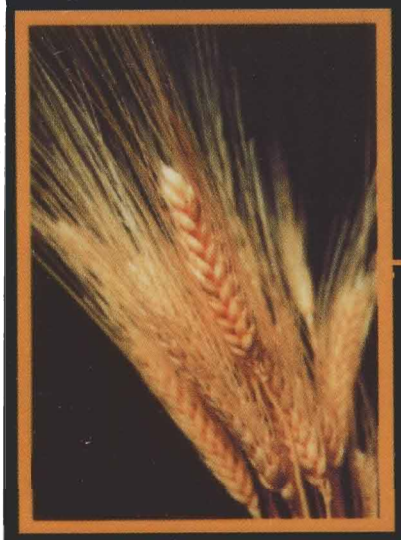


2002/2003 Crop

ARGENTINE WHEAT

Institutional Quality Report

http://www.trigoargentino.com.ar

Argentine Wheat

Institutional Quality Report

2002/2003 Crop

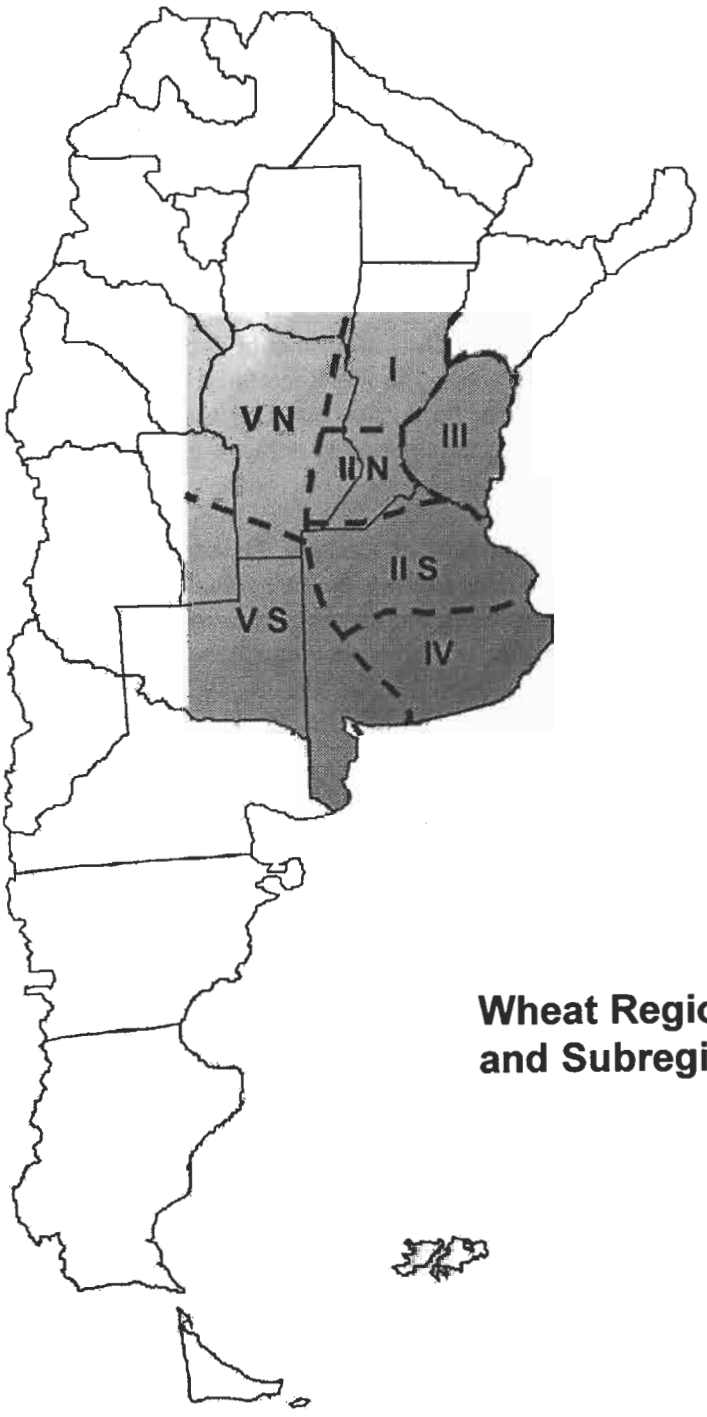
Argentine Wheat

Institutional Quality Report
2002/2003 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.
- **Cámara de Cereales y Afines de Córdoba.**
  Córdoba Grain 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.



Wheat Region and Subregions

WHEAT

Triticum aestivum L.

Organization and Methodology:

Sampling structure

It was agreed to obtain samples which represent about 4000 tons each, reaching a total of 314 analysis to be performed.

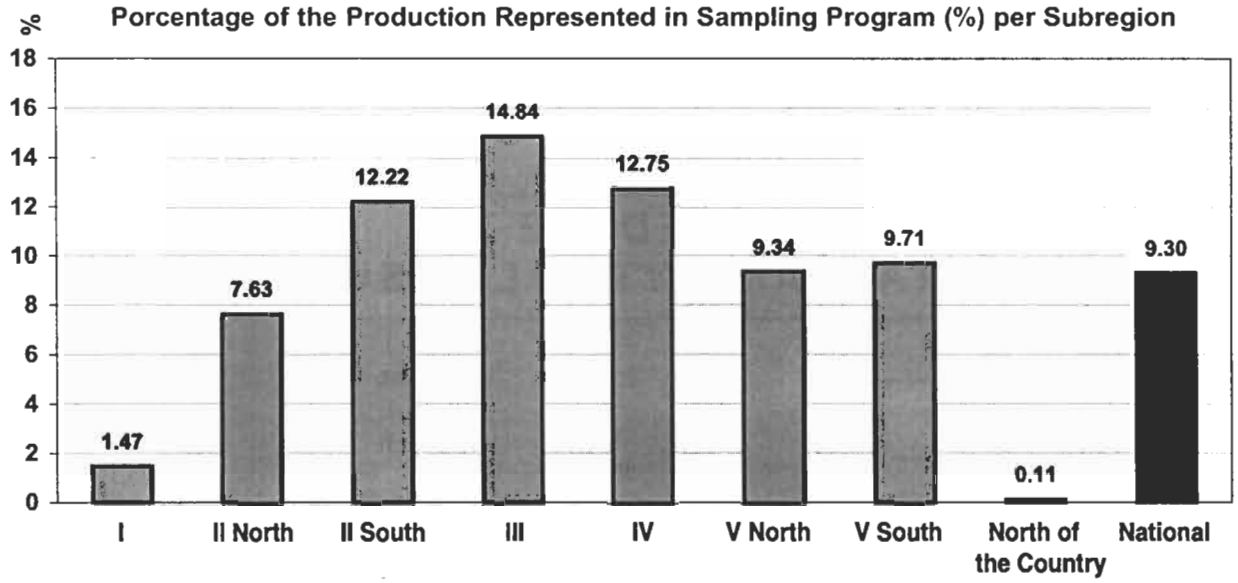
The sampling was planned proportionally to the territorial division (district or department) sown area, and the average yield registered the last three years, according to the Secretariat of Agriculture, Livestock, Fishery and Food data. In accordance with the estimated production resulting, the composite 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 Samples	Sampling (tons.)	Production (tons.)	Production Sampled (%)
I	12	11,669	796,375	1.47
II North	47	110,240	1,445,625	7.63
II South	36	145,046	1,187,113	12.22
III	17	69,044	465,133	14.84
IV	86	337,616	2,647,335	12.75
V North	19	96,743	1,035,520	9.34
V South	95	372,451	3,837,691	9.71
Nortwest of the Country	2	1,000	885,870	0.11
TOTALS	**314**	**1,143,809**	**12,300,662**	**9.30**

Based on data about production from the Secretariat of Agriculture, Livestock, Fishery and Food. May 2003

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 5559 samples used for this sampling program, in such a way a sampled tonnage of 9.30 % of the national wheat production, which amounted to 12,300,662 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, 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 .

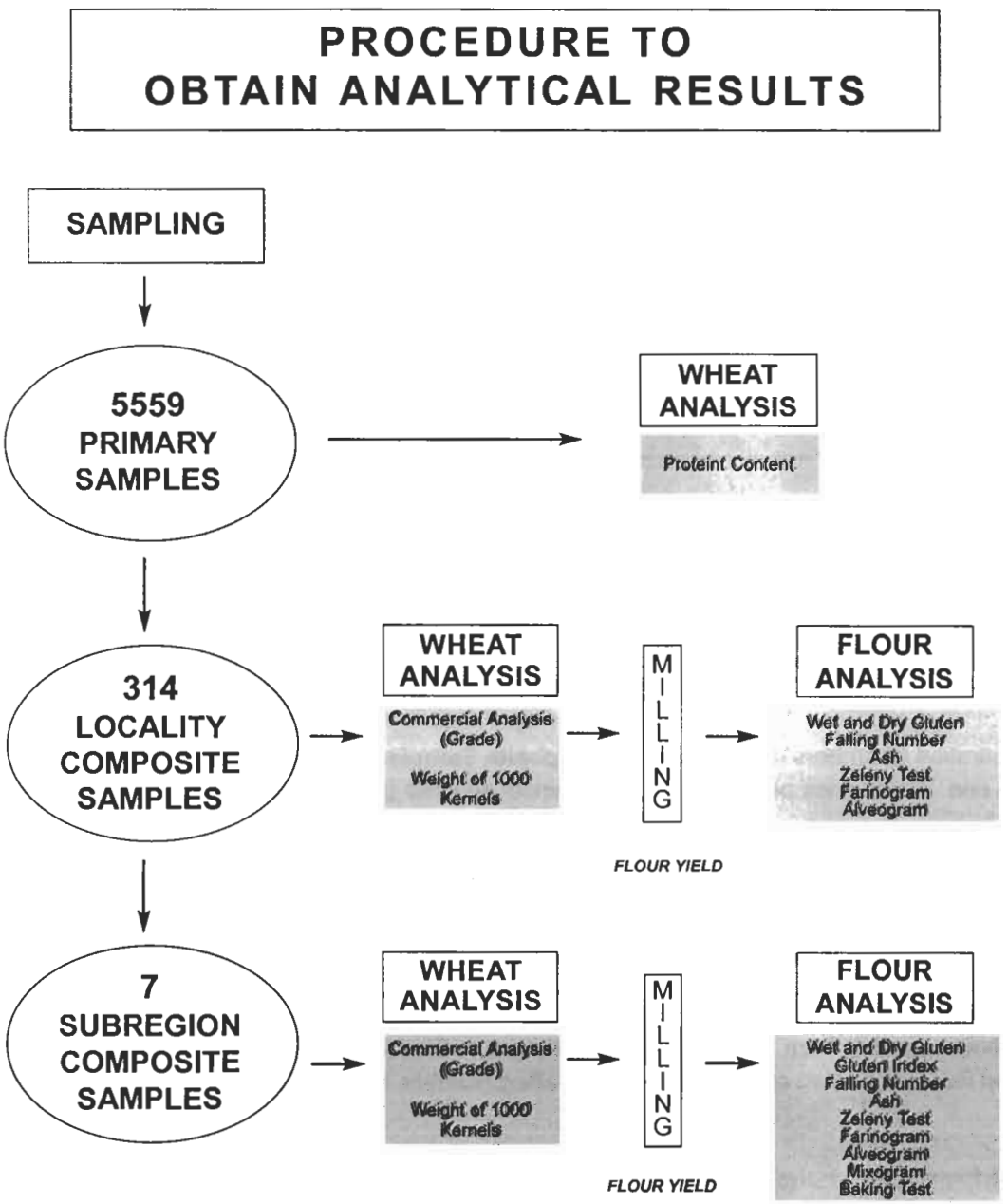
The composite samples were sent to the SENASA Laboratory to carry out the Bühler grinding, reserving a part in order to prepare the Subregion Composite Samples. It was decided to use only one mill for all the composite samples by locality, so as to minimize differences in the flour features due to the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



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 Nº 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 900º C +/- 25º 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 N° 56-61-IRAM* 15875)

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

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

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

RHEOLOGY

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

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

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

It determines the time of mixing or development (DT), and stability through a graphic drawn by the equipment due to the resistance of dough. Low value of DT is evidence of a bad bakery quality. Mixograms are classified in a scale that goes from 1 (very weak) to 9 (very strong).

Alveogram (Chopin Alveograph - ICC Nº 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

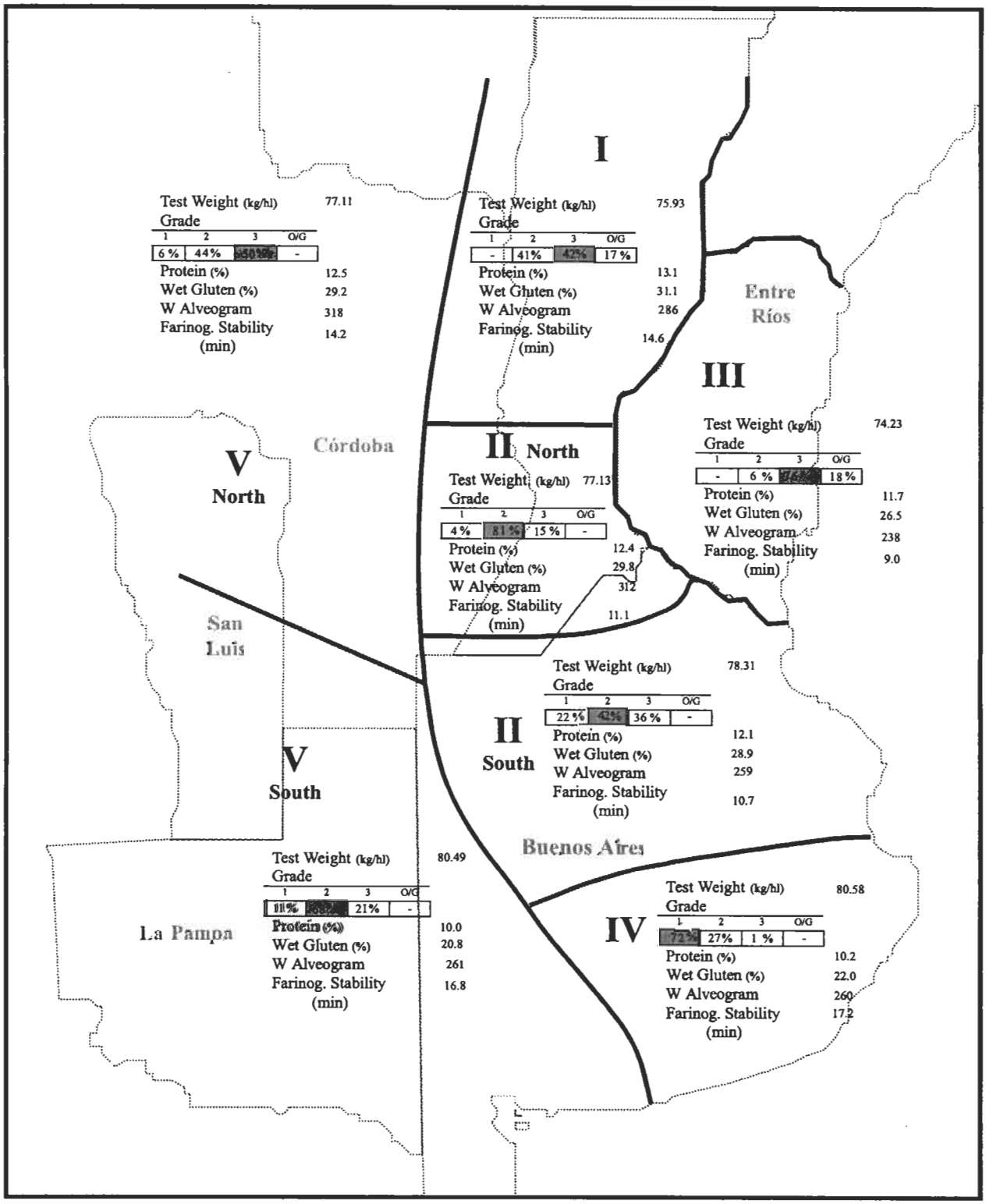
(Resolution Nº 557/97. Secretariat of Agriculture, Livestock, Fishery and Food)

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

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

Protein content: basis 11% (moisture basis of 13,5%)
According to protein content there will be 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 wheat sowing began at the usual time but in some areas the implantation were made under conditions of excessive edaphic humidity due to the high registered precipitations. This caused an uneven implantation because of the sowing depth and the covered of the seeds and in some cases, plants losses. The sowing started by the middle of May, but the biggest percentage was made during the month of June, concluding the same one at the end of July.

At sowing time the contents of useful water in the soil for the mentioned campaign were high to very high, with variationes from between 130 to 210 mm to the depth of 1,50 m in the soil profile; with the biggest registrations in San Jerónimo and San Martín Districts and to a lesser extent in Castellanos. During January-April period there were precipitations registered from between 505 to 650 mm, superior registrations to the historical average of 1931 and 2001which were between 30 to 75 % according to the respective areas. Due to the inherent factors of the devaluation phenomenon of our currency, where fuels and agrochemical prices were modified,producing a slight decrease of the Direct Swowing surface and less use of fertilizers.

Since the beginning of the cycle leaf disease were shown in the whole region (especially Yellow Spot and Leaf Rust), San Martín, San Jerónimo and San Justo Districts showed the bigger repercussions and severity. The biggest damages were associated with the lower chemical fertility and to those of no fertilized lots. The attack and repercussion degree was very heterogeneous inside the same region and the non treaties with fungicides lots suffered losses between 50 to 90 % of the foliage area of the crop.

The average of maximum and minimum temperatures during the tillering were similar to the historical average and the conditions were favorable for the tillers production. The precipitations between tillering and the begining of the stalking began in August and September, and were superior to the historical registrations in the whole region, causing especially the presence of Leaf Rust. This determined that the pulverizations application should be carried out a second time against the mentioned disease/pest, mainly in the more sensitive cultivations and in the lots with low chemical fertility. This fact produced severe losses of the foliage area up to 80% of the flag leaf and the destruction of the immediately inferior two leaves.

The precipitations during the period of stalking were high and superiors to the historical average and they were associated with periods of low heliophany (cloudy days). The presence of Leaf Rust were still registering, mainly in the Don Enrique cultivation which until this campaign had reacted very soundly with respect to this disease.

During the period of anthesis and grain filling, conditions of abundant rain and low heliophany periods persisted, that were associated with temperatures superior to 25°C (especially in the second fortnight of September and October) and to a relatively high humidity. This caused that the Leaf Rust attacks and also the undeveloped flowers still continued registering. Fusarium attacks of the ear were registered, but they were smaller than those of the campaign 2001/ 02 and the affected cultivations were those found in full flowering in the moment of the predisposition of the environmental conditions. Added to the problem caused by the leaf disease, the lack of radiation during this phase produced a strong decrease in the rates of growth of the cultivation (of 90-140 kg MS / ha / day to 50-80 kg MS / ha / day), that also influenced negatively in the final production.

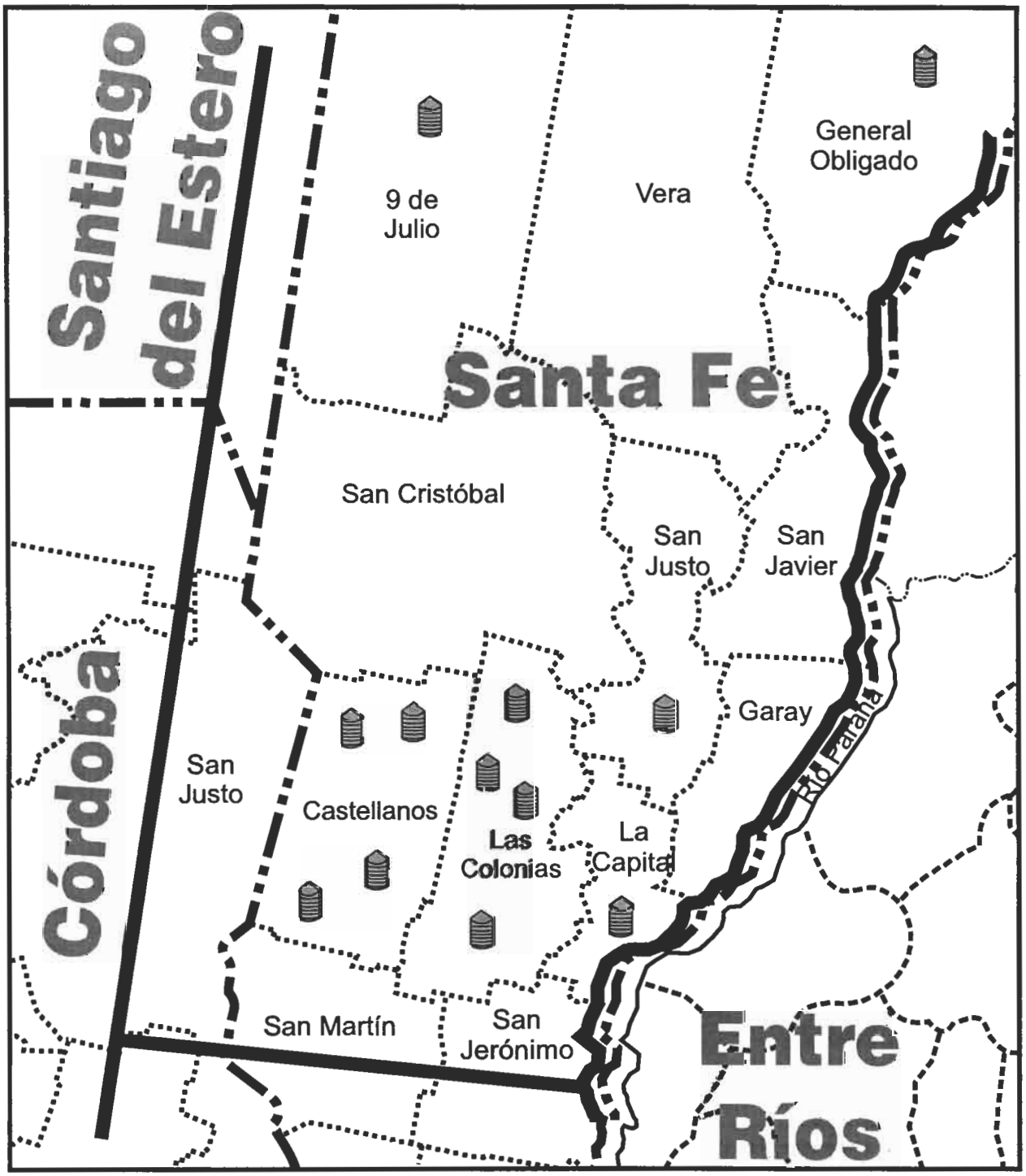
During the beginning of the grain filling stage, the edaphic humidity conditions were high and the heliophany increased considerably in relation to the preciding phenological phases, being characterized by sunny days, high thermal range and very cool nights. In the center south region of this ecological area was registered the presence of a new disease originated by a phatogen of the Fusarium gender, which penetrated through the roots and affected the cultivation partially and/or totally necrosis of the plants.

The yield losses caused for diverse reasons afore mentioned, were from 15 to 30 quintals / ha. Soya was the main cultivate predecessor, in smaller measure corn and very little sorghum or pastures.

It registered a decrease of the fertilizers consumption in relationship to the previous campaign, being the nitrogenous products the most used ones and then those containing phosphate. As in the precedent campaign a significant increase of the use of the sulfurated products took place, due to the highly significant responses obtained from experimental fields. The most used doses were those of: 50 to 120 kg/ha of urea, 50 to 80 kg/ha of phosphate diamónico or monoamódico, 40 to 70 kg/ha of agricultural gypsum and 50 to 100 kg/ha of ammonium sulfate; alone or combined. In relation to the mixtures, the most used ones were the compounds of the type N(30-50%) -P(20-35%) -S(10-20%) in the oriental region (near to the Paraná river) and the compounds of N(30-50%) -S(10-30%) in the occidental area. The consumption of liquid fertilizers registered a slight increment in relationship to the precedent campaign. The micronutrientes were used in the mixtures but in very small proportion, being the most used ones the Fe, the B, the Zn and the Cu. The consumption of fertilizers is superior mainly in San Justo and San Jerónimo Districts, and following them Las Colonias and La Capital and the rest. In general lines, 80% of the fertilizers were applied to the sown field and a 20% during the tillering stage.

The yields were low in general, with ranges of between 600 to 3500 kg / ha (these last ones were less than 10% of the total), being the productions of more frequency those from 1.200 to 2.000 kg / ha. This was due to the very important attacks of leaf fungus (especially Rust and yellow Spot) and in smaller proportion of the Fusarium of the roots and of the spike. Practically the 90% of the lots had burning problems for the high temperatures registered in the cultivation final stage, which produced low hectoliter weight (70-78). The protein contents in grains were regular to low, with predominance registrations from 9,5 to 11,5%.

There were registered isolated attacks of leaf and ear worms, which in places were of importance. The climatic conditions during the harvest were normal.



Each reference represents between 250 to 4,000 tns sampled.

Subregion I Wheat

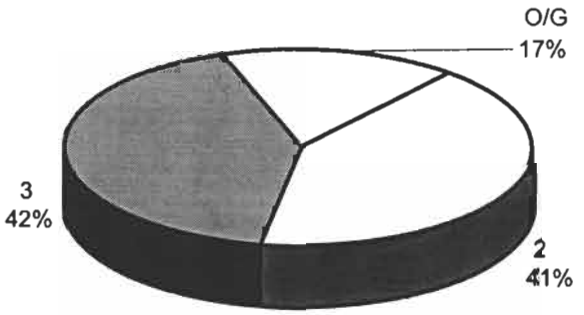
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	70.75	78.60	75.93	1.37	0.02
Total Damaged Kernels (%)	0.08	10.70	1.33	3.18	2.40
Foreign Material (%)	0.06	0.64	0.22	0.18	0.82
Shrunken and Broken Kernels (%)	0.60	3.00	1.26	0.75	0.60
Yellow Berry Kernels (%)	0.00	2.30	0.15	0.43	2.95
Protein (13,5% Moisture) (%)	11.3	14.1	13.1	0.5	0.04
Weight of 1000 Kernels (gr.)	24.10	29.30	26.18	1.92	0.07
Ash (% dry basis)	1.947	2.344	2.191	0.074	0.03

Total damaged kernels includes 1.16% sprouted kernels, 0.14% calcinated kernels and 0.03% insect chewed kernels.

Grade Distribution



Ref.: O/G: Out of Grade

Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	27.2	34.7	31.1	2.0	0.06
	Dry Gluten (%)	10.1	12.8	11.5	0.7	0.06
	Falling Number (sec.)	226	374	337	43	0.13
	Flour Yield (%)	67.0	74.6	70.8	1.3	0.02
	Ash (dry basis) (%)	0.475	0.701	0.629	0.065	0.10
FARINOGRAM	Water Absorption (14 % H°) (%)	55.9	59.8	58.1	1.0	0.02
	Development Time (min.)	5.6	16.7	9.5	2.4	0.25
	Stability (min.)	9.5	44.1	14.6	7.6	0.52
	Degree of Softening (12 min.)	21	80	56	15	0.27
ALVEOGRAM	P (mm)	66	121	83	11	0.14
	L (mm)	63	139	110	15	0.13
	W Joules x 10^{-4}	197	363	286	38	0.13
	P / L	0.50	1.92	0.76	0.29	0.38

These results were elaborated with 12 composite samples prepared proportionally from 12 original ones.

Subregion Data

In this subregion the wheat production was 796,375 tons., the 6.47 % of the national total. Were sampled 11,669 tons., the 1.47 % 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	9 de Julio	303	2	78.60	0.30	0.28	1.28	0.00	13.6	24.50	1.987
2	San Justo	298	3	75.90	0.92	0.26	1.72	0.00	13.4	26.40	2.285
3	Gral. Obligado	267	2	76.10	0.22	0.22	1.92	2.30	13.3	25.70	2.132
4	La Capital	301	2	77.00	0.50	0.08	1.12	0.00	11.3	24.90	1.947
5	Las Colonias	610	3	74.55	0.32	0.28	2.00	0.00	14.0	26.80	2.305
6	Las Colonias	520	2	77.25	0.12	0.56	0.76	0.00	14.1	25.30	2.344
7	Las Colonias	400	3	74.75	0.22	0.42	1.06	0.00	13.7	26.30	2.253
8	Las Colonias	270	O/G	70.75	1.26	0.64	1.24	0.00	13.9	26.60	2.338
9	Castellanos	1500	3	77.25	0.10	0.06	3.00	0.00	12.7	26.60	2.200
10	Castellanos	4000	2	76.35	0.08	0.06	0.88	0.00	13.1	24.10	2.174
11	Castellanos	1200	O/G	73.65	10.70	0.48	0.60	0.90	12.4	29.30	2.204
12	Castellanos	2000	3	75.90	0.46	0.28	0.90	0.00	13.0	28.60	2.166

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
1	9 de Julio	33.0	12.2	365	70.1	57.9	16.7	20.6	39	98	101	363	0.97	0.538
2	San Justo	31.6	11.7	317	68.2	57.7	8.9	10.9	80	68	114	255	0.60	0.580
3	Gral. Obligado	29.3	10.8	331	72.9	56.6	9.0	16.1	48	84	103	296	0.82	0.503
4	La Capital	27.2	10.1	310	71.6	57.8	7.1	10.1	72	78	76	197	1.03	0.475
5	Las Colonias	27.3	10.1	371	74.6	55.9	14.1	44.1	21	121	63	319	1.92	0.564
6	Las Colonias	34.7	12.8	353	71.4	57.8	13.0	22.6	25	86	111	329	0.77	0.602
7	Las Colonias	32.6	12.1	374	69.6	59.1	10.7	17.5	41	87	123	352	0.71	0.701
8	Las Colonias	34.3	12.7	318	67.0	59.8	8.9	13.4	64	70	139	324	0.50	0.687
9	Castellanos	32.1	11.9	304	71.6	58.7	6.8	9.5	69	76	105	233	0.72	0.533
10	Castellanos	32.2	11.9	361	70.3	58.9	10.0	13.1	52	86	110	289	0.78	0.688
11	Castellanos	28.4	10.5	226	71.7	56.3	5.6	9.8	80	66	125	237	0.53	0.651
12	Castellanos	29.7	10.9	362	70.0	57.9	10.0	12.9	56	83	119	313	0.70	0.636

Subregion II North
Background for the crop

The total rains registered during the period from June to November were of 605 mm, 2,8 times bigger to the historical series average of the Oliveros town (centre of Santa Fe Province).

The exceptional registrations happened in the first decade of July (78,3 mm), second decade of August (59,4 mm) and in the second decade of October with 107,2 mm. Thus, water was not a restrictive factor for the wheat cultivation growth and development.

Solar radiation and specifically the photosynthetically active radiation (PAR) is the energy source that the cultivations need to grow and to produce. A bigger provision of PAR will allow a bigger cultivation growth, determined by an increase in the foliar surface and in the quantity of tillers. The PAR availability like that of the water generally shows a strong spatial and seasonal variation.

During the last two decades of the month of September and October was registered a high cloudiness, coinciding with the faster development of cultivation growing and the development of the ear and flowers fixation in the spikelets, generating an important abortion of flowers and affecting approximately between 20 to 30 % lesser than expected of the number of grains for ear.

The medium temperatures registered along the wheat cultivation cycle were superior to the historical average 1951-2000. Therefore was observed an important reduction in number of emergency days to earing in both groups of varieties (short and long cycle).

Just as it happened in the two previous campaigns the minimum as the maximum temperatures starting from the first decade of October were the higher of the historical average, generating a reduction of the grains filling period and smaller grains.

The optimum range of temperatures for an appropriate grain growth rate is between 15 to 18°C during the day and of 10 to 13 °C during the night (Chowdhury and Wardlan, 1978).

Calderini D. et al. (1998) established that even though, an increase of the temperature increases the rate of accumulation of dry matter in the grain, paralleling it produces a reduction more than proportional in the filled duration, reducing in consequence the grains weight.

The environmental conditions of the area favoured the presence of foliar diseases (Orangey Rust, Yellow Spot and Septoria) frequently, but with different repercussion and severity depending on the variety.

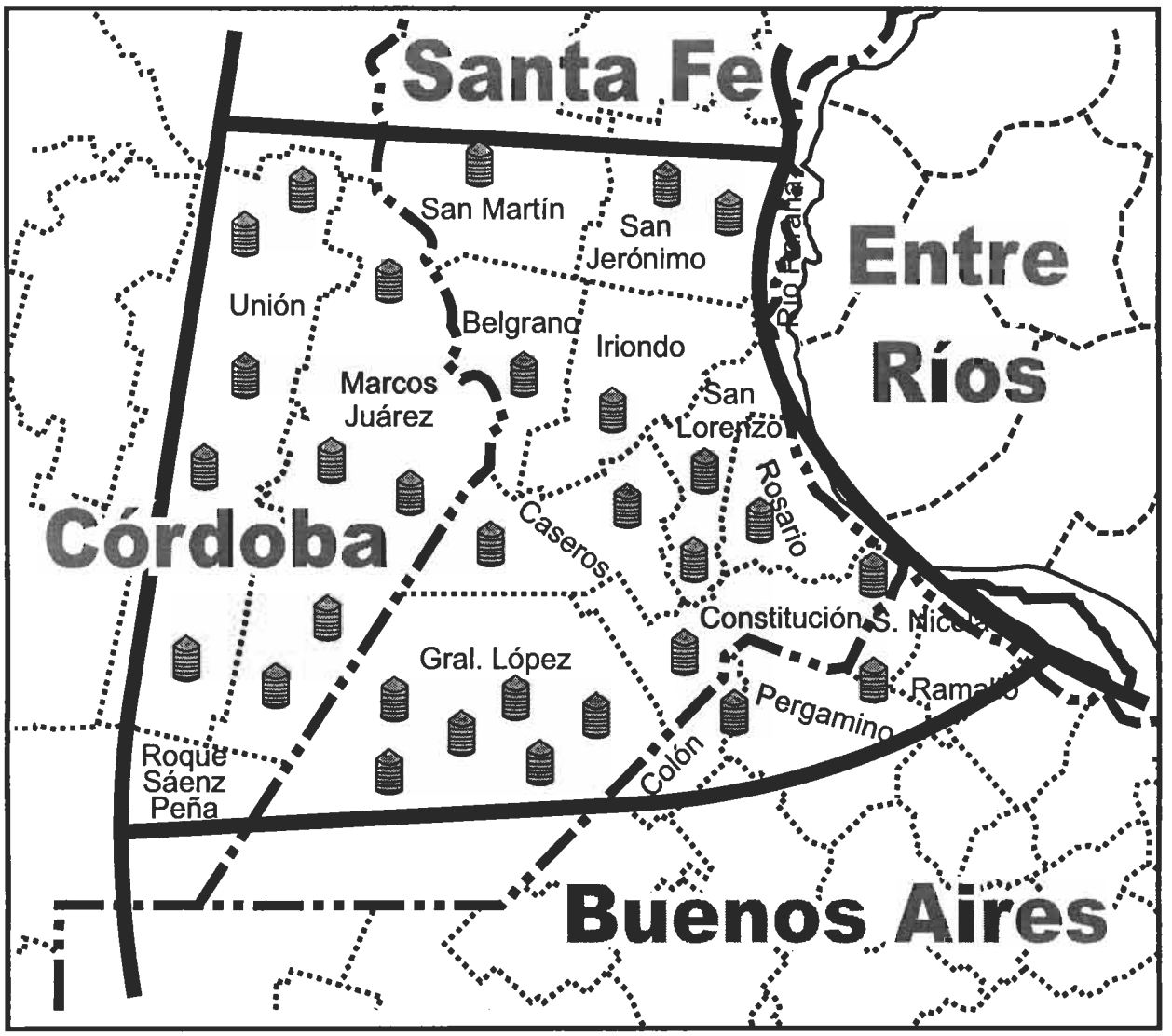
Since stalking the climatic conditions favoured the development of these diseases, especially orangey rust; the severity percentage was of 35 % for the cultivations of long cycle with a range from 26 to 50 % and of 41,4 % for those of short cycle with a range of 33 to 50 % that produced average reductions in the yields of 11 and 24 % for the long and short cycle respectively, with important variations between cultivations of both groups.

Just as it happened the last campaign the temperature and humidity conditions during the spring favoured the presence of bacterial problems in leaves and ears but they were not of the same intensity in all the crops.

Due to the climatic conditions, mainly temperature and radiation, the wheat yields registered in the area of INTA Oliveros and INTA Marcos Juárez, were very inferior to the estimate toward ends of stalking-beginning of earing. In this sense, another factor that had a negative incidence in yields was the reduction of the fertilizers applied because of the financial situation.

With respect to the cycle of the varieties, the use of short cycles was increased, owing to an important area was sowed during June and July.

Subregion II North Wheat



Each reference represents near 4,000 tns sampled.

Results of the Analyses

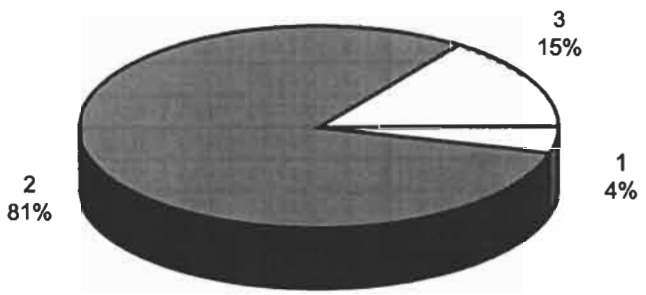
Composite Samples by Locality. Averages were weighted by Tonnage.

Subregion II North Wheat

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	73.40	80.35	77.13	1.40	0.02
Total Damaged Kernels (%)	0.09	1.43	0.52	0.34	0.65
Foreign Material (%)	0.09	1.01	0.39	0.21	0.54
Shrunken and Broken Kernels (%)	0.48	1.94	1.10	0.37	0.34
Yellow Berry Kernels (%)	0.00	2.36	0.49	0.59	1.20
Protein (13,5% Moisture) (%)	12.0	13.1	12.4	0.3	0.02
Weight of 1000 Kernels (gr.)	24.97	31.75	28.58	1.41	0.05
Ash (% dry basis)	1.754	2.169	2.004	0.988	0.49

Total damaged kernels includes 0.26 % sprouted kernels, 0.03 % frosty kernels, 0.11 % calcinated kernels, 0.11 % insect chewed kernels and 0.01 % heat damaged kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	26.7	32.3	29.8	1.4	0.05
	Dry Gluten (%)	9.3	11.4	10.6	0.5	0.04
	Falling Number (sec.)	352	479	424	28	0.07
	Flour Yield (%)	66.5	73.0	69.7	1.5	0.02
	Ash (dry basis) (%)	0.497	0.774	0.619	0.061	0.10
FARINOGRAM	Water Absorption (14 % H°) (%)	57.3	65.5	62.0	1.4	0.02
	Development Time (min.)	5.3	11.7	8.0	1.3	0.16
	Stability (min.)	7.0	17.6	11.1	1.9	0.17
	Degree of Softening (12 min.)	34	96	55	10	0.19
ALVEOGRAM	P (mm)	77	145	105	15	0.14
	L (mm)	58	113	88	13	0.15
	W Joules x 10^{-4}	244	372	312	32	0.10
	P / L	0.73	2.50	1.19	0.41	0.34

These results were elaborated with 47 composite samples prepared proportionally from 428 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 1,445,625 tons., the 11.75 % of the national total. Were sampled 110,240 tons., the 7.63 % 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) (%)
101	San Martín	2000	2	78.15	0.39	0.22	1.35	2.25	12.2	27.50	2.072
102	San Martín	3500	2	78.35	0.55	0.95	1.11	1.57	12.2	26.32	1.979
103	San Jerónimo	1050	2	78.60	0.63	0.15	0.87	1.22	12.7	26.33	2.057
104	San Jerónimo	3300	2	78.80	0.50	0.39	1.65	1.77	12.7	24.97	2.106
105	San Jerónimo	4500	3	75.65	0.31	0.32	0.70	0.15	12.9	26.62	2.169
106	Belgrano	2000	2	78.60	0.09	0.25	1.58	1.05	12.1	28.11	1.995
107	Belgrano	1000	2	77.70	0.53	0.12	0.69	0.15	12.2	27.60	2.042
108	Belgrano	1000	2	76.35	0.84	0.39	0.48	0.11	12.5	26.58	1.977
109	Iriondo	2010	2	77.70	1.13	0.15	0.53	0.91	12.6	30.63	1.995
110	Iriondo	2010	2	78.15	1.43	0.09	1.00	0.54	12.0	28.34	2.050
111	Caseros	2000	1	79.25	0.43	0.15	0.85	2.36	12.5	28.36	1.991
112	Caseros	3000	1	80.35	0.53	0.27	1.10	0.77	12.1	29.07	1.958
113	Caseros	3000	2	78.60	0.43	0.24	0.84	0.23	12.9	28.53	2.031
114	San Lorenzo	3000	2	77.45	1.15	0.22	1.36	0.09	12.0	28.97	1.754
115	San Lorenzo	1000	2	77.25	0.52	0.67	0.91	0.11	12.6	27.32	1.982
116	Rosario	2670	2	78.15	0.72	0.21	0.96	1.23	12.6	28.13	2.007
117	Constitución	1900	3	73.65	0.70	0.41	0.80	0.00	12.7	27.34	2.098
118	Constitución	1900	3	73.40	0.47	0.38	0.72	0.00	12.6	27.92	2.036
119	Constitución	3000	2	76.55	0.40	0.45	0.51	0.15	12.1	26.69	1.961
120	General López	2000	2	76.55	0.33	0.22	0.60	0.75	12.6	28.70	1.756
121	General López	2000	2	76.35	0.80	0.12	0.79	0.52	12.2	28.59	1.939
122	General López	3000	2	77.70	0.31	0.25	0.63	0.00	12.1	28.60	1.818
123	General López	2500	2	76.80	1.28	0.44	0.89	0.00	12.4	30.99	1.875
124	General López	3500	3	75.20	0.52	0.52	0.91	0.00	12.2	28.44	1.927
125	General López	2700	2	78.35	0.64	0.35	1.19	0.65	12.7	28.82	1.929
126	General López	1000	3	75.00	0.87	0.41	0.85	0.00	12.6	28.14	2.031
127	General López	1000	3	75.65	0.66	0.78	0.69	0.00	12.5	29.06	1.933
128	General López	2700	2	76.80	1.20	0.50	1.22	1.02	12.3	27.05	1.858
129	General López	1500	2	76.35	1.25	0.69	1.78	0.00	12.4	28.15	1.912
130	General López	1500	2	77.45	0.74	0.49	0.92	0.98	12.2	27.68	1.950

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	3000	2	76.35	0.20	0.21	0.67	0.22	12.0	30.68	2.067
132	Marcos Juárez	3000	2	76.80	0.72	0.28	1.12	0.10	12.5	28.47	2.022
133	Marcos Juárez	3000	2	76.10	0.11	1.01	1.94	0.14	12.8	28.72	1.96
134	Marcos Juárez	3000	2	77.00	0.37	0.25	0.94	0.28	13.1	31.75	2.085
135	Marcos Juárez	3000	2	78.60	0.31	0.28	1.47	0.33	12.8	29.04	1.961
136	Marcos Juárez	3000	2	77.45	0.09	0.31	1.74	0.00	12.2	29.91	2.168
137	Marcos Juárez	3000	2	77.90	0.32	0.39	0.86	0.10	12.8	29.10	2.083
138	Unión	3000	2	76.35	0.24	0.51	1.07	0.00	12.6	29.80	2.043
139	Unión	3000	2	76.55	0.40	0.64	1.55	0.21	12.3	29.61	2.009
140	Unión	3000	3	74.55	0.14	0.37	1.28	0.19	12.8	30.08	2.107
141	Unión	3000	2	76.35	0.32	0.25	1.12	0.54	12.2	29.24	2.150
142	Unión	3000	2	78.60	0.17	0.65	1.49	0.11	12.2	29.30	2.040
143	Unión	3000	2	76.10	0.21	0.36	1.29	0.15	12.1	30.04	1.990
144	Colón - Pergamino - Ramallo	1000	2	77.90	0.62	0.51	1.63	0.99	12.1	29.85	2.003
145	Colón - Pergamino - Ramallo	1000	2	78.60	0.82	0.63	1.82	1.22	12.1	27.13	2.154
146	Colón - Pergamino - Ramallo	1000	2	77.45	0.46	0.44	1.55	0.68	12.0	28.15	1.961
147	Colón - Pergamino - Ramallo	1000	2	77.70	1.26	0.31	1.34	0.95	12.2	28.85	2.108

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
101	San Martín	30.4	10.9	426	70.1	60.9	7.9	11.7	48	94	98	316	0.96	0.608
102	San Martín	30.8	10.9	407	70.0	60.8	7.7	10.5	50	94	101	311	0.93	0.635
103	San Jerónimo	31.4	11.1	413	68.2	60.0	8.2	14.9	53	85	113	333	0.75	0.533
104	San Jerónimo	31.1	10.9	411	68.6	60.3	7.9	11.5	48	98	91	306	1.08	0.607
105	San Jerónimo	31.5	11.2	399	67.8	61.8	8.0	11.9	54	113	85	327	1.33	0.625
106	Belgrano	30.3	10.6	422	69.1	65.5	7.0	9.5	64	127	74	320	1.72	0.667
107	Belgrano	29.2	10.5	389	70.6	63.1	8.0	11.7	55	110	79	304	1.39	0.722
108	Belgrano	32.0	11.2	416	68.7	63.8	6.0	7.8	69	88	104	284	0.85	0.676
109	Iriondo	30.1	10.5	358	70.1	63.2	7.3	10.5	61	109	88	332	1.24	0.718
110	Iriondo	28.6	10.2	389	66.5	64.1	9.2	12.4	53	135	60	301	2.25	0.671
111	Caseros	31.2	11.0	412	68.8	62.5	7.5	11.0	50	99	95	305	1.04	0.692
112	Caseros	29.7	10.5	411	68.6	61.0	7.8	9.5	60	90	101	288	0.89	0.591
113	Caseros	32.3	11.4	449	71.5	63.3	6.2	9.7	56	102	83	284	1.23	0.697
114	San Lorenzo	28.6	10.1	463	71.1	60.1	7.6	11.0	56	96	78	266	1.23	0.614
115	San Lorenzo	29.8	10.4	421	71.1	61.4	8.2	12.4	49	107	75	290	1.43	0.582
116	Rosario	29.4	10.4	434	69.3	62.9	8.1	12.7	42	95	84	284	1.13	0.546
117	Constitución	29.8	10.5	435	69.1	64.7	7.0	9.0	67	128	60	288	2.13	0.666
118	Constitución	29.4	10.4	461	68.6	62.8	7.0	10.5	54	102	83	289	1.23	0.638
119	Constitución	28.5	10.1	439	70.8	62.5	6.8	9.1	69	105	75	273	1.40	0.718
120	General López	30.0	10.6	396	69.8	63.7	6.3	9.1	72	109	83	312	1.31	0.577
121	General López	29.6	10.3	419	71.3	59.3	7.5	10.9	61	84	105	295	0.80	0.609
122	General López	29.1	10.3	418	70.2	62.8	8.0	10.7	52	123	59	264	2.08	0.623
123	General López	30.3	10.8	420	70.6	61.1	6.8	8.5	79	82	104	268	0.79	0.652
124	General López	30.8	10.6	413	70.9	62.5	7.2	11.4	51	97	100	319	0.97	0.632
125	General López	30.7	10.8	398	71.0	63.7	6.4	8.5	67	105	93	312	1.13	0.601
126	General López	31.3	11.2	419	71.5	64.7	6.5	8.1	77	97	91	281	1.07	0.768
127	General López	30.4	10.8	419	69.2	64.5	6.3	8.3	72	115	79	307	1.46	0.774
128	General López	30.3	10.9	429	70.2	61.4	6.3	8.8	68	87	96	261	0.91	0.688
129	General López	29.9	10.6	352	70.3	61.5	5.3	7.0	96	77	105	244	0.73	0.659
130	General López	28.4	10.1	435	70.3	59.9	6.9	9.8	60	93	90	269	1.03	0.656

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
131	Marcos Juárez	26.7	9.3	409	68.1	61.3	9.7	13.6	51	99	104	351	0.95	0.536
132	Marcos Juárez	30.5	10.6	438	70.5	61.4	8.8	13.3	50	114	92	365	1.24	0.588
133	Marcos Juárez	30.5	10.9	425	67.4	62.8	7.7	9.2	57	105	93	324	1.13	0.542
134	Marcos Juárez	31.8	11.3	367	67.6	63.7	10.8	12.3	55	145	58	328	2.50	0.553
135	Marcos Juárez	31.6	11.1	470	68.2	62.1	8.5	10.5	46	106	103	372	1.03	0.533
136	Marcos Juárez	27.6	9.8	428	69.2	62.1	9.3	12.5	46	107	95	343	1.13	0.559
137	Marcos Juárez	29.6	10.5	429	67.0	61.9	9.3	11.2	53	98	101	342	0.97	0.556
138	Unión	30.1	10.7	464	70.5	62.8	8.2	10.8	58	120	84	355	1.43	0.691
139	Unión	28.2	10.1	423	71.5	61.1	9.0	12.5	46	110	91	345	1.21	0.497
140	Unión	30.2	10.8	444	69.7	61.0	8.9	15.3	37	97	105	348	0.92	0.654
141	Unión	27.0	9.8	479	68.7	62.0	11.7	14.3	34	138	72	363	1.92	0.584
142	Unión	29.5	10.7	423	71.5	61.8	8.9	11.0	55	107	91	338	1.18	0.534
143	Unión	27.4	10.0	478	73.0	62.3	8.0	10.5	55	88	94	286	0.94	0.665
144	Colón - Pergamino - Ramallo	27.1	9.8	394	71.4	60.3	9.0	12.5	52	98	88	303	1.11	0.626
145	Colón - Pergamino - Ramallo	27.0	9.8	433	71.3	59.5	10.8	14.5	49	118	67	304	1.76	0.675
146	Colón - Pergamino - Ramallo	27.9	10.0	432	72.0	59.8	8.9	14.2	46	101	84	305	1.20	0.631
147	Colón - Pergamino - Ramallo	27.0	9.9	469	72.0	57.3	10.9	17.6	42	120	62	289	1.94	0.671

Subregión II South
Background for the crop

Wheat had a strong reduction of the sowed area, that is considered in the order from the 30 to 35% for the north districts, meanwhile it stayed the sowed area of the year 2001 in those south districts (25 de Mayo, 9 of Julio, Carlos Casares, etc.), what would produce an average reduction of the 20% with regard to the previous year.

There were several causes that produced the reduction of the wheat cultivated area. In the first place, it is necessary to have into consideration that the producers have to take in April or May the decision of sowing wheat, and by that time, there was a great economic, political and managerial uncertainty, which inhibited to the producers to take decisions.

Others causes were that funds were not available, and the fact that the previous wheat crop was deteriorated by excesses of spring rains, that depressed the yields and the quality, owing to flooding lots and the high incidence of leaf and ear diseases.

In front of this scene the producers in many of the cases opted to wait and to dedicate his field to cultivations that he found more profitable. Those that decided to sow wheat generally made it in time and with good level of humidity accumulated in the soil coming from the autumn months rains.

The varieties sowed in most of the sub-region were only 3 or 4, occupying insignificant surfaces new varieties or those for special destinations.

Most of the sowed surface was carried out under a minimum farming system, being noticed an important increase of the direct sowing and few lots were sowed under the conventional system.

The fertilization is one of the main weapon adopted by the wheat producer, it is considered that between the 80 to 90% of the sowed area was fertilized. The used nutrients were nitrogen and phosphorus, being increased the use of sulphur. The average doses are situated in between the 50 to 70 Kg/ha. of the phosphoric commercial product plus 70 to 120 Kg/ha. of nitrogenous fertilizer and about 5 to 10 Kg/ha. of sulphurous fertilizer for those that used the sulphur.

When minimum farming and/or direct sowing were used, the application of phosphorus was made before sowing. The nitrogenous with the sulphur was applied in the sowing and to a lesser extent to the tillering. Very few or practically none were the lots fertilized with nitrogenous in the advanced growth stages (ending of tillering- beginning of stalking).

The climatic conditions were not the best to reach good yields. The rains registered in different areas and cultivation stages caused flooding, that even though they were fleeting they wasted part of the lots and mainly they caused an important washed of the main mobile nutrients of the soil.

During tillering and stalking the cultivation developed normally without humidity restrictions, due to the occurrence of low intensity rains very opportune during the months of August and September. Regarding the temperatures, these were high and superiors to the usual, especially those of the month of August. The humidity and temperature conditions afore mentioned favored in the wheat the expression of an abundant tillering and foliage growth, estimating a high yield production.

Along the reproductive period (anthesis and grain filling) several adverse climatic factors have been contributed negatively over the pollen viability , being an obstacle for the normal grain fecundation.

In the month of October there were negative effects due to extreme temperatures. In the same month there were registered maximum T° of 28, 29,9 and 31,5 °C as well as, lower than usual minimum T° with registrations of 1,4, 1,3 and 2,2 °C measured to 5 cm of the soil level.

Although technically these registered values are not frozen, but they are low enough to damage the pollen during the anthesis-pollination stage. All this afore mentioned contributed to the spikelets fertility losses giving spikes with very few grains.

Other climatic negative effects were the continuous and excessive rains especially in the month of October, which contributed to the development of leaf and ear diseases, those that caused important yield losses. It was a year in which since very early began to manifest the leaf diseases and they were prolonged along the whole cycle.

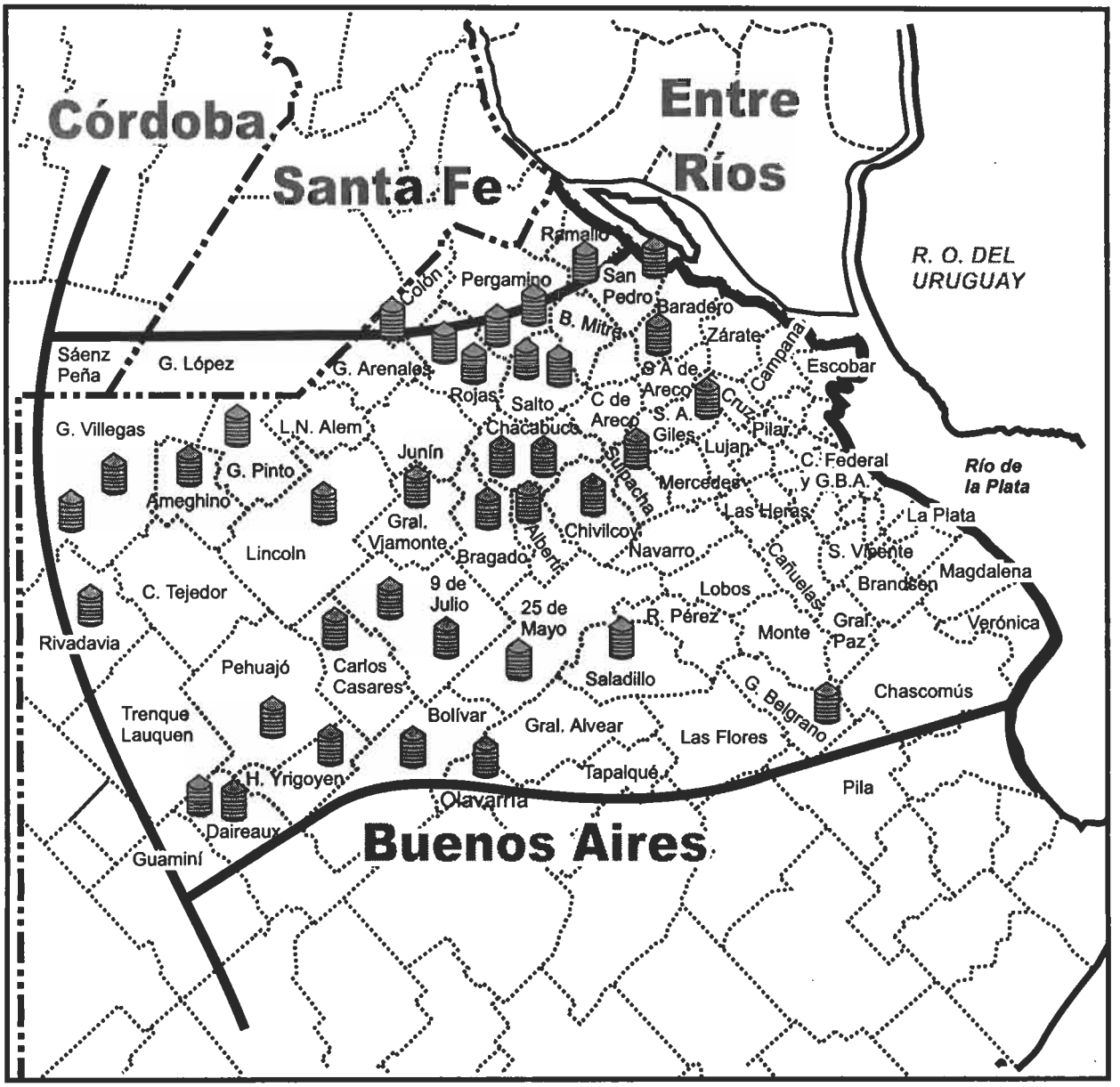
In the case of the foliage diseases "orangey rust" (Puccinia recondita) and "yellow spot" (Drechslera tritici-repentis) were showed with an important severity over the most susceptible cultivars, not as in the case of the "septorosis of the leaf" (Septoria tritici) whose incidence was almost imperceptible along the whole cultivation cycle. It is also necessary to mention the presence of two "bacteriosis" that affected unfavorably the cultivation: Xanthomonas translucens and the Pseudomonas syringae. This year was showed an important increment of the "take all" (Ophiobulus graminis), very possibly due to the high humidity conditions and ground water near the surface.

With regard to the "scab of the ear" (Fusarium graminearum) the most intense attacks were observed in those varieties that bloomed earlier and coincided with the first fortnight of the month of October and where favorable conditions occurred for the disease development, although without reaching intensities of high severity attacks.

Yields in general were low, smaller than the subregion historical average. In the north maximum yields were achieved from 3000 to 3300 Kg/ha, with an average of approximately 1800 Kg/ha, while in the south the same ones were of 4000 Kg/ha with an average of 2200 Kg/ha.

Regarding to the commercial quality it was very varied, with lots of good hectoliter weight and protein contents, as long as others with very bad ones that didn't fulfill the parameters to be located inside the third grade. These cases were very influenced by the cultivars used, and were in some cases repeated their good quality, and on the other hand there were others that were the opposite. In general the tendency was to obtain a production with an hectoliter weight medium to low with a protein content something better than in previous years.

Subregion II South Wheat



Each reference represents near 4,000 tns sampled.

Subregion II South Wheat

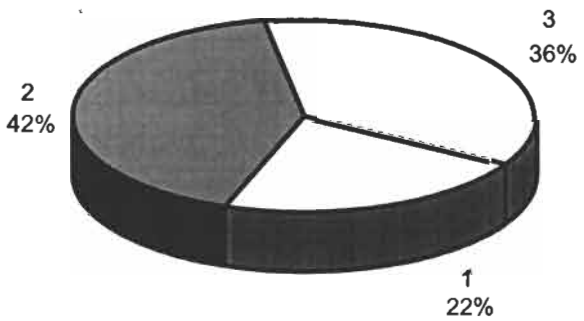
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	75.65	81.05	78.31	1.33	0.02
Total Damaged Kernels (%)	0.26	2.44	0.91	0.56	0.61
Foreign Material (%)	0.17	2.18	0.87	0.47	0.54
Shrunken and Broken Kernels (%)	0.42	1.18	0.71	0.21	0.30
Yellow Berry Kernels (%)	0.00	4.00	0.75	0.94	1.25
Protein (13,5% Moisture) (%)	10.3	13.2	12.1	0.6	0.05
Weight of 1000 Kernels (gr.)	24.79	33.38	28.65	2.30	0.08
Ash (% dry basis)	1.856	2.184	2.020	0.080	0.04

Total damaged kernels includes 0.11% sprouted kernels, 0.66% calcinated kernels, 0.04% insect chewed kernels and 0.10% germen chewed kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	24.2	31.9	28.9	2.0	0.07
	Dry Gluten (%)	9.0	11.8	10.7	0.7	0.07
	Falling Number (sec.)	347	441	399	19	0.05
	Flour Yield (%)	63.1	72.2	69.2	2.1	0.03
	Ash (dry basis) (%)	0.485	0.717	0.568	0.049	0.08
FARINOGRAM	Water Absorption (14 % H°) (%)	56.0	62.4	58.6	1.3	0.02
	Development Time (min.)	5.2	12.7	7.9	1.9	0.24
	Stability (min.)	6.2	20.2	10.7	3.3	0.31
	Degree of Softening (12 min.)	33	95	71	15	0.21
ALVEOGRAM	P (mm)	61	125	94	16	0.17
	L (mm)	59	115	86	15	0.17
	W Joules x 10^{-4}	184	319	259	34	0.13
	P / L	0.53	2.00	1.08	0.40	0.37

These results were elaborated with 36 composite samples prepared proportionally from 952 primary samples (farmer deliveries)

Subregion Data

In this subregion the wheat production was 1,187,113 tons., the 9.65 % of the national total.Were sampled 145,046 tons., the 12.22 % 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	Saladillo	4000	3	78.35	1.10	1.52	0.50	0.50	11.9	24.79	2.002
201	Gral. Pinto	4008	1	79.00	0.64	0.26	0.42	4.00	12.1	31.58	1.856
202	Gral. Viamonte	4037	3	75.90	0.48	1.48	0.94	2.14	12.3	26.98	2.001
203	Alberti	3955	1	79.90	0.56	0.34	0.48	0.00	12.0	29.24	1.935
204	Gral. Villegas	4054	2	79.00	0.70	0.62	0.74	1.56	11.9	32.03	1.980
205	9 de Julio	3972	3	76.80	0.70	1.28	0.98	0.78	12.5	27.61	1.964
206	Baradero	4066	2	77.25	0.56	0.52	0.96	0.00	12.5	25.09	2.073
207	9 de Julio	3944	3	76.35	0.50	1.44	0.60	1.04	11.9	26.52	2.040
208	Ameghino	4546	2	79.45	0.36	1.02	0.46	0.00	12.4	31.69	1.975
209	Rivadavia	4252	2	78.80	0.48	1.14	0.72	0.00	11.4	33.38	2.012
210	Suipacha	4003	3	77.45	1.08	1.28	0.92	1.74	12.5	27.68	2.068
211	Carlos Casares	4558	2	79.00	0.70	0.80	0.54	0.96	12.1	30.26	1.941
212	Arrecifes	4006	1	79.90	0.36	0.17	0.75	0.68	12.5	29.90	2.109
213	Daireaux	3978	2	79.00	0.26	0.82	0.86	0.20	10.3	32.47	1.898
214	Daireaux	3948	3	78.35	0.44	1.36	0.46	0.00	10.9	32.10	1.864
215	25 de Mayo	3550	3	76.35	0.52	1.42	0.56	0.90	12.0	28.42	2.057
216	Gral. Villegas	4051	1	79.25	0.37	0.55	0.64	0.00	11.8	31.59	2.027
217	Hipólito Yrigoyen	4021	3	77.70	1.12	2.18	0.64	0.00	11.7	30.44	1.957
218	Bragado	4150	1	79.45	0.90	0.48	0.46	1.36	11.8	29.25	1.967
219	Rojas	4079	2	77.00	0.78	0.86	0.84	1.46	12.7	25.45	2.046
220	Salto	3925	1	79.90	0.68	0.26	0.48	0.00	13.2	27.24	2.034
221	Pehuajó	4053	2	78.60	0.60	1.08	0.78	0.86	11.2	29.38	1.956
222	Bolívar	4348	3	79.25	0.42	1.28	0.52	2.88	11.7	27.89	1.899
223	Chacabuco	4085	3	79.45	0.81	1.42	1.14	0.00	12.6	28.18	2.099
224	Chacabuco	3999	2	78.15	1.66	0.88	0.66	0.00	12.4	27.77	2.102
225	Lincoln	4054	2	79.00	1.10	1.04	0.76	0.00	12.1	29.27	2.032
226	Pergamino	3943	2	78.15	1.54	0.72	1.08	0.60	12.9	26.64	2.099
227	Pergamino	3965	2	77.25	1.20	0.76	0.58	0.00	12.4	27.56	2.126
228	San Andrés de Giles	3214	1	79.90	0.55	0.36	0.88	0.00	11.9	27.68	2.108
229	Colón	4000	2	76.80	1.69	0.32	0.72	0.00	12.7	29.05	2.018
230	Ramallo	4013	3	75.65	2.44	0.38	0.88	0.00	12.3	25.35	2.158
231	San Pedro	4000	3	78.35	2.30	0.62	0.96	0.00	12.5	26.45	2.125
232	Gral. Belgrano	4090	3	75.65	2.24	0.64	0.72	0.60	12.5	24.81	2.184
233	Rojas	4088	2	78.35	1.14	0.32	0.52	0.82	12.5	27.82	2.048
234	Chivilcoy	4101	2	79.25	1.14	1.16	1.18	1.66	12.2	28.29	2.048
235	Olavarría	3990	1	81.05	0.80	0.38	0.44	2.08	10.5	30.61	1.952

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
200	Saladillo	28.2	10.5	410	64.7	57.2	7.5	9.6	74	89	84	239	1.06	0.532
201	Gral. Pinto	29.1	10.8	414	67.6	59.1	6.2	8.0	83	84	92	225	0.91	0.485
202	Gral. Viamonte	29.3	10.9	392	66.7	57.6	8.1	10.8	69	90	98	287	0.92	0.496
203	Alberti	30.0	11.1	383	67.5	61.3	6.7	8.0	85	94	96	274	0.98	0.582
204	Gral. Villegas	28.9	10.7	441	66.7	59.2	8.8	12.2	64	104	90	310	1.16	0.551
205	9 de Julio	29.4	10.9	419	70.3	58.3	9.5	13.0	57	91	106	298	0.86	0.578
206	Baradero	31.4	11.6	398	66.9	59.3	7.3	8.6	84	74	104	229	0.71	0.592
207	9 de Julio	28.6	10.6	403	66.6	56.8	10.2	13.5	61	61	115	207	0.53	0.622
208	Ameghino	29.2	10.8	401	67.8	60.8	5.5	6.7	95	81	98	241	0.83	0.645
209	Rivadavia	25.7	9.5	402	71.3	57.5	8.3	12.5	60	114	68	270	1.68	0.600
210	Suipacha	31.9	11.8	400	68.7	58.1	6.7	8.0	85	82	108	262	0.76	0.535
211	Carlos Casares	29.2	10.8	358	70.6	59.4	7.8	10.2	72	109	84	297	1.30	0.517
212	Arrecifes	31.4	11.6	390	69.2	60.6	8.3	10.1	52	121	61	259	1.98	0.637
213	Daireaux	24.3	9.0	419	70.4	58.4	12.7	18.8	39	125	63	293	1.98	0.539
214	Daireaux	24.2	9.0	387	68.4	57.8	11.8	14.9	54	124	62	286	2.00	0.547
215	25 de Mayo	28.2	10.5	397	63.1	56.7	12.5	17.5	49	117	75	304	1.56	0.540
216	Gral. Villegas	27.4	10.1	384	67.8	58.5	8.0	11.4	61	113	80	298	1.41	0.618
217	Hipólito Yrigoyen	26.6	9.8	392	68.9	58.5	8.4	14.9	52	110	77	304	1.43	0.567
218	Bragado	28.1	10.4	417	69.4	56.1	6.8	11.1	64	73	100	219	0.73	0.553
219	Rojas	29.8	11.1	417	70.3	58.2	6.4	8.4	82	89	94	266	0.95	0.639
220	Salto	30.9	11.4	415	70.0	59.0	7.5	8.4	92	86	105	271	0.82	0.607
221	Pehuajó	25.8	9.5	390	69.1	58.7	6.8	8.2	79	81	85	224	0.95	0.570
222	Bolívar	27.0	10.0	374	72.2	58.3	9.0	12.7	62	101	81	284	1.25	0.522
223	Chacabuco	28.3	10.5	421	72.1	58.6	8.7	12.2	64	104	92	319	1.13	0.646
224	Chacabuco	29.4	10.9	429	72.2	58.2	7.7	10.4	68	96	81	267	1.19	0.601
225	Lincoln	29.8	11.0	389	71.2	57.7	6.7	8.7	85	77	113	249	0.68	0.630
226	Pergamino	31.4	11.6	401	70.1	59.4	5.5	6.5	89	80	90	208	0.89	0.618
227	Pergamino	30.2	11.2	420	67.6	58.6	5.7	7.7	78	84	90	215	0.93	0.623
228	San Andrés de Giles	29.1	10.8	388	71.2	58.0	5.2	6.2	83	75	92	184	0.82	0.611
229	Colón	30.8	11.4	383	68.4	58.7	6.4	8.8	80	91	101	287	0.90	0.600
230	Ramallo	29.2	10.8	427	72.2	58.3	6.7	8.0	91	91	80	229	1.14	0.599
231	San Pedro	29.5	10.9	391	70.7	58.7	7.1	9.7	69	80	103	256	0.78	0.599
232	Gral. Belgrano	31.7	11.7	386	71.3	59.6	6.2	8.6	73	77	89	204	0.87	0.599
233	Rojas	31.3	11.6	389	69.0	62.4	6.8	7.4	92	110	59	230	1.86	0.582
234	Chivilcoy	29.1	10.8	394	72.1	60.0	9.7	12.8	65	116	63	273	1.84	0.665
235	Olavarría	24.9	9.2	347	69.1	56.0	12.1	20.2	33	93	75	243	1.24	0.717

Subregión III
Background for the crop

The meteorological conditions registered during the year 2002, were characterized by slightly superior thermal conditions to the prospective ones the same as the relative humidity of the environment, abundant rains, slight inferiority in radiation and heliophany and a sensitive decrease in the potential evapotranspiration.

The cultivation of wheat during this campaign, had a difficult beginning due to the economic uncertainty that at sowing time existed in our country. Because of that issue there was a setback in the use of inputs, especially fertilizers, for what the potential of yield of the implanted materials was limited from the same moment of the producer's decision to sow wheat.

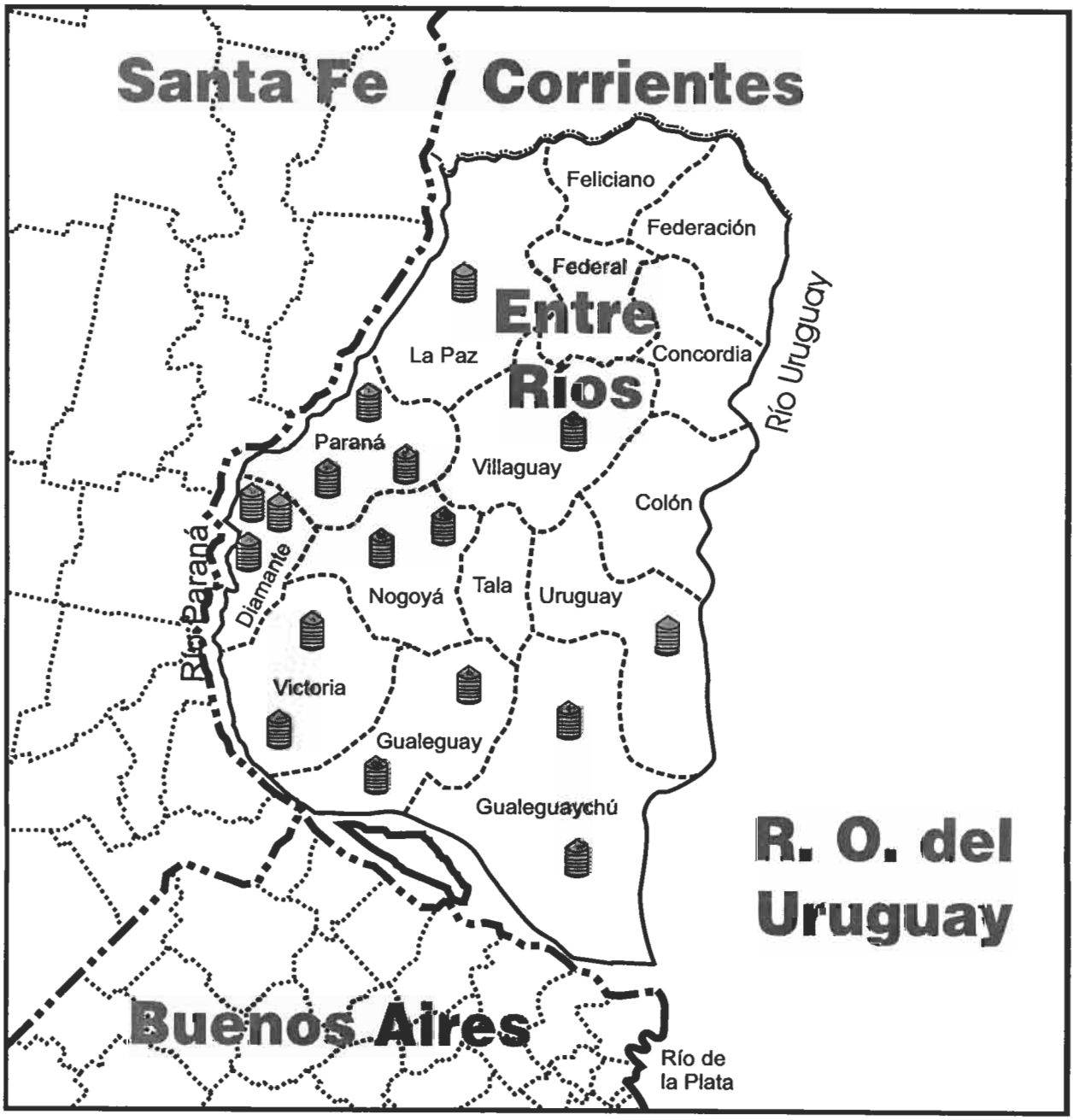
The agroecological condit6ions at sowing time were good, for what a good tillering took place, especially in lots of good fertility or appropriately fertilized.

Leaf diseases like yellow spot appeared in this time, especially in lots which predecessor had been wheat. Later on an important epifphtia of leaf rust began, especially in the more diffused cultivation in the area, for what many producers should carry out a fungicide application against this phatogen.

At the beginning of earing and the beginning of anthesis in most of the implanted wheats, favorable climatic conditions were given to the development of the fusariosis of the ear, process that later on it was depressed by the descent temperatures that made that it was observed in most of the lots a high incidence (n° of affected ears) but low severity (affected % of each ear) of fusariosis.

The yields obtained by the Subregión III were of 1596 kg/ha, very inferior value to the yields obtained in years with low incidence of diseases (2500 kg/ha) for what is considered that the main causes of this yield decrease were the foliages diseases, mainly leaf rust and fusariosis of the ear.

The commercial quality surrendered in the storings was accepted since the affected grains by fusariosis were eliminated in the threshing and most of the production was inside of the Standard quality frame for the wheat commercialization.



Each reference represents near 4,000 tns sampled.

Subregion III Wheat

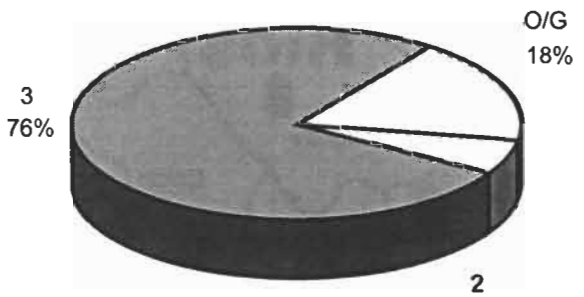
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	70.00	76.90	74.23	1.65	0.02
Total Damaged Kernels (%)	1.20	4.14	2.18	0.81	0.37
Foreign Material (%)	0.44	1.72	0.85	0.34	0.40
Shrunken and Broken Kernels (%)	0.64	1.76	1.02	0.26	0.26
Yellow Berry Kernels (%)	0.90	3.10	2.04	0.60	0.29
Protein (13,5% Moisture) (%)	11.0	12.5	11.7	0.4	0.03
Weight of 1000 Kernels (gr.)	24.33	30.38	26.93	1.55	0.06
Ash (% dry basis)	1.832	2.059	1.923	0.741	0.39

Total damaged kernels includes 0.41% sprouted kernels, 1.68% calcinated kernels and 0.09% green kernels.

Grade Distribution



Ref.: O/G: Out of Grade

Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	23.5	29.2	26.5	1.3	0.05
	Dry Gluten (%)	9.0	11.0	9.8	0.5	0.05
	Falling Number (sec.)	329	414	362	24	0.07
	Flour Yield (%)	70.4	73.3	71.7	0.9	0.01
	Ash (dry basis) (%)	0.486	0.684	0.576	0.047	0.08
FARINOGRAM	Water Absorption (14 % H°) (%)	58.1	62.8	61.2	1.6	0.03
	Development Time (min.)	5.2	9.2	7.0	1.3	0.18
	Stability (min.)	5.3	13.3	9.0	2.3	0.25
	Degree of Softening (12 min.)	50	137	77	19	0.25
ALVEOGRAM	P (mm)	34	98	78	15	0.19
	L (mm)	72	116	90	12	0.14
	W Joules x 10^{-4}	124	307	238	41	0.17
	P / L	0.35	1.26	0.87	0.26	0.29

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 465,133 tons., the 3.78 % of the national total. Were sampled 69,044 tons., the 14.84 % 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	4008	3	75.20	1.60	1.02	1.76	2.80	11.0	26.88	1.846
301	Paraná	4001	2	76.90	1.26	0.84	0.92	2.30	11.5	25.88	1.879
302	Paraná	4080	3	75.20	1.86	1.40	1.04	2.15	11.4	26.38	1.834
303	Villaguay	4180	O/G	71.80	2.76	1.72	0.92	2.50	12.0	28.75	1.939
304	Diamante	4079	3	75.10	1.20	0.56	1.36	1.60	11.5	27.52	1.873
305	Diamante	4002	3	74.60	2.10	0.64	0.86	2.20	11.6	26.38	1.834
306	Diamante	4033	3	74.70	1.68	0.56	0.82	2.00	11.4	26.72	1.869
307	La Paz	4091	3	73.80	2.64	0.58	0.98	3.10	11.2	28.52	1.965
308	Gualeguay	4064	O/G	70.00	2.60	1.22	0.64	2.10	11.7	24.33	1.954
309	Gualeguay	4104	3	73.40	1.48	0.56	1.24	2.45	11.9	25.17	1.849
310	Gualeguaychú	4017	3	74.80	3.70	0.82	1.20	1.85	12.0	30.38	1.832
311	Gualeguaychú	4077	O/G	72.70	4.14	0.44	1.26	2.00	12.5	28.63	1.961
312	Nogoyá	4040	3	73.60	1.84	0.78	0.96	2.80	11.5	25.46	1.975
313	Nogoyá	4053	3	73.10	1.64	1.14	0.92	1.10	11.5	25.18	1.954
314	C. del Uruguay	4066	3	75.80	2.90	0.98	0.88	1.60	12.1	28.52	2.028
315	Victoria	4100	3	75.90	1.70	0.60	0.86	0.90	11.7	26.79	2.059
316	Victoria	4049	3	75.50	1.93	0.60	0.70	1.20	11.8	26.33	2.037

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
300	Paraná	23.5	9.3	329	73.3	59.3	8.7	11.7	59	34	96	124	0.35	0.649
301	Paraná	27.0	9.7	345	73.2	59.4	9.2	13.3	50	91	72	254	1.26	0.684
302	Paraná	25.7	9.5	379	71.3	59.3	8.7	10.8	69	92	76	272	1.21	0.536
303	Villaguay	27.4	9.8	330	70.7	58.1	7.2	11.0	71	73	91	245	0.80	0.619
304	Diamante	27.5	10.1	344	72.0	61.4	8.2	11.6	56	96	78	283	1.23	0.579
305	Diamante	25.4	9.4	370	71.8	62.7	6.5	8.2	86	98	90	307	1.09	0.629
306	Diamante	24.2	9.0	361	73.2	60.3	8.7	11.4	65	86	83	264	1.04	0.575
307	La Paz	25.4	9.4	362	72.3	58.9	6.9	9.2	78	71	87	224	0.82	0.503
308	Gualeguay	26.3	9.4	357	70.6	62.5	5.2	5.3	137	74	83	200	0.89	0.559
309	Gualeguay	27.3	10.0	371	72.5	62.8	5.7	6.0	83	86	75	212	1.15	0.589
310	Gualeguaychú	27.0	9.9	396	70.4	62.8	5.7	6.4	81	64	110	206	0.58	0.486
311	Gualeguaychú	29.2	10.5	343	71.5	62.3	5.2	6.7	86	68	93	190	0.73	0.574
312	Nogoyá	27.3	10.0	350	71.4	61.9	7.2	8.9	67	70	111	255	0.63	0.559
313	Nogoyá	26.4	9.7	384	71.1	62.2	7.3	8.8	72	77	90	242	0.86	0.555
314	C. del Uruguay	28.1	10.3	332	70.8	61.9	5.8	8.2	95	72	116	257	0.62	0.562
315	Victoria	27.0	9.6	388	72.1	62.6	6.7	7.5	71	94	82	264	1.15	0.576
316	Victoria	26.4	11.0	414	70.9	62.6	5.9	7.4	74	85	89	254	0.96	0.564

Subregion IV

Background for the crop

Sowings of June could be made on time. Later sowings became flooded as a consequence of August rains (138 mm in 10 days). This situation caused loss of plants or seed rotting. Cultivars could recover during tillering and, in the end, there were no significant drop of the yields.

Very good conditions during vegetative phase generated a high biomass. At the beginning of November new abundant rains, accompanied by continuous winds, caused lodging of many plants.

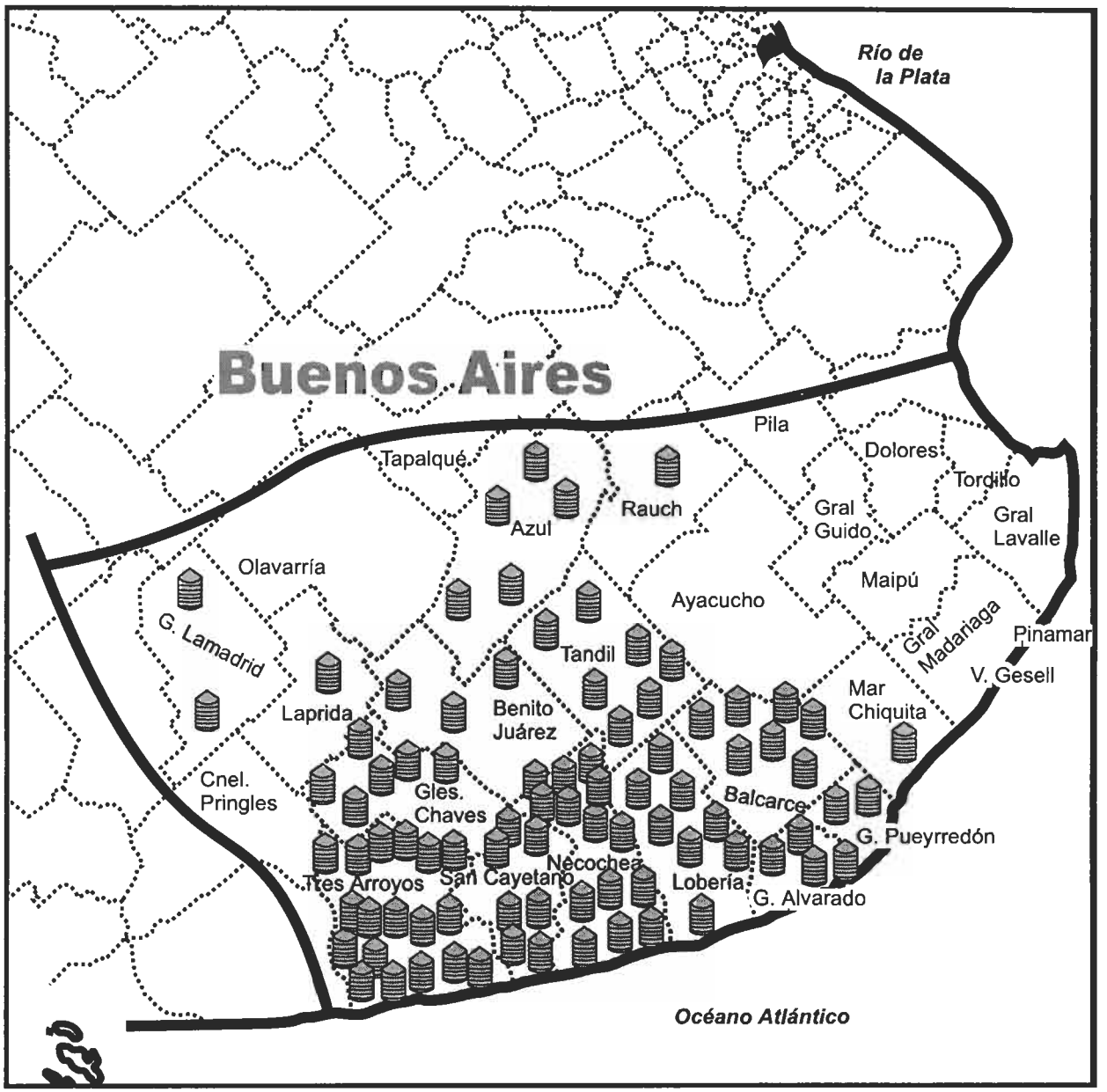
There was no lack of humidity during November, and temperatures during filling grain period were adequate. In December, materials showed hydric stress. This conditions and the occurrence of early illnesses affected final yields.

Similarly to 2002 crop, the importance of diseases was higher than lack of humidity. This was demonstrated by fungicide application which obtained important increases in yields.

Most relevant leaf diseases were orange rust (Puccinia recondita) and septoriosis (Septoria tritici). They started in heading and showed a high incidence in the yield results. Bacteriosis appeared explosively after stormy weather of November and was considerable in some varieties. Fusariosis, that also appeared, was more important from visual point of view than in harvested grain. It had a slight influence in yields.

Due to problems during grain filling cycle and early appearing of illnesses, final yields were inferior to the expectations. Harvest results were uneven, from regular to good according to varieties diseases attack, cycle and sowing date.

Subregion IV Wheat



Each reference represents near 4,000 tns sampled

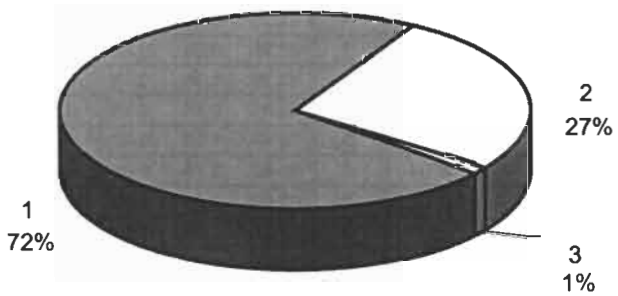
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	77.00	83.50	80.58	1.14	0.01
Total Damaged Kernels (%)	0.18	2.94	0.93	0.41	0.44
Foreign Material (%)	0.12	1.32	0.44	0.19	0.43
Shrunken and Broken Kernels (%)	0.32	1.49	0.80	0.23	0.28
Yellow Berry Kernels (%)	0.23	14.20	5.93	3.72	0.63
Protein (13,5% Moisture) (%)	9.5	10.9	10.2	0.3	0.03
Weight of 1000 Kernels (gr.)	30.41	37.18	34.37	1.47	0.04
Ash (% dry basis)	1.710	1.967	1.865	0.060	0.03

Total damaged kernels includes 0.14% sprouted kernels, 0.03% heat damaged kernels, 0.63% calcinated kernels, 0.03% insect chewed kernels and 0.10% germen chewed kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	19.0	25.6	22.0	1.4	0.06
	Dry Gluten (%)	7.0	9.5	8.0	0.6	0.07
	Falling Number (sec.)	340	451	403	20	0.05
	Flour Yield (%)	63.3	73.3	70.1	2.1	0.03
	Ash (dry basis) (%)	0.478	0.627	0.549	0.033	0.06
FARINOGRAM	Water Absorption (14 % H°) (%)	52.1	60.5	56.9	1.8	0.03
	Development Time (min.)	5.5	13.2	8.7	1.5	0.17
	Stability (min.)	11.8	35.2	17.2	3.7	0.22
	Degree of Softening (12 min.)	9	66	34	13	0.37
ALVEOGRAM	P (mm)	70	127	96	12	0.12
	L (mm)	48	113	77	13	0.17
	W Joules x 10^{-4}	188	328	260	29	0.11
	P / L	0.65	2.65	1.25	0.36	0.29

These results were elaborated with 86 composite samples prepared proportionally from 1538 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 2,647,335 tons., the 21.52 % of the national total.Were sampled 337,616 tons., the 12.75 % 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	Lobería	4000	1	79.45	0.96	0.24	0.93	8.87	10.2	34.65	1.908
401	Lobería	4000	2	77.90	0.67	0.68	0.94	7.64	9.9	30.82	1.894
402	Rauch	4002	1	80.80	0.61	0.33	0.62	2.69	10.2	35.00	1.899
403	Lobería	4000	2	79.90	1.35	0.43	0.53	3.40	10.6	34.13	1.904
404	Azul	4000	1	79.00	0.67	0.31	1.18	0.76	10.8	31.41	1.851
405	Balcarce	4000	2	79.90	1.59	0.21	0.64	4.61	10.4	34.86	1.962
406	Balcarce	4038	1	81.25	0.97	0.12	0.60	1.38	10.9	33.63	1.947
407	Balcarce	4000	1	81.70	0.95	0.40	0.79	5.44	10.2	33.37	1.957
408	Balcarce	4018	1	81.25	0.95	0.41	0.72	0.89	10.7	33.68	1.949
409	Balcarce	4007	2	80.35	1.36	0.18	0.32	1.80	10.3	35.37	1.961
410	Balcarce	4000	1	80.80	0.90	0.40	0.66	3.29	10.5	34.27	1.952
411	Balcarce	4000	2	79.45	1.55	0.42	0.49	2.53	10.7	33.09	1.962
412	Lobería	4001	1	80.80	0.79	0.58	0.77	5.29	9.8	35.27	1.947
413	Lobería	4008	1	82.60	0.46	0.29	0.83	4.62	9.7	32.74	1.938
414	Lobería	4005	3	77.00	2.94	1.32	0.99	4.35	10.4	32.95	1.955
415	Lobería	4010	2	80.35	1.49	0.31	1.12	3.48	10.2	32.82	1.967
416	Lobería	4010	2	79.70	1.84	0.42	0.74	0.76	10.4	33.34	1.958
417	Gral.Alvarado	4010	1	79.00	0.64	0.54	0.76	7.31	9.8	35.63	1.906
418	Gral.Alvarado	4007	2	80.35	1.22	0.68	0.70	2.75	10.6	37.12	1.910
419	Gral.Alvarado	4000	2	80.80	1.27	0.37	0.64	5.14	10.1	32.75	1.925
420	Gral.Alvarado	4000	2	79.45	1.25	0.46	0.98	7.62	9.9	34.60	1.930
421	Gral.Pueyrredón	4000	2	80.35	1.64	0.29	0.56	2.91	10.0	36.27	1.861
422	Gral.Pueyrredón	4000	2	80.80	1.94	0.21	0.65	1.79	10.5	33.23	1.850
423	Mar Chiquita	4000	1	80.80	0.75	0.58	0.40	0.40	10.1	35.53	1.894
424	Benito Juárez	4000	1	79.45	0.39	0.36	0.56	2.40	9.9	34.48	1.880
425	Benito Juárez	4000	1	82.15	0.18	0.21	0.45	1.09	9.5	35.04	1.872
426	Benito Juárez	4003	1	79.45	0.66	0.50	0.93	1.95	9.6	33.84	1.881
427	Azul	4000	2	79.00	0.77	0.71	1.20	0.23	10.8	30.41	1.845
428	Azul	4000	2	79.00	0.57	0.49	1.49	0.50	10.8	30.88	1.837
429	Azul	4000	1	79.00	0.64	0.26	0.45	0.30	10.4	36.73	1.855
430	Azul	4000	1	80.80	0.95	0.27	0.39	2.22	10.1	34.22	1.838
500	General Lamadrid	3404	2	78.15	0.60	0.56	1.02	5.40	10.5	30.53	1.831
501	General Lamadrid	4011	2	79.90	0.58	0.82	0.96	0.60	10.8	30.90	1.869
503	Gonzales Cháves	4012	1	80.60	0.80	0.48	0.42	13.80	9.7	35.62	1.789
504	Gonzales Cháves	4002	1	81.95	0.64	0.50	0.52	7.20	9.7	35.28	1.837
505	Gonzales Cháves	4001	1	81.95	0.70	0.44	0.56	7.90	9.9	35.42	1.710
506	Gonzales Cháves	2489	1	80.80	1.36	0.16	0.98	4.40	9.6	34.02	1.889
507	Gonzales Cháves	4020	1	80.80	0.58	0.50	0.88	5.60	10.2	33.15	1.869
508	Gonzales Cháves	4001	2	79.90	1.04	0.74	0.80	13.20	10.2	33.14	1.842
511	Laprida	3249	2	78.15	0.40	0.92	1.30	1.40	10.1	32.30	1.815
512	Necochea	4000	1	81.50	1.02	0.28	1.00	9.80	10.1	35.97	1.932
513	Necochea	4000	1	80.60	0.74	0.26	0.48	12.80	9.7	35.10	1.865
514	Necochea	4009	1	82.60	0.82	0.26	0.60	5.20	10.3	35.20	1.836

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	4000	1	81.70	0.78	0.46	0.72	6.70	10.4	34.60	1.830
516	Necochea	4000	1	80.60	1.12	0.44	0.70	4.50	10.3	36.30	1.859
517	Necochea	4004	1	80.60	1.24	0.50	0.66	4.30	10.7	34.73	1.723
518	Necochea	4016	1	80.60	1.28	0.32	0.70	6.20	9.9	33.87	1.764
519	Necochea	4010	1	80.15	0.84	0.48	0.94	10.60	9.9	34.48	1.746
520	Necochea	4008	1	80.35	1.36	0.32	0.98	7.80	9.9	34.65	1.783
521	Necochea	4027	2	80.60	0.78	0.68	0.90	10.80	9.8	35.18	1.778
522	Necochea	4000	1	80.60	0.88	0.48	0.76	14.20	9.9	34.80	1.812
523	Necochea	4000	1	79.90	0.70	0.52	0.86	4.70	9.9	33.02	1.859
524	Necochea	4012	1	81.05	0.96	0.26	0.88	5.60	10.3	34.24	1.816
525	Necochea	4004	1	80.80	0.84	0.34	0.98	8.40	10.3	35.29	1.774
526	San Cayetano	4011	1	80.60	0.82	0.50	1.22	9.60	9.9	32.97	1.894
527	San Cayetano	4000	1	80.15	1.12	0.38	0.78	3.60	10.4	35.38	1.848
528	San Cayetano	4000	1	81.05	0.92	0.34	0.72	11.60	10.1	35.17	1.854
529	San Cayetano	4000	1	80.35	0.52	0.32	1.16	3.60	10.6	33.33	1.853
530	San Cayetano	4003	1	81.95	0.86	0.34	0.64	6.20	10.4	34.23	1.779
531	San Cayetano	4016	1	80.80	0.48	0.42	0.80	8.20	10.0	34.49	1.807
532	San Cayetano	4006	1	79.90	1.22	0.38	0.82	5.80	9.9	33.06	1.831
534	Tandil	4000	1	80.60	0.30	0.60	0.86	6.50	10.6	35.43	1.866
535	Tandil	4025	1	80.80	1.42	0.38	0.84	7.80	10.2	35.18	1.821
536	Tandil	4016	1	80.15	0.54	0.32	0.66	5.40	10.1	35.07	1.869
537	Tandil	3152	1	80.35	0.58	0.60	0.76	5.60	10.4	34.38	1.885
538	Tandil	4002	1	79.00	0.64	0.56	1.14	6.40	10.0	36.08	1.835
539	Tandil	4005	1	80.60	0.66	0.60	0.94	3.40	9.6	37.18	1.846
540	Tandil	2885	1	79.00	0.66	0.58	1.12	5.60	10.2	34.30	1.784
543	Tres Arroyos	4000	1	79.90	1.26	0.44	0.60	12.10	10.0	33.36	1.898
544	Tres Arroyos	4001	2	82.40	1.14	0.66	0.70	8.60	10.1	32.88	1.881
545	Tres Arroyos	2978	2	80.80	0.88	0.92	1.04	13.20	9.9	33.88	1.923
546	Tres Arroyos	4016	1	82.60	0.82	0.20	0.78	7.80	10.1	36.48	1.870
547	Tres Arroyos	4001	1	81.70	1.00	0.34	1.08	5.40	10.3	35.71	1.904
548	Tres Arroyos	4013	1	82.40	0.84	0.38	0.84	5.40	10.5	35.61	1.820
549	Tres Arroyos	4004	2	80.60	1.12	0.68	1.12	10.20	10.0	33.49	1.924
550	Tres Arroyos	3207	1	80.60	1.34	0.38	0.76	4.80	9.8	34.76	1.825
551	Tres Arroyos	4003	2	81.50	0.70	0.80	1.22	6.20	10.0	33.59	1.797
552	Tres Arroyos	4007	1	81.50	0.68	0.32	0.78	4.80	10.2	35.80	1.831
553	Tres Arroyos	4000	1	81.95	0.64	0.54	0.82	12.40	10.3	35.62	1.777
554	Tres Arroyos	4000	1	80.35	0.84	0.60	0.74	14.20	10.2	35.06	1.805
555	Tres Arroyos	4000	1	83.50	0.76	0.28	0.58	4.80	10.3	35.98	1.960
556	Tres Arroyos	4000	1	81.95	0.62	0.24	0.86	8.40	10.3	35.84	1.962
557	Tres Arroyos	4000	1	82.15	0.60	0.56	0.66	7.40	10.4	36.06	1.922
558	Tres Arroyos	4006	1	81.95	0.62	0.26	0.72	10.40	10.1	36.12	1.824
559	Tres Arroyos	4002	1	79.90	1.08	0.46	0.92	1.80	10.7	34.13	1.853
560	Tres Arroyos	3859	1	80.80	1.40	0.30	0.92	13.80	10.1	34.25	1.829

Subregion IV Wheat

Appendix of Locality Composite Samples.

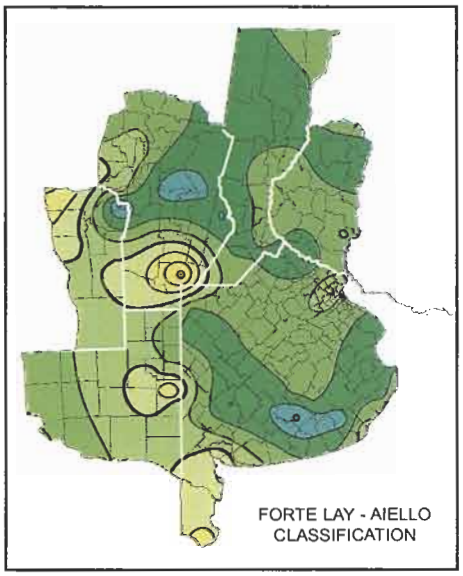
SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
400	Lobería	23.5	8.7	397	71.5	58.8	8.3	11.8	64	104	74	260	1.41	0.627
401	Lobería	21.3	7.9	397	69.9	52.4	8.3	19.0	26	95	66	218	1.44	0.594
402	Rauch	22.6	8.4	363	70.3	55.3	10.5	17.5	37	98	88	280	1.11	0.527
403	Lobería	23.6	8.7	402	70.1	57.7	8.9	14.9	51	107	87	306	1.23	0.529
404	Azul	25.6	9.5	410	69.4	53.3	9.5	15.2	43	73	90	220	0.81	0.562
405	Balcarce	24.4	9.0	405	72.2	56.1	8.7	14.6	56	106	91	292	1.16	0.510
406	Balcarce	25.4	9.4	407	66.2	57.6	8.2	13.1	62	100	87	279	1.15	0.580
407	Balcarce	23.5	8.7	407	69.2	57.4	8.8	15.2	48	85	89	243	0.96	0.558
408	Balcarce	24.6	9.1	409	68.9	56.9	10.6	14.7	63	91	104	295	0.88	0.566
409	Balcarce	22.1	8.2	398	69.6	56.5	10.5	15.7	51	111	72	275	1.54	0.501
410	Balcarce	23.5	8.7	418	68.0	55.2	7.1	11.8	66	74	113	243	0.65	0.555
411	Balcarce	25.3	9.4	402	70.9	59.0	7.2	13.0	55	102	81	269	1.26	0.613
412	Lobería	21.1	7.9	340	63.3	54.7	12.0	18.3	47	87	100	273	0.87	0.557
413	Lobería	21.4	7.9	354	71.3	53.7	10.6	19.9	31	79	79	200	1.00	0.506
414	Lobería	22.2	8.2	416	65.2	54.6	10.0	14.6	60	77	95	234	0.81	0.529
415	Lobería	21.7	8.0	406	71.8	54.7	11.3	23.0	24	104	50	207	2.08	0.507
416	Lobería	24.1	8.9	387	63.4	55.2	8.5	13.1	52	79	76	198	1.04	0.534
417	Gral.Alvarado	21.8	8.1	416	72.3	55.9	8.5	15.0	42	127	48	242	2.65	0.581
418	Gral.Alvarado	21.7	8.0	406	64.8	53.8	12.0	20.8	33	91	86	268	1.06	0.528
419	Gral.Alvarado	21.9	8.1	389	68.2	55.7	7.0	15.5	38	93	73	223	1.27	0.523
420	Gral.Alvarado	22.1	8.2	380	63.6	52.1	7.6	15.2	40	70	78	188	0.90	0.545
421	Gral.Pueyrredón	22.3	8.3	381	70.5	57.7	10.0	16.1	39	96	83	270	1.16	0.551
422	Gral.Pueyrredón	23.1	8.5	435	69.8	55.2	9.4	13.8	65	85	70	202	1.21	0.522
423	Mar Chiquita	22.7	8.4	424	70.3	55.7	11.6	15.6	46	83	79	226	1.05	0.506
424	Benito Juárez	20.2	7.5	415	71.9	53.9	8.4	22.4	20	115	49	223	2.35	0.543
425	Benito Juárez	21.2	7.9	361	71.2	54.5	7.0	17.3	29	103	77	267	1.34	0.523
426	Benito Juárez	19.0	7.1	410	71.5	55.7	5.5	17.3	23	120	53	246	2.26	0.544
427	Azul	24.6	9.1	379	71.3	55.9	8.9	15.9	40	97	69	240	1.41	0.506
428	Azul	25.1	9.3	379	71.4	54.9	9.6	16.0	39	95	84	264	1.13	0.534
429	Azul	24.8	9.2	374	71.9	55.1	13.2	24.1	26	100	91	313	1.10	0.535
430	Azul	23.0	8.5	358	71.9	54.7	10.0	16.9	42	101	56	210	1.80	0.497
500	General Lamadrid	22.7	8.1	397	71.3	57.3	10.4	23.1	17	98	76	274	1.29	0.583
501	General Lamadrid	22.6	8.4	391	69.9	56.7	10.2	35.2	9	89	99	323	0.90	0.515
503	Gonzales Cháves	19.8	7.0	405	70.6	54.7	12.2	28.1	12	88	75	249	1.17	0.478
504	Gonzales Cháves	20.3	7.3	395	69.9	57.6	10.1	21.1	19	105	72	271	1.46	0.509
505	Gonzales Cháves	19.7	7.3	404	70.4	58.4	8.6	24.5	14	112	60	263	1.87	0.482
506	Gonzales Cháves	19.9	7.2	381	71.8	57.9	6.5	19.4	19	99	57	226	1.74	0.525
507	Gonzales Cháves	22.3	8	391	70.4	58.3	9.2	14.7	40	94	86	271	1.09	0.527
508	Gonzales Cháves	21.6	7.8	380	69.1	56.2	9.7	17.6	31	83	90	261	0.92	0.482
511	Laprida	20.3	7.5	403	71.7	57.8	8.1	21.6	17	103	79	304	1.30	0.501
512	Necochea	21.3	7.8	406	71.3	59.5	9.0	18.1	28	112	62	268	1.81	0.520
513	Necochea	20.0	7.3	410	73.3	57.1	6.5	18.1	18	100	60	232	1.67	0.510
514	Necochea	22.2	8.0	404	72.0	59.3	8.0	14.9	44	104	65	253	1.60	0.528
515	Necochea	22.8	8.2	395	71.0	59.7	9.2	15.3	45	109	77	296	1.42	0.538

Appendix of Locality Composite Samples.

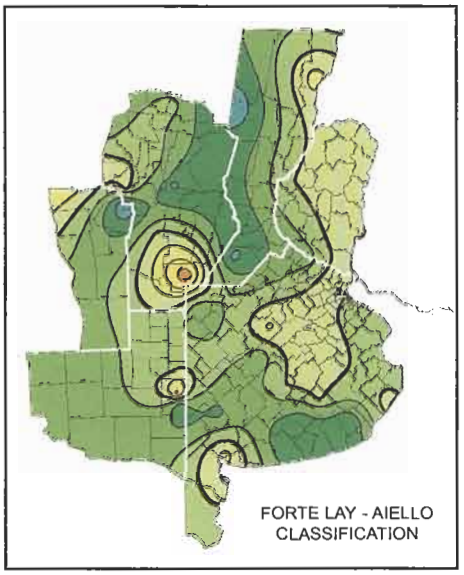
SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
516	Necochea	21.8	8.0	409	71.6	59.8	9.2	15.4	43	111	72	293	1.54	0.551
517	Necochea	22.8	8.3	385	72.0	59.9	9.1	16.6	36	106	76	296	1.39	0.535
518	Necochea	21.0	7.6	401	71.8	56.3	9.1	17.3	34	89	76	243	1.17	0.547
519	Necochea	21.3	7.8	394	73.2	56.4	8.1	15.6	34	94	62	218	1.52	0.547
520	Necochea	20.6	7.4	421	71.9	57.1	8.5	17.2	28	100	67	251	1.49	0.576
521	Necochea	20.8	7.5	400	71.1	56.9	8.0	14.7	39	91	77	248	1.18	0.556
522	Necochea	20.4	7.3	410	71.5	57.0	7.8	15.0	33	97	63	227	1.54	0.569
523	Necochea	20.6	7.4	412	71.1	56.7	7.2	13.4	41	90	79	252	1.14	0.597
524	Necochea	21.9	7.9	391	70.4	56.9	8.1	17.4	26	92	83	277	1.11	0.529
525	Necochea	21.6	7.8	416	70.5	57.3	8.5	16.6	28	99	73	273	1.36	0.586
526	San Cayetano	19.9	7.4	406	71.8	56.1	7.7	18.3	25	90	85	272	1.06	0.567
527	San Cayetano	22.0	8.0	378	70.5	58.4	7.3	20.3	17	104	67	275	1.55	0.530
528	San Cayetano	21.1	7.7	390	69.9	59.4	5.9	13.2	39	109	71	287	1.54	0.598
529	San Cayetano	21.9	8.1	387	69.8	57.5	9.6	23.0	14	97	71	269	1.37	0.533
530	San Cayetano	21.8	8.0	424	71.7	59.2	7.5	17.4	27	112	72	296	1.56	0.560
531	San Cayetano	22.2	7.8	400	70.0	55.9	8.1	16.8	28	84	88	256	0.95	0.530
532	San Cayetano	22.1	7.8	400	69.3	57.1	7.5	13.9	34	91	72	232	1.26	0.519
534	Tandil	22.5	8.1	415	71.3	58.3	9.4	15.4	39	94	72	251	1.31	0.580
535	Tandil	22.5	8.3	411	72.0	56.4	7.5	14.6	35	75	102	249	0.74	0.575
536	Tandil	22.0	7.9	408	68.7	55.9	9.2	17.0	32	78	102	270	0.76	0.553
537	Tandil	22.1	7.9	421	70.2	56.2	8.2	17.1	30	77	92	248	0.84	0.582
538	Tandil	21.2	7.7	404	71.4	58.7	7.9	14.5	38	97	68	239	1.43	0.593
539	Tandil	20.0	7.2	398	67.1	56.3	8.4	15.7	31	82	83	233	0.99	0.551
540	Tandil	21.2	7.8	411	71.0	56.6	8.0	17.5	28	83	89	260	0.93	0.557
543	Tres Arroyos	21.0	7.6	418	71.1	56.5	10.1	21.4	20	87	78	257	1.12	0.523
544	Tres Arroyos	20.4	7.5	412	70.4	60.5	5.6	11.9	36	119	68	280	1.75	0.563
545	Tres Arroyos	20.5	7.5	409	70.6	58.9	8.2	15.1	33	110	56	244	1.96	0.572
546	Tres Arroyos	21.1	7.7	430	66.0	57.6	8.2	14.8	35	90	91	282	0.99	0.604
547	Tres Arroyos	21.9	8.0	423	67.1	57.7	8.3	14.3	40	90	86	270	1.05	0.601
548	Tres Arroyos	22.5	8.2	425	69.2	57.9	8.7	16.7	30	99	76	281	1.30	0.573
549	Tres Arroyos	21.4	7.7	441	72.1	56.2	8.8	16.8	32	96	73	257	1.32	0.578
550	Tres Arroyos	20.4	7.4	417	71.7	58.1	6.9	16.7	24	111	62	271	1.79	0.570
551	Tres Arroyos	21.7	7.9	433	69.3	57.8	7.9	17.3	27	104	70	274	1.49	0.570
552	Tres Arroyos	21.7	7.8	403	71.2	58.6	7.6	14.9	30	110	69	284	1.59	0.566
553	Tres Arroyos	21.8	7.9	440	69.6	57.1	8.4	16.7	28	94	79	281	1.19	0.572
554	Tres Arroyos	21.9	8.0	388	70.8	59.2	6.1	12.2	41	98	81	293	1.21	0.558
555	Tres Arroyos	22.1	8.0	426	69.6	58.8	9.9	18.5	32	95	84	292	1.13	0.601
556	Tres Arroyos	21.4	7.9	415	69.7	59.6	8.2	21.2	19	102	69	270	1.48	0.596
557	Tres Arroyos	21.1	7.7	413	69.8	59.1	6.8	15.7	31	100	78	287	1.28	0.604
558	Tres Arroyos	21.5	7.9	451	70.4	58.6	7.7	19.3	23	99	85	302	1.16	0.565
559	Tres Arroyos	23.2	8.5	447	71.9	59.5	9.5	22.8	17	116	76	328	1.53	0.561
560	Tres Arroyos	21.9	8.0	404	70.3	56.4	10.1	21.8	20	91	68	239	1.34	0.542

SOIL HUMIDITY CLASSIFICATIO

MAY 2002



JUNE 2002



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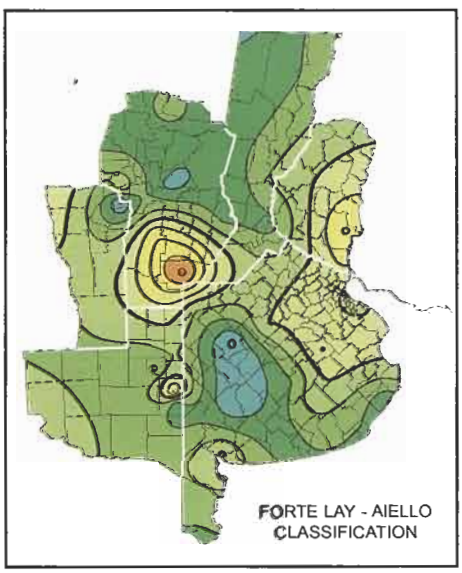
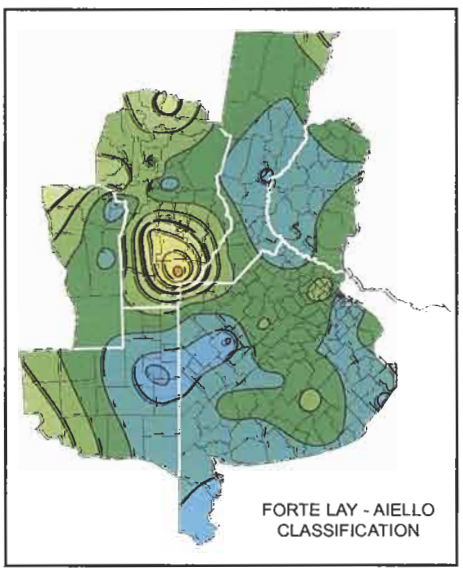


SEPTEMBER 2002



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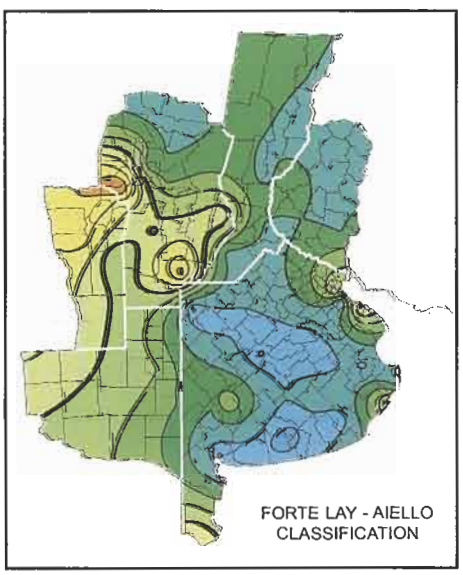

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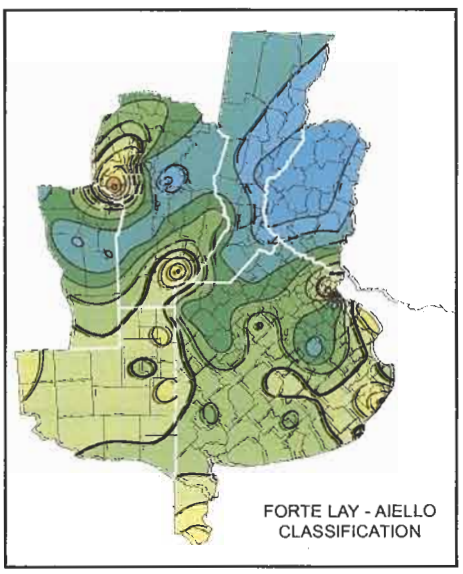
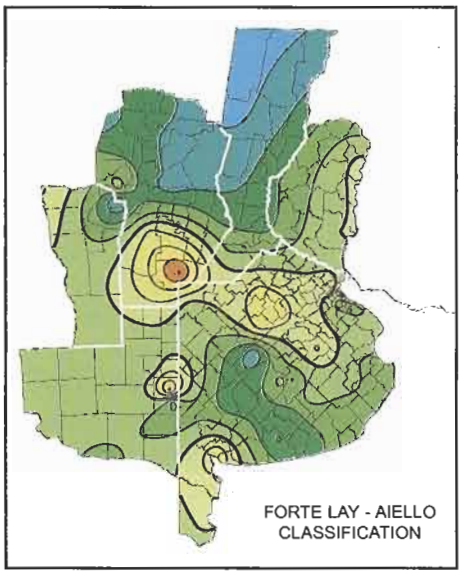
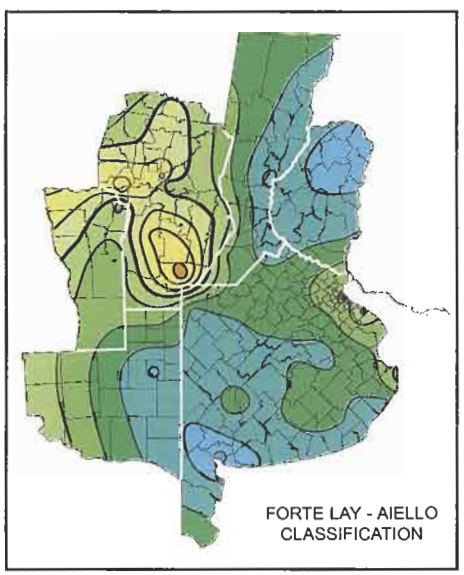


02/2003 WHEAT CROP

JULY 2002

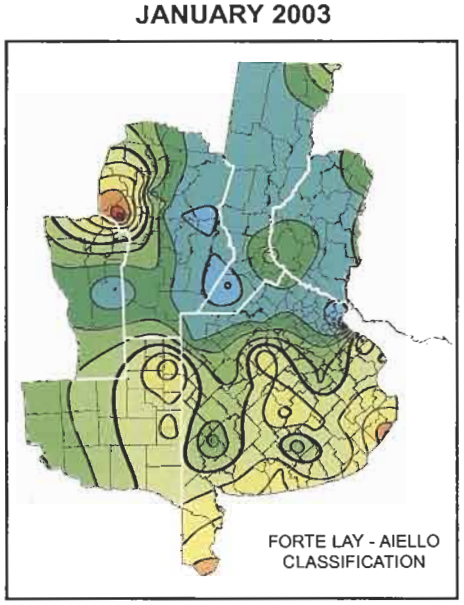


OCTOBER 2002



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 2003



Climatology 2002/2003

Climate and Wheat crop 2002 – 2003 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 2001-2002 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 southeast of the wheat region.

MAY 2002

The map shows the beginning of the wheat campaign with a prevalence of conditions close to normal. However, some areas such as the southeast of Buenos Aires around Tandil and Juárez, had much more humid conditions than normal, with heavy rains causing a delay in the planting of the lots. To the centre of Córdoba, some zones showed positive anomalies regarding soil moisture, but they are beneficial for first plantings. Nevertheless, other zones located to the west of the province, marginal for wheat, had normal or lightly above normal conditions, but they did not benefit by the great quantity of moisture as in previous years. Laboulaye neighbouring area, at the south-southeast of Córdoba, shows some values below normal for this season, although they do not affect wheat due to the phreatic water closeness in an area with floodings in previous periods.

JUNE 2002

Again, it is observed a month average with hydric conditions almost normal, with cold and dry weather, in particular during the second half of the month. These allowed to plant long and intermediate cycles in the centre and north of the wheat region. There was still some deficiency regarding normal conditions in the zone of Laboulaye, but this anomaly was not an obstacle to planting due to what was previously mentioned.

JULY 2002

There are still normal conditions, although the area with deficiencies at the south of Córdoba was intensified, and due to this reason planting of short and intermediate cycles had to be interrupted because of superficial moisture, being the long term cycle wheat conditions, planted earlier, acceptable. Relatively drier conditions than normal also extended, with less intensity, to the east (north of Buenos Aires), but there was no inconvenience there. Planting began in the Buenos Aires southeast zones, once excesses disappeared. At the north of the wheat regions moisture is above normal.

AUGUST 2002

There are still relatively normal conditions, although it is still observed the area with deficiencies at the south of Córdoba. However, to the last part of the month there were some rains which improved superficial moisture. The same were excessive at the centre and southeast of Buenos Aires and that was while the last planting at the southeast had to be interrupted due to several excesses, although positive anomalies regarding moisture as an average of the month were not observed, contrary to the centre-southeast of Buenos Aires. High temperatures before and during rain at the third decade of the month, also favoured crops which were delayed by the low temperatures of the previous periods.

SEPTEMBER 2002

Crops continued to develop almost normally at the centre-east and centre-south of the main wheat region. However, dry conditions, which persisted to the northeast, specially at the south of Córdoba, and a little to the northeast of Buenos Aires, damaged wheat. Although normal hydric conditions were observed, at the northeast of Córdoba, they are not so good for the region nor for the time of the year , as there, they represent drought. This was the opposite to the more favourable conditions of previous years. This effect was reinforced by a higher incidence than normal of drying winds and severe changes in temperature. Towards La Pampas, centre-west and south of Buenos Aires the most intense and extense soil moisture positive anomalies are observed keeping optimun conditions for planted wheat.

OCTOBER 2002

Soil dry continued, specially to the centre of Córdoba and, although the first important storms took place, in many cases accompanied by harmful hail, rains came late for wheats at this zone. On the other hand, abundance of rains at the norheast region (particularly in Entre Ríos) caused predisponing conditions to the appearance of criptogamic diseases. The same happened at the centre-southeast of Buenos Aires with flooding of many wheat lots. However, the strong and extense positive soil moisture anomaly in all the centre-southeast of Buenos Aires and centre-southeast of La Pampa, determined perfect conditions for crops in these regions.

NOVEMBER 2002

Soil moisture conditions, above normal, in most of the centre-east and south wheat region continued, with new water excesses at the centre-south and southeast of Buenos Aires and in Entre Ríos and Santa Fe, being crops predisposed to ear diseases (Fusarium). In La Pampa, conditions close to normal for this season, favoured a good ripening. In Córdoba, droughts suffered during previous periods determined drops in yield, in particular to the west.

DECEMBER 2002

Normal moisture conditions prevailed in the centre and south of the wheat area, with soils relatively dry, favouring ripening and harvest in La Pampa, where the conditions for crop development were very good. Conditions improved at the south and southeast of Buenos Aires, which suffered moisture excesses and lack of solar radiation in previous periods. There were no excessively high temperatures. High soil positive moisture anomalies at the north of the region, specially in Entre Ríos and east of Santa Fe, would not have had any incidence in already harvested crops.

JANUARY 2003

This map is attached as some wheat lots, at the southeast extreme of the region, were still being harvested, in special during the first part of the month. There, normal to dry conditions favoured harvesting tasks.

Subregion V North
Background for the crop

Planted surface dropped near 15 % and yields, at the north of Córdoba and centre-north of Santa Fe dropped 25 %.

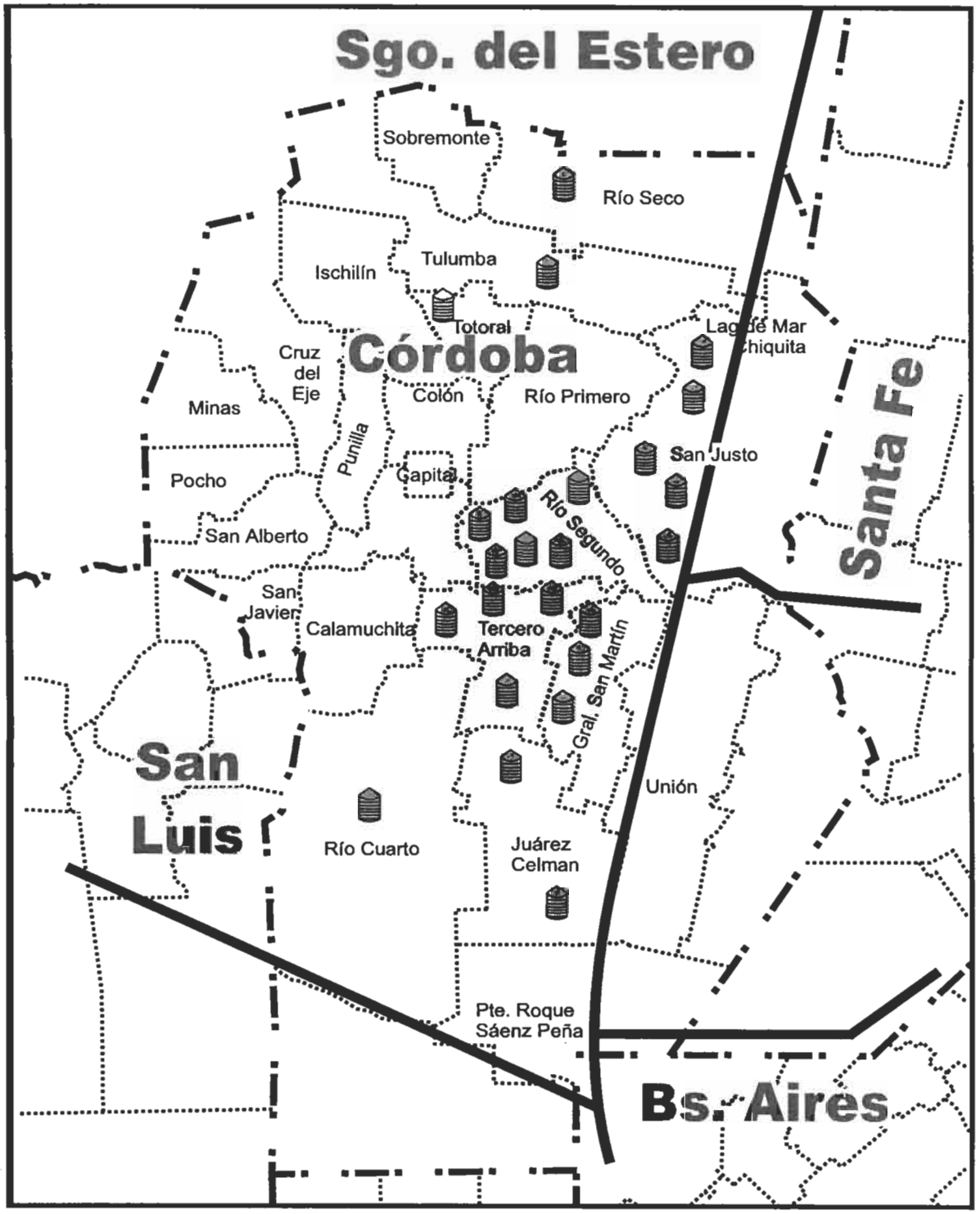
The planted area was smaller than foreseen due to lack of moisture when planting and to a diminishing of the technological level, mainly observed in the use of fertilizers and agrochemicals.

At the middle of July, the first leaf rust infections were seen. As from flowering, a severe epidemic development of leaf rust in susceptible varieties and moderate to severe of yellow spot were observed, although yields did not vary very much due to this reason.

Most of the wheat of the central zone of the country was placed in a Grade 2 of commercialisation, with a drop in the hectolitre weight, being around 77 kg/hl. Grain protein was higher than 12 %, similar to the last harvest, but with a better industrial quality.

It was observed a greater interest of producers in the classification of wheat basing on its industrial quality, due to the possibility of achieving differential prices in commercialisation when offering specific qualities instead of unspecified mixtures.

Factors such as a lesser use of fertilizers, incidence of leaf diseases in some varieties, together with periods of high temperatures at critical moments affected the wheat in all the region. In general, a shortening of the cycle was observed, which contributed to a drop in yields.



Each reference represents near 4,000 tns sampled

Subregion V North Wheat

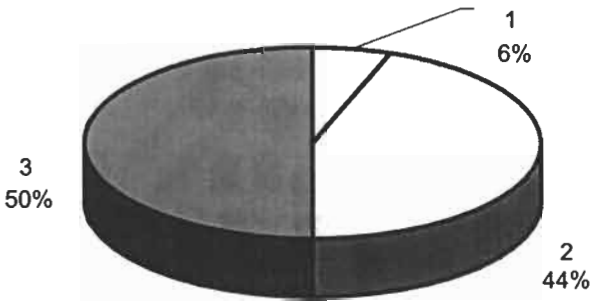
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	75.00	81.70	77.11	1.77	0.02
Total Damaged Kernels (%)	0.14	2.26	0.66	0.56	0.85
Foreign Material (%)	0.08	0.50	0.29	0.10	0.35
Shrunken and Broken Kernels (%)	0.49	1.75	1.06	0.33	0.31
Yellow Berry Kernels (%)	0.00	0.80	0.29	0.20	0.68
Protein (13,5% Moisture) (%)	11.2	13.8	12.5	0.5	0.04
Weight of 1000 Kernels (gr.)	25.30	31.60	27.69	1.68	0.06
Ash (% dry basis)	1.789	2.151	1.972	0.108	0.05

Total damaged kernels includes 0.06 % green kernels, 0.07 % calcinated kernels, 0.14 % frosty kernels, 0.15 % insect chewed kernels and 0.24 % sprouted kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	27.0	34.7	29.2	2.3	0.08
	Dry Gluten (%)	9.7	12.3	10.5	0.7	0.07
	Falling Number (sec.)	374	525	432	39	0.09
	Flour Yield (%)	57.4	72.0	67.9	4.1	0.06
	Ash (dry basis) (%)	0.448	0.754	0.592	0.064	0.11
FARINOGRAM	Water Absorption (14 % H°) (%)	57.2	61.7	60.5	1.0	0.02
	Development Time (min.)	4.2	18.0	10.0	2.5	0.24
	Stability (min.)	6.7	24.5	14.2	4.6	0.33
	Degree of Softening (12 min.)	23	70	44	14	0.32
ALVEOGRAM	P (mm)	76	131	106	16	0.15
	L (mm)	54	122	87	17	0.19
	W Joules x 10^{-4}	234	376	318	42	0.13
	P / L	0.74	2.43	1.22	0.46	0.37

These results were elaborated with 19 composite samples prepared proportionally from 200 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 1,035,520 tons., the 8.42 % of the national total. Were sampled 96,743 tons., the 9.34 % 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 Seco	4000	2	78.60	0.25	0.08	1.31	0.20	12.5	28.00	1.897
601	Totoral	4000	1	81.70	0.14	0.13	0.49	0.30	11.2	31.60	1.825
602	Tulumba	4000	2	79.90	1.98	0.21	1.54	0.10	13.8	26.70	1.988
603	Río IV	5122	3	75.00	1.52	0.42	1.29	0.00	13.0	25.40	1.936
604	Río II	4500	2	79.00	0.40	0.15	1.75	0.20	12.5	27.40	2.060
605	Río II	4500	2	78.80	0.60	0.28	1.45	0.30	11.8	26.60	2.060
606	Juarez Celman	8000	2	78.60	0.24	0.28	0.66	0.50	13.1	29.20	1.789
607	Juarez Celman	1621	3	75.20	1.88	0.22	0.75	0.20	11.9	29.60	1.896
608	Tercero Arriba	4000	2	78.60	1.12	0.18	1.28	0.20	12.6	28.80	1.952
609	Tercero Arriba	4000	3	76.35	2.26	0.27	0.75	0.50	12.3	28.80	1.891
610	Tercero Arriba	8000	3	75.65	0.50	0.30	1.45	0.30	11.8	27.10	1.977
611	Río II	6000	2	77.90	0.36	0.30	0.86	0.50	12.2	29.40	1.937
612	Río II	7000	2	77.45	0.32	0.20	1.12	0.80	12.0	29.90	1.901
613	San Justo	5000	3	75.90	0.40	0.38	0.98	0.20	12.5	25.80	2.151
614	San Justo	5000	3	75.45	0.38	0.38	0.90	0.10	12.7	25.90	2.115
615	San Justo	5000	3	75.65	0.46	0.50	1.06	0.10	12.6	25.60	2.130
616	San Justo	5000	3	75.65	0.54	0.38	0.92	0.20	12.5	25.30	2.127
617	San Martín	6000	3	75.45	0.50	0.30	0.85	0.20	12.7	27.40	2.026
618	San Martín	6000	3	75.65	0.60	0.39	0.70	0.20	12.6	28.10	1.870

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
600	Río Seco	30.1	10.5	384	64.0	57.2	7.7	9.5	56	76	84	236	0.90	0.448
601	Totoral	28.1	9.9	381	57.4	59.2	6.5	6.7	70	80	96	234	0.83	0.549
602	Tulumba	30.1	11.0	383	58.3	59.9	18.0	24.5	31	100	88	343	1.14	0.552
603	Río IV	34.7	12.3	374	61.6	61.5	10.0	13.0	45	90	122	376	0.74	0.551
604	Río II	28.1	10.1	430	63.7	58.8	9.5	14.8	38	95	85	292	1.12	0.569
605	Río II	28.2	10.0	407	66.6	59.2	11.3	18.0	30	98	95	320	1.03	0.531
606	Juarez Celman	32.8	11.6	440	70.4	60.8	8.2	9.7	63	87	101	295	0.86	0.578
607	Juarez Celman	30.1	10.8	407	71.4	61.0	4.2	8.9	48	104	78	275	1.33	0.548
608	Tercero Arriba	30.2	10.8	437	69.4	61.1	9.9	13.9	46	103	103	365	1.00	0.613
609	Tercero Arriba	28.6	10.4	390	72.0	60.6	8.5	19.1	23	102	76	296	1.34	0.640
610	Tercero Arriba	27.0	9.8	463	71.0	61.3	10.5	14.6	45	118	82	353	1.44	0.538
611	Río II	27.3	9.9	416	70.2	61.7	7.7	9.4	63	131	54	263	2.43	0.593
612	Río II	27.1	9.7	403	68.3	61.3	7.9	9.9	57	119	62	270	1.92	0.583
613	San Justo	28.2	10.2	438	70.8	60.4	12.3	19.1	29	118	79	348	1.49	0.623
614	San Justo	27.2	10.2	525	70.1	60.5	11.0	18.4	28	122	77	351	1.58	0.754
615	San Justo	27.8	10.1	466	70.0	60.5	11.7	20.0	26	116	92	374	1.26	0.602
616	San Justo	27.3	10.0	489	69.9	60.3	12.8	21.0	24	131	68	344	1.93	0.573
617	San Martín	30.8	11.0	438	67.9	61.3	10.0	12.1	46	94	105	323	0.90	0.694
618	San Martín	31.9	11.3	466	71.3	60.7	11.2	11.1	43	102	101	342	1.01	0.657

Subregion V South
Background for the crop

The 2002/2003 crop year began with positive climatic conditions for wheat growing.

The Autumn months of April and May were humid enough to allow early sowing in very good conditions. During May and June 15 frosts occurred, which allowed early sown plants to develop comfortably in the tillering stage, with satisfactory root system growth. Sowings in July and August were carried out normally.

As in the previous crop year, August was atypical, with too much precipitation for the region; in many locations, rains on the 27th and the 28th exceeded 144 milimetres. This caused flooded soil with emergence problems in late sowings, and much nitrogen leaching. On many fields, weed control was not effective. Presence of wild oat (Avena fatua), among others, was noticeable.

October and November were also humid, making fertilizer applications insufficient.

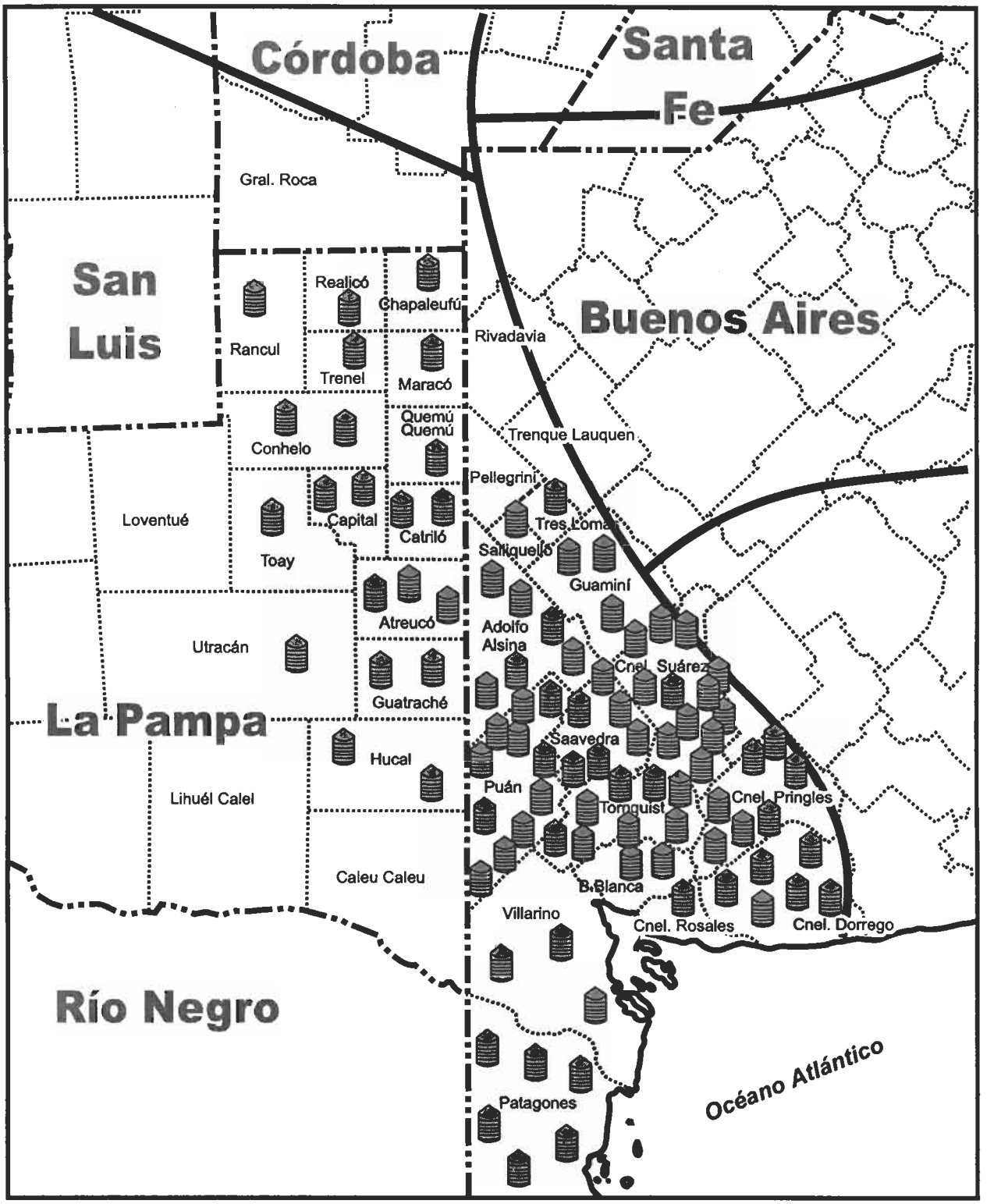
Additionally, rains of November 7th to 10th, together with subsequent strong winds that damaged plant leaf tissues, were suitable for bacterial infections, both in spikes (causing abortion and sterile flowers) as well as on leaf.

The latter half of November was favourable for grain filling.

In the most humid areas, problems of leaf diseases and leaf rust showed up.

In accordance to sanitary problems and lack of nutrients caused by leaching, yield was lower than expected by crop condition before the above-mentioned November rains. It varied from 1300 to 2300 kg/ha.

Subregion V South Wheat



Each reference represents near 4,000 tns sampled.

Subregion V South Wheat

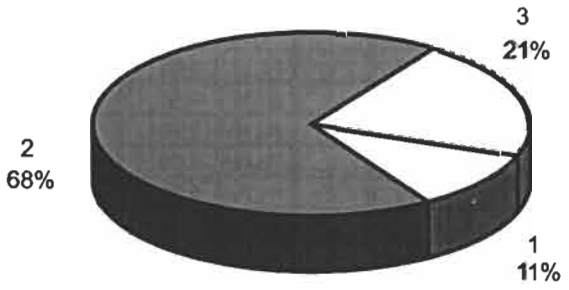
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	77.90	83.50	80.49	1.32	0.02
Total Damaged Kernels (%)	0.00	0.82	0.16	0.16	1.03
Foreign Material (%)	0.34	2.42	0.99	0.37	0.37
Shrunken and Broken Kernels (%)	0.42	2.48	1.12	0.42	0.38
Yellow Berry Kernels (%)	0.60	27.60	8.12	5.50	0.68
Protein (13,5% Moisture) (%)	9.1	11.0	10.0	0.4	0.04
Weight of 1000 Kernels (gr.)	29.34	38.21	34.03	2.02	0.06
Ash (% dry basis)	1.527	2.046	1.881	0.090	0.05

Total damaged kernels includes 0.02% sprouted kernels, 0.06% calcinated kernels, 0.04% insect chewed kernels and 0.04% germen chewed kernels.

Grade Distribution



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	15.8	25.3	20.8	1.6	0.08
	Dry Gluten (%)	6.0	9.2	7.7	0.5	0.07
	Falling Number (sec.)	342	430	396	17	0.04
	Flour Yield (%)	58.3	74.1	70.0	3.0	0.04
	Ash (dry basis) (%)	0.505	0.853	0.581	0.061	0.11
FARINOGRAM	Water Absorption (14 % H°) (%)	52.9	63.8	58.3	1.7	0.03
	Development Time (min.)	1.5	17.5	6.8	3.4	0.49
	Stability (min.)	1.4	59.3	16.8	10.0	0.59
	Degree of Softening (12 min.)	4	81	34	19	0.57
ALVEOGRAM	P (mm)	40	134	98	18	0.18
	L (mm)	46	91	67	10	0.15
	W Joules x 10^{-4}	187	342	261	31	0.12
	P / L	0.68	2.35	1.45	0.39	0.27

These results were elaborated with 95 composite samples prepared proportionally from 2089 primary samples (farmer deliveries).

Subregion Data

In this subregion the wheat production was 3,837,691 tons., the 31.20 % of the national total.Were sampled 372,451 tons., the 9.71 % 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	4006	2	79.45	0.16	0.76	0.98	13.80	9.3	35.01	1.842
704	Atreucó	4000	3	79.90	0.00	1.44	1.10	16.20	9.9	38.16	1.884
705	Atreucó	4005	2	80.35	0.16	1.14	1.02	9.80	10.0	37.75	1.943
707	Capital	4023	2	80.35	0.10	0.92	1.32	6.40	9.8	32.06	1.527
708	Capital	4013	2	79.90	0.18	0.70	1.16	13.20	9.5	36.37	1.878
709	Catriló	4005	1	79.90	0.24	0.38	0.44	7.20	10.4	38.21	1.894
710	Catriló	4005	2	80.15	0.12	0.70	0.90	6.20	9.9	33.41	1.915
711	Chapaleufú	4010	2	79.25	0.08	0.92	1.00	2.40	10.7	32.65	2.002
712	Conhelo	4000	2	80.15	0.06	0.86	0.66	10.60	9.5	34.91	1.794
713	Conhelo	4000	2	80.80	0.16	0.86	1.34	7.40	10.0	34.68	2.046
714	Guatraché	4001	2	80.15	0.10	0.74	0.86	8.90	10.0	33.35	1.841
715	Guatraché	4000	2	79.45	0.08	1.04	0.68	3.40	10.2	32.66	1.689
716	Hucal	4002	2	81.70	0.06	1.08	2.16	18.20	9.4	36.09	1.755
717	Hucal	4001	3	80.80	0.00	1.34	1.56	14.20	9.5	33.13	1.799
718	Maracó	4001	1	79.25	0.54	0.58	0.76	5.60	10.8	35.64	1.999
719	Quemú - Quemú	4000	2	79.25	0.26	0.70	1.02	4.40	10.3	34.22	1.930
720	Rancul	4001	2	80.60	0.20	0.88	1.28	8.40	10.7	33.87	1.949
721	Realicó	4005	3	79.45	0.34	1.48	0.52	3.60	11.0	34.79	1.959
722	Toay	4000	2	80.80	0.08	0.64	0.78	1.40	10.9	33.95	1.918
723	Trenel	4005	3	81.05	0.06	1.28	0.62	4.20	10.4	34.83	2.015
724	Utracán	4008	2	78.35	0.44	1.24	0.74	5.40	10.9	32.26	1.961
725	Adolfo Alsina	4000	2	79.00	0.28	1.20	0.86	9.20	9.9	35.57	1.872
726	Adolfo Alsina	4000	2	79.00	0.18	1.16	0.78	9.20	9.6	35.86	1.831
727	Adolfo Alsina	4000	3	78.15	0.12	1.46	0.98	7.40	9.7	35.39	1.831
728	Adolfo Alsina	4000	2	79.00	0.26	0.80	0.42	2.90	9.9	34.69	1.823
729	Adolfo Alsina	4012	3	77.90	0.46	1.48	0.86	6.10	9.8	34.68	1.849
730	Adolfo Alsina	4000	2	79.45	0.24	0.70	0.92	10.40	10.2	36.54	1.780
731	Bahía Blanca	4000	2	80.80	0.28	0.94	1.44	10.40	10.0	34.27	1.906
732	Bahía Blanca	4002	2	80.35	0.16	1.12	1.30	13.40	10.0	35.55	1.965
733	Coronel Dorrego	4000	2	82.60	0.00	0.62	0.58	0.80	10.2	33.00	1.935
734	Coronel Dorrego	4000	2	79.90	0.00	0.96	1.16	5.60	10.4	34.76	1.995
735	Coronel Dorrego	4000	2	80.80	0.24	0.46	1.30	6.80	9.9	34.36	1.912
736	Coronel Dorrego	4002	2	81.70	0.06	0.80	1.88	3.60	9.9	33.02	1.847
737	Coronel Dorrego	2993	2	80.80	0.00	1.02	1.78	2.60	10.1	34.35	1.833
738	Coronel Dorrego	4000	1	81.95	0.04	0.34	0.64	4.40	10.5	33.44	1.967
746	Coronel Pringles	4023	3	79.90	0.00	1.42	1.70	3.80	10.5	31.73	1.890
747	Coronel Pringles	4014	2	80.80	0.06	1.00	1.14	1.20	10.7	31.11	1.922
748	Coronel Pringles	4032	2	79.00	0.40	1.06	0.90	3.60	10.8	30.60	1.937
749	Coronel Pringles	4010	2	80.80	0.00	0.98	1.16	2.40	10.6	30.21	1.929
750	Coronel Pringles	4063	2	78.15	0.06	1.24	1.56	3.20	10.1	30.50	1.943
751	Coronel Pringles	4007	3	79.00	0.04	1.46	1.32	3.20	10.0	32.11	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) (%)
752	Coronel Pringles	4012	2	80.60	0.22	0.96	1.20	4.40	10.2	29.34	1.969
753	Coronel Rosales	2123	2	81.05	0.12	0.76	0.90	2.60	10.3	31.88	1.946
754	Coronel Suárez	4010	2	78.15	0.30	1.10	0.88	4.80	10.3	32.29	1.913
755	Coronel Suárez	4000	2	78.15	0.22	1.06	1.24	0.60	10.4	31.34	1.890
756	Coronel Suárez	4004	2	79.00	0.18	0.76	1.00	3.20	10.1	31.08	1.958
757	Coronel Suárez	4001	2	80.35	0.24	0.86	1.32	3.40	9.9	31.24	1.946
758	Coronel Suárez	4006	2	80.35	0.06	0.50	1.32	1.80	10.3	31.36	1.994
759	Coronel Suárez	4006	2	79.45	0.26	0.80	1.30	1.40	10.2	33.44	1.947
760	Coronel Suárez	4003	2	79.00	0.26	0.82	1.04	6.10	10.0	30.43	1.945
761	Coronel Suárez	4000	2	79.90	0.16	1.18	1.10	7.20	10.1	31.62	1.915
762	Coronel Suárez	4001	3	79.90	0.22	1.34	1.04	6.10	10.0	32.47	1.893
763	Coronel Suárez	4000	2	79.45	0.00	0.88	1.02	3.40	10.2	32.77	1.940
764	Coronel Suárez	4004	3	79.45	0.18	1.32	0.82	2.60	10.0	31.43	1.859
765	Coronel Suárez	4017	2	79.45	0.18	0.70	0.98	6.80	9.7	31.72	1.881
766	Guaminí	4002	2	80.80	0.22	0.82	0.88	0.60	10.5	34.34	1.988
767	Guaminí	4008	2	80.80	0.22	1.00	0.94	3.20	10.5	33.23	1.774
768	Guaminí	4011	1	81.70	0.66	0.52	0.74	4.80	10.4	35.88	1.820
769	Patagones	4003	2	82.15	0.00	0.50	1.82	16.80	10.1	34.48	1.688
770	Patagones	4002	3	83.50	0.06	1.54	1.80	11.20	9.5	31.50	1.627
771	Patagones	4000	2	83.05	0.00	0.96	2.30	11.60	9.8	31.70	1.673
772	Patagones	4001	2	82.15	0.26	0.80	2.22	13.80	10.3	34.81	1.721
773	Patagones	4002	3	82.40	0.00	1.32	1.44	17.40	9.7	35.12	1.735
774	Patagones	4000	2	82.60	0.26	0.86	1.82	13.60	10.1	30.82	1.765
776	Puán	4004	3	80.60	0.00	1.46	1.16	7.40	9.9	35.81	1.802
777	Puán	4027	3	79.45	0.20	1.58	1.22	5.60	10.3	35.60	1.938
778	Puán	4006	2	79.25	0.38	1.06	1.02	8.40	10.0	35.02	1.897
779	Puán	3341	2	79.90	0.04	0.88	1.44	4.80	10.2	35.05	1.919
780	Puán	4001	2	82.85	0.00	0.68	0.88	19.80	9.2	36.94	1.878
781	Puán	4000	2	82.15	0.10	0.98	0.94	18.60	9.5	36.18	1.886
782	Puán	4000	2	82.60	0.00	0.94	1.02	13.80	9.7	36.96	1.809
783	Puán	4001	3	81.25	0.00	1.70	1.46	12.40	9.3	34.11	1.771
784	Puán	4000	1	81.25	0.08	0.58	0.82	12.20	9.6	34.41	1.890
785	Puán	4006	2	81.70	0.12	0.90	1.04	7.30	9.8	35.44	1.841
786	Puán	4009	1	82.40	0.00	0.44	1.10	6.20	9.4	34.78	1.811
787	Saavedra	4000	2	81.95	0.00	0.82	0.78	11.80	9.5	35.16	1.897
788	Saavedra	4000	2	81.50	0.06	0.80	0.58	12.20	9.7	35.96	1.930
789	Saavedra	4000	2	81.05	0.04	0.72	0.86	6.80	9.5	34.46	1.909
790	Saavedra	2995	1	79.00	0.82	0.38	0.74	5.60	9.9	34.67	1.781
791	Saavedra	2235	2	81.25	0.00	0.86	0.88	10.80	9.5	34.38	1.917
792	Saavedra	2696	1	80.80	0.14	0.56	0.82	6.70	10.0	32.59	1.814
793	Saavedra	3633	1	79.25	0.22	0.56	0.82	5.80	9.9	31.29	1.870

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) (%)
796	Salliqueló	4000	2	79.00	0.76	1.18	0.88	1.80	10.2	33.38	2.009
797	Tornquist	4006	2	81.50	0.00	1.06	1.04	12.80	9.4	37.95	1.974
798	Tornquist	4000	3	82.15	0.00	1.30	1.08	27.20	9.3	36.23	1.975
799	Tornquist	4007	3	81.70	0.00	2.42	1.16	16.90	9.8	35.78	1.920
800	Tornquist	4005	3	81.70	0.30	2.26	0.48	13.20	9.6	37.04	1.919
801	Tornquist	4000	3	81.70	0.00	0.84	1.26	27.60	9.1	36.06	1.835
802	Tornquist	4000	2	82.15	0.06	1.24	0.90	13.40	9.8	34.63	1.935
803	Tornquist	4001	1	82.60	0.24	0.46	0.86	8.90	9.8	36.06	1.869
804	Tornquist	4008	2	82.15	0.06	0.70	1.00	6.50	9.4	37.83	1.968
805	Tres Lomas	4001	2	78.15	0.42	1.24	0.72	4.20	10.1	32.72	1.986
806	Villarino	4002	3	80.35	0.12	1.32	2.48	12.80	9.6	34.89	1.862
807	Villarino	4001	2	81.25	0.24	0.86	1.58	12.20	9.9	34.13	1.860
808	Villarino	4001	2	80.80	0.00	1.16	2.18	4.80	10.5	32.66	1.843

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
703	Atreucó	20.0	7.2	404	59.8	55.0	8.0	23.5	18	89	54	187	1.65	0.558
704	Atreucó	20.8	7.7	429	68.4	55.5	11.8	26.5	19	90	77	263	1.17	0.535
705	Atreucó	20.7	7.7	415	61.6	55.4	7.4	19.3	23	87	64	216	1.36	0.557
707	Capital	21.1	7.6	404	68.0	57.3	7.4	17.4	22	66	56	225	1.18	0.545
708	Capital	18.1	6.9	419	58.3	58.6	1.7	1.5	68	108	46	204	2.35	0.594
709	Catriló	21.4	7.9	391	66.3	58.2	7.3	23.3	14	110	59	263	1.86	0.552
710	Catriló	20.5	7.5	393	58.9	56.7	6.0	19.1	18	106	56	242	1.89	0.599
711	Chapaleufú	22.7	8.3	408	67.7	57.4	9.8	17.9	28	109	52	227	2.10	0.574
712	Conhelo	18.2	6.8	393	65.3	55.3	13.0	30.8	13	96	61	228	1.57	0.555
713	Conhelo	19.0	7.3	388	65.8	58.9	1.7	37.4	46	122	56	278	2.18	0.561
714	Guatraché	18.5	7.0	388	67.5	57.4	11.5	18.4	28	90	69	234	1.30	0.548
715	Guatraché	21.4	7.6	385	66.1	57.3	10.1	18.1	29	94	65	236	1.45	0.505
716	Hucal	17.7	6.8	390	69.3	55.5	5.2	15.8	25	94	70	250	1.34	0.541
717	Hucal	15.8	6.0	406	68.1	52.9	17.5	59.3	4	80	58	192	1.38	0.508
718	Maracó	20.8	7.5	404	67.1	57.6	13.6	33.5	12	107	68	285	1.57	0.535
719	Quemú - Quemú	21.8	7.9	383	69.7	56.9	14.3	26.9	18	108	51	228	2.12	0.577
720	Rancul	23.6	8.5	401	67.4	59.8	9.8	17.7	26	117	59	270	1.98	0.542
721	Realicó	24.8	8.9	401	68.3	60.8	10.0	16.1	30	118	73	316	1.62	0.623
722	Toay	25.3	9.2	393	66.7	60.7	10.9	16.4	31	114	70	305	1.63	0.580
723	Trenel	21.9	8.1	379	69.7	60.3	2.0	28.9	27	122	58	282	2.10	0.558
724	Utracán	24.9	9.2	389	68.2	60.1	8.7	12.8	41	107	76	281	1.41	0.638
725	Adolfo Alsina	20.4	7.8	399	72.1	55.6	6.0	21.9	17	83	77	236	1.08	0.573
726	Adolfo Alsina	21.4	8.2	396	71.0	57.2	6.6	18.4	21	95	64	228	1.48	0.584
727	Adolfo Alsina	20.3	7.5	387	73.8	53.2	5.5	18.4	20	68	86	208	0.79	0.575
728	Adolfo Alsina	20.4	7.6	402	72.6	57.2	7.0	18.6	25	99	68	257	1.46	0.578
729	Adolfo Alsina	20.2	7.6	404	71.6	56.4	6.1	18.0	23	42	62	206	0.68	0.586
730	Adolfo Alsina	22.2	8.2	403	71.6	58.0	8.4	17.6	23	98	73	266	1.34	0.546
731	Bahía Blanca	21.0	8.0	411	71.2	58.2	7.9	16.7	30	106	69	274	1.54	0.580
732	Bahía Blanca	20.6	7.8	408	71.1	57.8	7.9	15.4	33	99	66	255	1.50	0.567
733	Coronel Dorrego	20.3	7.8	430	69.9	60.8	6.5	12.7	36	132	57	302	2.32	0.616
734	Coronel Dorrego	20.9	7.9	378	68.5	61.2	4.7	11.4	36	120	67	308	1.79	0.555
735	Coronel Dorrego	19.7	7.4	379	69.9	57.2	6.2	24.7	12	116	50	243	2.32	0.543
736	Coronel Dorrego	19.3	7.3	426	70.2	58.2	1.7	1.8	67	47	63	248	0.75	0.545
737	Coronel Dorrego	20.0	7.6	427	67.8	57.7	6.0	32.7	16	113	60	278	1.88	0.521
738	Coronel Dorrego	22.4	8.2	379	69.7	59.7	12.3	45.4	17	—	—	—	—	0.513
746	Coronel Pringles	21.7	8.3	391	68.7	59.9	8.0	20.3	23	134	65	342	2.06	0.590
747	Coronel Pringles	23.2	8.8	385	70.9	57.5	8.3	22.0	24	96	84	289	1.14	0.599
748	Coronel Pringles	23.1	8.5	394	70.5	57.8	6.1	16.4	31	94	86	290	1.09	0.521
749	Coronel Pringles	22.3	8.1	420	70.9	59.7	1.7	1.8	72	56	70	240	0.80	0.588
750	Coronel Pringles	21.3	7.9	416	71.1	58.1	5.9	11.9	39	101	75	273	1.35	0.592
751	Coronel Pringles	21.4	7.9	410	69.5	57.9	5.3	12.8	33	98	78	262	1.26	0.577

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
752	Coronel Pringles	21.7	8.0	342	70.6	57.8	5.6	14.5	36	98	81	279	1.21	0.588
753	Coronel Rosales	22.5	8.2	399	72.3	60.2	8.5	17.2	29	113	63	274	1.79	0.560
754	Coronel Suárez	22.5	8.1	419	72.6	59.3	6.1	17.7	23	114	56	250	2.04	0.828
755	Coronel Suárez	22.4	8.2	418	72.3	58.3	7.9	20.2	19	106	73	291	1.45	0.806
756	Coronel Suárez	22.6	8.0	403	72.8	58.8	5.1	12.6	35	105	65	249	1.62	0.581
757	Coronel Suárez	20.4	7.6	410	71.2	57.5	11.8	22.8	20	97	82	285	1.18	0.563
758	Coronel Suárez	18.9	7.0	405	70.9	57.9	7.5	24.7	17	104	80	308	1.30	0.591
759	Coronel Suárez	21.7	8.0	427	72.1	58.9	8.0	26.3	16	60	78	307	0.77	0.577
760	Coronel Suárez	20.3	7.6	399	69.5	57.8	7.8	16.9	27	95	84	286	1.13	0.603
761	Coronel Suárez	21.7	8.0	395	69.2	58.5	5.8	15.6	27	101	75	272	1.35	0.595
762	Coronel Suárez	19.6	7.2	378	70.7	57.2	10.3	24.6	14	90	87	287	1.03	0.566
763	Coronel Suárez	20.6	7.8	399	71.4	57.6	10.0	25.3	14	103	77	293	1.34	0.560
764	Coronel Suárez	20.8	7.7	381	70.0	57.4	6.5	15.7	31	96	84	291	1.14	0.573
765	Coronel Suárez	20.5	7.5	380	72.2	58.9	1.8	1.7	77	40	56	219	0.71	0.577
766	Guaminí	22.6	8.3	382	70.5	60.8	8.9	17.4	28	90	70	324	1.29	0.853
767	Guaminí	23.6	8.6	405	70.0	58.5	9.9	15.0	46	97	82	286	1.18	0.800
768	Guaminí	23.2	8.2	397	72.0	59.9	11.6	17.8	29	116	62	277	1.87	0.520
769	Patagones	21.4	8.0	384	70.4	59.2	7.5	13.5	42	102	82	293	1.24	0.598
770	Patagones	19.7	7.3	366	64.3	63.8	1.9	2.1	64	—	—	—	—	0.571
771	Patagones	22.3	8.1	396	66.9	61.3	6.6	15.6	31	89	59	299	1.51	0.594
772	Patagones	20.9	7.9	398	71.8	57.6	13.8	37.5	4	99	91	320	1.09	0.578
773	Patagones	20.1	7.5	394	70.2	59.6	5.9	18.2	25	117	63	288	1.86	0.528
774	Patagones	21.3	8.1	403	69.1	60.5	5.3	13.9	31	126	56	283	2.25	0.613
776	Puán	20.7	7.7	403	73.0	58.7	5.2	19.1	20	109	66	268	1.65	0.554
777	Puán	21.3	8.0	421	72.4	59.2	5.3	13.2	34	103	79	290	1.30	0.651
778	Puán	18.9	7.2	426	73.3	57.5	6.5	22.2	14	108	76	299	1.42	0.556
779	Puán	20.5	7.7	418	73.1	58.1	6.0	18.3	22	81	69	269	1.17	0.573
780	Puán	18.2	6.8	385	73.8	57.9	5.2	9.1	56	92	71	231	1.30	0.669
781	Puán	19.2	7.1	406	73.5	58.6	5.0	8.9	54	96	61	219	1.57	0.682
782	Puán	19.8	7.4	410	74.1	58.7	6.0	11.9	38	106	63	254	1.68	0.566
783	Puán	19.7	7.2	400	71.1	56.7	7.0	16.0	27	93	62	216	1.50	0.568
784	Puán	20.5	7.6	390	73.6	58.4	4.1	8.1	58	92	84	257	1.10	0.661
785	Puán	21.2	7.7	379	71.4	57.4	5.8	16.7	27	97	81	279	1.20	0.559
786	Puán	20.2	7.4	384	70.7	58.4	5.0	11.5	42	97	70	239	1.39	0.617
787	Saavedra	19.8	7.3	365	73.2	59.3	4.5	7.5	63	97	72	235	1.35	0.552
788	Saavedra	20.0	7.4	398	72.3	58.9	2.2	2.5	68	101	71	255	1.42	0.617
789	Saavedra	19.6	7.2	387	71.4	59.5	1.9	1.4	81	40	57	233	0.70	0.608
790	Saavedra	20.6	7.5	379	70.6	57.5	6.0	11.7	37	105	64	252	1.64	0.580
791	Saavedra	20.5	7.5	393	71.0	57.4	7.0	15.9	29	100	64	244	1.56	0.574
792	Saavedra	21.5	7.8	383	70.9	58.9	7.4	15.2	34	104	69	268	1.51	0.563
793	Saavedra	20.3	7.5	369	70.9	55.8	8.9	20.1	23	89	75	239	1.19	0.575

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
796	Salliqueló	20.3	7.5	366	70.6	58.9	7.8	17.7	25	106	64	255	1.66	0.607
797	Tornquist	19.4	7.3	349	72.3	58.9	1.7	2.0	72	105	65	261	1.62	0.581
798	Tornquist	18.3	7.0	399	71.2	58.3	1.7	1.5	78	84	61	254	1.38	0.545
799	Tornquist	18.8	7.1	386	71.3	57.8	1.7	1.9	77	96	67	249	1.43	0.551
800	Tornquist	19.3	7.2	389	71.6	56.8	4.7	14.8	25	99	68	259	1.46	0.526
801	Tornquist	20.0	7.1	395	72.9	58.6	1.9	1.5	81	106	57	235	1.86	0.569
802	Tornquist	20.6	7.6	398	71.8	61.2	1.7	1.5	74	86	61	273	1.41	0.521
803	Tornquist	20.4	7.6	391	71.3	60.4	6.1	12.9	37	114	63	273	1.81	0.525
804	Tornquist	20.4	7.5	369	71.8	60.7	5.4	9.3	52	98	50	233	1.96	0.555
805	Tres Lomas	21.1	7.6	395	70.2	57.5	10.0	23.4	17	102	55	224	1.85	0.511
806	Villarino	20.3	7.5	409	71.3	60.3	1.5	1.6	67	95	47	222	2.02	0.538
807	Villarino	20.6	7.6	391	70.2	61.1	1.5	1.7	62	116	64	283	1.81	0.543
808	Villarino	21.5	8.0	400	69.8	58.0	11.5	34.2	13	106	55	240	1.93	0.534

North of the Country

Each reference represents near 500 tns sampled.

Results of the Analyses

Composite Samples by Locality.

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) (%)
923	Santiago del Estero	500	3	79.45	2.96	0.16	0.92	0.32	12.0	30.18	1.653
922	Tucumán	500	F/E	79.25	5.08	0.20	1.01	0.15	12.2	27.45	1.952

Total damaged kernels includes 0.06% frosty kernels, 3.12% sprouted kernels, 0.26% germen chewed kernels and 0.58% calcinated kernels.

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
923	Santiago del Estero	28.5	10.0	392	70.1	60.2	6.5	10.6	62	100	79	274	1.27	0.588
922	Tucumán	26.8	9.9	296	70.5	58.6	7.3	9.1	105	93	84	278	1.11	0.608

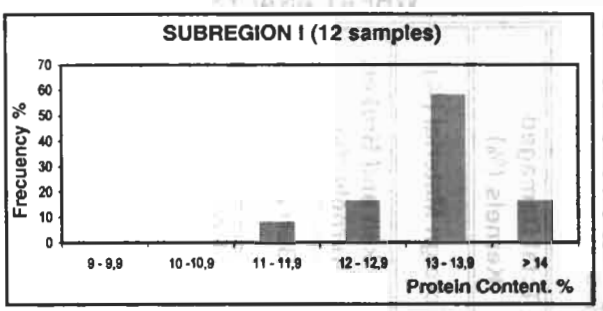
Subregion Data

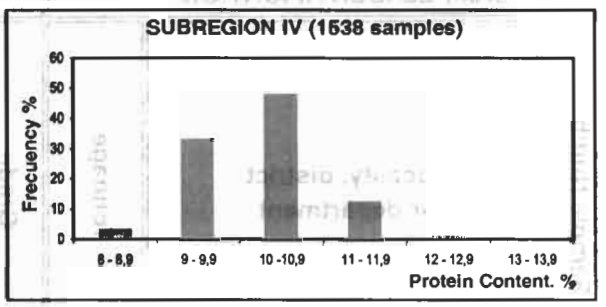
In this subregion the wheat production was 885,870 tons., the 7.20 % of the national total. Were sampled 1,000 tons., the 0.11 % of the subregion production.

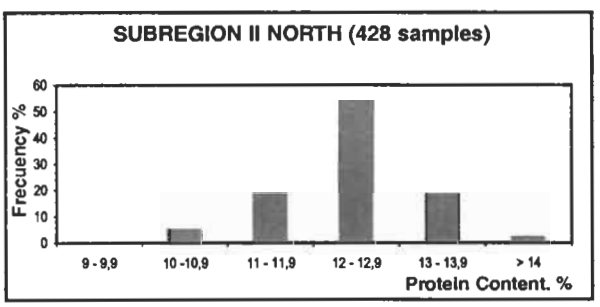
Protein Content

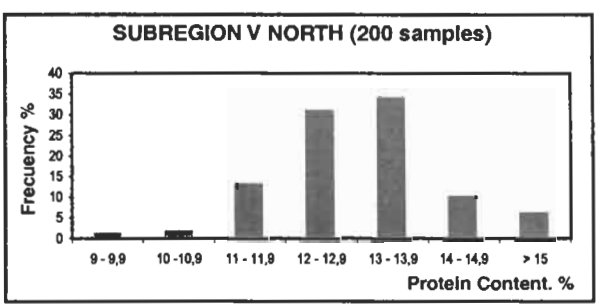
Distribution by ranges

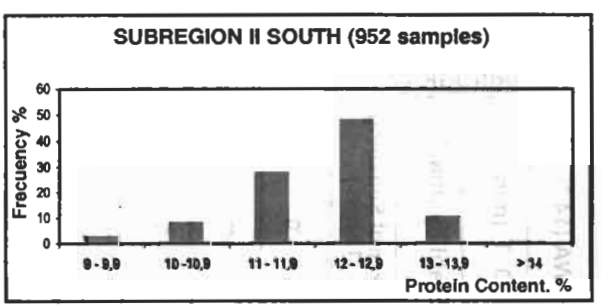
Results obtained on 5559 Primary Samples

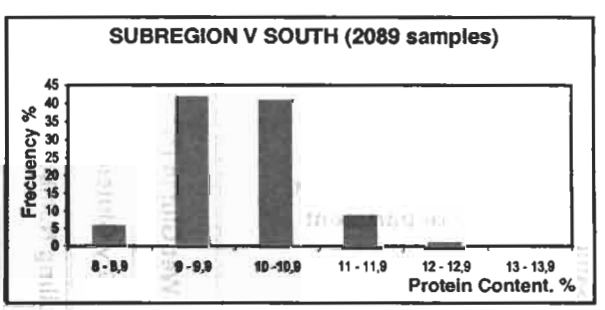


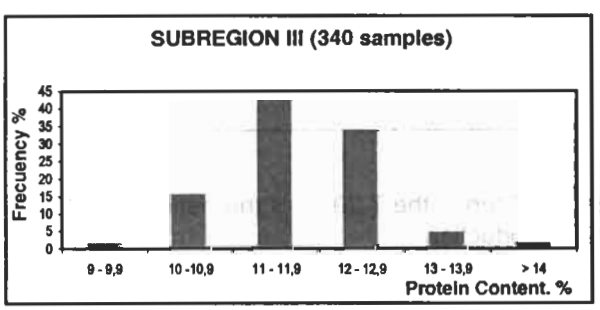


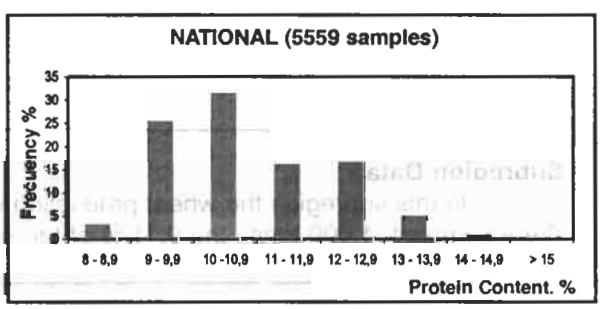












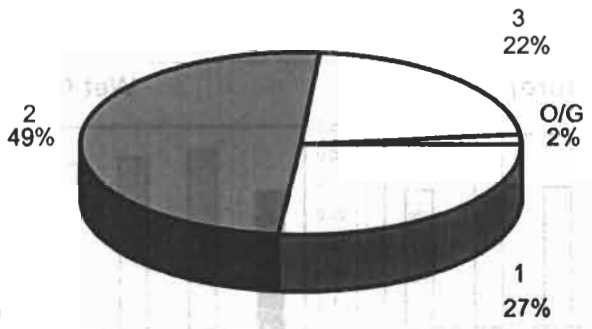
Wheat National Averages

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)	70.00	83.50	79.20	2.32	0.03
Total Damaged Kernels (%)	0.00	10.70	0.69	0.73	1.05
Foreign Material (%)	0.06	2.42	0.68	0.41	0.61
Shrunken and Broken Kernels (%)	0.32	3.00	0.96	0.37	0.39
Yellow Berry Kernels (%)	0.00	27.60	4.69	4.94	1.05
Protein (13,5% Moisture) (%)	9.1	14.1	10.9	1.1	0.10
Weight of 1000 Kernels (gr.)	24.10	38.21	31.88	3.50	0.11
Ash (% dry basis)	1.527	2.344	1.919	0.106	0.06

Grade Distribution



Ref.: O/G: Out of grade

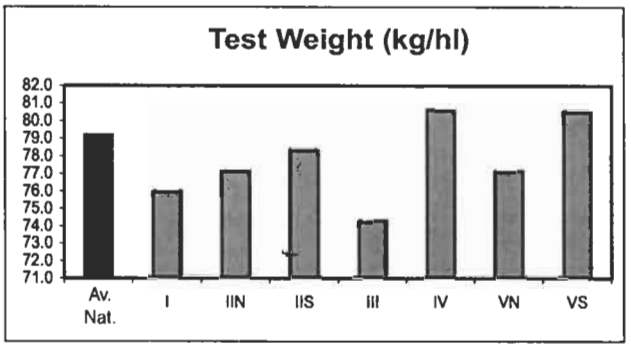
Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	15.8	34.7	24.2	4.1	0.17
	Dry Gluten (%)	6.0	12.8	8.9	1.4	0.16
	Falling Number (sec.)	226	525	402	28	0.07
	Flour Yield (%)	57.4	74.6	69.9	2.7	0.04
	Ash (dry basis) (%)	0.448	0.853	0.577	0.057	0.10
FARINOGRAM	Water Absorption (14 % H°) (%)	52.1	65.5	58.7	2.3	0.04
	Development Time (min.)	1.5	18.0	7.9	2.6	0.33
	Stability (min.)	1.4	59.3	14.9	7.0	0.47
	Degree of Softening (12 min.)	4	137	45	22	0.49
ALVEOGRAM	P (mm)	34	145	97	16	0.17
	L (mm)	46	139	78	16	0.20
	W Joules x 10^{-4}	124	376	269	40	0.15
	P / L	0.35	2.65	1.24	0.42	0.34

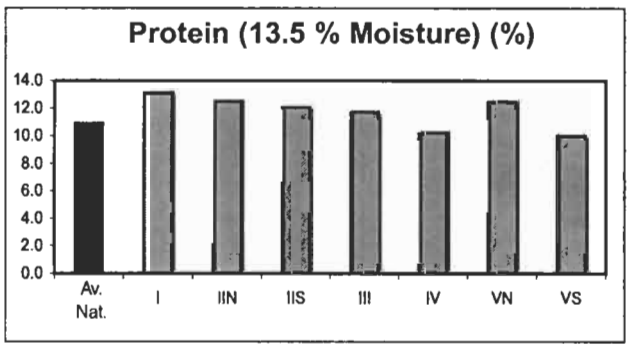
Weighting basis: Tonnage of the production sampled by Subregion, according to chart data, on page 6.

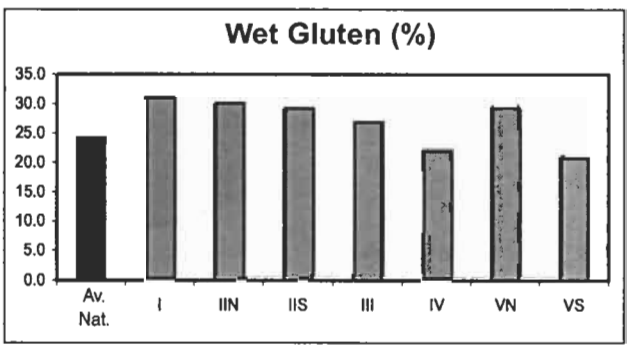
Wheat National and Subregions Averages

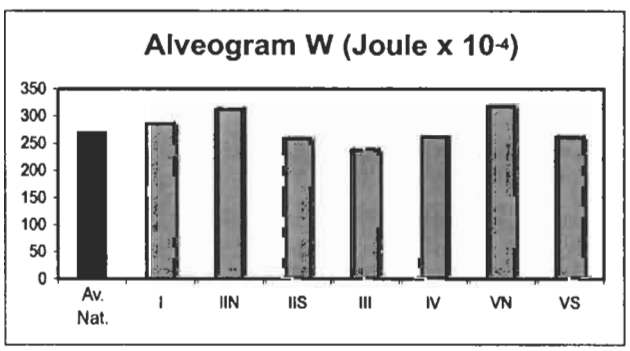
Comparative Graphics

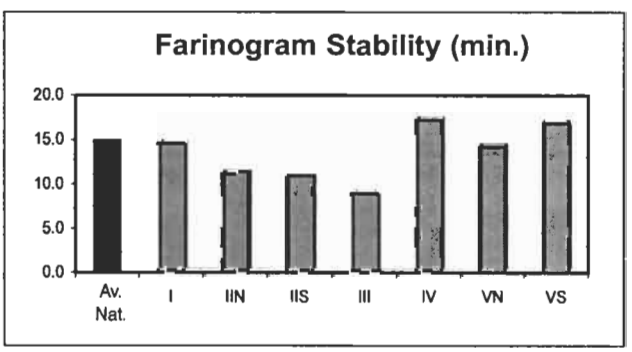
Composite Samples by Locality. Averages were weighted by Tonnage.











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	
IV	86	80.6	a	V South	0.16	a	V North	0.28	a	II South	0.72	a
V South	95	80.5	a	II North	0.58	ab	I	0.30	a	IV	0.81	ab
II South	36	78.3	b	V North	0.76	bc	II North	0.39	a	III	1.02	bc
V North	19	77.2	b	II South	0.91	bc	IV	0.45	a	V North	1.06	bc
II North	47	77.1	b	IV	0.93	bc	III	0.85	b	II North	1.09	bcd
I	12	75.7	c	I	1.27	c	II South	0.87	b	V South	1.11	cd
III	17	74.2	d	III	2.18	d	V South	0.98	b	I	1.37	d

Subreg.	Yellow Berry Kernels		Subreg.	Protein		Subreg.	Weight 1000 Kernels		Subreg.	Ash	
I	0.27	a	I	13.2	a	IV	34.36	a	IV	1.865	a
V North	0.27	a	V North	12.4	b	V South	34.02	a	V South	1.881	a
II North	0.53	a	II North	12.4	b	II South	28.62	b	III	1.923	ab
II South	0.75	a	II South	12.1	b	II North	28.50	b	V North	1.975	bc
III	2.04	a	III	11.7	c	V North	27.72	bc	II North	2.002	c
IV	5.94	b	IV	10.2	d	III	26.93	c	II South	2.021	c
V South	8.07	b	V South	10.0	d	I	26.26	c	I	2.195	d

Subreg.	Wet Gluten		Subreg.	Dry Gluten		Subreg.	Falling Number		Subreg.	Flour Field	
I	31.0	a	I	11.5	a	I	333	a	III	71.7	a
II North	29.7	ab	II South	10.7	b	III	362	b	I	70.8	ab
V North	29.2	b	II North	10.5	b	V South	396	c	IV	70.2	ab
II South	28.9	b	V North	10.5	b	II South	399	c	V South	70.0	ab
III	26.5	c	III	9.8	c	IV	403	cd	II North	69.9	ab
IV	22.0	d	IV	8.0	d	II North	423	de	II South	69.2	bc
V South	20.8	d	V South	7.7	d	V North	428	e	V North	67.6	c

Subreg.	Water Abs.		Subreg.	D. T. (min.)		Subreg.	Stability (min.)		Subreg.	Degree Softening	
II North	62.0	a	I	10.1	a	IV	17.2	a	V South	34	a
III	61.2	ab	V North	9.9	ab	V South	16.8	a	IV	34	a
V North	60.4	b	IV	8.7	abc	I	16.7	a	V North	43	ab
II South	58.6	c	II North	8.0	bc	V North	14.4	ab	I	54	bc
V South	58.3	c	II South	7.9	bc	II North	11.2	bc	II North	56	c
I	57.9	cd	III	7.0	c	II South	10.7	bc	II South	71	d
IV	56.9	d	V South	6.8	c	III	9.0	c	III	76	d

Subreg.	P		Subreg.	L		Subreg.	W		Subreg.	P/L	
II North	105	a	I	107	a	V North	316	a	I	0.84	a
V North	105	a	III	90	b	II North	308	a	III	0.90	a
V South	98	a	II South	88	bc	I	292	a	II South	1.14	ab
IV	96	ab	II North	88	bc	V South	261	b	II North	1.26	bc
II South	94	ab	V North	87	bc	IV	260	b	V North	1.28	bc
I	84	bc	IV	77	cd	II South	259	b	IV	1.31	bc
III	78	c	V South	67	d	III	238	b	V South	1.49	c

Subreg.	Flour Ash	
IV	0.549	a
III	0.576	ab
V South	0.581	ab
II South	0.588	abc
V North	0.589	abc
I	0.597	bc
II North	0.629	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
< 10,0	20.2 243 14.9	21.80
10,0 - 10,9	**22.1** **271** **18.3**	**36.86**
11,0 - 11,9	26.9 254 10.6	9.29
12,0 - 12,9	29.5 291 11.1	27.56
13,0 - 14,0	31.8 318 17.1	4.49

WET GLUTEN RANGE	Average Prot W Stability	% Country
< 21,0	9.8 253 16.4	23.72
21,0 - 24,9	**10.3** **265** **17.5**	**34.30**
25,0 - 27,9	11.8 281 12.9	12.50
28,0 - 31,9	12.4 286 10.9	26.28
32,0 - 35,0	13.3 313 13.7	3.20

Alveograph W RANGE	Average Gluten Prot Stabil.	% Country
< 190	23.7 10.5 14.2	1.30
190 - 249	23.2 10.5 13.9	29.03
250 - 299	**24.0** **10.9** **14.8**	**48.40**
300 - 349	27.6 12.0 16.0	17.42
350 - 400	29.9 12.7 15.0	3.85

Farinograph STABILITY RANGE	Average Gluten Prot W	% Country
1,0 - 4,9	19.8 9.7 244	4.49
5,0 - 9,9	28.5 12.0 253	18.26
10,0 - 14,9	**26.4** **11.5** **287**	**32.05**
15,0 - 19,9	22.4 10.3 265	29.49
> 20,0	22.1 10.6 278	15.71

Composite Sample of each Subregion

Results of the Analyses

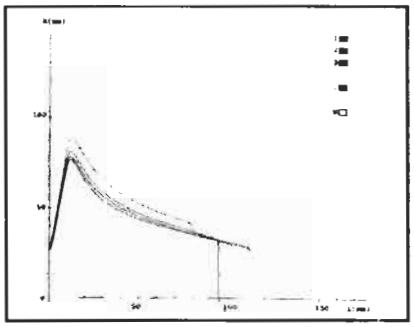
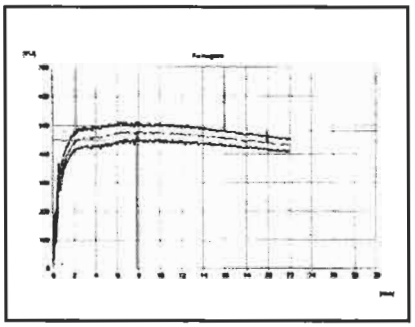
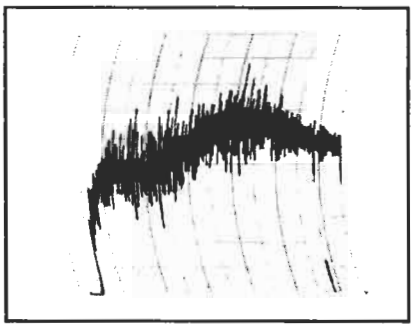
Along with the analisis of samples corresponding to different localities, a further evaluation was performed in order to analyze Composite Samples of each Subregion directly, which were made proportionally from the composite samples corresponding to each locality, such as it is detailed in Organization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

		Subregions							Weighted* Average	Average last Quinquenio
		I	II N	II S	III	IV	V N	V S		
WHEAT	Test Weight (kg/hl)	76.35	77.25	78.75	74.40	80.61	77.25	80.80	79.41	80.38
	Weight of 1000 Kernels (gr.)	26.70	28.30	28.20	28.94	33.82	26.9	33.37	31.47	33.77
	Ash (dry basis) (%)	2.096	2.013	2.002	1.923	1.886	1.963	1.844	1.910	1.836
	Protein (13.5% Moisture) (%)	13.2	12.4	12.0	11.8	10.1	12.3	10.0	10.9	11.1
MILLING	Flour Yield (%)	71.7	70.7	67.2	69.8	71.7	70.4	68.4	69.7	66.7
	Ash (dry basis) (%)	0.622	0.619	0.604	0.576	0.556	0.608	0.590	0.585	0.555
FLOUR	Moisture (%)	13.20	12.80	13.40	13.20	12.64	13.30	13.40	13.10	13.81
	Wet Gluten (%)	30.7	29.6	27.9	27.8	22.2	29.5	20.9	24.3	25.1
	Dry Gluten (%)	11.2	10.8	10.1	10.7	8.3	10.6	8.0	9.0	9.2
	Gluten Index (%)	97	96	95	96	98	98	99	98	96
	Falling Number (sec.)	318	393	386	402	359	392	363	372	373
	Zeleny Test (cc)	41	35	34	35	38	40	36	37	37
	FARINOGRAM									
	Water Absorption (%)	59.6	61.8	59.7	60.5	56.6	62.0	55.7	57.9	60.1
	Development Time (min.)	7.9	8.8	6.4	8.2	8.0	12.9	7.9	8.3	8.9
	Stability (min.)	13.8	11.5	13.6	8.6	15.9	13.3	15.1	14.2	14.9
	Degree of Softening	39	80	59	134	49	74	35	56	50
	MIXOGRAM									
	Development Time (min.)	4:00 (A)	3:30 (A)	4:00 (A)	3:30 (B)	4:00 (A)	3:30 (A)	4:30 (A)	4:02 (A)	4:14 (A)
	Scale	6	6	6	6	6	6	6	6	6
	ALVEOGRAM									
	P (mm)	90	101	94	80	83	116	88	90	97
	L (mm)	95	82	95	89	71	77	75	78	79
	G	22	20	22	21	19	19	19	20	20
	W (Joules x 10-4)	309	293	307	250	220	328	235	255	278
	P/L	0.95	1.23	0.99	0.89	1.16	1.51	1.17	1.16	1.25
	BAKING									
	Absoprtion (%)	62.5	61.0	62.5	61.0	61.6	62.5	61.0	61.5	61.8
	Development Time (min.)	3' 00	3' 00	3' 00	2' 30	3' 00	3' 00	3' 00	2' 48	3' 12
	Fermentation Time (min.)	160'	160'	160'	160'	160'	160'	160'	160'	160
	Loaf Volume (cc)	815	800	830	780	719	795	660	733	673
	Specific Volume	6.1	6.0	6.5	5.9	5.3	6.0	4.9	5.5	5.1

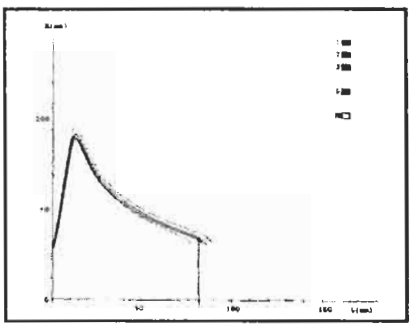
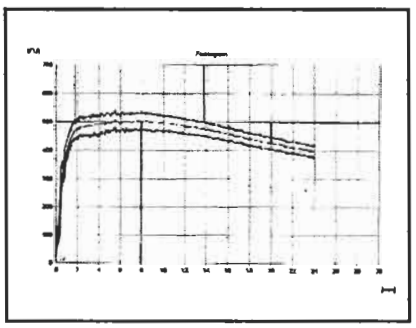
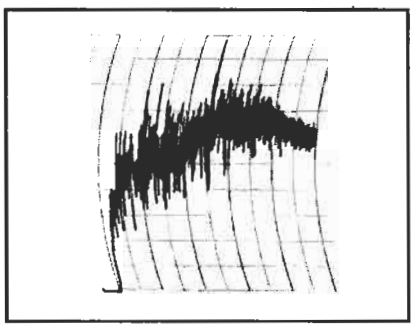
*Weighting basis: Tonnage of the production sampled by Subregion, according to chart data, on page 6.

Results of the Analyses

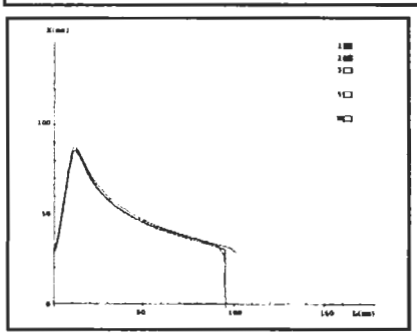
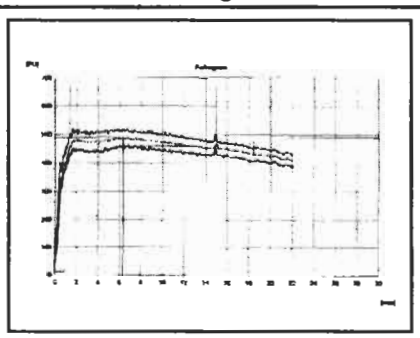
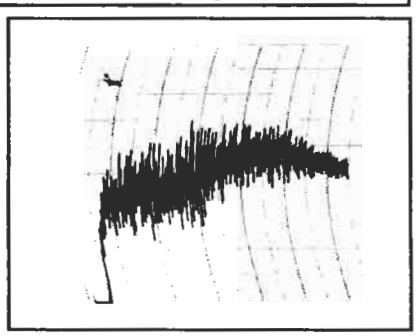
Subregion I

Alveogram	Farinogram	Mixogram
		

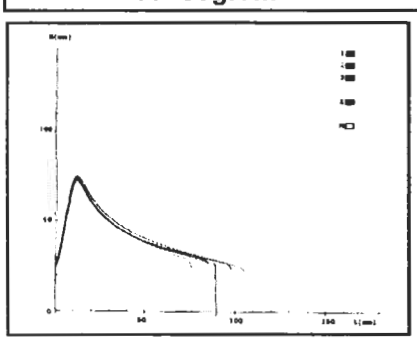
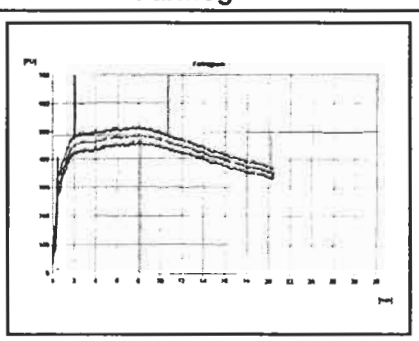
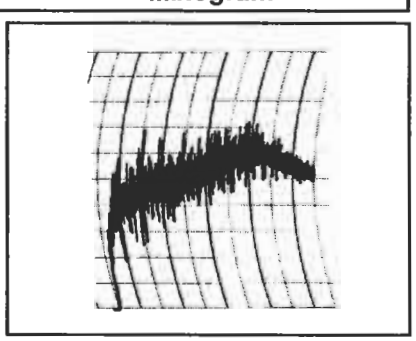
Subregion II North

Alveogram	Farinogram	Mixogram
		

Subregion II South

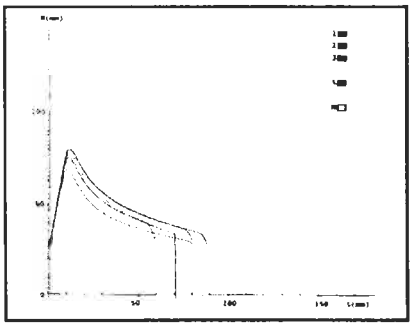
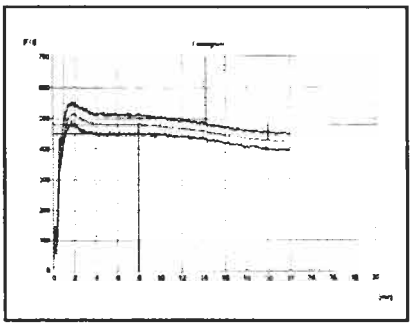
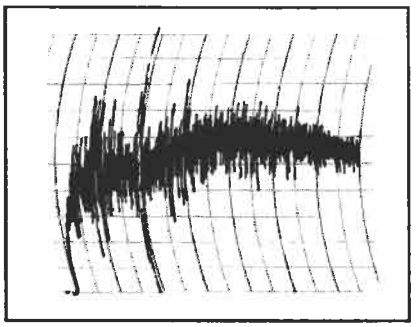
Alveogram	Farinogram	Mixogram
		

Subregion III

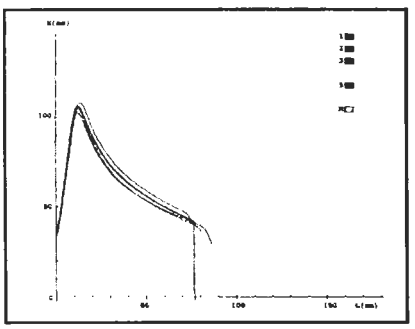
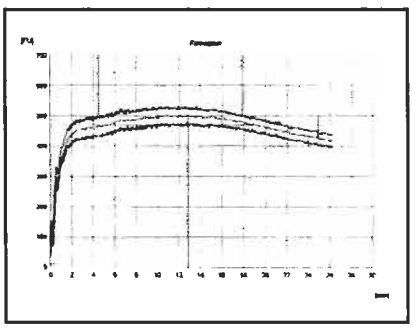
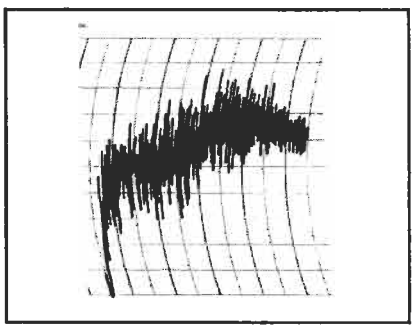
Alveogram	Farinogram	Mixogram
		

Results of the Analyses

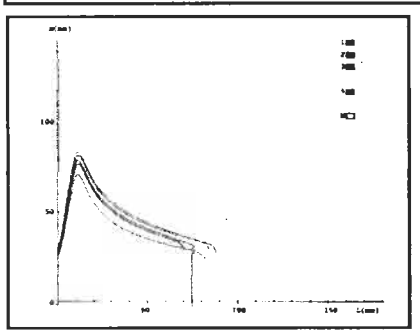
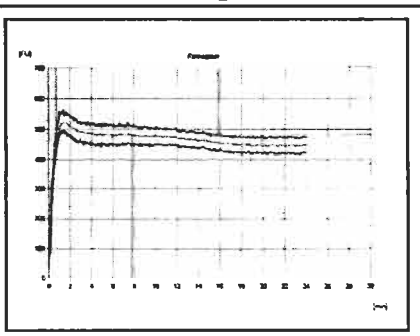
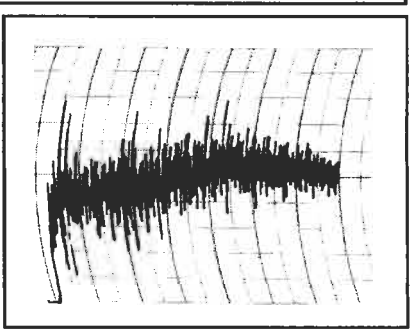
Subregion IV

Alveogram	Farinogram	Mixogram
		

Subregion V North

Alveogram	Farinogram	Mixogram
		

Subregion V South

Alveogram	Farinogram	Mixogram
		

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.

02/03 Crop

Sown Area (ha)	42,800
Harvested Area (ha)	39,420
Average Yield (Kg/ha)	2,480
Production (tn)	97,600

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 27 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 absorption (45 %), fixed time of kneeding (8 min) and small stainless steel bowl (50 g). The following data are reported:

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

Argentine Standard for Durum Wheat

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

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

VITREOUS KERNELS

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

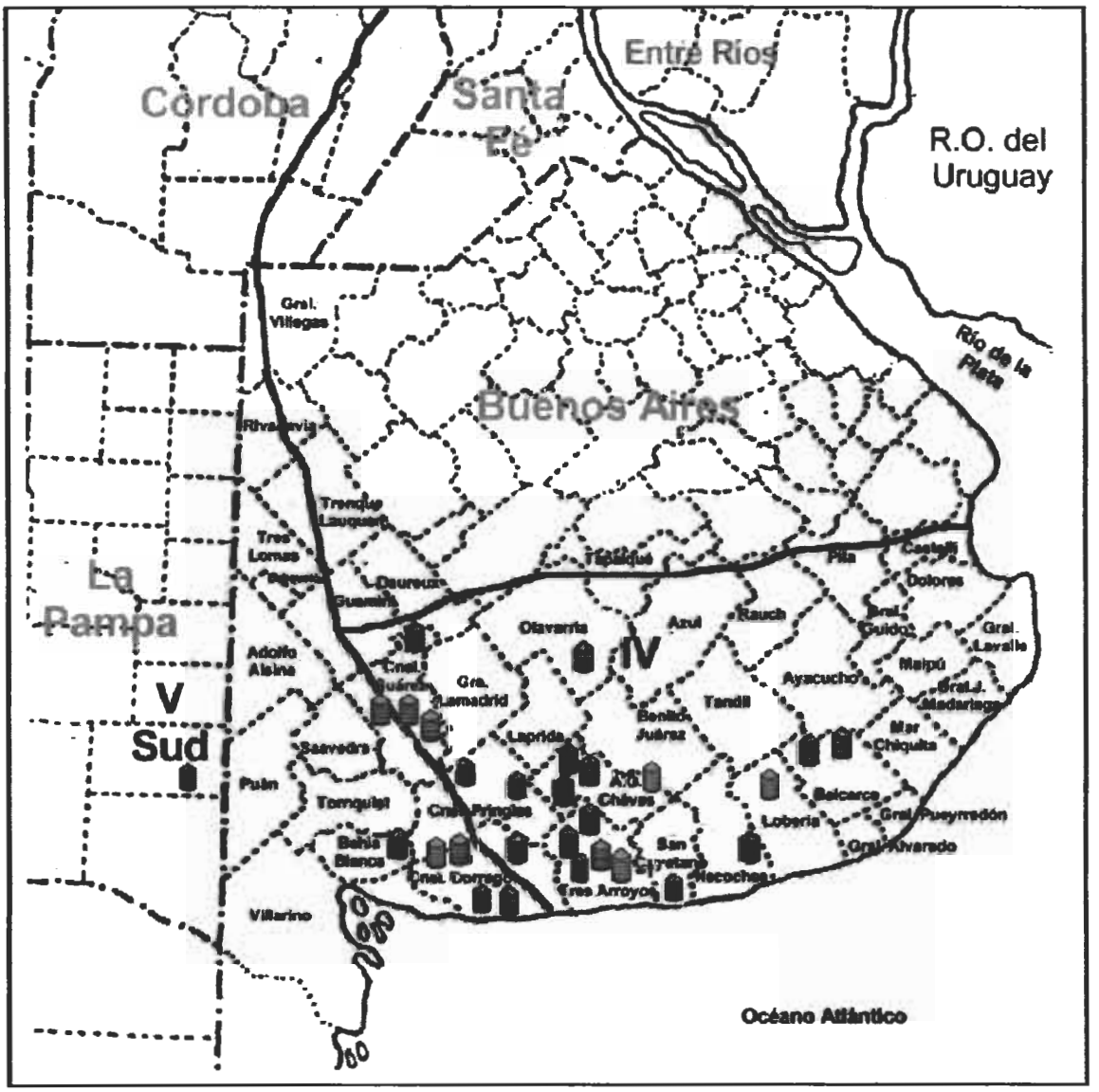
PROTEIN

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

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

LIVING INSECTS AND ARACHNIDS: FREE

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


Córdoba
Santa Fé
Entre Ríos
R.O. del Uruguay
Río de la Plata
Buenos Aires
La Pampa
V Sud
IV
Océano Atlántico

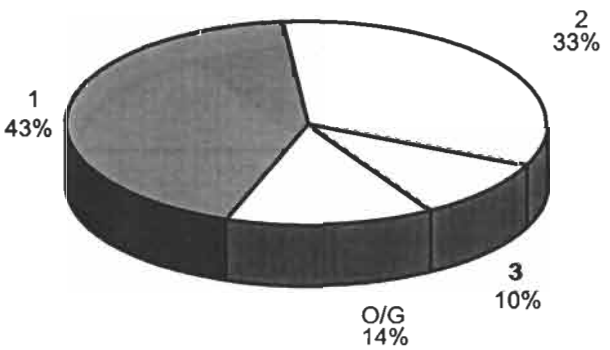
Results of the Analyses

Composite Samples by Locality

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	70.50	82.60	79.55	2.76	0.03
Total Damaged Kernels (%)	0.08	1.10	0.50	0.28	0.56
Foreign Material (%)	0.26	2.90	0.90	0.75	0.83
Shrunken and Broken Kernels (%)	0.74	2.54	1.31	0.53	0.41
Vitreous Kernels (%)	28	79	59	13	0.22
Wheat (Triticum aestivum) (%)	0.72	2.52	1.31	0.50	0.38
Protein (13,5% Moisture) (%)	9.7	11.1	10.3	0.4	0.04
Weight of 1000 Kernels (gr.)	34.64	45.45	41.33	3.61	0.09
Ash (% dry basis)	1.827	2.167	1.999	0.110	0.05

Total damaged kernels includes 0.13% sprouted kernels, 0.02% insect chewed kernels, 0.11% germen chewed kernels, 0.23% calcinated kernels and 0.01% green kernels.

Grade Distribution



Ref.: O/G: Out of grade

Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec.)	388	493	435	27	0.06
	Color (b)	23.7	30.9	27.7	1.6	0.06
	Wet Gluten (%)	24.1	29.2	26.0	1.3	0.05
	Gluten Index (%)	29	87	64	17	0.27
FARINOGRAM	Energy Level	35.9	46.6	41.7	2.6	0.06
	Degree Softening (%)	21	35	27	4	0.15

These results were elaborated with 21 composite sample.

Subregion V South Durum Wheat

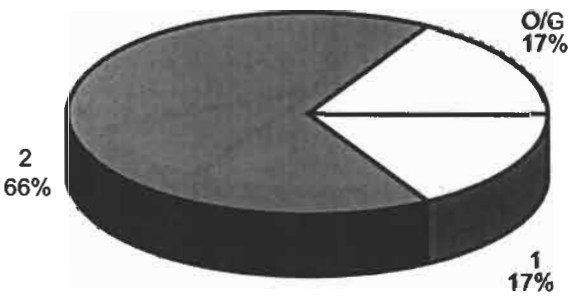
Results of the Analyses

Composite Samples by Locality

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.80	81.50	79.25	1.72	0.02
Total Damaged Kernels (%)	0.00	0.44	0.15	0.16	1.10
Foreign Material (%)	0.20	1.46	0.91	0.51	0.56
Shrunken and Broken Kernels (%)	0.92	2.54	1.68	0.54	0.32
Vitreous Kernels (%)	21	81	55	20	0.36
Wheat (Triticum aestivum) (%)	0.78	11.64	3.07	4.21	1.37
Protein (13,5% Moisture) (%)	9.0	10.9	10.0	0.7	0.07
Weight of 1000 Kernels (gr.)	36.39	45.57	40.96	3.64	0.09
Ash (% dry basis)	1.778	2.100	1.910	0.120	0.06

Total damaged kernels includes 0.08% sprouted kernels, 0.02% insect chewed kernels, 0.02% germen chewed kernels and 0.03% calcinated kernels..

Grade Distribution



Ref.: O/G: Out of grade

Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec.)	423	459	448	13	0.03
	Color (b)	26.5	31.8	28.1	1.9	0.07
	Wet Gluten (%)	21.0	29.5	25.3	2.9	0.11
	Gluten Index (%)	50	85	65	12	0.18
FARINOGRAM	Energy Level	36.9	41.7	39.4	1.9	0.05
	Degree Softening (%)	21	33	27	4	0.17

These results were elaborated with 6 composite sample.

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS									
	Sub-region	Locality, district or department	Grade	Test Weight (kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Vitreous Kernels (%)	Bread Wheat (%)	Protein (13.5 Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (% dry basis)
	IV	Balcarce	2	78.15	1.10	0.62	1.62	73	1.60	10.8	35.95	2.087
	IV	Balcarce	2	76.80	0.12	1.10	1.14	79	0.78	10.9	34.68	2.129
	IV	Coronel Pringles	3	82.60	0.08	2.44	1.3	66	0.74	10.0	44.96	1.840
	IV	Coronel Pringles	1	82.15	0.72	0.58	1.14	58	1.02	9.7	43.68	2.117
	IV	Coronel Suárez	1	79.00	0.10	0.36	1.06	72	1.76	10.5	35.82	1.922
	IV	Coronel Suárez	O/G 2	79.90	0.58	1.42	1.54	32	0.90	10.4	42.20	1.892
	IV	Coronel Suárez	O/G 3	80.80	0.56	2.02	2.52	28	0.72	10.9	42.69	1.827
	IV	Coronel Suárez	3	76.10	0.28	1.56	1.10	62	1.26	10.1	35.58	2.036
	IV	Gonzales Chávez	1	82.15	0.32	0.60	0.82	60	1.32	10.0	44.72	1.876
	IV	Gonzales Chávez	1	80.35	0.52	0.42	1.14	60	1.92	10.4	42.63	1.943
	IV	Gonzales Chávez	1	79.90	0.84	0.26	0.76	50	0.86	10.2	44.18	2.060
	IV	Gonzales Chávez	1	79.15	0.42	0.46	1.02	54	1.20	10.2	42.72	2.167
	IV	Lobería	2	81.50	0.74	0.36	2.16	68	1.32	10.4	42.70	1.893
	IV	Necochea	2	77.25	0.54	0.40	0.98	66	1.32	11.1	40.96	2.100
	IV	Olavarría	O/G 3	70.50	0.52	2.90	2.54	38	1.14	10.5	34.64	1.916
	IV	San Cayetano	2	79.45	0.76	0.54	1.60	52	1.16	10.3	43.49	2.041
	IV	Tres Arroyos	1	81.70	0.18	0.40	0.74	62	0.72	9.7	44.17	1.930
	IV	Tres Arroyos	1	79.70	0.40	0.46	1.36	66	1.56	10.1	42.37	1.967
	IV	Tres Arroyos	1	81.70	0.22	0.38	0.90	67	1.42	10.1	41.84	2.132
	IV	Tres Arroyos	2	81.70	0.60	0.80	1.26	61	2.34	10.1	42.47	2.148
	IV	Zona de la Costa (San Fco. de Bellog, Lincalel, Claromecó)	2	79.90	0.90	0.84	0.78	69	2.52	10.6	45.45	1.954
	VS	Bahía Blanca	O/G 2	77.70	0.00	1.46	2.54	21	11.64	9.0	38.55	1.876
	VS	Coronel Dorrego	2	81.50	0.00	0.20	1.64	60	0.78	9.3	45.57	1.825
	VS	Coronel Dorrego	2	79.90	0.44	1.12	0.92	65	1.58	9.8	45.07	1.877
	VS	Coronel Dorrego	1	79.45	0.22	0.60	1.44	58	1.78	10.2	40.08	2.004
	VS	Coronel Dorrego	2	80.15	0.12	0.64	1.96	81	1.16	10.5	40.08	2.100
	VS	Guatraché	2	76.80	0.12	1.44	1.56	47	1.48	10.9	36.39	1.778

Appendix of Locality Composite Samples.

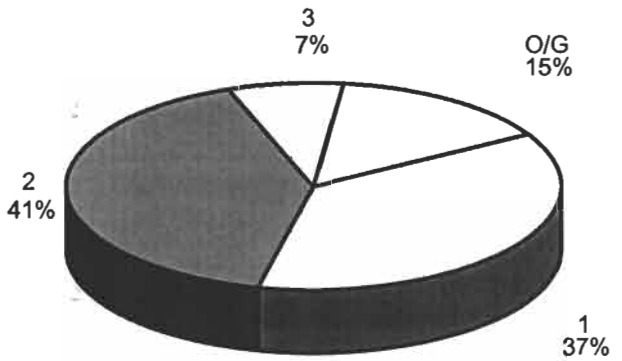
SAMPLE IDENTIFICATION			SEMOLIN ANALYSIS					
Sample Number	Sub-region	Locality, district or department	Falling Number (sec.)	Color (b)	Wet Gluten (%)	Gluten Index (%)	Farinogram Energy Level	Farinogram Degree of Softening (%)
9	IV	Balcarce	430	29.2	29.2	46	42.6	35
18	IV	Balcarce	459	29.9	28.4	29	37.7	33
6	IV	Coronel Pringles	428	26.5	25.7	59	42.3	28
25	IV	Coronel Pringles	440	26.9	25.3	43	40.9	23
2	IV	Coronel Suárez	443	30.2	27.1	73	46.6	26
12	IV	Coronel Suárez	433	28.3	26.0	73	41.2	31
13	IV	Coronel Suárez	465	28.2	26.0	70	39.5	25
14	IV	Coronel Suárez	476	30.9	26.3	53	35.9	28
3	IV	Gonzales Chávez	400	28.1	24.1	68	44.2	23
15	IV	Gonzales Chávez	461	27.3	26.3	86	44.6	26
21	IV	Gonzales Chávez	390	26.4	24.7	82	43.1	23
22	IV	Gonzales Chávez	419	26.1	25.4	87	46.5	23
1	IV	Lobería	388	27.5	26.1	49	42.4	28
7	IV	Necochea	432	27.6	28.3	31	42.5	33
10	IV	Olavarría	448	29.4	25.7	68	40.1	28
19	IV	San Cayetano	446	23.7	25.7	69	40.2	26
4	IV	Tres Arroyos	428	27.3	25.5	60	42.1	23
16	IV	Tres Arroyos	493	26.1	25.3	70	39.6	23
26	IV	Tres Arroyos	429	27.4	25.1	75	42.5	31
27	IV	Tres Arroyos	411	27.4	24.1	87	40.4	21
20	IV	Zona de la Costa (San Fco. de Belloq, Lincalel, Claromecó)	416	28.2	26.1	59	41.7	24
11	VS	Bahía Blanca	451	27.1	21.0	85	36.9	21
5	VS	Coronel Dorrego	451	27.5	24.2	50	41.7	25
17	VS	Coronel Dorrego	448	27.1	24.7	66	37.5	23
23	VS	Coronel Dorrego	423	28.3	25.1	61	39.0	29
24	VS	Coronel Dorrego	453	26.5	27.0	59	40.6	33
8	VS	Guatraché	459	31.8	29.5	70	40.8	29

Durum Wheat Averages

Results of the Analysis

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	70.50	82.60	79.48	2.54	0.03
Total Damaged Kernels (%)	0.00	1.10	0.42	0.30	0.70
Foreign Material (%)	0.20	2.90	0.90	0.69	0.77
Shrunken and Broken Kernels (%)	0.74	2.54	1.39	0.55	0.39
Vitreous Kernels (%)	21	81	58	15	0.25
Wheat (Triticum aestivum) (%)	0.72	11.64	1.70	2.04	1.20
Proteins (13,5% Moisture) (%)	9.0	11.1	10.2	0.5	0.05
Weight of 1000 Kernels (gr.)	34.64	45.57	41.25	3.55	0.09
Ash (% dry basis)	1.778	2.167	1.979	0.116	0.06

Grade Distribution



Ref.: O/G: Out of grade

Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec.)	388	493	438	24.7	0.06
	Color (b)	23.7	31.8	27.8	1.7	0.06
	Wet Gluten (%)	21.0	29.5	25.8	1.7	0.07
	Gluten Index (%)	29	87	64	16	0.25
FARINOGRAM	Energy Level	35.9	46.6	41.2	2.6	0.06
	Degree Softening (%)	21	35	27	4	0.15

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.
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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.
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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.

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Lobería	Pro-Agro
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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
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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.
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Saladillo	Coop. Agricol. Ganad. de Saladillo.
Salliqueló	Ganadera Salliqueló
Salto, Pehuajó, Chacabuco, Lincoln, S.A. de Giles, Gral. Belgrano y Olavarría	Trigalia
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San Cayetano	Molino Balatón
Stroeder	Cooperativa Agropecuaria de Stroeder Ltda.
Suipacha	Coincer S.A.
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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.
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Tres Arroyos	Cooperativa Rural Alfa Ltda.
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Tres Lomas	Morero Semillas
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	Centro de Acopiadores de Cereales Zona Puerto Quequén
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	Centro de Acopiadores del Noroeste Bonaerense
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	Sociedad de Cerealistas del Norte de la Pcia. de Bs. As.

LOCALITY	DENOMINATION
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Hernando	Coop. Agrícola La Vencedora Ltda.
Justiniano Posse	Coop. de Justiniano Posse
Leones	Coop. de Leones
Oliva	ACA Acopio Oliva
Ucacha	Ucacha Cereales
Villa del Rosario	ACA Acopio Villa del Rosario
Villa del Totoral	Pronor S.A.
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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
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Cnel. Hilario Lagos	Productores Asociados S. A.
Cnel. Hilario Lagos	René Thomas
Colonia Barón	Pincen S. R. L.
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Eduardo Castex	Brandemann y Cía
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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.

LOCALITY	DENOMINATION
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Ingeniero Luiggi	C.A. de Granos
Ingeniero Luiggi	El Campo S. A.
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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

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Alcorta	Coop. de Alcorta
Alcorta	Jakas, Kokic e Ivancich S.A.
Alvarez	Moscoloni Hnos S.R.L.
Bigand	Jakas, Kokic e Ivancich S.A.
Cañada de Gómez	Acopio ACA de Cañada de Gómez
Chabás	Jakas, Kokic e Ivancich S.A.
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.
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Oficina Local SENASA Santa Fe

WHEAT DURUM

Kraft Foods
Luchetti
Manera
Molinos Rio de la Plata
Terrabusi
Trigalia

Acknowledgments

We thanks the information provided by the following technicians, for the elaboration of the commentaries about crop development and environmental conditions of each subregión.

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