22.9	7.8	397	67.9	58.8	7.2	11.7	39	95	89	274	1.07	0.541

Subregion V South 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) (%)
753	Coronel Rosales	25.1	8.8	457	69.9	60.0	10.2	20.9	28	117	94	388	1.24	0.562
754	Coronel Suarez	33.5	11.4	354	63.9	61.3	8.8	10.9	38	85	124	346	0.69	0.577
755	Coronel Suarez	25.5	8.7	373	65.8	59.7	8.6	14.6	39	96	97	326	0.99	0.548
756	Coronel Suarez	26.2	8.9	394	69.9	61.3	6.9	12.4	34	107	94	337	1.14	0.549
757	Coronel Suarez	27.9	9.3	410	66.8	63.5	8.3	12.7	30	123	83	356	1.48	0.614
758	Coronel Suarez	25.7	8.6	399	66.8	60.2	6.5	11.0	46	93	98	295	0.95	0.564
759	Coronel Suarez	25.1	8.9	412	68.8	61.2	5.2	9.5	58	93	114	327	0.82	0.615
760	Coronel Suarez	25.5	8.7	359	66.3	59.2	6.4	10.6	52	80	114	289	0.70	0.547
761	Coronel Suarez	24.0	8.3	374	68.5	60.7	6.4	10.0	55	98	102	322	0.96	0.575
762	Coronel Suarez	27.5	9.5	426	64.1	61.3	7.4	10.5	37	97	104	321	0.93	0.543
763	Coronel Suarez	24.9	8.3	367	67.5	58.5	6.7	9.9	56	83	94	258	0.88	0.566
764	Coronel Suarez	23.5	8.2	346	65.4	57.4	8.0	11.7	53	81	98	264	0.83	0.522
765	Coronel Suarez	24.3	8.2	387	69.7	58.9	6.7	10.3	53	91	97	293	0.94	0.559
766	Guaminí	29.2	9.9	393	66.4	59.2	8.8	11.3	48	86	108	315	0.80	0.560
767	Guaminí	29.3	9.9	376	70.6	62.0	5.7	7.0	68	92	94	275	0.98	0.632
768	Guaminí	29.9	10.2	402	66.6	61.3	7.5	9.2	50	94	115	340	0.82	0.543
769	Patagones	23.5	8.0	370	63.5	59.4	7.0	12.2	48	100	83	290	1.20	0.565
770	Patagones	22.2	7.7	375	66.9	59.1	8.4	18.5	28	116	75	319	1.55	0.546
771	Patagones	22.8	7.9	356	67.2	60.4	7.2	13.3	44	111	73	292	1.52	0.555
772	Patagones	20.1	7.2	348	61.2	59.1	6.1	13.5	40	113	67	276	1.69	0.540
773	Patagones	22.2	7.8	389	64.5	59.6	5.3	9.6	61	101	73	260	1.38	0.622
774	Patagones	22.2	7.7	343	64.0	55.6	6.0	9.1	70	70	115	248	0.61	0.599
775	Pellerigrini	29.7	10.0	408	69.7	61.6	7.7	8.8	63	98	102	332	0.96	0.627
776	Puan	26.6	9.0	419	67.6	59.5	7.2	9.0	68	86	120	324	0.72	0.643
777	Puan	27.2	9.3	405	71.2	61.4	7.0	9.9	56	100	102	331	0.98	0.612
778	Puan	28.8	9.7	409	66.2	60.3	7.0	9.8	53	90	105	318	0.86	0.591
779	Puan	26.3	8.9	370	70.1	60.6	7.3	9.3	63	102	90	311	1.13	0.597
780	Puan	27.3	9.2	437	65.3	60.5	7.5	9.4	56	98	98	319	1.00	0.580
781	Puan	25.6	8.7	410	70.7	60.0	5.9	9.3	60	91	87	276	1.05	0.609
782	Puan	24.5	8.4	455	68.2	59.5	7.2	9.1	59	91	103	293	0.88	0.603
783	Puan	23.8	8.1	432	70.8	58.2	7.3	10.3	57	88	95	272	0.93	0.606
784	Puan	25.8	8.9	408	67.2	59.0	8.0	11.2	52	80	120	297	0.67	0.599
785	Puan	30.0	10.2	389	70.0	61.6	7.2	10.6	47	91	111	318	0.82	0.651
786	Puan	24.3	8.4	403	64.5	59.2	7.8	11.2	43	86	106	289	0.81	0.570
787	Saavedra	23.7	7.9	361	70.6	60.1	5.9	9.5	44	101	70	249	1.44	0.600
788	Saavedra	23.1	8.0	367	66.8	58.0	6.1	10.7	47	92	79	250	1.16	0.564
789	Saavedra	22.6	7.7	338	69.1	59.7	5.4	8.6	52	96	57	204	1.68	0.604
790	Saavedra	22.2	7.6	348	67.1	58.5	4.8	9.0	51	89	86	258	1.03	0.572
791	Saavedra	24.8	8.4	338	68.2	58.2	7.4	10.3	45	86	88	251	0.98	0.558
792	Saavedra	26.1	8.9	332	66.6	58.5	8.2	10.8	50	87	118	322	0.74	0.535

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) (%)
793	Saavedra	26.5	9.0	404	68.4	58.4	7.9	11.2	36	83	97	256	0.86	0.538
796	Salliquelo	27.8	9.6	398	64.6	60.7	8.5	11.8	37	92	110	328	0.84	0.601
797	Tornquist	22.7	7.9	427	67.0	57.7	8.2	12.5	46	91	89	274	1.02	0.591
798	Tornquist	24.3	8.4	425	67.8	57.9	9.7	14.7	35	91	90	282	1.01	0.537
799	Tornquist	23.8	8.2	406	67.0	59.3	9.8	18.6	21	103	88	317	1.17	0.544
800	Tornquist	22.5	7.7	389	69.0	56.8	8.2	14.5	32	87	94	277	0.93	0.571
805	Tres Lomas	26.7	9.1	385	67.5	58.1	7.2	8.8	69	83	99	264	0.84	0.587
806	Villarino	19.2	6.9	408	65.3	56.3	7.5	14.2	40	90	75	240	1.20	0.582
807	Villarino	23.7	8.4	371	71.5	56.8	10.8	17.8	37	90	87	287	1.03	0.569
808	Villarino	25.7	9.0	369	65.9	57.9	31.7	43.5	14	97	94	340	1.03	0.562

North of the Country Wheat

Nortwest of the Country (NOA)
Background for the crop

The 2003/04 campaign showed unfavorable weather conditions during almost all the development of the crop.

The sow started early due to the scarce reserve of humidity in the soils, at the second fortnight of April, with long cycle varieties, followed by intermediate crops during the first days of May. Short cycle varieties were sowed from the middle of May till the end of the sow, at the first days of June.

The occurrence of late frosts (end of August and September) affected most of the crops to a greater or lesser extent.

Foliage diseases, mainly yellow spot (Drechslera tritici), were observed during the first stages of the crop, but they did not progress due to unfavorable weather conditions.

The harvest started early (end of September and beginning of October), and it developed normally in almost all the wheat area. Kernel quality decreases were not detected, except for some lots lately sowed, which were harmed by the rain during the threshing.

Yields were lower than those of the 2002 campaign, with some cases of lots that could not be harvested because they had been severely affected by frosts or drought.

Northeast of the Country (NEA)
Background for the crop

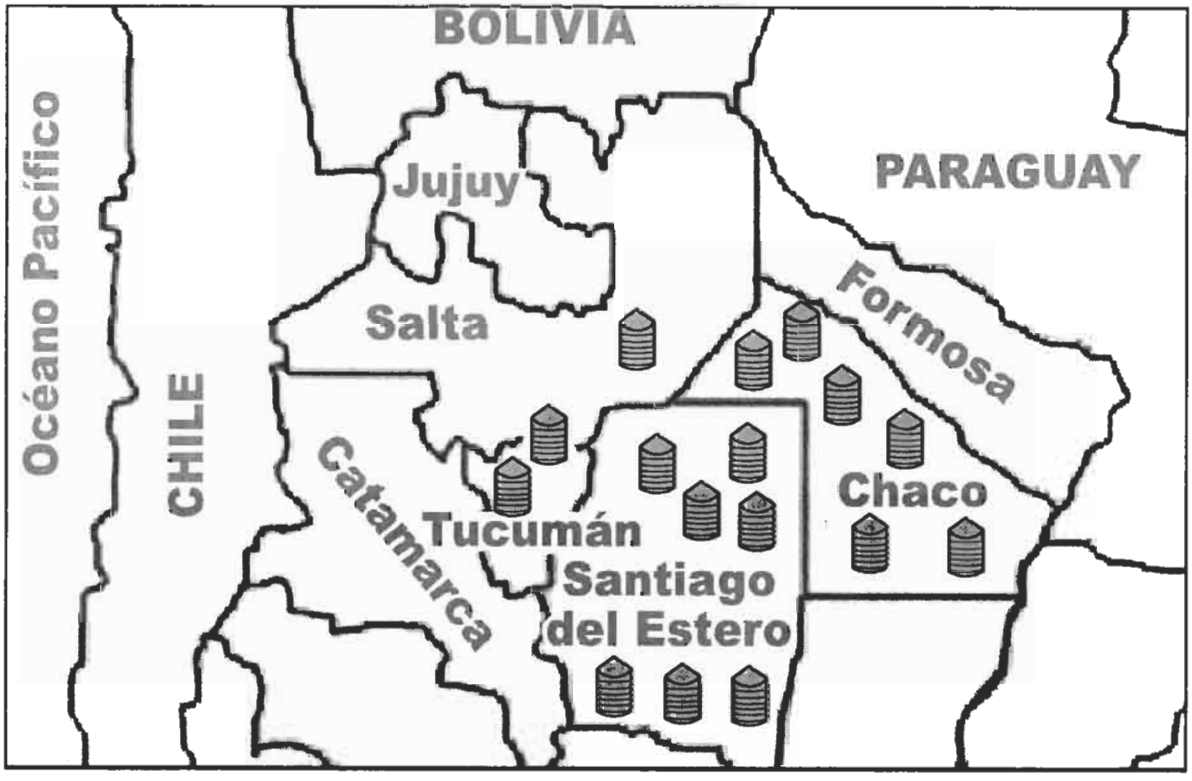
NEA wheat was sowed in a very long period, between the end of April and middle of August, due to the winter and autumn drought, among other factors, with very varied yield results, ranging from 500 and 3,300 kg/ha, with an estimated average of 1,400 kg/ha.

As in previous years, wheat integrates double crop production systems such as wheat and soy or wheat and sunflower. A 70% is sowed by direct seeding (non tillage) and the rest by conventional method.
Varieties of different vegetative cycle were used to be more certain about the harvest and counteract the effects of adverse factors such as droughts, frosts, high temperatures and drying winds from the north sector, among others.

Foliage diseases, such as "leaf rust" and "stem rust", were observed at late sowings, but with slight damages.

Harvest was carried out among the months of August, September and October, with very high protein values, up to 16%, and gluten values, 45-50%. On the other hand, those harvested in November had a lower commercial and industrial quality due to the higher environment humidity.

North of the Country



Each reference represents near 4,000 tns sampled.

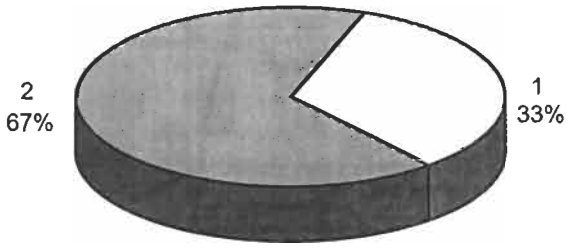
NOA Wheat

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)	78.70	83.40	81.21	2.25	0.03
Total Damaged Kernels (%)	0.61	1.62	1.10	0.46	0.42
Foreign Material (%)	0.24	0.69	0.45	0.22	0.49
Shrunken and Broken Kernels (%)	0.91	2.44	1.69	0.67	0.40
Yellow Berry Kernels (%)	0.97	1.20	1.01	0.07	0.07
Protein (13,5% Moisture) (%)	11.3	15.0	13.1	1.7	0.13
Weight of 1000 Kernels (gr.)	29.11	33.59	31.19	1.87	0.06
Ash (% dry basis)	1.688	1.952	1.827	0.125	0.07

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	27.8	38.0	33.9	3.8	0.11
	Dry Gluten (%)	10.0	13.6	12.2	1.3	0.11
	Falling Number (sec.)	425	457	440	16	0.04
	Flour Yield (%)	60.4	66.0	61.6	1.7	0.03
	Ash (dry basis) (%)	0.538	0.657	0.596	0.056	0.09
FARINOGRAM	Water Absorption (14 % H°) (%)	61.7	62.1	61.9	0.2	0.00
	Development Time (min.)	8.3	10.8	9.5	1.2	0.12
	Stability (min.)	9.3	10.6	9.8	0.4	0.05
	Degree of Softening (12 min.)	45	54	48	3	0.07
ALVEOGRAM	P (mm)	73	106	84	11	0.13
	L (mm)	79	145	114	28	0.25
	W Joules x 10^{-4}	286	358	318	35	0.11
	P / L	0.50	1.35	0.74	0.30	0.40

These results were elaborated with 3 composite samples prepared proportionally from 92 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 210,650 tons., the 1.44% of the national total. Were sampled 34,000 tons., the 16.19% of the subregion production.

Results of the Analyses Comercial and Industrial

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	Tucumán	15000	2	78.70	0.72	0.24	1.14	0.97	11.7	32.62	1.952
2	Tucumán	15000	2	83.40	1.62	0.69	2.44	0.99	15.0	29.11	1.688
1	Salta	4000	1	82.40	0.61	0.30	0.91	1.20	11.3	33.59	1.879

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	Tucumán	38.0	13.6	425	61.6	62.1	10.8	10.0	45	73	145	358	0.50	0.538
2	Tucumán	31.4	11.4	457	60.4	61.7	8.5	9.3	50	89	92	286	0.97	0.657
1	Salta (Capital)	27.8	10.0	429	66.0	61.9	8.3	10.6	54	106	79	289	1.35	0.582

NEA
Wheat

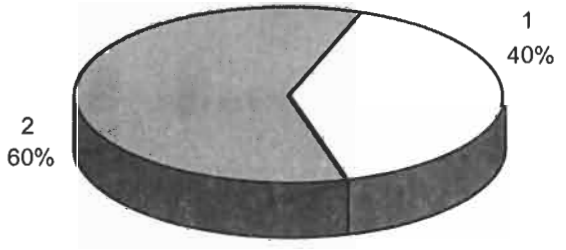
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.25	83.40	79.63	2.07	0.03
Total Damaged Kernels (%)	0.26	1.79	0.79	0.32	0.40
Foreign Material (%)	0.10	0.81	0.33	0.22	0.65
Shrunken and Broken Kernels (%)	0.53	2.44	1.12	0.57	0.51
Yellow Berry Kernels (%)	0.55	9.72	2.11	2.02	0.96
Protein (13,5% Moisture) (%)	10.8	17.1	14.4	2.0	0.14
Weight of 1000 Kernels (gr.)	26.48	33.59	28.59	2.14	0.07
Ash (% dry basis)	1.688	2.304	2.150	0.106	0.05

Total damaged kernels includes 0.06% green kernels, 0.23% frosty kernels, 0.17% sprouted kernels, 0.01% calcinated kernels, 0.03% insect chewed kernels and 0.29% germen chewed kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	25.2	40.2	34.7	4.6	0.13
	Dry Gluten (%)	9.1	14.7	12.5	1.7	0.14
	Falling Number (sec.)	425	545	500	33	0.07
	Flour Yield (%)	60.1	67.1	63.2	1.9	0.03
	Ash (dry basis) (%)	0.538	0.704	0.617	0.053	0.09
FARINOGRAM	Water Absorption (14 % H°) (%)	57.9	64.6	62.2	1.9	0.03
	Development Time (min.)	6.7	22.3	13.8	5.4	0.39
	Stability (min.)	7.7	30.1	16.8	8.3	0.49
	Degree of Softening (12 min.)	7	84	36	22	0.62
ALVEOGRAM	P (mm)	73	126	105	14	0.13
	L (mm)	49	145	92	16	0.17
	W Joules x 10^{-4}	221	457	367	74	0.20
	P / L	0.50	2.38	1.15	0.40	0.35

These results were elaborated with 13 composite samples prepared proportionally from 725 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 385,911 tons., the 2.65% of the national total. Were sampled 76,000 tons., the 19.69% of the subregion production.

Results of the Analyses Comercial and Industrial

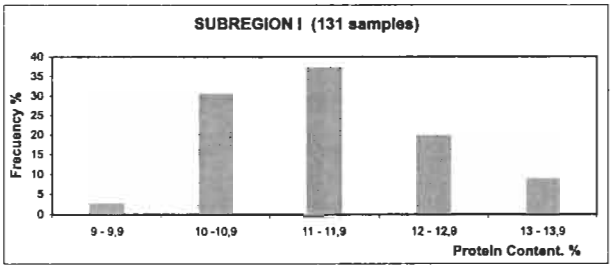
SAMPLE IDENTIFICATION			WHEAT ANALYSIS									
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
1	Chaco (Charata - Las Breñas)	4000	2	77.30	1.04	0.74	1.77	2.54	14.5	27.29	2.171
2	Chaco (Pampa del Infierno-R.S.Peña)	4000	2	79.30	1.79	0.81	2.28	2.86	14.5	27.33	2.180
3	Chaco (Barranqueras)	4000	2	79.40	0.26	0.59	2.19	2.70	14.8	26.84	2.291
4	Chaco	4000	1	81.70	0.80	0.36	0.90	3.20	11.1	32.20	1.850
5	Chaco	16000	2	76.25	0.64	0.43	0.85	0.55	15.1	28.15	2.193
6	Chaco	16000	1	80.70	0.80	0.10	0.53	1.32	17.1	26.48	2.194
1	Santiago del Estero - Capital	4000	2	80.90	0.65	0.29	1.42	1.25	13.5	28.46	2.133
2	Santiago del Estero - Quimili	4000	2	79.80	0.82	0.50	2.21	1.76	14.8	26.61	2.304
3	Santiago del Estero	4000	2	83.00	1.24	0.13	1.03	1.55	13.3	29.46	2.133
4	Santiago del Estero	4000	1	81.50	0.84	0.25	0.77	3.88	11.0	33.59	1.983
5	Santiago del Estero - Bandera	4000	1	81.60	0.71	0.21	1.06	1.30	12.7	31.54	2.096
6	Santiago del Estero	4000	1	80.70	0.84	0.19	0.78	1.87	13.5	29.65	2.186
7	Santiago del Estero	4000	2	79.90	0.28	0.10	1.30	9.72	10.8	31.70	1.980

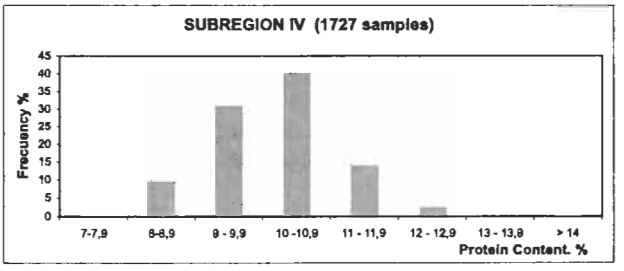
SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
1	Chaco (Charata - Las Breñas)	35.9	12.6	492	66.6	62.5	9.4	11.5	45	88	117	333	0.76	0.704
2	Chaco (Pampa del Infierno - R. S. Peña)	34.2	12.3	527	63.2	61.7	12.7	18.9	21	100	105	380	0.95	0.622
3	Chaco (Barranqueras)	35.0	12.5	476	66.4	62.7	10.4	12.3	35	106	108	406	0.99	0.664
4	Chaco	25.2	9.1	445	62.7	57.9	8.9	8.9	84	116	49	221	2.38	0.572
5	Chaco	35.8	12.8	498	62.5	61.5	13.7	12.9	39	96	97	360	0.99	0.558
6	Chaco	40.2	14.7	545	62.5	64.6	22.3	30.1	7	126	80	457	1.58	0.674
1	Santiago del Estero (Capital)	31.3	11.4	474	60.4	61.7	8.0	9.5	45	93	105	321	0.88	0.626
2	Santiago del Estero (Quimili)	34.4	12.3	499	64.2	61.6	12.2	19.3	30	109	103	426	1.06	0.622
5	Santiago del Estero (Bandera)	28.9	10.5	465	60.1	62.9	8.0	7.7	61	98	86	280	1.14	0.558
7	Santiago del Estero	25.9	9.3	449	67.1	59.1	6.7	8.4	68	84	83	232	1.01	0.572

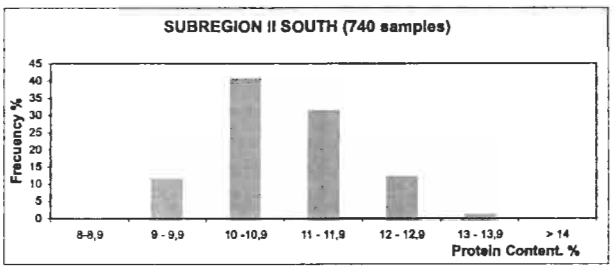
Protein Content Wheat

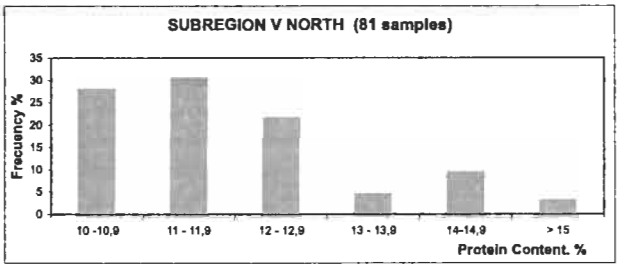
Protein Content

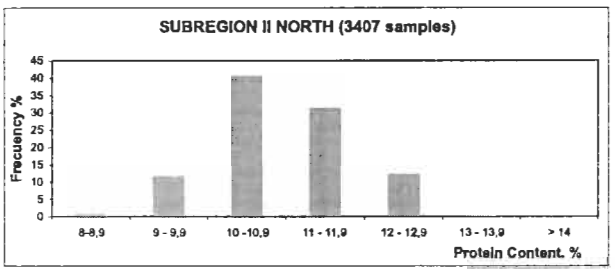
Distribution by ranges
Results obtained on 9021 Primary Samples

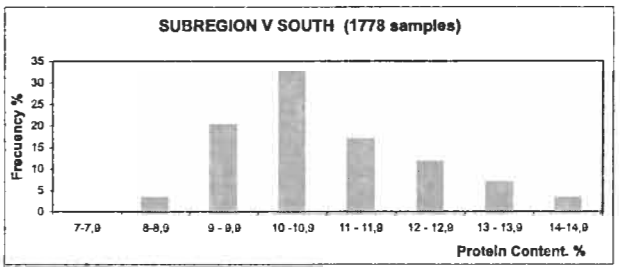


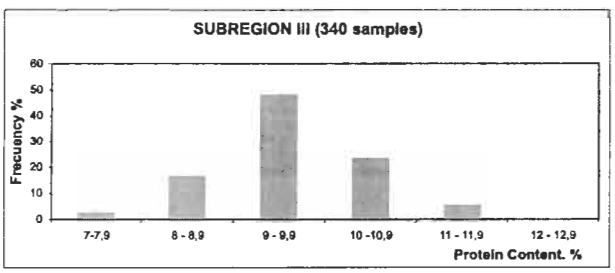


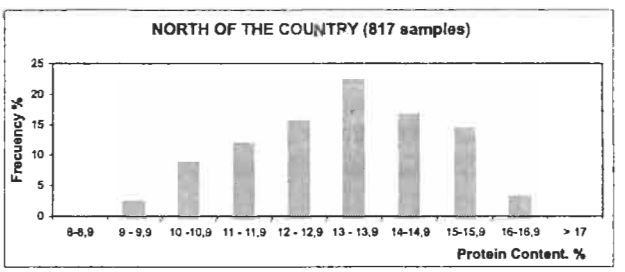


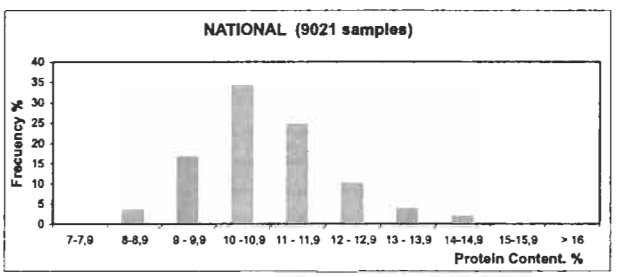












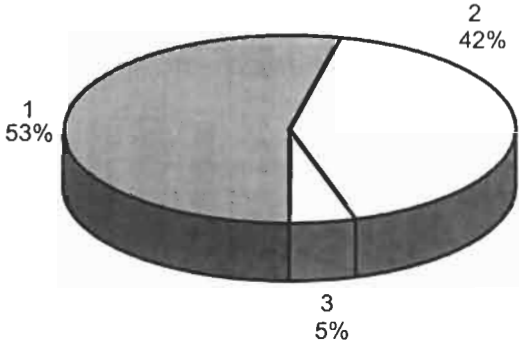
Wheat National Averages

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)	76.10	85.50	81.13	1.51	0.02
Total Damaged Kernels (%)	0.00	2.94	0.52	0.48	0.93
Foreign Material (%)	0.06	2.08	0.41	0.31	0.75
Shrunken and Broken Kernels (%)	0.08	2.62	0.86	0.55	0.64
Yellow Berry Kernels (%)	0.00	21.42	3.69	3.55	0.96
Protein (13,5% Moisture) (%)	8.9	17.1	10.9	1.1	0.10
Weight of 1000 Kernels (gr.)	25.10	42.82	34.91	3.76	0.11
Ash (% dry basis)	1.466	2.366	1.815	1.591	0.88

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	17.9	40.2	24.8	3.3	0.13
	Dry Gluten (%)	6.1	14.7	8.8	1.3	0.14
	Falling Number (sec.)	317	545	402	41	0.10
	Flour Yield (%)	54.2	74.2	66.2	3.7	0.06
	Ash (dry basis) (%)	0.421	0.704	0.568	0.050	0.09
FARINOGRAM	Water Absorption (14 % H°) (%)	50.5	64.6	59.2	2.0	0.03
	Development Time (min.)	1.4	31.7	8.7	2.9	0.33
	Stability (min.)	1.5	43.5	13.2	4.7	0.35
	Degree of Softening (12 min.)	7	231	45	20	0.44
ALVEOGRAM	P (mm)	66	144	102	14	0.14
	L (mm)	39	145	80	17	0.21
	W Joules x 10^{-4}	146	457	279	47	0.17
	P / L	0.50	3.00	1.27	0.43	0.34

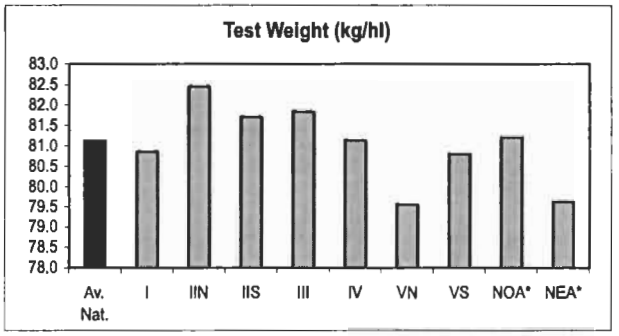
Weighting basis: Tonnage of the production sampled by Subregion, according to chart data, on page 7.

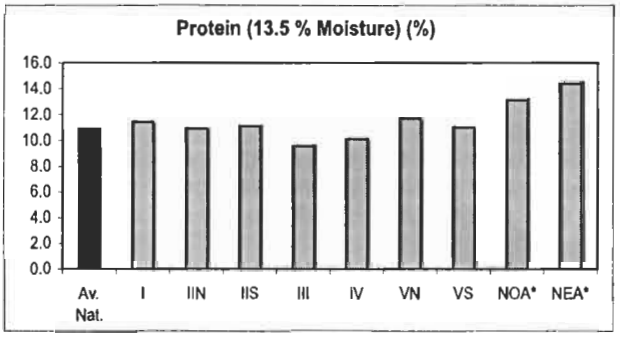
National Averages Wheat

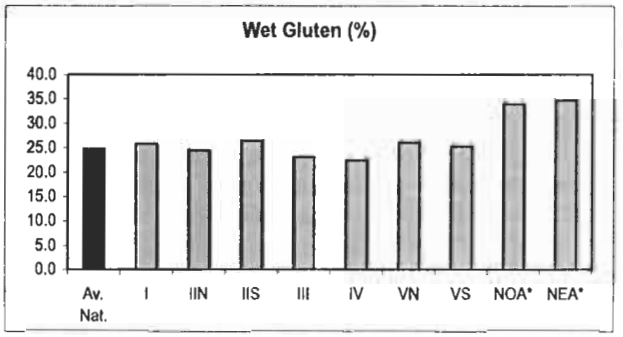
Wheat National and Subregions Averages

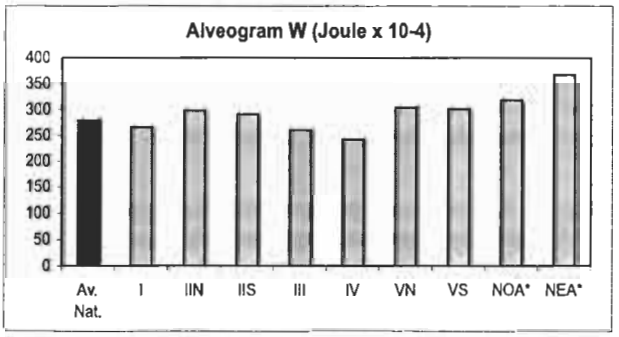
Comparative Graphics

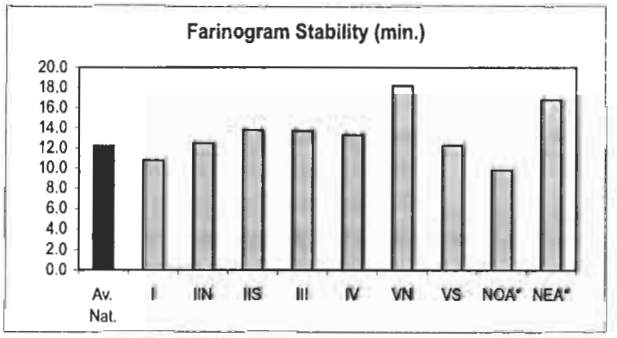
Composite Samples by Locality. Averages were weighted by Tonnage.











* NOA= Nortwest of the Country
* NEA= Notheast of the Country

By Agr. Eng. (Ms.Sci.) Nelly Salomón, Agronomy Department, Universidad Nacional del Sur

Mean Comparison among Subregions:

An analysis of the variation of the measured data was carried out (ANOVA) 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 %.

Subreg.	N° Samples	Test Weight		Subreg.	Total Damaged Kernels		Subreg.	Foreign Material		Subreg.	Shrunken and Broken Kernels	
II North	47	82.41	a	IV	0.29	a	V North	0.24	a	IV	0.41	a
III	17	81.84	ab	V South	0.34	a	II North	0.27	a	II South	0.46	a
II South	36	81.70	abc	II North	0.69	b	IV	0.28	a	III	0.61	a
IV	91	81.10	bc	I	0.69	b	I	0.32	a	I	1.02	b
I	23	80.85	bc	III	0.74	b	III	0.34	a	V South	1.07	b
V South	90	80.75	c	V North	0.76	b	II South	0.37	a	II North	1.36	c
V North	18	79.53	d	II South	0.82	b	V South	0.72	b	V North	1.75	d

Subreg.	Yellow Berry Kernels		Subreg.	Protein		Subreg.	Weight 1000 Kernels		Subreg.	Ash	
V North	0.30	a	V North	11.7	a	IV	39.33	a	III	1.635	a
II South	1.13	a	I	11.4	ab	V South	35.32	b	IV	1.717	a
II North	2.19	ab	II South	11.1	b	II South	34.50	b	II South	1.802	a
I	3.64	bc	V South	11.0	b	II North	32.08	c	V North	1.812	a
V South	3.80	bc	II North	10.9	b	III	31.99	c	II North	1.818	a
IV	4.74	c	IV	10.1	c	I	31.33	c	V South	1.865	a
III	10.55	d	III	9.6	d	V North	29.42	d	I	1.911	a

Subreg.	Wet Gluten		Subreg.	Dry Gluten		Subreg.	Falling Number		Subreg.	Flour Yield	
II South	26.4	a	II South	9.8	a	I	461	a	III	68.35	a
V North	26.2	ab	V North	9.5	ab	V North	455	a	II North	67.52	ab
I	25.8	ab	I	9.3	ab	II North	427	b	V North	67.41	ab
V South	25.4	ab	II North	8.9	bc	V South	394	c	II South	65.94	b
II North	24.5	bc	V South	8.7	cd	III	392	c	V South	63.49	c
III	23.1	cd	III	8.5	ce	IV	380	cd	I	61.88	c
IV	22.3	d	IV	7.8	e	II South	368	d	IV	61.69	c

Statistical Analysis Wheat

Subreg.	Water Absorption (%)		Subreg.	D.T. (min.)		Subreg.	Stability (min.)		Subreg.	Degree Softening	
V South	59.7	a	V North	10.6	a	V North	17.2	a	I	67	a
I	59.6	a	III	9.7	ab	II South	13.8	b	II South	52	b
V North	59.6	a	II South	9.7	ab	III	13.7	b	V South	46	bc
II North	59.8	a	I	8.6	abc	IV	13.2	b	III	44	bc
II South	59.8	a	IV	8.0	bc	II North	12.6	b	IV	44	bc
III	58.7	ab	V South	7.9	bc	V South	12.6	b	V North	35	c
IV	57.6	b	II North	6.8	c	I	10.8	b	II North	32	c

Subreg.	P		Subreg.	L		Subreg.	W		Subreg.	P/L	
II North	116	a	V South	94	a	V South	303	a	II North	1.73	a
II South	110	ab	II South	78	b	V North	300	a	III	1.60	a
V North	109	ab	V North	77	b	II North	299	a	I	1.54	ab
I	105	bc	IV	76	b	II South	291	ab	II South	1.50	ab
III	105	bc	I	71	b	I	266	bc	V North	1.49	ab
V South	96	cd	II North	69	b	III	260	c	IV	1.30	bc
IV	95	d	III	68	b	IV	242	c	V South	1.06	c

Subreg.	Flour Ash	
III	0.475	a
IV	0.551	b
II North	0.552	b
II South	0.567	bc
I	0.587	c
V South	0.588	c
V North	0.598	c

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	21.0 228 13.0	14.07
10 - 10,9	**23.5** **271** **12.9**	**44.31**
11,0 --11,9	26.4 304 13.2	30.24
12,0 - 12,9	28.7 319 13.4	7.49
13,0 - 13,9	31.7 294 8.4	1.78
> 14	35.3 378 16.3	2.09

WET GLUTEN RANGE	Average Protein W Stability	% Country
< 21	9.7 226 12.9	10.24
21 - 24,9	**10.4** **269** **13.1**	**44.58**
25 - 27,9	11.2 298 13.4	32.23
28 - 31,9	12.2 327 11.7	10.24
32 - 34,9	13.8 387 15.2	1.20
> 35	14.6 383 15.4	1.51

Alveograph W RANGE	Average Gluten Prot. Stability	% Country
< 190	20.3 9.6 10.1	2.11
190 - 249	22.3 10.2 12.4	22.29
250 - 299	**24.4** **10.7** **12.7**	**45.48**
300 - 349	26.5 11.4 13.5	23.19
350 - 400	29.2 12.2 16.6	5.42
> 400	34.1 14.2 21.0	1.51

Farinograph STABILITY RANGE	Average Gluten Protein W	% Country
1 - 4,9	23.7 10.8 194	1.20
5,0 - 9,9	26 11.2 274.0	16.27
10 - 14,9	**24.6** **10.8** **280.0**	**62.5**
15 - 19,9	23.7 10.7 279.0	15.96
> 20	27.2 12 353.0	4.52

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.

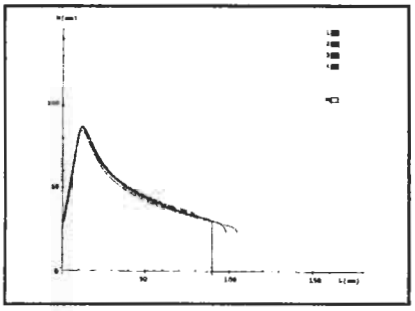
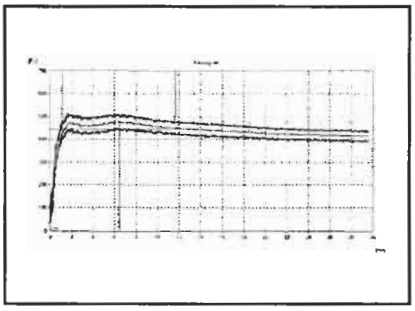
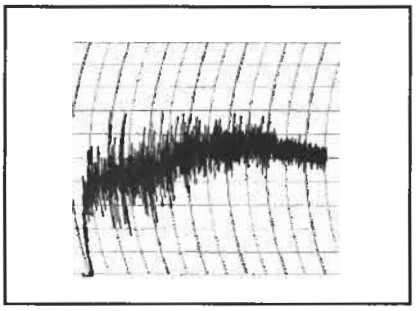
		Subregions									Pondered Average	Average last Quinquenio
		I	II N	II S	III	IV	V N	V S	NEA*	NOA*		
WHEAT	Test Weight (kg/hl)	81.80	82.45	81.87	82.00	81.13	79.45	80.75	79.63	81.21	81.15	80.2
	Weight of 1000 Kernels (gr.)	30.90	32.13	34.00	32.17	39.36	29.40	35.32	28.59	31.19	34.60	33.93
	Ash (dry basis) (%)	2.000	1.877	1.802	1.590	1.715	1.864	1.865	2.150	1.827	1.809	1.848
	Protein (13.5% Moisture) (%)	11.2	10.9	11.0	9.5	10.1	11.6	11.0	14.4	13.1	11.0	11.1
MILLING	Flour Yield (%)	67.2	60.4	65.9	58.6	68.0	61.7	61.8	63.2	61.6	64.1	66.0
	Ash (dry basis) (%)	0.635	0.565	0.501	0.504	0.545	0.631	0.585	0.691	0.666	0.573	0.568
FLOUR	Moisture (%)	13.5	15.2	14.3	12.8	14.7	14.5	14.5	13.2	13.0	14.31	13.90
	Wet Gluten (%)	25.3	24.2	25.2	22.9	21.9	25.7	24.7	34.0	30.9	24.7	24.9
	Dry Gluten (%)	8.9	8.7	9.9	8.2	7.9	9.2	8.9	11.9	11.0	9.0	9.1
	Gluten Index (%)	98	98	98	98	98	100	100	94	85	98	97
	Falling Number (sec.)	467	329	383	363	366	408	350	457	446	375	375
	Zeleny Test (cc)	33	31	35	32	35	34	38	39	35	36	37
	FARINOGRAM											
	Water Absorption (%)	57.2	59.9	60.3	58.6	57.4	60.3	58.3	60.9	61.2	58.6	59.0
	Development Time (min.)	6.5	6.5	7.2	7.3	8.7	11.3	6.8	10.2	8.3	8.1	8.2
	Stability (min.)	10.4	12.8	14.7	14.6	13.6	16.9	12.8	15.0	9.6	13.3	14.3
	Degree of Softening	46	41	36	31	32	30	23	32	72	33.9	46.6
	Quality Number	121	155	173	190	165	231	225	213	140	185	—
	MIXOGRAM											
	Development Time (min.)	4:30 (A)	4:00 (A)	4:00 (A)	3:30 (A)	4:30 (A)	4:10 (A)	4:20 (A)	3:45 (A)	3:15 (B)	4:12 (A)	4:15 (A)
	Scale	6	6	6	6	6	6	6	6	5	6	6
	ALVEOGRAM											
	P (mm)	95	115	112	104	99	122	93	121	97	103	98
	L (mm)	90	78	78	72	81	77	91	102	102	85	81
	G	21	20	20	19	20	20	21	23	23	20	20
	W (Joules x 10-4)	290	315	324	277	275	341	289	493	345	308	280
	P/L	1.06	1.47	1.44	1.45	1.23	1.59	1.02	1.18	0.95	1.24	1.25
	BAKING											
	Absoprtion (%)	62.0	62.5	62.5	62.0	62.0	62.5	62.0	64.0	62.5	62.3	61.9
	Development Time (min.)	4' 00	3' 30	3' 00	3' 00	3'00	3' 00	3' 00	3' 00	3' 00	3' 07	3'19
	Fermentation Time (min.)	160'	160'	160'	160'	160'	160'	160'	160'	160'	160'	160
	Loaf Volume (cc)	610	698	700	625	705	655	715	775	670	695	686
	Specific Volume	4.4	5.2	5.2	4.6	5.3	4.9	5.5	5.9	5.0	5.2	5.2

NEA* : Northeast of the Country
NOA* : Northwest of the Country

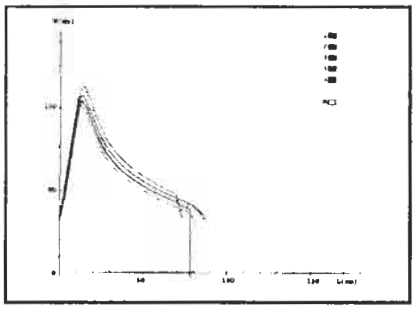
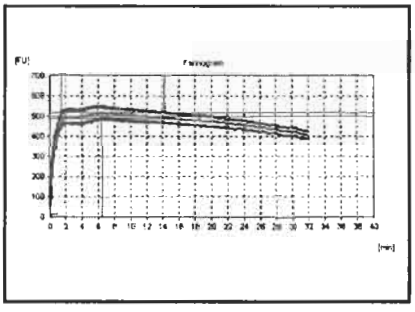
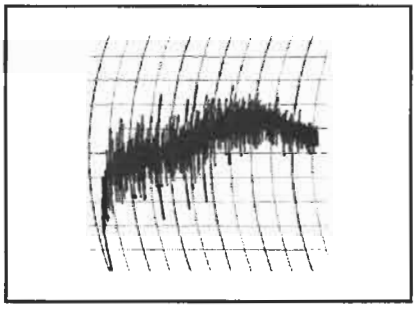
*Weighting basis: Tonnage of the production sampled by Subregion, according to chart data, on page 7.

Results of the Analyses

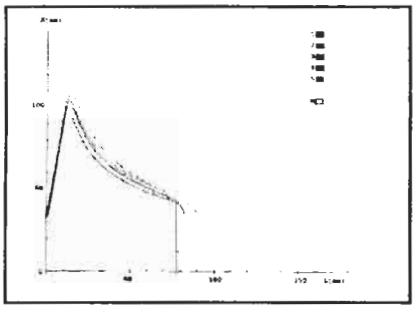
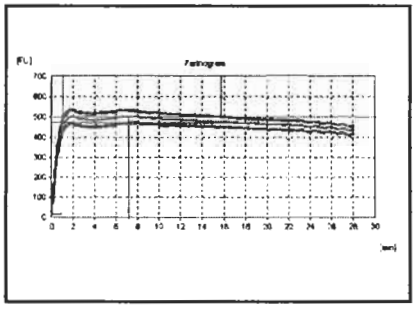
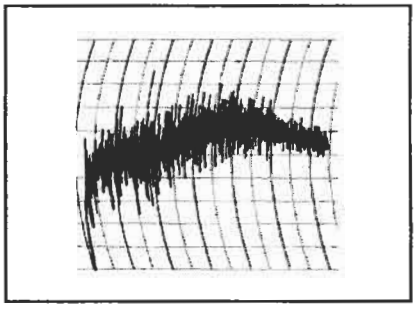
Subregion I

Alveogram	Farinograma	Mixogram
		

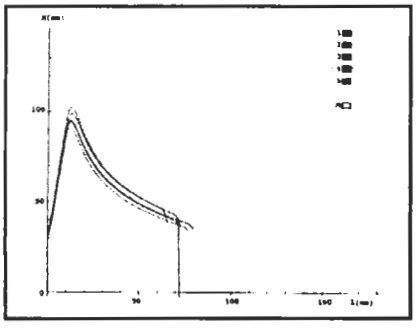
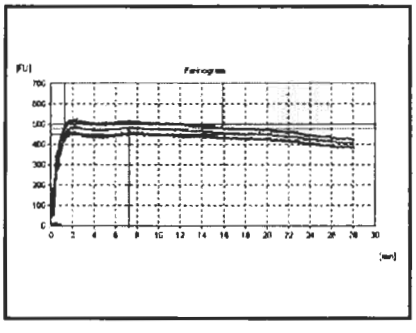
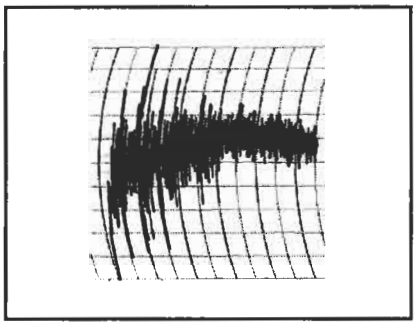
Subregion II North

Alveogram	Farinogram	Mixogram
		

Subregion II South

Alveogram	Farinogram	Mixogram
		

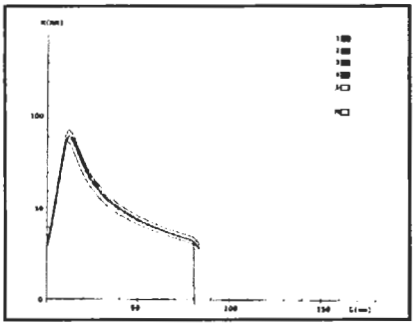
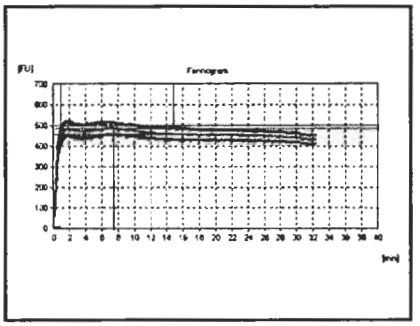
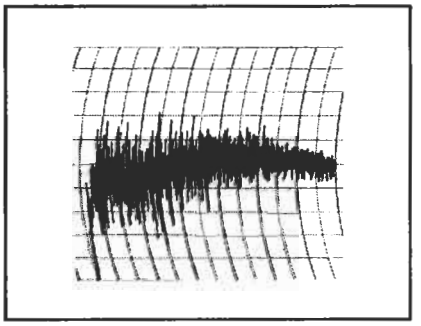
Subregion III

Alveogram	Farinogram	Mixogram
		

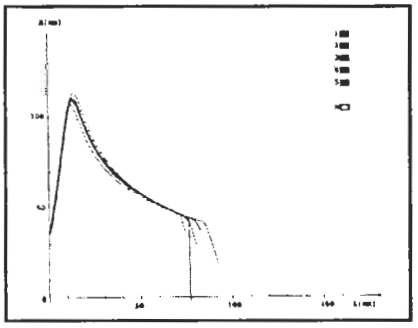
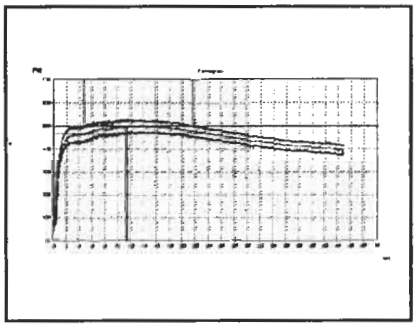
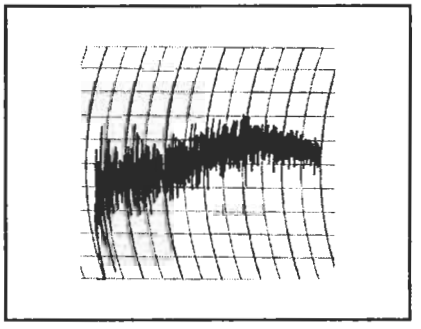
Subregion Composite Samples Wheat

Results of the Analyses

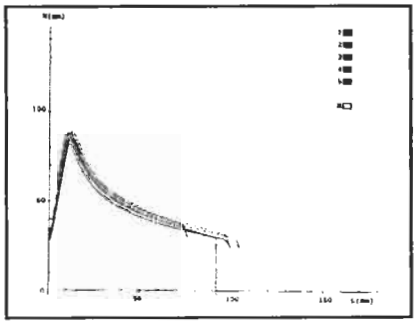
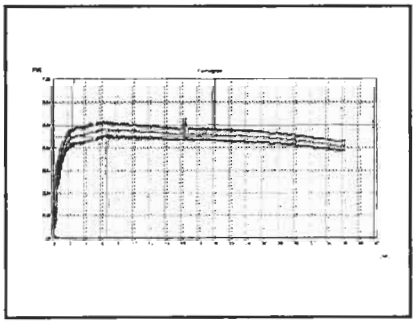
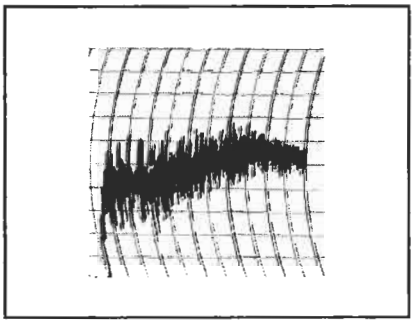
Subregion IV

Alveogram	Farinogram	Mixogram
		

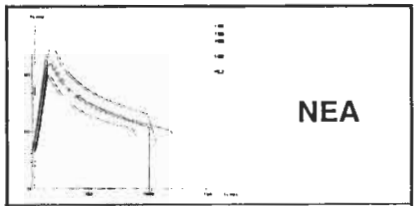
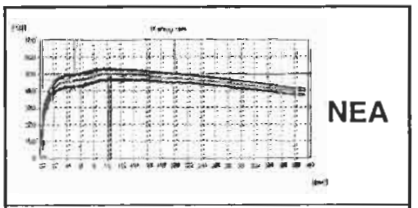
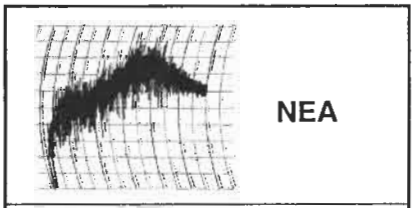
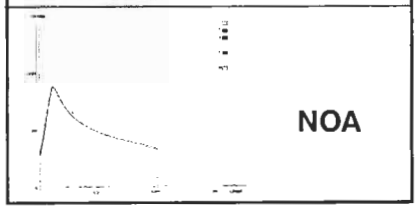
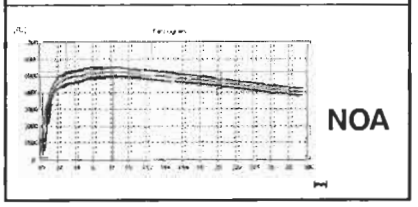
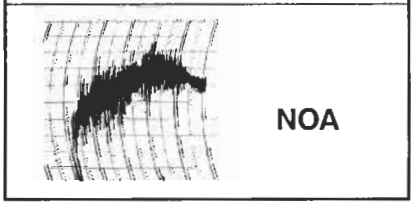
Subregion V North

Alveogram	Farinogram	Mixogram
		

Subregion V South

Alveogram	Farinogram	Mixogram
		

Subregion North / NEA - NOA

Alveogram	Farinogram	Mixogram
 NEA	 NEA	 NEA
 NOA	 NOA	 NOA

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.

03/04 Crop

Sown Area (ha)	46,900
Harvested Area (ha)	46,780
Average Yield (Kg/ha)	3,150
Production (tn)	147,200

Source: SAGPyA

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 32 composite samples.

They were organized according to theirs origin region, mainly in the Subregions 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.


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

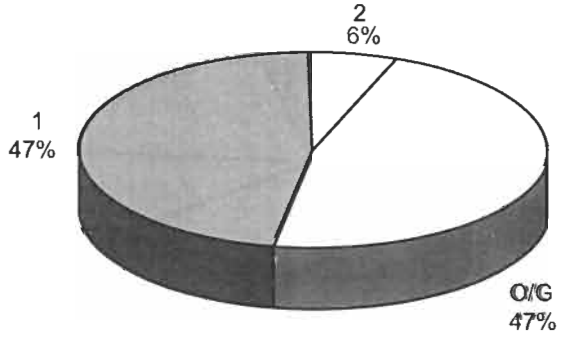
Results of the Analyses
Composite Samples by Locality

Subregion IV Durum Wheat

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.10	83.25	80.17	1.94	0.02
Total Damaged Kernels (%)	0.08	1.00	0.43	0.28	0.64
Foreign Material (%)	0.06	1.08	0.36	0.28	0.76
Shrunken and Broken Kernels (%)	0.14	1.40	0.66	0.38	0.57
Vitreous Kernels (%)	19	82	47	18	0.38
Wheat (Triticum aestivum) (%)	0.50	4.36	1.94	1.10	0.57
Proteins (13,5% Moisture) (%)	10.0	13.5	11.1	1.0	0.09
Weight of 1000 Kernels (gr.)	37.27	52.24	46.85	4.27	0.09
Ash (% dry basis)	1.724	2.016	1.793	0.075	0.04

Total damaged kernels includes 0.13% sprouted kernels, 0.08% insect chewed kernels, 0.10% germen chewed kernels, 0.06% fusarium and 0.06% green kernels.

Grade Distribution



O/G: Out of Grade

Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec.)	400	482	447	25	0.06
	Color (b)	22	25.2	23.3	1.0	0.04
	Wet Gluten (%)	24.7	35.9	28.7	2.9	0.10
	Gluten Index (%)	14	90	58	18	0.31
FARINOGRAM	Energy Level	35.1	43.8	38.6	2.0	0.05
	Degree Softening (%)	22	34	27	3	0.11

These results were elaborated with 17 composite sample.

Subregion V South Durum Wheat

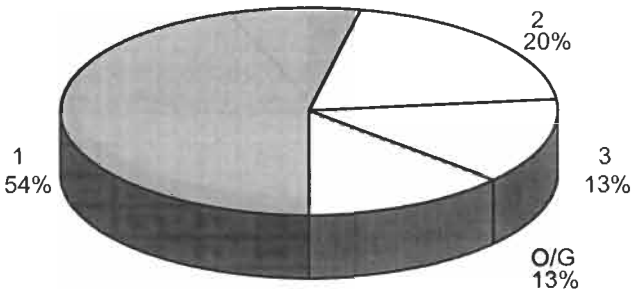
Results of the Analyses

Composite Samples by Locality

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	77.45	84.85	81.53	1.84	0.02
Total Damaged Kernels (%)	0.00	0.62	0.29	0.18	0.60
Foreign Material (%)	0.14	1.68	0.60	0.40	0.66
Shrunken and Broken Kernels (%)	0.18	3.10	1.03	0.72	0.70
Vitreous Kernels (%)	35	72	56	12	0.22
Wheat (Triticum aestivum) (%)	0.82	2.96	1.80	0.57	0.31
Proteins (13,5% Moisture) (%)	9.2	13.8	11.2	1.2	0.11
Weight of 1000 Kernels (gr.)	33.63	56.68	46.82	5.44	0.12
Ash (% dry basis)	1.602	1.983	1.728	0.093	0.05

Total damaged kernels includes 0.08% sprouted kernels, 0.06% insect chewed kernels, 0.16% germen chewed kernels, 0.05% fusarium and 0.02% green kernels.

Grade Distribution



Ref.: O/G: Out of grade

Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec.)	398	546	447	36	0.08
	Color (b)	20.7	25.4	23.1	1.4	0.06
	Wet Gluten (%)	23.5	35.8	29.0	3.1	0.11
	Gluten Index (%)	8	86	50	22	0.44
FARINOGRAM	Energy Level	31.5	44.5	39.1	4.1	0.11
	Degree Softening (%)	23	33	30	3	0.11

These results were elaborated with 15 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 (%)	Bread Wheat (Triticum aestivum) (%)	Protein (13.5 % Moisture (%)%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
6	IV	Balcarce	O/G 1	81.05	0.62	0.18	0.22	28	0.94	10.0	52.24	1.734
26	IV	Balcarce	O/G 1	82.85	0.70	0.22	1.04	56	4.36	10.3	51.90	1.785
1	IV	Coronel Pringles	1	78.80	0.58	0.68	1.12	62	2.46	11.2	43.67	1.820
14	IV	Coronel Pringles	2	79.00	0.44	1.08	1.14	54	2.16	12.2	37.27	1.724
7	IV	Coronel Suárez	1	78.15	0.18	0.52	1.00	82	0.86	13.5	39.88	1.790
15	IV	Coronel Suárez	O/G 1	79.00	1.00	0.56	0.64	30	0.60	12.6	47.97	1.782
27	IV	Coronel Suárez	O/G 2	76.10	0.12	0.78	1.40	35	0.94	12.5	43.17	1.940
5	IV	Gonzales Chávez	1	79.90	0.84	0.24	0.46	76	0.50	11.5	46.71	1.738
21	IV	Gonzales Chávez	1	82.15	0.42	0.32	0.64	55	1.38	10.5	48.41	1.736
28	IV	Gonzales Chávez	1	81.25	0.12	0.26	0.60	52	1.78	10.8	46.63	1.761
3	IV	Olavarría	O/G 1	78.35	0.76	0.32	0.24	32	1.40	10.8	44.74	2.016
19	IV	San Cayetano	O/G 1	80.60	0.16	0.22	0.14	19	2.66	10.1	51.28	1.758
25	IV	San Cayetano	O/G 1	81.50	0.32	0.06	0.22	21	3.18	10.3	49.76	1.768
4	IV	Tres Arroyos	1	78.15	0.28	0.40	0.28	43	1.22	10.7	43.62	1.792
22	IV	Tres Arroyos	1	81.70	0.50	0.12	0.58	52	2.66	10.8	49.05	1.767
23	IV	Tres Arroyos	1	83.25	0.08	0.10	0.72	50	2.62	10.2	50.30	1.788
24	IV	Tres Arroyos	O/G 1	81.05	0.26	0.14	0.78	52	3.32	10.2	49.88	1.785
11	VS	Bahía Blanca	2	80.60	0.12	1.08	0.38	46	0.98	11.5	44.12	1.729
9	VS	Coronel Dorrego	1	81.70	0.26	0.40	0.78	72	2.96	10.8	45.68	1.717
12	VS	Coronel Dorrego	1	81.95	0.20	0.64	1.22	64	1.96	10.3	47.08	1.618
13	VS	Coronel Dorrego	1	80.80	0.36	0.48	1.36	43	1.84	11.4	45.02	1.636
30	VS	Coronel Dorrego	1	82.15	0.62	0.56	1.08	61	2.32	10.5	45.39	1.728
8	VS	Guatraché	3	77.45	0.34	0.68	3.10	67	1.64	13.8	33.63	1.983
32	VS	Guisasola	O/G 1	82.60	0.34	0.14	0.50	35	1.42	10.1	50.80	1.698
29	VS	La Costa	1	83.05	0.06	0.62	0.92	54	2.42	10.0	51.16	1.799
31	VS	Las Oscuras	3	84.85	0.28	1.68	0.38	47	1.52	9.2	53.97	1.721
2	VS	Oriente	1	81.25	0.56	0.24	0.66	53	0.82	10.1	48.26	1.738
16	VS	Patagones	1	83.25	0.14	0.38	0.18	63	1.52	12.2	49.72	1.671
17	VS	Puán	2	81.70	0.26	0.48	1.58	64	2.38	11.7	43.17	1.602
18	VS	Saavedra	O/G 1	79.25	0.46	0.32	0.74	36	1.54	12.3	42.87	1.733
10	VS	Tandil	1	82.85	0.00	0.28	0.98	72	1.68	12.7	56.68	1.833
20	VS	Tornquist	2	79.45	0.42	0.98	1.66	65	2.06	11.2	44.80	1.709

Appendix of Locality Composite Samples.

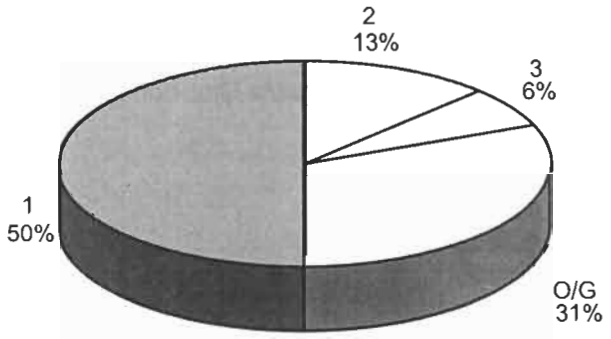
SAMPLE IDENTIFICATION			SEMOLIN ANALYSIS					
Sample Number	Suregion	Locality, district or department	Falling Number (sec.)	Color (b)	Wet Gluten (%)	Gluten Index (%)	Farinogram Energy Level	Farinogram Degree of Softening (12 min.)
6	IV	Balcarce	430	22.4	27.0	38	38.5	30
26	IV	Balcarce	425	22.4	26.9	41	38.0	27
1	IV	Coronel Pringles	467	25.2	30.0	90	41.6	26
14	IV	Coronel Pringles	461	24.0	31.9	72	40.0	24
7	IV	Coronel Suárez	475	24.3	35.9	54	36.8	23
15	IV	Coronel Suárez	400	22.2	30.6	14	39.0	34
27	IV	Coronel Suárez	482	24.0	32.6	49	40.2	28
5	IV	Gonzales Chávez	419	24.1	30.0	52	43.8	24
21	IV	Gonzales Chávez	431	24.0	27.2	60	38.4	22
28	IV	Gonzales Chávez	463	24.3	28.5	56	37.8	27
3	IV	Olavarría	420	23.1	26.4	65	37.1	30
19	IV	San Cayetano	472	22.6	24.7	73	35.1	27
25	IV	San Cayetano	456	22.6	25.4	78	38.0	25
4	IV	Tres Arroyos	417	23.2	25.6	79	36.0	26
22	IV	Tres Arroyos	449	22.0	29.4	44	38.2	26
23	IV	Tres Arroyos	468	22.2	28.2	63	38.1	27
24	IV	Tres Arroyos	468	23.4	28.0	58	39.0	27
11	VS	Bahía Blanca	450	23.5	28.8	39	42.8	29
9	VS	Coronel Dorrego	416	24.2	27.8	30	39.1	33
12	VS	Coronel Dorrego	429	22.2	27.1	8	36.1	28
13	VS	Coronel Dorrego	414	23.5	30.4	56	39.4	31
30	VS	Coronel Dorrego	434	22.9	27.4	66	38.4	31
8	VS	Guatraché	409	20.7	23.5	10	31.5	33
32	VS	Guisasola	460	21.4	26.8	67	34.9	31
29	VS	La Costa	546	25.3	35.8	50	44.0	26
31	VS	Las Oscuras	461	21.6	26.4	50	33.8	23
2	VS	Oriente	458	23.8	26.8	82	36.1	33
16	VS	Patagones	398	23.3	33.5	45	42.1	29
17	VS	Puán	439	25.4	30.4	47	42.4	33
18	VS	Saavedra	483	23.7	31.9	55	44.5	29
10	VS	Tandil	441	21.8	31.0	61	44.0	32
20	VS	Tornquist	469	23.1	27.7	86	37.1	24

Durum Wheat Averages

Results of the Analysis

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.10	84.85	80.80	1.99	0.02
Total Damaged Kernels (%)	0.00	1.00	0.37	0.24	0.66
Foreign Material (%)	0.06	1.68	0.47	0.35	0.74
Shrunken and Broken Kernels (%)	0.14	3.10	0.84	0.59	0.70
Vitreous Kernels (%)	19	82	51	16	0.31
Wheat (Triticum aestivum) (%)	0.50	4.36	1.88	0.88	0.47
Proteins (13,5% Moisture) (%)	9.2	13.8	11.1	1.1	0.10
Weight of 1000 Kernels (gr.)	33.63	56.68	46.84	4.77	0.10
Ash (% dry basis)	1.602	2.016	1.762	0.089	0.05

Grade Distribution



Ref.: O/G: Out of grade

Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec.)	398	546	447	30.4	0.07
	Color (b)	20.7	25.4	23.2	1.1	0.05
	Wet Gluten (%)	23.5	35.9	28.9	3.0	0.10
	Gluten Index (%)	8	90	54	20	0.37
FARINOGRAM	Energy Level	31.5	44.5	38.8	3.1	0.08
	Degree Softening (%)	22	34	28	3	0.12

Country elevators, Cooperatives and Mills that contributed in the sampling

LOCALITY	DENOMINATION
BUENOS AIRES PROVINCE	
Alberti	Rivara S.A.
América	Prunder S. A.
Arrecifes	Luis A. Ducret S.A.
Arrecifes	Noble Argentina
Azul	H. J. Navas
Bahía Blanca	Molinos Rio de la Plata
Bajo Hondo	Acopio A.C.A.
Balcarce	Acopio Balcarce
Balcarce	Jorge Mateos
Balcarce	Scorziello y Galella
Balcarce	Siagro
Balcarce, Gral. Alvarado y Gral. Pueyrredón	Coop. Gral. Necochea
Baradero	Julio Do Campo
Benito Juárez	Campoamor S. A.
Bolívar	Coop. Agrop. De Bolívar Ltda.
Bragado - Nueve de Julio	La Bragadense
Cabildo	Cooperativa Agrícola Ganadera e Industrial Sombra de Toro Ltda.
Carhué	Cooperativa Agrícola Ganadera Ltda. de Adolfo Alsina
Carlos Casares	Grobocopatel Hnos.
Carmen de Patagones	Cooperativa Agrícola Ganadera e Industrial de Patagones y Viedma
Carmen de Patagones	Novick y Cía.
Cnel. Suárez	Cooperativa Agropecuaria Gral. San Martín Ltda.
Coronel Dorrego	Casa Balda S. A.
Coronel Dorrego	Raúl H. Pérez
Coronel Pringles	Pucará S. A.
Coronel Suárez	Agro Coronel Suárez
Daireaux	Aripar S.A.
Daireaux	Camafer
Darregueira	La Emancipación Sociedad Cooperativa Mixta de Consumo Ltda
Gral. Alvarado	H. Villar
Gral. Lamadrid	Productores Gral. Lamadrid
Gral. Pinto, Ameghino	Rucamalen S.A.
Gral. Viamonte	Coop. Rural Gral. Viamonte
Gral. Villegas	Bandagro S.A.
Gral. Villegas	Miguel Alzamora
Gral. Villegas	Molinos Mellana S.A.
Gral. Villegas	Semillera Fuertes S.A.
Gral. Villegas	Sigra Villegas S.A.
Guaminí	Cooperativa Agrícola Ganadera Guaminí Ltda.
Hipólito Yrigoyen	Coop. Agrop. El Progreso
Laprida	Vagnini y Mañana S.R.L.
Lartigau	Cooperativa Agrícola Ganadera de Lartigau Ltda.
Licenciado Matienzo	Cantabria S. A.
Lobería	Barón y Cia.
Lobería	Cantabria
Lobería	E. Marmetto
Lobería	Fernández Candia
Lobería	Forner Hnos.S.A.

LOCALITY	DENOMINATION
Lobería	Pedro Ramón Cabeza S.A.
Lobería	Pro-Agro
M. Cascallares	Cooperativa Agrícola Ltda. de Micaela Cascallares
Mar Chiquita	Camposur
Necochea	Alea y Cía.
Necochea	Cooperativa Agropecuaria Gral. Necochea Ltda.
Necochea	Dorrego, López y Noves S.A.
Necochea	Fernández Candia-Caraffo Premrou S.A.
Necochea	Marmetto
Pigüé	Molino Cañuelas
Puán	Cooperativa Agrícola Ganadera Ltda. de Puan
Puán	Torre Hnos.
Quequén	Promotora Agropecuaria Necochea
Rauch	Tolvas
Rivadavia	El Indio S.A.
Rivadavia	Hernán Gutierrez
Rivadavia	Prunder S.A.
Rivadavia	Pueblo Chico S.A.
Rivadavia	Sanchez y Cía. S.C.
Rojas, Pergamino	Coop. Agrop. Ltda. de Carabelas
Saavedra	Oregui Productores de Goyena
Saladillo	Coop. Agricol. Ganad. de Saladillo.
Salliqueló	Ganadera Salliqueló
Salto, Pehuajó, Chacabuco, Lincoln, S.A. de Giles, Gral. Belgrano y Olavarría	Trigalia
San Cayetano	Gazaneo, Julio Gustavo
San Cayetano	Molino Balatón
Stroeder	Cooperativa Agropecuaria de Stroeder Ltda.
Suipacha	Coincer S.A.
Tandil	Cooperativa Agropecuaria de Tandil Ltda.
Tornquist	Cooperativa Rural Ltda. de Tornquist
Tornquist	Los Vascos Cereales
Trenque Lauquen	Juan Carlos Latour
Tres Arroyos	Agarraberes, Oscar Pedro
Tres Arroyos	Agro El Carretero S.A.
Tres Arroyos	Agroservicios Sudeste S.A.
Tres Arroyos	Bellingeri e Hijos, Francisco
Tres Arroyos	Cooperativa Agraria de Tres Arroyos Ltda.
Tres Arroyos	Cooperativa Rural Alfa Ltda.
Tres Arroyos	Goñi, Héctor Jesús
Tres Arroyos	La Pampa Coo. Agrícola Ganadera de Colonización y Consumo Ltda.
Tres Lomas	Morero Semillas
Veinticinco de Mayo	Cereales 25 de Mayo
Villarino	Barraca Mitre
	Centro de Acopiadores de Cereales
	Centro de Acopiadores de Cereales de Daireaux
	Centro de Acopiadores de Cereales de la zona Oeste de la Pcia. de Bs. As.
	Centro de Acopiadores de Cereales Zona Puerto Quequén
	Centro de Acopiadores de Cerreales de Tres Arroyos
	Centro de Acopiadores del Noroeste Bonaerense
	Soc. de Acopiadores Cereales Zona Bahía Blanca
	Sociedad de Cerealistas del Norte de la Pcia. de Bs. As.

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CÓRDOBA PROVINCE	
Adelia María	Merlo Manavella S.A.
Córdoba	ACA Córdoba
Dto. Gral. San Martín	Coop. Silvio Pellico
Dto. Gral. San Martín	Ortega Hnos.
Dto. Juárez Celman	Miguel Viglianco e hijos SA.
Dto. San Justo	Miguel Gazzoni e Hijos
Freyre	Coop. Agríc. Ganad. y de Cons. de Freyre Ltda.
Gral. Cabrera	Cotagro Coop. Agropecuaria Ltda.
Justiniano Posse	Coop. de Justiniano Posse
Leones	Coop. de Leones
Morteros	Coop. Agríc. y Ganad. de Morteros Ltda.
Oliva	ACA Acopio Oliva
Santa María	Ceriol S.R.L.
Ucacha	Ucacha Cereales
Villa del Rosario	ACA Acopio Villa del Rosario
	Sociedad de Acopiadores de Granos de la Pcia. de Córdoba
ENTRE RÍOS PROVINCE	
Crespo	La Agrícola Regional Coop. Ltda.
Diamante	Agromoya SRL
Gral. Galarza	Coop. La Protectora Ltda.
Gral. Ramírez	Coop. La Ganadera Gral. Ramírez Ltda.
Gualeguay	Dowery SA
Gualeguay	Maribey SA
Gualeguaychú	Unión Cerealera SRL
Hasenkamp	León Rabey e Hijos S. A.
Hasenkamp	Ultragrain S.A.
La Paz	Coop. La Paz
Larroque	Tierra Greda SA
Lucas González	Coop. El Progreso Ltda.
María Luisa	Héctor Bolzan y Cia
Rincón del Nogoyá	Agrosur SA
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
LA PAMPA PROVINCE	
Anguil	Trabajadores Unidos Coop. Mixta Ltda de Anguil
Arata	P. U. de Arata S.R.L.
Catriló	Lartirigoyen y Cía. S. R. L.
Cnel. Hilario Lagos	Productores Asociados S. A.
Cnel. Hilario Lagos	René Thomas
Cnel. Hilario Lagos	S.A.G.P. y A.
Colonia Barón	Pincen S. R. L.
Doblas	Cooperativa Agropecuaria de Doblas Ltda.
Eduardo Castex	Acción Cooperativa Agropecuaria Ltda. de Eduardo Castex
Eduardo Castex	Brandemann y Cía

LOCALITY	DENOMINATION
General Pico	A.C.A. Acopio
General Pico	Acopagro S. A.
General Pico	Agronomía Pico
General Pico	Cereales Anahi Ruca S. A.
General Pico	Dominguez Carlos
Gral. San Martín	Sociedad Cooperativa Agrícola Ganadera Ltda. de Gral. San Martín
Guatraché	Acopio A.C.A.
Ingeniero Luiggi	Agronomía Fernández
Ingeniero Luiggi	C.A. de Granos
Ingeniero Luiggi	El Campo S. A.
Intendente Alvear	Caivano-Chapaleufú S. A.
Intendente Alvear	Grainco Pampa
M. Riglos	Cooperativa Agropecuaria de Miguel Riglos Ltda.
Macachín	Atreu-có Cooperativa Agropecuaria Ltda.
Miguel Riglos	Trimag S.A.
Quemú Quemú	Cereales Quemú
Quemú Quemú	Comercial Antón
Quemú-Quemú	García Rouco y Bouza
Realicó	Cooperativa Alta Italia Ltda.
Santa Rosa	Silvera Omar
Uriburu	Agro Ganadera Don Enrique S. A.
Uriburu	Alvarez Hnos.
Villa Mirasol	Comercial Mirasol
	Roberto J. Vazquez
	Sembrar SRL
	Enrique Cittadini
	Juan P. Alazia
	Centro de Acopiadores de Cereales de La Pampa y Limítrofes

SANTA FE PROVINCE

Alcorta	Coop. de Alcorta
Alcorta	Jakas, Kokic e Ivancich S.A.
Alvarez	Moscoloni Hnos S.R.L.
Arequito	Acopio Arequito S.R.L.
Avellaneda	Unión Agríc. de Avellaneda Coop. Ltda.
Bigand	Jakas, Kokic e Ivancich S.A.
Cañada de Gómez	Acopio ACA de Cañada de Gómez
Carreras	Jakas Kokic e Ivancich S.A.
Chabás	Jakas, Kokic e Ivancich S.A.
Dto. Belgrano	Boni Hnos.
Dto. Caseros	Campo Lindo S.R.L.
Dto. Caseros	Prince Cereales S.R.L.
Dto. Caseros	Semillero Cardini S.R.L.
Dto. Caseros	Theiler Hnos y Cia S.R.L.
Dto. Gral. López	A. Permingeat S.A.
Dto. Gral. López	Chapuy Cereales S.A.
Dto. Gral. López	Don Regino S.C.A.
Dto. Rosario	Del Teglia & Cía S.R.L.
Dto. Rosario	Santa Sylvina S.A.
Dto. San Jerónimo	E.Toya e Hijos S.A.
Dto. San Jerónimo	Melica Hnos S.C.
Dto. San Jerónimo	Vuelta Hnos. S.A.
Gral. Gelly	Cereales Triángulo S.R.L.
Hughes	Cerealista Hugues S.R.L.
Irigoyen	Adagri S.A.
Irigoyen	Coop. Agropecuaria Mixta Ltda. de Irigoyen
Landeta	Landeta Cereales S.R.L.
Malabrigo	Coop. Agrop. de Malabrigo Ltda.
Margarita	Coop. Agric. Mixta de Margarita Ltda.
Máximo Paz	Coop. Agropecuaria Ltda. de Máximo Paz

LOCALITY	DENOMINATION
Montes de Oca	Felipe Crosetti S.A.
Pujato	Rogelio Rogani S.R.L.
Rafaela	Domingo Sapino Ltda. S.A.
Roldán	R. Amsler S.A.C.
Rosario	Juan María S.R.L.
Rosario	Olega S.A.
Rufino	Cerealoeste S.A.
San Jerónimo Norte	Agro Cereales Las Colonias
San José de la Esquina	Acopio ACA San José de la Esquina
San Justo	Coop. Agríc. Ganad. de San Justo Ltda.
	Sociedad Gremial de Acopiadores de Granos (Rosario)

CHACO PROVINCE

Pampa del Infierno y Los Frentones	Grupo de Productores Trigueros del Oeste
Saenz Peña	Cooperativa Saenz Peña
Villa Angela	Grupo de Productores de Villa Angela

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WHEAT

INTA Estación Experimental Agropecuaria Marcos Juárez

WHEAT DURUM

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Molinos Rio de la Plata

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Subregion I
Ing. Agr. HUGO FONTANETTO
Estación Experimental Agropecuaria Rafaela. Instituto Nacional de Tecnología Agropecuaria.

Ing. Agr. OSCAR KELLER
Estación Experimental Agropecuaria Rafaela. Instituto Nacional de Tecnología Agropecuaria.

Subregion II North
Ing. Agr. JULIO CASTELLARIN
Estación Experimental Agropecuaria Oliveros. Instituto Nacional de Tecnología Agropecuaria.

Ing. Qca. MARTHA CUNIBERTI
Estación Experimental Agropecuaria Marcos Juárez. Instituto Nacional de Tecnología Agropecuaria.

Subregion II South
Ing. Agr. OMAR POLIDORO
Estación Experimental Agropecuaria Pergamino. Instituto Nacional de Tecnología Agropecuaria.

Ing. Agr. LUIS VENTIMIGLIA
Agencia de Extensión Rural 9 de Julio. Instituto Nacional de Tecnología Agropecuaria.

Subregion III
Ing. Agr. HÉCTOR MILISICH
Estación Experimental Agropecuaria Paraná. Instituto Nacional de Tecnología Agropecuaria.

Subregion IV
Ing. Agr. GILBERTO KRAAN
Chacra Experimental Integrada Barrow. Instituto Nacional de Tecnología Agropecuaria - Ministerio de Asuntos Agrarios y Producción de la Provincia de Buenos Aires.

Ing. Agr. FRANCISCO DI PANE
Chacra Experimental Integrada Barrow. Instituto Nacional de Tecnología Agropecuaria Ministerio de Agricultura, Ganadería y Alimentación de la Provincia de Buenos Aires.

Subregion V North
Ing. Agr. PAOLA CAMPITELLI
Facultad de Ciencias Agropecuarias. Universidad Nacional de Córdoba

Subregion V South
Ing. Agr. RUBÉN MIRANDA
Departamento de Agronomía. Universidad Nacional del Sur.

Ing. Agr. FEDERICO MÖCKEL
Departamento de Agronomía. Universidad Nacional del Sur.

NEA
Ing. Agr. ISIDRO CETTOUR
Estación Experimental Agropecuaria Saenz Peña, Chaco. Inst. Nacional de Tecnología Agropecuaria.

NOA
Ing. Agr. DANIEL GAMBOA
Estación Experimental Agropecuaria Obispo Colombres, Tucumán. Inst. Nacional de Tecnología Agropecuaria

Useful Information

ASOCIACIÓN DE COOPERATIVAS ARGENTINAS COOPERATIVA LIMITADA
Av. Madero 942, Pisos 4, 5 y 6. (1106) Buenos Aires. TE: 011-4310-1300. Fax: 011-4310-1330.
Fax server: 011-4310-1390.
E-mail: ferrari@acacoop.com.ar Web Site: www.acacoop.com.ar

BOLSA DE CEREALES DE BAHÍA BLANCA
Saavedra 636, Piso 1 (B8000DDN) Bahía Blanca - Pcia. de Buenos Aires.
Tel. 0291-4559520 - Fax: 0291-4519062
E-mail: bolcer@bblanca.com.ar Web Site: www.bcereal.bblanca.com.ar

CÁMARA ARBITRAL DE CEREALES DE BAHÍA BLANCA
Saavedra 636, Piso 3 (B8000DDN) Bahía Blanca - Pcia. de Buenos Aires.
Tel. 0291-4560140. Fax: 0291-4560218.
E-mails: camarabb@cacbb.com.ar y laboratorio@cacbb.com.ar

CÁMARA ARBITRAL DE CEREALES DE ENTRE RIOS
Urquiza 645. (3100) Paraná. TE: 0343-4312784 / 4314361. Fax: 0343-4310301
E-mail: cacer@cacerer.com.ar

CÁMARA ARBITRAL DE CEREALES DE LA BOLSA DE COMERCIO DE ROSARIO
Córdoba 1402, (S2000AWX) Rosario. Pcia. de Santa Fe. TE: 0341-4211000. Fax: Int. 2211.
E-mail: camara@bcr.com.ar Web Site: www.bcr.com.ar

BOLSA DE COMERCIO DE ROSARIO
Córdoba 1402, (S2000AWX) Rosario. Pcia. de Santa Fe. TE:0341-4213477/78
Web Site: www.bcr.com.ar

CÁMARA ARBITRAL DE CEREALES DE LA BOLSA DE COMERCIO DE SANTA FE
San Martín 2231. (3000) Santa Fe. TE: 0342-4554734. Fax: 0342-4552026
E-mail: bolcomsf@arnet.com.ar

CÁMARA ARBITRAL DE LA BOLSA DE CEREALES DE BUENOS AIRES
Bouchard 454, piso 8. (1106) Buenos Aires. TE: 011-4311-6020. Fax: 011-4311-2552
E-mail: mdirosso@cabcbue.com.ar Web Site: www.cabcbue.com.ar

BOLSA DE CEREALES DE BUENOS AIRES
Corrientes 119/123. (1043) Buenos Aires
TE: 011-4312-2000 / 9 Web Site: www.bolcereales.com

BOLSA DE CEREALES DE CÓRDOBA Y CÁMARA DE CEREALES Y AFINES DE CÓRDOBA TRIBUNAL ARBITRAL
Bvard. Ocampo 317. Bo. Gral. Paz (5000) Córdoba. TE: 0351-4229637 / 4247256 / 4253716
Fax: 0351-4233772 - E-mail: camaracerealcba@camcercor.com.ar - laboratorio@camcercor.com.ar
Web Site: www.bccba.com.ar

CENTRO DE EXPORTADORES DE CEREALES
Bouchard 454, piso 7, (1106) Buenos Aires. TE: 011-4331-0074. Fax: 011-4311-3899.
E-mail: ciaracec@ciaracec.com.ar

COMISIÓN NACIONAL DE ACTIVIDADES ESPACIALES
Av. Paseo Colón 751. (1063) Buenos Aires. TE / Fax: 011-4331-0074.
E-mail: aiello@conae.gov.com.ar Web Site: www.conae.gov.com.ar

FEDERACIÓN ARGENTINA DE LA INDUSTRIA MOLINERA
Bouchard 454, Piso 6º (1106) Buenos Aires. TE: 011-4312-8717
E-mail: faim@faim.org.ar Web Site: www.faim.org.ar

FEDERACIÓN DE CENTROS Y ENTIDADES GREMIALES DE ACOPIADORES DE CEREALES
Av. Corrientes 119 PB. (1043) Buenos Aires. TE: 011-4312-0155. Fax. 011-4313-2290.
E-mail: acopiadores@acopiadores.com Web Site: www.acopiadores.com

INSTITUTO NACIONAL DE TECNOLOGÍA AGROPECUARIA

- **CHACRA EXPERIMENTAL INTEGRADA BARROW (INTA-MAAyP Pcia. Bs. As.)**
  Ruta Nac. Nº 3 - Km. 488, Casilla de Correo 216 (7500) Tres Arroyos – Pcia. de Buenos Aires.
  TE / Fax: 02983-431081 / 431083.
  E-mail: cebarro@chacrabarrow.gov.ar Web Site: www.inta.gov.ar/crbsass/barrow

- **ESTACIÓN EXPERIMENTAL AGROPECUARIA MARCOS JUÁREZ**
  Ruta Prov. Nº 12 - Km. 5, Casilla de Correo 21 (2580) Marcos Juárez – Pcia. de Córdoba.
  TE / Fax: 03472-425001 / 427171
  E-mail: mcuniberti@correo.inta.gov.ar Web Site: www.inta.gov.ar/mjuarez

SERVICIO NACIONAL DE SANIDAD Y CALIDAD AGROALIMENTARIA

- **DIRECCIÓN DE CALIDAD AGROALIMENTARIA**
  COORDINACIÓN DE PRODUCTOS GRANARIOS
  Av. Paseo Colón 367, Piso 3, (C1063ACD) Buenos Aires.
  TE: 011-4331.6041 / 9 int. 1208 / 1229 / 1501. Fax: int. 1508
  E-mail: progran@senasa.gov.ar – dica@senasa.gov.ar
  Web Site: www.senasa.gov.ar

- **DIRECCIÓN DE LABORATORIOS Y CONTROL TÉCNICO**
  COORDINACIÓN GENERAL DEL LABORATORIO VEGETAL
  Av. Ing. Huergo 1001, (1107) Buenos Aires.
  TE: 011-4362-1177 / 1199 / 4514 - Fax: int. 215
  E-mail: jmussini@inea.com.ar Web Site: www.senasa.gov.ar

SECRETARÍA DE AGRICULTURA, GANADERÍA, PESCA Y ALIMENTOS DE LA NACIÓN

Av. Paseo Colón 982, (C1063ACW) Buenos Aires. TE: 011-4349-2000. Fax: 011-4349-2589.
E-mails: comunicacion@sagpya.minproduccion.gov.ar prensa@sagpya.minproduccion.gov.ar
Web Site: www.sagpya.mecon.gov.ar

Contents:

Ministerio de Agricultura, Ganadería y Pesca
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Ministerio de Asuntos Agrarios y Producción
Buenos Aires LA PROVINCIA
Subsecretaría de Asuntos Agrarios

INTA
Instituto Nacional de Tecnología Agropecuaria

Federación de Centros y Entidades Gremiales de Acopiadores de Cereales
Buenos Aires

BC
Bolsa de Cereales, Oleaginosos, Frutos y Productos de Bahía Blanca

AFA S.C.L.
Agricultores Federados Argentinos
Sociedad Cooperativa Limitada

Bolsa de Comercio de Rosario
Cámara Arbitral de Cereales

Cámara Arbitral de la Bolsa de Cereales de Buenos Aires

Cámara Arbitral de Cereales de Bahía Blanca Argentina

Cámara Arbitral de Cereales de Entre Ríos

faim
federación argentina de la industria molinera

Cámara Arbitral de Cereales
Bolsa de Comercio de Santa Fe

Asociación de Cooperativas Argentinas

Centro de Exportadores de Cereales

Bolsa de Cereales de Córdoba y
Cámara de Cereales y Afines de Córdoba
Tribunal Arbitral