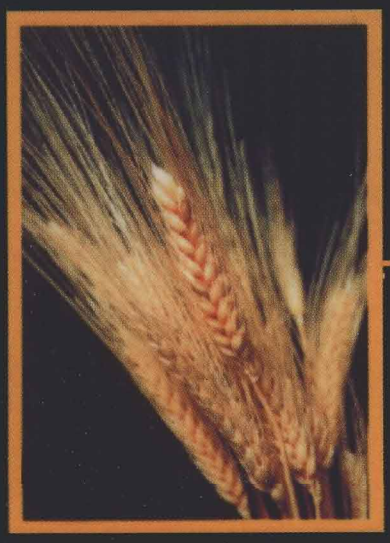

2001-2002 Crop

ARGENTINE WHEAT

Institutional Quality Report

http://www.trigoargentino.com.ar

Argentine Wheat

Institutional Quality Report

2001/2002 Crop

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Institutional Quality Report
2001/2002 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.
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  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 Alimentación (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 – MAGPyA)**
  Barrow Experimental Station.

Argentine Wheat
Institutional Quality Report
2001/2002 Crop

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 338 analysis to be performed.

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

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

Subregion	Locality Composite Samples	Sampling (tons)	Production (tons)	Production Sampled (%)
I	16	64,016	891,600	7.18
II North	65	109,650	2,372,400	4.62
II South	26	101,950	1,291,600	7.89
III	17	68,588	525,400	13.05
IV	84	336,087	4,515,000	7.44
V North	17	63,285	1,225,700	5.16
V South	109	429,381	3,480,300	12.34
Nortwest of the Country (1)	2	30,000	398,200	7.53
Northeast of the Country (2)	2	8,000	460,000	1.74
TOTALS	**338**	**1,210,957**	**15,160,200**	**7.99**

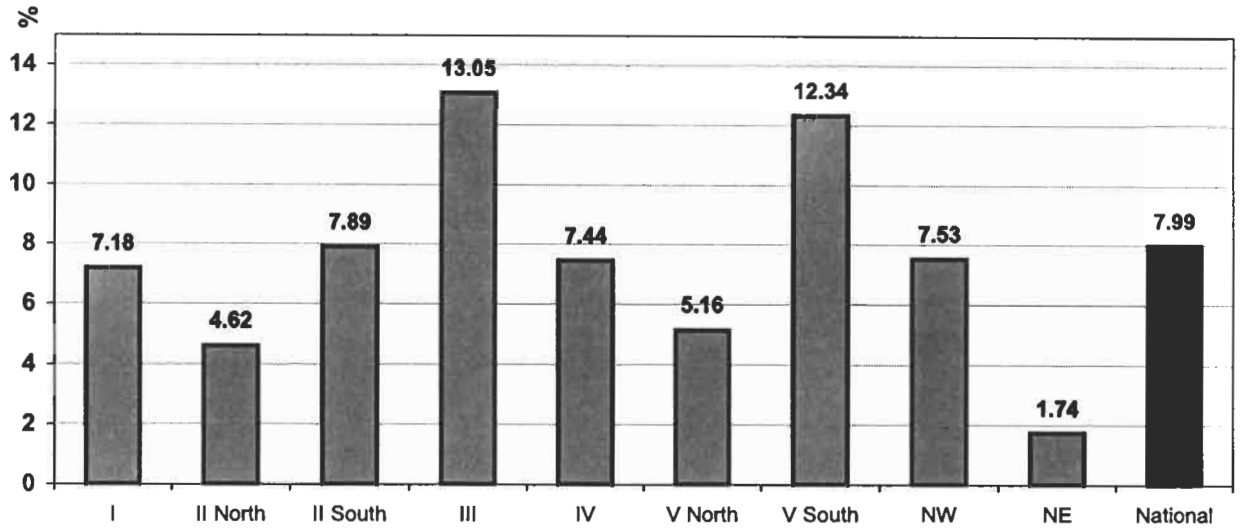
Based on preliminary data about production from the Secretariat of Agriculture, Livestock, Fishery and Food. May 2002

(1) - It comprises samples from Salta, Tucumán and Jujuy provinces

(2) - It comprises samples from Chaco and Santiago del Estero provinces.

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 6043 samples used for this sampling program, in such a way a sampled tonnage of 7.99 % of the national wheat production, which amounted to 15,160,200 tons, was reached.

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



Procedure

The primary samples were sent to the respective Arbitration Chambers Laboratories according to the wheat subregion of origin. The Santa Fe Arbitration Chamber received samples from the Subregion I and the NE of the country, the Rosario Chamber those from the Subregion II N, the Buenos Aires Chamber those from the Subregions II S 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. The samples from the North West of the country were sent to the SENASA.

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

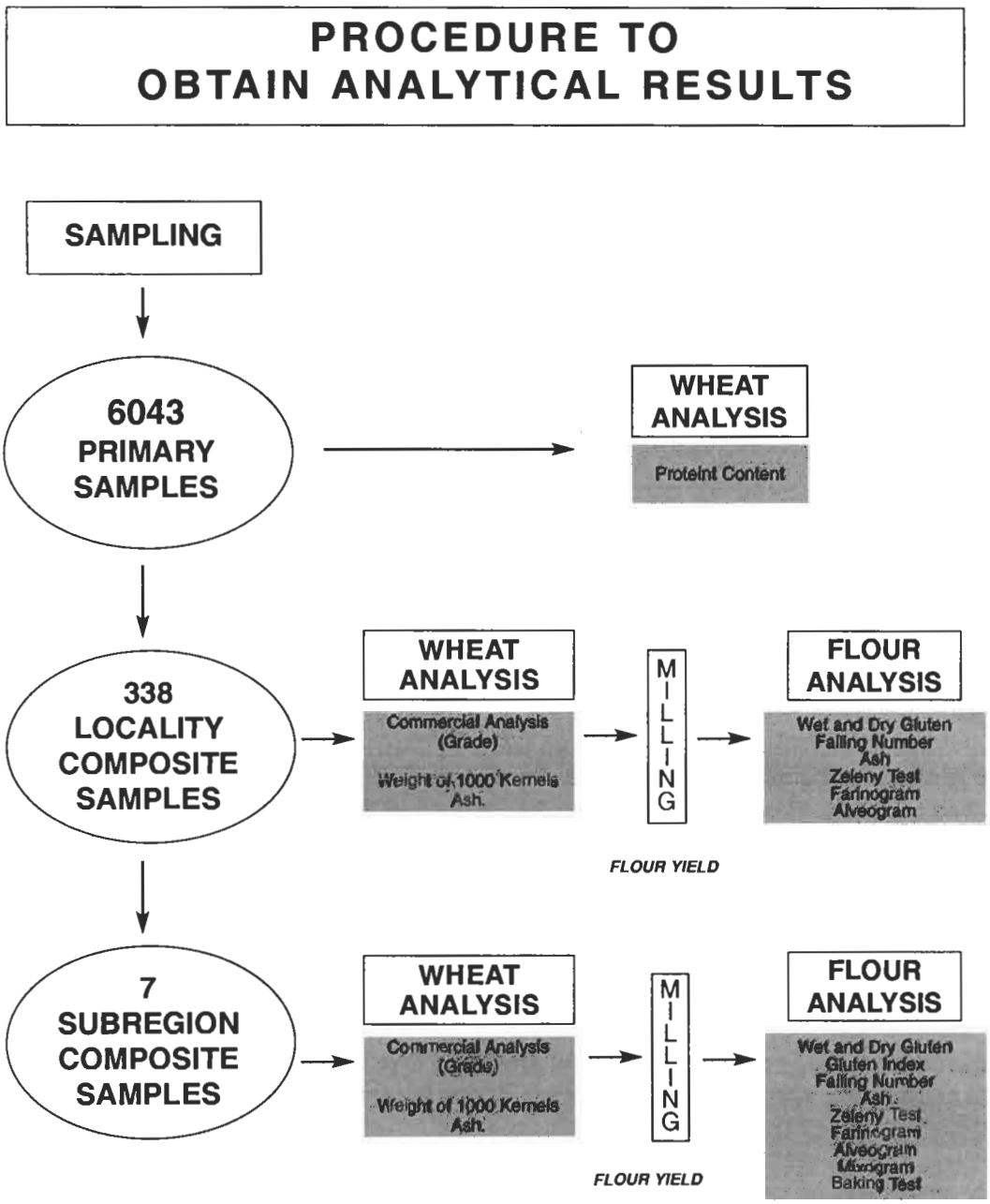
The composite samples were sent to the SENASA Laboratory to carry out the Bühler grinding, reserving a part in order to prepare the Subregion Composite Samples. It was decided to use only one mill for all the composite samples by locality, so as to minimize differences in the flour features due to the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

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

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

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

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



Methodologies for quality analysis

In order to evaluate the industrial quality of wheat, characteristics of grain, its behavior in milling, different analytical values, alveographic and farinographic curves, and bread quality, are taken into consideration.

Agricultural and weather conditions can easily affect quality, and even the most remarkable varieties can present a questionable quality. Consequently any qualitative abnormality must be observed in different environments or periods of cultivation in order to assure that the result is due tothe variety.

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

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

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

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

The volume of bread is one of the most important factors of flour potential force, since it demonstrates the gluten capacity of expansion through gas produced by the contact between yeast and sugars, and at the same time, the ability to hold the gas during the whole expansion.

Wheat with a low loaf volume, or with a high one, but with huge alveolus or holes inside, are not desired, as they are the evidence of weak flours. It is essential to know the flour protein content during baking, since at a low level there will be less expansion and final volume, which is not due to the quality but to the quantity of proteins.

WHEAT

Test Weight (SAGPyA 557/97 Resolution)

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

Moisture (IRAM* 15850)

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

Gluten (ICC N° 137 - IRAM* 15864)

Gluten is a plastic - elastic substance with a white - yellowish colour which is obtained from the washing of a dough with a current of water to eliminate the starch and the soluble proteins (albumins and globulins), remaining the insoluble (gliadins and glutenins), which constitute wet gluten and dry gluten. The result is expressed in percentage .

The gluten main characteristic is the coherence and the agglutination that it gives to starch cells. During baking gluten is the one that retains gases, which are originated during the fermentation due to yeast effect.

The methodology is carried out using the "Glutomatic" system.

Zeleny Test (AACC Nº 56-61-IRAM* 15875)

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

Falling Number (Hagberg – Perten Method - AACC Nº 56-81-IRAM* 15862)

This test measures flour alpha amylase activity, from which depends the fermentative capacity of dough during baking. These enzymes activity in wheat is variable, being affected by climate harvest conditions.

Wet and hot conditions contribute to an increase in the enzymes activity, especially in germinated kernels, making the dough more liquid and obtaining sticky - crumbed breads. In order to know the alpha amylase activity, the Falling Number is used. A general idea of the enzyme activity is obtained through this method, according to the falling time in seconds. It is determinated on a 7g of flour with 15% of moisture.

RHEOLOGY

Farinogram (Brabender Farinograph - ICC Nº 115 – IRAM* 15855)

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

Mixogram (Swanson Mixograph - AACC Nº 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

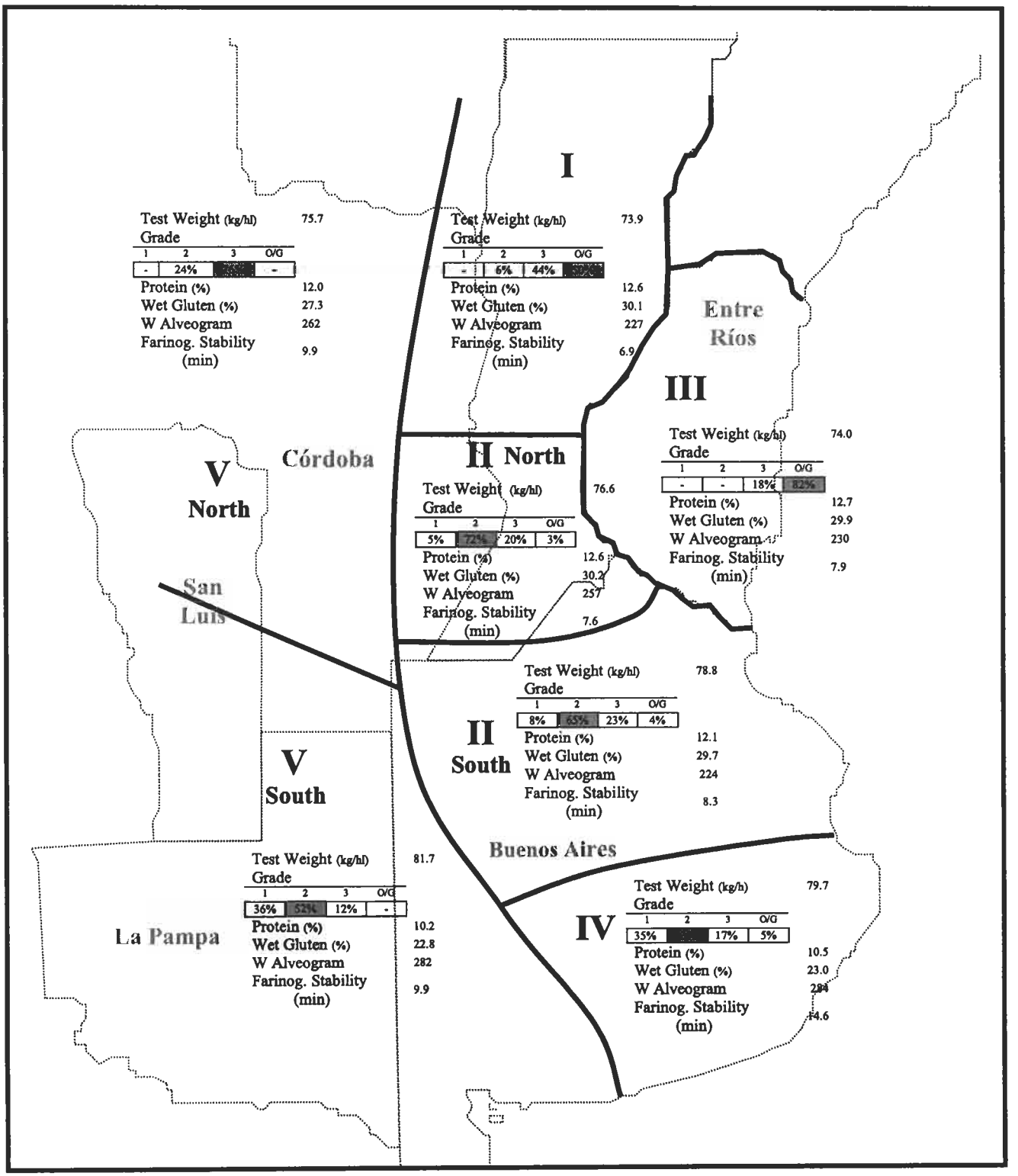
(Resolution Nº 557/97. Secretariat of Agriculture, Livestock, Fishery and Food)

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

Sowing began with a delay respect to normal date because of excessive rains registered between March and May, with edaphic water contains close to saturation. Sowing started in the middle of May, being generalized in June and finished in July.

During the establishment of the crops edaphic water contains were medium to very high, with values between 105 to 170 mm of useful water until the proof of 1.20 m in the soil profile. Highest values were obtained in the Department of San Jerónimo and the lowest in San Martín. During the period January-April rains of 440 to 590 mm were registered, 35 to 70 % higher than the historic average 1931 – 2000. Direct drilling (not tillage) continued increasing its area in this Sub-region.

Since the beginning of the cycle leaf diseases appeared in the whole Sub-region (Rust, Septoria and Dreschlera), being their effects more dangerous in San Martín and San Jerónimo Departments, and it had different incidence in each department. Crops where fungicides were not applied suffered losses between 60 to 90 % in the leaf area.

During tilling, the media maximum and the media minimum temperatures were a bit higher than the historical average and the climate conditions were adequate to produce more tillers for unit of area. The crop was seriously affected because of consecutive frosts registered between 26 to 29 of July, during the tillage stage, with variable intensity depending on the cultivar. This produce in extreme cases the destruction of all the aerial biomass, not withstanding the crops continued their growing but delayed their cycle. Rains between tillage and the beginning of stem elongation (August and September) duplicated their historical values in the whole Sub-region. This determined in a lot of cases a second pulverization against the above mentioned diseases, specially in the most susceptible cultivars and / or in those crops where the first application was premature. This situation generated an important loss in the leaf area (until 70 % in the flag leave and the destruction of the two leaves contiguously below it).

During stem elongation a second damage, because of frosts dated the 16th of September, was registered. The intensity of this damage depended on the cultivar and the date of sowing.

During anthesis and grain filling, rain conditions (212 mm in October), continued to be abundant, and associated with temperatures above 25 ºC, cloudy days and high air humidity, created conditions for Fusarium attacks in all the crops of the Sub-region. The incidence of this disease was very variable, being the most affected cultivars those that were in full flowering during the period with optimum conditions for the fungus. Test weight was affected in all cultivars, being variable in order to the locality, sowing date and the cycle of the cultivar. In general, the first harvest crops were more affected, with values between 72 to 60 of test weight.

The major incidence was observed in the departments of the south of the Sub-region, where a strong impact in the yields was registered, specially in those that were not treated crops and / or treatments were too late because of bad climate conditions.

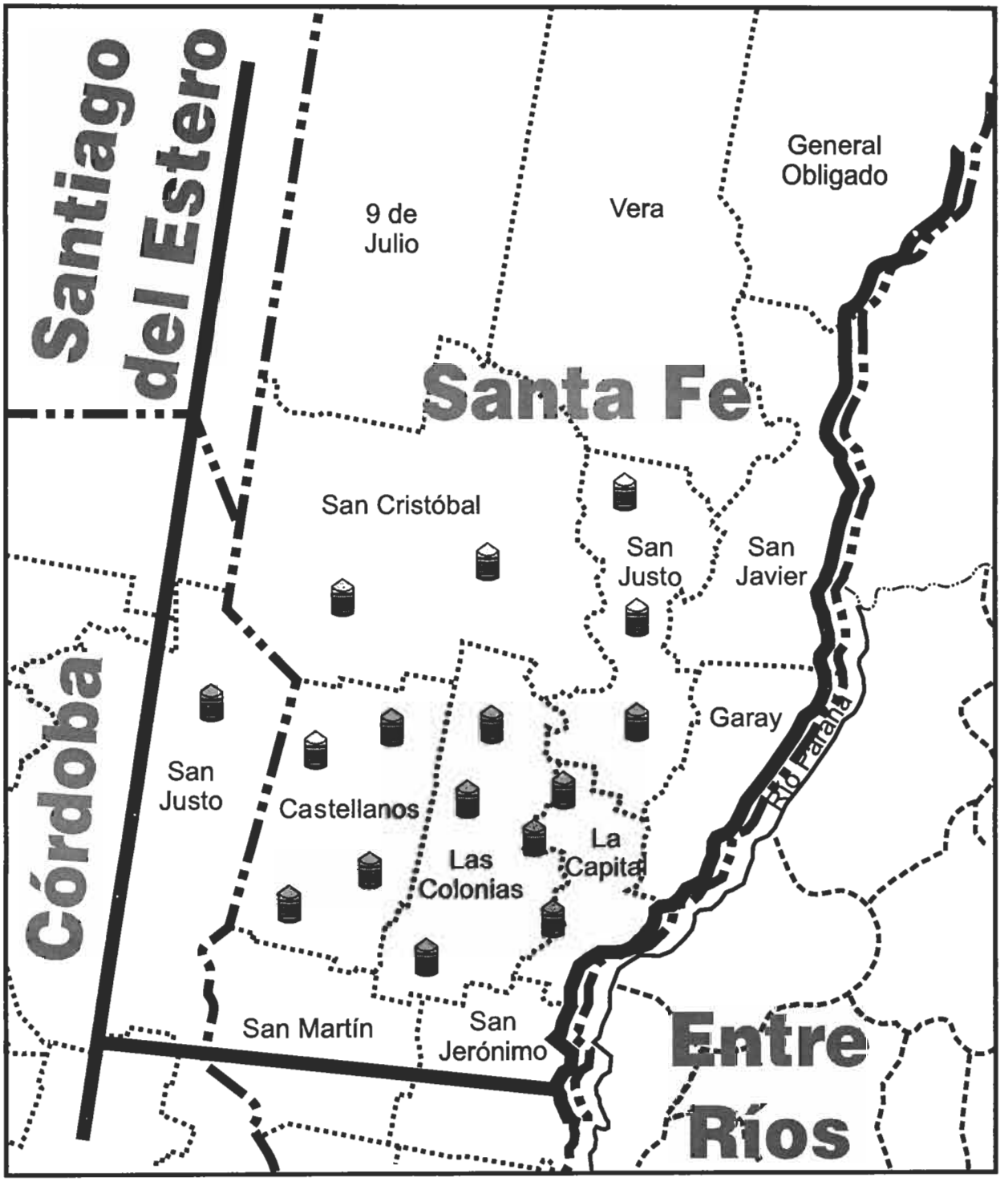
In addition to the problem caused by leaf and ear diseases, the lack of sun radiation during grain filling - caused a strong fall in the growing rate of crops (100-120 kg of dry matter/ha/day to 50-70 kg of dry matter/ha/day)- contributed to decrease the final production. As a consequence of all the reasons enumerated, yield losses were between 6 to 25 q/ha.

The cultivars more used were those of intermediate-long cycle, with more yield potential and more soil covering. Soybean was the main predecessor crop, followed by maize, and in a few cases sorghum and pastures.

An increase of 35 % in the use of fertilizers respect to the previous crop was registered, being the most used N, in second place P, and there was an important increase in S. Mixtures of fertilizers were used, in special: N (30-50 %), P (20-35 %), S (10-25 %). With respect to liquid fertilizers, a little increase was registered. Micronutrients were used in mixtures in a very little proportion, being the most used Fe, B, Zn and Cu. Fertilizers consumption was higher in the Departments of San Justo, San Jerónimo, Las Colonias and La Capital, than in the others. In general, fertilizers were applied 70 % at sowing and 30 % during tillage.

Yields were very heterogeneous, between 800 to 3,500 kg / ha (less than 8 % of the crops had the highest yields). The more frequent yields were 1,600 to 2,000 kg / ha, because of leaf diseases and in special Fusarium, affecting in this case baking quality. Practically, 90 % or crops suffered Fusarium attacks in different intensity. Protein contents were satisfactory, between 12.5 to 13.8 %.

Insect attacks were not important: leaf and ear worms, and for the first time, a punctual presence of green bug in stalking. Climate conditions at harvest were normal.



Each reference represents near 4,000 tns sampled.

Subregion I Wheat

Results of the Analyses

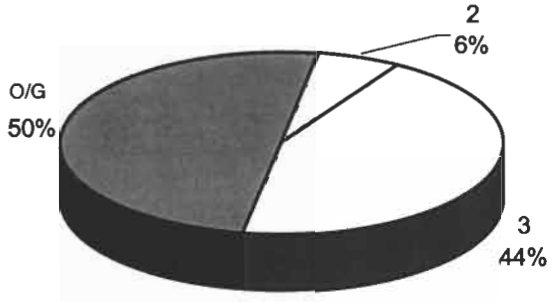
Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	70.20	76.60	73.94	1.94	0.03
Total Damaged Kernels (%)	1.00	6.56	2.45	1.29	0.53
Foreign Material (%)	0.12	1.00	0.48	0.26	0.54
Shrunken and Broken Kernels (%)	0.74	2.00	1.38	0.32	0.23
Yellow Berry Kernels (%)	0.00	0.00	0.00	0.00	0.00
Protein (13,5% Moisture) (%)	12.1	13.0	12.6	0.3	0.02
Weight of 1000 Kernels (gr.)	27.0	32.0	29.45	1.54	0.05
Ash (% dry basis)	1.561	2.030	1.830	0.124	0.07

Total damaged kernels includes mainly calcinated kernels and in minor proportion, frosty kernels and heat damaged kernels.

Grade Distribution

Ref:O/G: Out of Grade



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	28.0	31.6	30.1	0.9	0.03
	Dry Gluten (%)	10.0	11.1	10.7	0.3	0.03
	Falling Number (sec.)	336	455	416	32	0.08
	Flour Yield (%)	62.20	69.50	67.28	1.75	0.03
	Ash (dry basis) (%)	0.517	0.684	0.621	0.048	0.08
FARINOGRAM	Water Absorption (14 % H°) (%)	58.4	62.9	60.8	1.2	0.02
	Development Time (min.)	4.0	7.2	5.6	0.9	0.15
	Stability (min.)	5.2	9.7	6.9	1.2	0.17
	Degree of Softening (12 min.)	68	148	94	19	0.20
ALVEOGRAM	P (mm)	57	83	70	8	0.12
	L (mm)	98	133	110	10	0.09
	W Joules x 10^{-4}	168	268	227	26	0.12
	P / L	0.43	0.81	0.63	0.11	0.18

These results were elaborated with 16 composite sample prepared proportionally from 80 primary samples (farmer deliveries)

Subregion Data:

In this subregion the wheat production was 891,600 tons., the 5.88 % of the national total. Were sampled 64,016 tons., the 7.18 % 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 % Molsture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
1	Castellanos	4000	2	76.00	1.62	0.20	1.76	0.00	12.9	29.85	1.851
2	Castellanos	4002	O/G	71.30	3.16	0.80	1.26	0.00	12.9	29.00	1.561
3	Castellanos	4010	3	73.70	2.14	0.40	1.62	0.00	12.8	27.40	2.030
4	Castellanos	3999	O/G	70.20	2.88	0.62	1.14	0.00	12.9	27.00	1.878
5	Las Colonias	4003	3	74.50	2.20	0.24	1.32	0.00	12.7	29.40	1.881
6	Las Colonias	4000	3	73.60	2.54	0.94	2.00	0.00	12.5	28.65	1.891
7	Las Colonias - La Capital	4000	O/G	71.40	2.22	0.72	1.60	0.00	13.0	29.15	1.925
8	Las Colonias - La Capital	4000	O/G	74.20	3.68	0.56	1.34	0.00	12.8	28.45	1.936
9	La Capital - Las Colonias	4000	O/G	71.70	2.68	0.40	1.22	0.00	12.2	31.60	1.843
10	San Cristóbal	4000	3	76.10	2.14	0.12	1.06	0.00	12.4	31.40	1.729
11	San Crisóbal	4000	3	74.20	1.28	1.00	1.04	0.00	12.1	29.65	2.026
12	San Justo (Sta. Fe)	4000	3	76.60	2.64	0.30	1.32	0.00	12.9	29.05	1.843
13	San Justo (Sta. Fe)	4005	3	75.00	1.50	0.36	1.88	0.00	12.7	27.00	1.756
14	San Justo (SF) - Vera - Gral. Obligado	4002	O/G	75.20	6.56	0.56	1.36	0.00	12.5	31.55	1.685
15	Las Colonias	3995	O/G	72.70	1.00	0.22	1.34	0.00	12.6	30.00	1.764
16	San Justo (Córdoba)	4000	O/G2	76.60	1.00	0.32	0.74	0.00	12.3	32.00	1.678

Subregion II North

Wheat crop was characterized by special climate conditions that affected its productivity and quality.

In general, no water deficiencies were registered during the cycle. Water availability was adequate, as rains between the end of may to the end of November totalled 332 mm.

The cycle began with an appropriate water contain in the soil profile as consequence of autumn rains. Excellent conditions during the first stages of the crop favoured a good number of ears /area and a high value of potential spikelets per ear.

At the end of tillage to the beginning of stalking there was an infrequent volume of rains (54.7 mm). Then, an excess of air humidity was registered because of many rainy days (261,6 mm).

Cloudy days and, consequently, low sun radiation, were coincident with the stages where the growing rate of the crop and, in special, the ears, must be the maximum, taking into account their relation with the yield. Therefore, a significant abortion of basal spikelets (15-30 %) was produced.

During October there were 18 days with air relative humidity up to 80 %. This was coincident with the beginning of heading in the early sowed crops, and this condition continued during most part of grain filling, favouring illnesses development in all the cycle, specially Fusarium.

With respect to temperature in the beginning of the cycle, some periods with media temperatures above the historical values were registered, favouring a rapid establishment and development of crops. This situation was repeated at the end of September, before the gleaning of the earlier sowed crops.

There were 34 frosty days, which affected the leaf area of the crops and in some cases the death of plants. The main frost was registered on the 16th of September in Marcos Juárez, east of Córdoba (-7.6 ºC). During grain filling, temperatures were moderate and there were practically no values over 30 ºC.

Burnt kernels (Fusarium) are lighter than sound kernels, and test weight, commercial quality and baking quality is affected. Moreover, the presence of Fusarium always is associated with a major percent of shrunken kernels. In this crop, the level of the damage was related to the date of gleaning in each case –all of the cultivars are susceptible in different proportion-. The levels of incidence were variable (5-40 %) in Oliveros, south of Santa Fe.

Early harvest crops –which firstly reached gleaning- showed the most damages in plant, important losses in yields, and high percentage of damaged kernels (burnt and shrunken kernels). As a consequence, some of the lots were placed "out of standard".

Advancing the harvest the yields improved. The latter harvested crops presented better yields and quality, with low values of burnt kernels and an acceptable test weight (77-80 kg/ha according to the area).

Likewise, leaf illnesses affected the crops (leaf rust, Dreschlera and Septoria), favoured by climate conditions during tillage and stalking, producing a fall in yields, between 25 to 35 %, with great variability among varieties.

In some cases bacteriosis affected leaves, since the climatic conditions of the spring favored its incidence, generating smuts, necrotic and translucent areas in leaves.

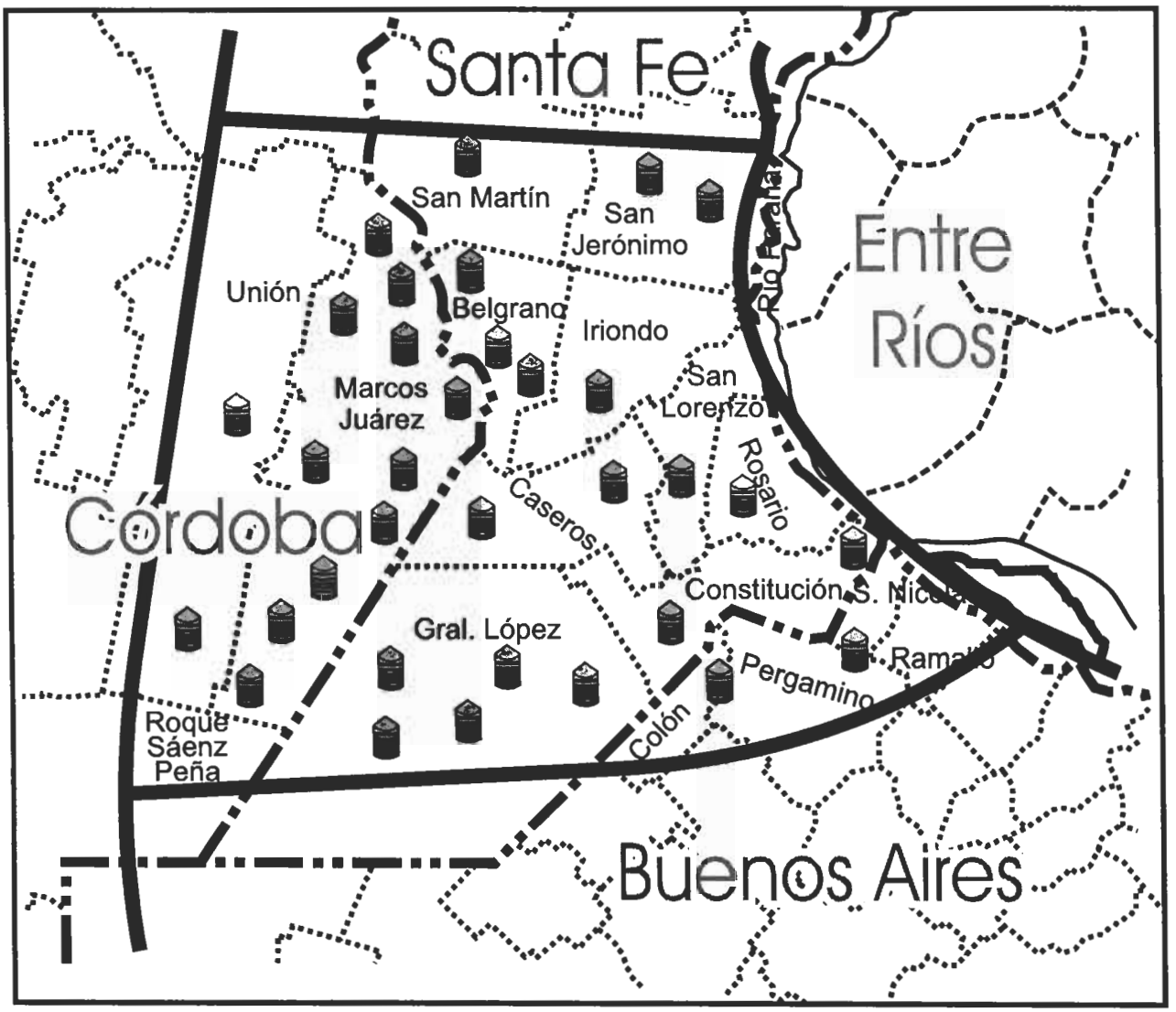
As a consequence of the climatic problems and diseases, yields don't reach the expectations , with grains lighter than normal.

Subregion I Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
1	Castellanos	30.7	10.8	444	66.8	61.3	7.2	7.8	78	79	100	263	0.79	0.560
2	Castellanos	30.6	10.9	402	67.8	61.7	4.0	6.0	94	67	106	206	0.63	0.649
3	Castellanos	30.9	10.9	417	68.3	61.3	6.7	8.7	75	82	105	262	0.78	0.684
4	Castellanos	29.7	10.7	412	68.3	60.4	5.7	6.9	86	70	119	244	0.59	0.650
5	Las Colonias	30.5	10.7	427	66.1	59.1	5.7	7.3	91	62	113	208	0.55	0.650
6	Las Colonias	30.0	10.5	408	66.7	61.5	4.7	6.0	104	72	98	214	0.73	0.660
7	Las Colonias - La Capital	31.6	11.1	455	66.0	60.9	5.7	7.3	91	70	112	231	0.63	0.622
8	Las Colonias - La Capital	29.3	10.2	444	68.8	60.2	6.4	8.2	99	69	100	220	0.69	0.569
9	La Capital - Las Colonias	29.8	10.7	435	67.3	59.6	4.0	5.3	118	58	101	168	0.57	0.641
10	San Cristóbal	30.8	11.0	358	68.9	60.0	5.4	6.3	93	58	113	202	0.51	0.658
11	San Crisóbal	30.1	10.7	431	69.5	60.3	6.6	9.7	68	83	102	268	0.81	0.674
12	San Justo (Sta. Fe)	30.4	10.3	435	69.2	61.2	5.3	6.0	82	66	111	202	0.59	0.659
13	San Justo (Sta. Fe)	30.5	11.0	449	68.3	60.4	5.3	6.2	89	65	121	228	0.54	0.591
14	San Justo (SF) - Vera - Gral. Obligado	29.7	10.8	336	62.2	62.8	5.5	5.2	148	71	122	238	0.58	0.560
15	Las Colonias	28.7	10.5	418	66.2	58.4	6.2	6.5	109	57	133	220	0.43	0.588
16	San Justo (Córdoba)	28.0	10.0	381	66.1	62.9	5.7	6.5	76	83	102	252	0.81	0.517

Subregion II North Wheat



Each reference represents near 4,000 tns sampled.

Results of the Analyses

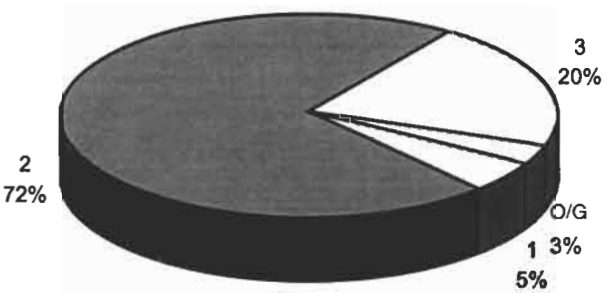
Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	70.80	79.80	76.60	1.57	0.02
Total Damaged Kernels (%)	0.44	3.90	1.38	0.50	0.38
Foreign Material (%)	0.11	1.37	0.37	0.22	0.60
Shrunken and Broken Kernels (%)	0.39	2.88	1.29	0.38	0.30
Yellow Berry Kernels (%)	0.00	2.05	0.24	0.41	1.75
Protein (13,5% Moisture) (%)	11.8	13.3	12.6	0.3	0.03
Weight of 1000 Kernels (gr.)	25.04	30.30	27.79	1.14	0.04
Ash (% dry basis)	1.827	2.172	2.025	0.088	0.04

Total damaged kernels includes 0.11% sprouted kernels, 0.80% calcinated kernels, 0.05 insect chewed kernels and 0.36 germen chewed kernels.

Grade Distribution

Ref:O/G: Out of Grade



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	24.4	33.3	30.2	1.5	0.05
	Dry Gluten (%)	8.9	11.6	10.7	0.5	0.05
	Falling Number (sec.)	370	472	428	22	0.05
	Flour Yield (%)	58.80	70.10	66.70	2.16	0.03
	Ash (dry basis) (%)	0.433	0.731	0.582	0.062	0.11
FARINOGRAM	Water Absorption (14 % H°) (%)	58.50	64.70	61.48	1.22	0.02
	Development Time (min.)	3.4	8.2	6.3	0.9	0.14
	Stability (min.)	5.4	10.8	7.6	1.2	0.16
	Degree of Softening (12 min.)	58	135	78	13	0.16
ALVEOGRAM	P (mm)	50	105	79	10	0.13
	L (mm)	71	143	106	11	0.11
	W Joules x 10^{-4}	149	324	257	32	0.12
	P / L	0.43	1.48	0.75	0.17	0.23

These results were elaborated with 65 composite samples prepared proportionally from 598 primary samples (farmer deliveries)

Subregion Data:

In this subregion the wheat production was 2,372,400 tons., the 15.65 % of the national total. Were sampled 109,650 tons., the 4.62 % of the subregion production.

Subregion II North Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS								
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13.5 % Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
101	San Martín	2400	3	75.80	1.82	0.30	1.64	0.60	13.0	25.94	2.059
102	San Martín	500	2	77.20	0.88	0.33	0.42	0.25	12.5	26.69	2.000
103	San Martín	500	2	78.20	0.57	0.39	0.39	1.43	12.2	26.18	1.945
104	San Jerónimo	1000	3	73.80	2.53	0.51	1.40	0.00	12.9	25.04	1.958
105	San Jerónimo	2000	2	77.00	1.41	0.32	1.02	0.85	12.3	26.65	2.033
106	San Jerónimo	1500	O/G	72.70	1.89	0.44	1.33	0.00	13.3	26.92	1.931
107	San Jerónimo	1000	3	73.30	2.11	0.40	1.47	0.00	13.0	26.30	2.070
108	Belgrano	1850	2	76.70	1.55	0.15	1.32	0.24	12.6	26.12	2.045
109	Belgrano	1800	2	77.80	1.51	0.18	1.52	0.00	12.6	27.23	2.032
110	Belgrano	1000	3	75.70	0.80	0.44	1.40	0.00	12.6	25.95	2.093
111	Belgrano	1000	1	79.00	0.63	0.12	0.71	2.05	11.9	28.58	2.002
112	Belgrano	1000	2	78.30	0.91	0.20	1.10	1.23	12.4	26.91	1.993
113	Iriondo	1000	2	77.80	1.40	0.59	1.82	0.33	12.8	26.29	2.087
114	Iriondo	1000	3	77.70	2.33	0.50	1.63	0.00	12.4	27.39	2.061
115	Iriondo	500	2	78.10	1.78	0.42	1.29	0.31	12.4	27.51	2.027
116	Caseros	1000	1	79.80	0.77	0.11	1.00	1.88	12.8	29.34	2.028
117	Caseros	1000	2	76.60	1.42	0.40	1.81	0.00	12.2	26.97	2.120
118	Caseros	2500	2	77.50	0.74	0.37	1.99	0.55	12.4	27.80	1.952
119	Caseros	2500	2	76.80	1.33	0.30	1.79	0.00	12.2	30.04	2.037
120	San Lorenzo	500	3	75.40	1.39	0.41	1.44	0.00	12.4	26.41	2.000
121	San Lorenzo	500	3	75.20	1.81	0.23	1.42	0.00	12.2	27.59	2.011
122	Rosario	1000	2	76.80	1.10	0.24	0.90	0.00	12.4	26.73	2.093
123	Constitución	2000	2	78.20	0.69	0.29	1.04	0.89	11.8	27.93	1.940
124	Constitución	2000	2	76.10	1.69	0.33	0.83	0.00	12.3	27.27	2.007
125	Constitución	1800	2	78.00	0.88	0.50	0.91	1.11	12.3	28.31	1.992
126	Constitución	1600	2	76.10	1.25	0.74	0.79	0.95	12.2	28.84	1.940
127	General López	1600	2	79.60	1.34	0.52	0.71	0.67	12.4	29.51	1.906
128	General López	1600	2	78.30	1.19	0.29	1.70	0.30	12.5	28.51	1.906
129	General López	1000	2	77.60	1.56	0.30	1.04	0.15	12.6	27.91	2.035
130	General López	1000	2	77.60	1.58	0.43	1.32	0.15	12.6	28.80	2.048
131	General López	1000	2	77.30	1.57	0.32	1.03	0.20	12.4	27.41	2.016
132	General López	1000	2	78.30	1.82	0.39	1.41	0.31	12.6	27.00	2.056
133	General López	1000	2	77.90	1.70	0.61	1.29	0.10	12.5	27.43	1.902

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) (%)
134	General López	1000	2	76.50	1.34	0.83	1.18	0.10	12.7	27.80	1.951
135	General López	1000	2	77.90	1.19	0.47	1.27	0.00	12.5	27.69	1.827
136	General López	1000	2	77.20	1.22	0.50	1.23	0.59	12.5	27.40	1.935
137	General López	1000	2	77.40	1.78	0.39	1.43	0.78	12.6	26.40	1.974
138	General López	1000	2	79.20	0.80	0.32	1.40	0.60	12.1	28.86	2.134
139	General López	2000	1	79.00	0.61	0.21	0.98	0.95	12.1	27.88	1.905
140	General López	2000	2	78.30	1.72	0.40	1.27	0.00	12.6	28.18	1.966
141	General López	1500	2	78.40	1.43	0.32	1.19	0.00	12.5	26.48	1.868
142	Marcos Juárez	4000	2	76.30	1.62	0.24	1.81	0.00	12.8	28.72	2.137
143	Marcos Juárez	4000	2	77.00	1.60	0.34	1.44	0.00	12.7	30.30	1.855
144	Marcos Juárez	4000	2	76.00	1.78	0.30	1.53	0.00	12.9	28.51	2.048
145	Marcos Juárez	4000	2	76.00	0.99	0.31	0.98	0.00	13.1	28.26	2.138
146	Marcos Juárez	4000	2	77.30	1.33	0.28	1.32	0.00	12.1	28.33	2.071
147	Marcos Juárez	4000	2	76.00	1.74	0.22	1.04	0.00	13.2	27.50	2.150
148	Marcos Juárez	4000	2	76.30	1.23	0.20	1.68	0.00	12.8	28.95	2.166
149	Marcos Juárez	4000	2	76.90	0.44	0.14	0.60	0.00	12.2	27.61	2.172
150	Marcos Juárez	4000	3	73.20	1.99	0.20	0.91	0.00	13.0	26.32	2.083
151	Marcos Juárez	4000	2	76.60	0.50	0.23	1.11	0.00	12.6	28.48	1.938
152	Marcos Juárez	4000	2	76.50	0.46	0.39	0.97	0.00	12.5	28.65	2.032
613	Marcos Juárez	2500	O/G3	75.90	3.90	0.35	1.48	0.10	12.0	27.10	1.858
153	Unión	1000	3	74.00	1.61	1.09	1.52	0.20	12.8	26.89	2.053
154	Unión	1000	3	73.40	1.91	1.10	1.50	0.32	13.1	26.17	2.078
155	Unión	1000	O/G	70.80	2.37	1.37	1.11	0.10	12.9	26.50	2.065
156	Unión	1000	3	75.50	1.30	1.10	2.88	0.00	12.8	25.78	2.076
157	Unión	1000	2	76.40	0.68	0.83	1.62	0.30	12.4	27.64	2.024
158	Unión	1000	3	74.80	1.39	0.59	1.41	0.24	12.2	27.54	2.080
159	Unión	1000	2	76.30	1.50	0.80	1.59	0.00	12.5	27.14	1.898
160	Unión	1000	3	73.80	1.32	0.77	1.66	0.00	12.1	25.55	1.986
161	Colón - Pergamino - Ramallo	500	2	78.10	1.23	0.11	1.26	0.98	12.4	27.72	1.970
162	Colón - Pergamino - Ramallo	500	2	77.60	1.77	0.41	1.74	0.00	12.8	27.32	1.996
163	Colón - Pergamino - Ramallo	500	2	77.70	0.98	0.33	1.23	0.00	12.3	27.42	2.113
164	Colón - Pergamino - Ramallo	500	2	79.10	1.22	0.31	1.57	0.74	12.5	26.95	2.095

Subregion II North Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
101	San Martín	30.1	10.8	446	66.3	60.2	6.3	8.1	77	69	121	248	0.57	0.529
102	San Martín	29.6	10.4	429	64.4	58.5	5.5	8.1	73	62	112	207	0.55	0.555
103	San Martín	29.1	10.3	428	65.2	59.7	6.3	8.4	77	73	100	221	0.73	0.566
104	San Jerónimo	31.2	10.9	414	67.9	60.1	5.7	6.7	102	61	124	216	0.49	0.561
105	San Jerónimo	29.6	10.5	422	69.7	59.7	4.5	5.5	110	50	115	149	0.43	0.512
106	San Jerónimo	31.5	11.2	394	63.5	60.5	5.5	5.4	135	55	120	178	0.46	0.654
107	San Jerónimo	30.7	10.7	434	68.4	61.8	6.2	7.5	85	75	103	238	0.73	0.603
108	Belgrano	27.8	10.0	429	65.3	60.5	6.7	8.4	74	78	111	268	0.70	0.502
109	Belgrano	28.9	10.2	423	62.7	60.2	5.7	7.4	74	69	143	268	0.48	0.510
110	Belgrano	29.4	10.5	425	65.9	60.9	6.0	7.9	73	80	114	271	0.70	0.523
111	Belgrano	26.3	9.3	415	64.9	58.7	7.5	10.8	62	77	99	256	0.78	0.532
112	Belgrano	27.6	9.8	421	66.1	60.7	7.3	10.1	65	92	98	287	0.94	0.490
113	Iriondo	31.0	10.0	456	63.6	59.9	6.3	8.1	86	69	104	224	0.66	0.613
114	Iriondo	28.3	10.2	432	66.0	60.2	6.5	7.8	80	80	100	241	0.80	0.603
115	Iriondo	24.4	8.9	470	63.0	60.3	6.5	8.7	70	76	101	239	0.75	0.498
116	Caseros	30.6	10.9	428	64.9	61.4	6.2	6.9	80	77	92	230	0.84	0.510
117	Caseros	30.1	11.0	444	63.9	60.8	6.7	7.7	78	69	112	237	0.62	0.547
118	Caseros	29.5	10.8	426	65.6	61.5	6.0	7.0	89	78	108	256	0.72	0.603
119	Caseros	29.6	11.0	430	67.1	61.7	6.5	7.3	85	75	123	271	0.61	0.565
120	San Lorenzo	29.8	10.6	454	65.8	62.0	6.7	7.1	77	84	93	252	0.90	0.628
121	San Lorenzo	29.6	10.4	392	61.1	63.2	5.8	6.1	91	84	79	211	1.06	0.667
122	Rosario	29.0	10.4	423	66.0	60.7	5.3	7.3	78	73	113	252	0.65	0.646
123	Constitución	27.8	10.3	435	64.1	62.5	6.3	7.3	84	87	90	248	0.97	0.679
124	Constitución	31.3	10.9	443	67.2	63.0	6.2	6.4	91	81	101	250	0.80	0.611
125	Constitución	29.8	10.8	425	65.8	63.3	6.0	7.6	84	80	103	256	0.78	0.580
126	Constitución	30.3	11.0	427	64.2	62.1	6.2	7.9	75	84	95	249	0.88	0.603
127	General López	32.0	11.2	421	66.0	62.9	5.5	5.8	90	90	97	256	0.93	0.587
128	General López	31.3	10.7	400	66.1	63.9	5.7	6.8	82	91	108	283	0.84	0.523
129	General López	27.9	10.1	424	63.8	61.3	5.7	8.8	58	80	120	275	0.67	0.585
130	General López	29.1	10.4	400	66.1	61.8	6.2	8.6	61	87	112	291	0.78	0.536
131	General López	29.2	10.2	410	63.8	61.8	3.4	7.2	61	83	111	274	0.75	0.570
132	General López	30.2	10.2	438	68.1	61.6	5.2	8.2	64	85	125	302	0.68	0.504
133	General López	31.6	10.8	388	58.8	62.4	5.5	5.5	89	81	104	251	0.78	0.596

Appendix of Locality Composite Samples.

Subregion II North Wheat

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
134	General López	31.2	10.6	384	67.9	64.7	6.0	6.5	78	102	85	267	1.20	0.579
135	General López	30.2	10.6	383	62.5	61.4	5.8	7.0	82	86	99	252	0.87	0.459
136	General López	31.2	10.9	399	65.3	63.7	5.5	6.8	76	96	87	262	1.10	0.604
137	General López	29.8	10.7	376	63.7	60.7	6.5	8.6	70	77	113	259	0.68	0.587
138	General López	30.6	10.7	401	66.4	62.3	6.3	8.3	68	93	94	271	0.99	0.595
139	General López	28.9	10.2	387	64.2	60.7	4.7	6.6	78	73	99	214	0.74	0.571
140	General López	29.1	10.3	405	66.7	62.6	5.5	6.4	84	85	89	228	0.96	0.559
141	General López	28.8	10.4	433	64.5	61.9	4.5	5.5	92	70	111	212	0.63	0.507
142	Marcos Juárez	30.3	10.8	450	67.7	61.0	6.2	7.5	83	74	111	250	0.67	0.575
143	Marcos Juárez	31.0	11.1	426	68.1	61.5	5.8	5.8	85	66	108	207	0.61	0.507
144	Marcos Juárez	29.0	10.0	456	68.7	61.2	5.7	6.4	79	76	96	250	0.79	0.604
145	Marcos Juárez	32.3	11.5	440	70.1	62.6	7.9	8.0	72	89	105	300	0.85	0.575
146	Marcos Juárez	31.9	11.3	472	69.1	62.0	6.7	9.6	58	81	111	289	0.73	0.619
147	Marcos Juárez	32.0	11.4	443	69.0	61.7	6.5	7.3	81	77	105	259	0.73	0.573
148	Marcos Juárez	33.3	11.6	443	67.9	61.0	7.9	8.3	71	79	105	276	0.75	0.668
149	Marcos Juárez	30.1	10.6	428	69.6	61.3	6.5	8.5	65	87	104	290	0.84	0.619
150	Marcos Juárez	31.0	10.8	412	65.0	59.6	6.5	8.1	67	71	123	260	0.58	0.578
151	Marcos Juárez	30.8	11.0	465	67.1	64.0	7.8	9.6	82	104	93	324	1.12	0.731
152	Marcos Juárez	30.2	10.6	411	68.0	60.0	7.0	9.2	64	79	109	268	0.72	0.679
613	Marcos Juárez	28.7	10.1	370	65.1	60.5	6.0	8.3	68	79	110	257	0.72	0.640
153	Unión	31.5	11.0	427	68.2	61.9	5.8	5.9	94	73	107	235	0.68	0.525
154	Unión	33.0	11.5	434	68.4	61.3	5.2	5.4	96	61	121	210	0.50	0.585
155	Unión	30.9	10.8	445	68.3	62.3	5.2	5.7	92	74	99	223	0.75	0.649
156	Unión	28.2	10.0	414	-	60.5	5.7	8.2	61	81	91	246	0.89	0.494
157	Unión	30.1	10.8	467	68.0	64.4	7.0	8.4	71	77	111	262	0.69	0.620
158	Unión	26.2	9.6	448	-	60.4	5.8	8.6	64	83	90	254	0.92	0.445
159	Unión	29.9	10.9	447	69.9	61.0	6.3	7.8	79	76	115	269	0.66	0.595
160	Unión	26.9	9.6	421	-	61.1	6.7	7.5	78	94	83	264	1.13	0.476
161	Colón - Pergamino - Ramallo	26.9	9.5	425	64.5	60.3	6.8	9.5	63	86	93	260	0.92	0.554
162	Colón - Pergamino - Ramallo	30.2	10.4	425	68.3	61.9	7.8	9.0	70	100	82	275	1.22	0.459
163	Colón - Pergamino - Ramallo	28.3	10.1	377	64.5	60.2	8.2	10.4	65	82	105	277	0.78	0.461
164	Colón - Pergamino - Ramallo	30.2	10.5	389	66.8	62.2	7.5	10.1	59	105	71	259	1.48	0.433

Subregion II South

The initial perspectives of the wheat crop were favorable, fact that was reflected in an increase of the sowed area between 6 to 8 % compared to the previous cycle.

In that moment a great production near a possible new record was expected. However unfavorable climatic conditions that affected yields and the quality of the grains, prevented farmers from obtaining them, resulting in the lowest production for the sub-region in the last 5 years. Regarding the yield average for hectare something similar happened, being reflected in it the biggest incidence of the adverse conditions, that produced a reduction in the average of 12 %, diminishing this percentage from the north towards the south of the sub-region.

Several causes generated this situation according to the evolution of the crop:

Sowing in general was delayed due to the excessive rains occurred during the autumn, producing the flooding of many lots or parts of them. As a result of this situation in the middle of July great portion of sows were not concluded. This made that many producers changed the cultivars of long cycle for other precocious ones or semi-precocious, and those that didn't make it sowed in an inadequate sowing date.

Most of the sows were carried out in the minimum tillage system, being smaller the area where the conventional system or direct drilling was used.

It is considered that 80 % of the sowed area was fertilized, in most of the lots during or before the sows, with a mixture of phosphorus and nitrogen and in a smaller proportion sulphur.

Due to the high humidity storage accumulated in the soil profile due to the rain during the autumn, wheat had a very good establishment.

During the tillage and the stem elongation crops developed normally, without limitations of humidity, due to the abundant rains that took place in August and September, overcoming the historical ones. On the other hand, the temperatures were higher than the normal ones, especially those of August. These two favorable climatic conditions made the wheat express an abundant foliage growth.

Until here, crops developed normally, as if expecting high yields.

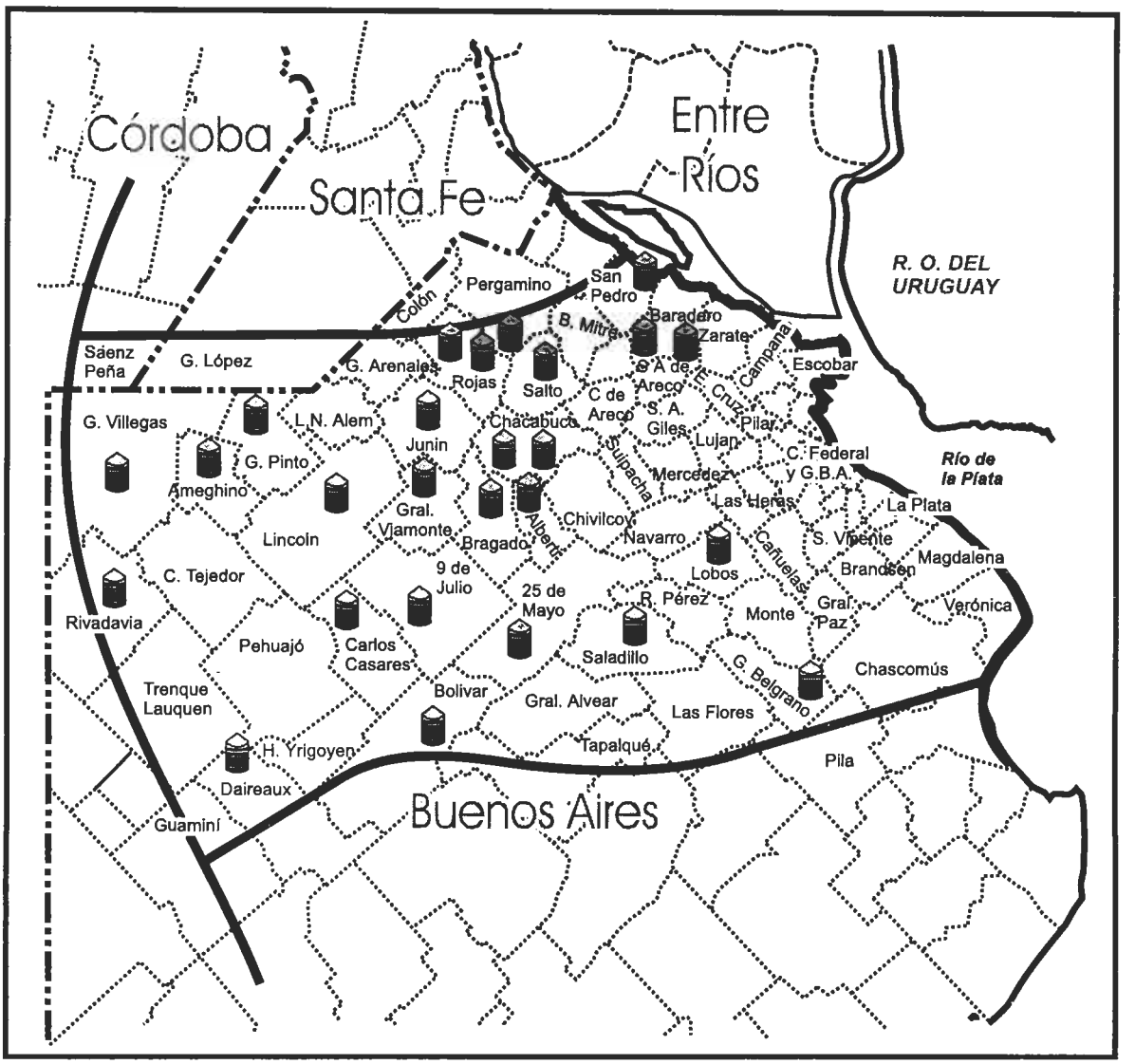
In the reproductive period of the crop, during flowering and grain filling, coincident with the months of October and November, continuous and excessive rains took place, adding 388 millimeters, with a frequency of 23 days with rains in Pergamino, speciallyl during the flowering period favoring the development of leaf and ear diseases.

Regarding the healthy aspects, the severe incidence of the diseases was one of the decisive causes in the decrease of the yields. This began in the most susceptible cultivars from the period of the tillage-stem elongation, with attacks of regular intensity of "orange leaf rust" and "yellow stain". In the period of anthesis and grain attacks of bacteriosis, Septoria and Fusarium were observed, favored by the continuous and excessive rains (368,4 mm distributed in 23 days), that produced the flooding of several crops.

The major incidence of Fusarium was observed on those cultivars in which anthesis date was between 3 and 18 of October (favorable conditions: high humidity and maximum temperatures between 16.6 ºC and 25ºC). In the case of the most susceptible cultivars, they were severely affected being registered extreme losses between 50 and 70 % in yields. On the other hand, there were cultivars of good behavior with yields that overcome 3,500 kg/ha, considered very good for this region and the conditions of this campaign.

The maturity of the crops was delayed due to the occurrence of temperatures rather fresh that put back the development of the crops. This made that in many cases the producers harvested with more moisture in grains than normal, due to the fear that rains took place during the harvest and also looking for the sowing of soybean as a second crop.

Subregion II South Wheat



Each reference represents near 4,000 tns sampled.

Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

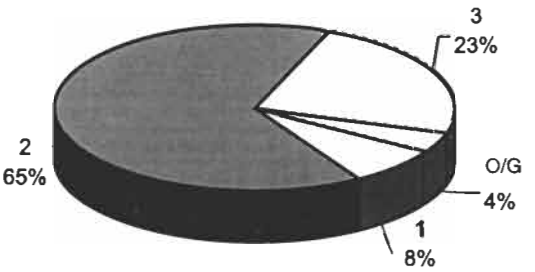
Subregion II South Wheat

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	71.40	81.05	78.8	2.0	0.03
Total Damaged Kernels (%)	0.46	2.94	1.64	0.64	0.39
Foreign Material (%)	0.16	1.84	0.56	0.40	0.71
Shrunken and Broken Kernels (%)	0.42	1.38	0.87	0.20	0.23
Yellow Berry Kernels (%)	0.00	4.54	1.00	1.10	1.10
Protein (13,5% Moisture) (%)	10.9	13.5	12.1	0.6	0.05
Weight of 1000 Kernels (gr.)	24.72	34.27	28.81	2.07	0.07
Ash (% dry basis)	1.832	2.121	1.940	0.078	0.04

Total damaged kernels includes 0.15% sprouted kernels, 1.38% calcinated kernels, 0.04% insect chewed kernels and 0.07% germen chewed kernels.

Grade Distribution

Ref:O/G: Out of Grade



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	25.5	33.8	29.7	2.1	0.07
	Dry Gluten (%)	9.4	12.5	11.0	0.8	0.07
	Falling Number (sec.)	340	460	399	32	0.08
	Flour Yield (%)	63.60	70.50	67.2	1.73	0.03
	Ash (dry basis) (%)	0.505	0.665	0.584	0.044	0.07
FARINOGRAM	Water Absorption (14 % H°) (%)	54.4	64.5	58.6	2.0	0.03
	Development Time (min.)	5.0	10.3	6.3	1.3	0.20
	Stability (min.)	5.6	15.4	8.3	2.3	0.28
	Degree of Softening (12 min.)	48	92	78	11	0.14
ALVEOGRAM	P (mm)	57	97	73	11	0.15
	L (mm)	69	154	101	18	0.18
	W Joules x 10^{-4}	174	318	224	34	0.15
	P / L	0.42	1.30	0.72	0.21	0.29

These results were elaborated with 26 composite sample prepared proportionally from 1,085 primary samples (farmer deliveries).

Subregion Data:

In this subregion the wheat production was 1,291,600 tons., the 8.52 % of the national total. Were sampled 101,950 tons., the 7.89 % 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	25 de Mayo	4,010	1	80.80	0.92	0.28	0.76	1.68	11.7	31.3	1.846
201	San Antonio de Areco	4,000	3	75.45	0.54	1.84	0.92	0.00	12.7	26.8	2.121
202	Rojas	4,601	2	78.60	1.94	0.46	1.06	0.22	12.9	28.8	2.063
203	General Viamonte	4,050	3	79.45	2.54	0.52	0.66	0.00	11.8	29.5	1.879
204	Alberti	4,020	3	80.60	2.83	0.44	0.88	0.00	12.1	29.0	1.939
205	9 de Julio	3,934	3	80.60	2.42	0.56	0.88	1.86	11.8	28.8	1.857
206	Carlos Casares	4,000	2	80.15	1.48	0.50	0.96	2.00	11.5	30.1	1.849
207	General Pinto	3,716	2	79.25	1.60	0.48	0.74	1.08	11.8	28.3	1.954
208	Saladillo	4,000	2	78.35	1.40	0.72	0.70	1.00	11.4	27.9	1.873
209	Bolivar	4,000	3	79.90	2.26	1.46	0.72	2.46	11.3	33.3	1.888
210	General Villegas	3,217	2	77.90	1.96	0.84	1.38	0.70	11.8	28.9	2.028
211	San Pedro	4,000	2	80.80	1.42	0.28	0.66	0.00	12.2	28.5	1.980
212	Salto	4,000	2	80.15	1.66	0.22	0.76	0.00	12.7	30.7	1.975
213	Lincoln	4,015	2	81.05	1.58	0.26	0.96	2.18	12.0	30.0	1.834
214	Bragado	4,000	2	78.60	1.23	0.98	0.72	1.56	11.9	28.8	1.864
215	Arrecifes	4,000	2	78.60	1.82	0.42	0.96	0.00	12.0	27.5	1.981
216	Gral. Belgrano	3,995	2	77.00	1.42	0.28	0.64	1.18	11.3	27.7	1.944
217	Lobos	4,000	1	79.00	0.84	0.18	0.42	0.94	11.5	29.9	1.899
218	Ameghino	3,850	2	77.70	1.52	0.28	0.82	0.00	12.0	28.0	1.869
219	Baradero	3,770	3	76.35	2.34	0.86	0.74	1.24	12.5	27.7	1.965
220	Chacabuco	4,000	2	79.25	1.08	0.48	1.00	0.28	12.7	25.7	2.018
221	Chacabuco	4,000	2	78.60	1.06	0.44	0.94	2.90	12.3	25.6	2.057
222	Rivadavia	3,027	2	79.25	1.22	0.22	1.02	0.00	11.9	30.4	1.938
223	Daireaux	3,466	2	80.35	0.46	1.02	1.00	4.54	10.9	34.3	1.832
224	Junín	3,980	O/G3	71.40	2.94	0.42	1.34	0.58	12.9	24.7	1.990
225	Rojas	4,299	2	79.45	1.84	0.16	1.04	0.00	13.5	28.2	1.973

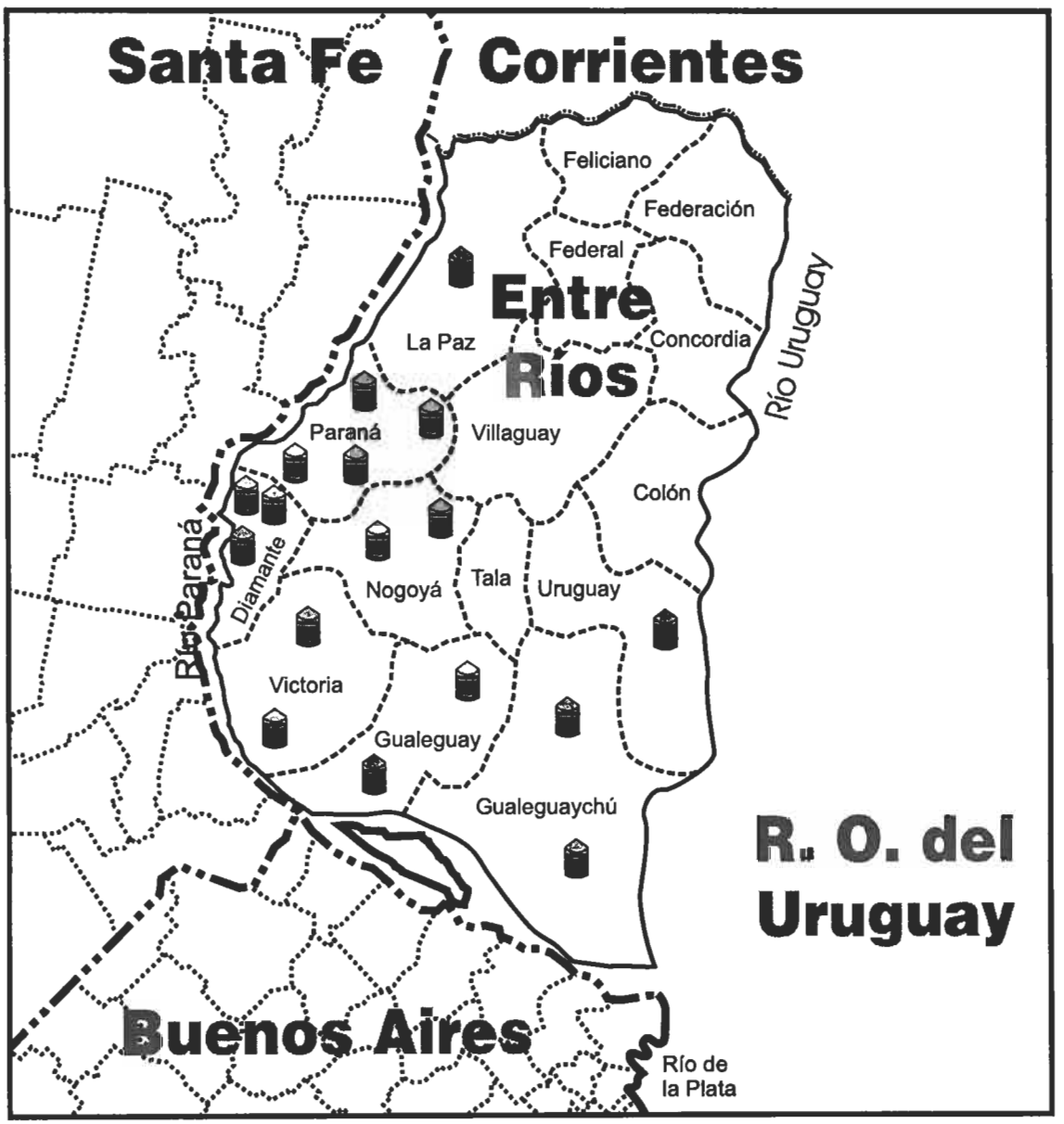
Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
200	25 de Mayo	28.9	10.7	383	68.4	58.5	6.0	7.3	86	71	88	190	0.81	0.508
201	San Antonio de Areco	31.1	11.5	409	69.3	58.6	6.8	9.1	78	75	101	239	0.74	0.560
202	Rojas	32.1	11.9	375	67.1	61.7	5.7	6.0	89	78	100	235	0.78	0.580
203	General Viamonte	30.0	11.1	374	70.5	59.8	5.2	7.1	79	76	85	201	0.89	0.539
204	Alberti	30.6	11.3	416	63.6	58.9	6.0	7.0	86	63	107	196	0.59	0.573
205	9 de Julio	30.5	11.3	359	68.3	58.4	6.8	8.7	69	76	95	223	0.80	0.505
206	Carlos Casares	27.7	10.3	385	66.6	57.8	6.3	8.0	75	74	81	196	0.91	0.557
207	General Pinto	32.0	11.9	388	65.3	58.3	5.0	5.8	92	63	107	190	0.59	0.576
208	Saladillo	28.2	10.5	376	66.1	57.5	6.9	10.0	75	62	131	250	0.47	0.545
209	Bolivar	28.4	10.5	380	66.1	59.4	9.8	14.5	48	97	98	318	0.99	0.514
210	General Villegas	29.5	10.9	383	67.0	59.1	6.7	8.9	75	85	96	244	0.89	0.607
211	San Pedro	31.7	11.7	340	67.8	60.0	6.0	7.1	78	90	69	205	1.30	0.563
212	Salto	25.5	9.4	366	68.2	55.2	10.3	15.4	52	84	90	259	0.93	0.528
213	Lincoln	29.8	11.0	372	68.8	59.5	6.0	7.2	73	71	97	202	0.73	0.625
214	Bragado	28.9	10.7	460	65.5	57.2	6.4	9.2	76	57	97	186	0.59	0.625
215	Arrecifes	29.7	11.0	446	68.2	59.7	5.7	7.6	72	92	81	240	1.14	0.616
216	Gral. Belgrano	25.5	9.4	450	66.6	54.4	5.1	8.0	81	61	93	174	0.66	0.633
217	Lobos	25.6	9.5	387	69.8	54.9	5.1	9.0	71	68	92	196	0.74	0.598
218	Ameghino	31.3	11.6	403	63.8	60.5	5.2	5.6	92	59	111	177	0.53	0.665
219	Baradero	31.8	11.8	378	67.8	59.2	5.7	6.9	92	63	125	228	0.50	0.581
220	Chacabuco	30.0	11.1	420	66.3	57.6	5.7	6.9	86	70	112	227	0.63	0.610
221	Chacabuco	30.4	11.3	456	68.4	57.9	6.6	8.1	81	75	115	252	0.65	0.606
222	Rivadavia	31.4	11.6	413	67.7	64.5	5.4	5.8	80	79	84	205	0.94	0.634
223	Daireaux	27.1	10.0	407	64.4	59.1	7.2	10.7	65	88	99	267	0.89	0.664
224	Junín	30.7	11.4	394	-	57.3	5.9	8.3	88	63	122	227	0.52	0.588
225	Rojas	33.8	12.5	448	67.9	60.4	5.5	7.5	76	64	154	282	0.42	0.612

Subregion III

Wheat crop began its cycle with an excellent development, because of very good conditions of humidity in the autumn. This favoured tillage, and due to yield expectations, the lots were fertilised in their great majority with nitrogen and phosphorus, (50 to 90 kg/ha of diammonia phosphate and 40 to 80 kg/ha of urea/UAN). After a mild winter, symptoms of rust of the leaf began to appear in the most susceptible cultivars. Then, many producers applied fungicides at the end of the winter.

Starting from the 25 of September, there began a period of days with rains and sprinkles and days with high humidity and uninterrupted low radiation of about 27 days. These climatic conditions, added to the great concentration of inoculo of Fusarium in the stubble of the previous crop (and favoured because most of the crops were carried out in direct drilling), were responsible for the biggest epifitia of Fusarium ever reminded in the sub-region and possibly in the country. This epifitia caused great reductions in the yields. Yield averages decreased from 23 q/ha in 1999, year in which there was not Fusarium, to 13 q/ha in 2001. Besides yield reduction, a very low commercial quality of the grains was registered, along with poor industrial quality of the seeds.



Each reference represents near 4,000 tns sampled.

Subregion III Wheat

Results of the Analyses

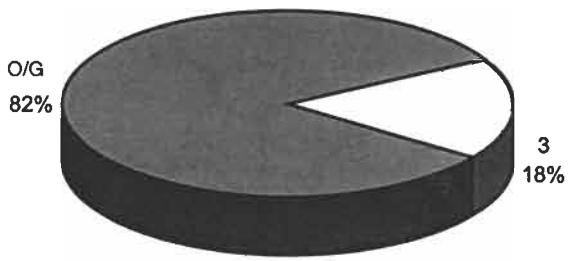
Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	71.20	78.80	74.00	1.90	0.03
Total Damaged Kernels (%)	2.34	8.30	4.35	1.54	0.35
Foreign Material (%)	0.54	2.18	0.99	0.52	0.52
Shrunken and Broken Kernels (%)	0.58	2.06	1.27	0.45	0.36
Yellow Berry Kernels (%)	0.50	0.90	0.65	0.11	0.18
Protein (13,5% Moisture) (%)	12.3	13.3	12.7	0.3	0.02
Weight of 1000 Kernels (gr.)	22.67	26.61	24.26	1.12	0.05
Ash (% dry basis)	1.560	1.900	1.755	0.119	0.07

Total damaged kernels includes 4.12% calcinated kernels, 0.09% green kernels and 0.08% sprouted kernels.

Grade Distribution

Ref:O/G: Out of Grade



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	27.9	31.2	29.9	1.1	0.04
	Dry Gluten (%)	10.1	11.3	10.7	0.3	0.03
	Falling Number (sec.)	410	480	440	16	0.04
	Flour Yield (%)	64.90	68.20	66.37	0.91	0.01
	Ash (dry basis) (%)	0.471	0.752	0.581	0.066	0.11
FARINOGRAM	Water Absorption (14 % H°) (%)	58.2	61.9	59.7	1.1	0.02
	Development Time (min.)	5.3	10.4	6.6	1.3	0.20
	Stability (min.)	6.2	13.7	7.9	1.8	0.23
	Degree of Softening (12 min.)	72	127	96	14	0.15
ALVEOGRAM	P (mm)	52	89	68	11	0.17
	L (mm)	86	135	108	13	0.12
	W Joules x 10^{-4}	186	306	230	35	0.15
	P / L	0.39	1.03	0.62	0.18	0.28

These results were elaborated with 17 composite sample prepared proportionally from 369 primary samples (farmer deliveries).

Subregion Data:

In this subregion the wheat production was 525,400 tons., the 3.47 % of the national total. Were sampled 68,588 tons., the 13.05 % of the subregion production.

Appendix of Locality Composite Samples.

Subregion III Wheat

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	4041	O/G	73.50	3.76	0.86	1.06	0.60	12.8	24.00	1.760
301	Paraná	4075	O/G	73.60	3.74	0.82	0.96	0.50	13.2	25.92	1.890
302	Paraná	4038	O/G	72.40	4.14	0.66	1.90	0.50	12.8	22.67	1.900
303	Paraná	4026	O/G	72.30	6.36	0.76	2.06	0.70	12.6	24.71	1.870
304	Diamante	4034	O/G	74.20	4.40	0.58	1.40	0.60	12.5	24.53	1.830
305	Diamante	4072	O/G	73.40	3.42	1.82	1.18	0.60	13.3	24.31	1.870
306	Diamante	4012	O/G	72.40	5.22	0.66	1.46	0.70	13.2	26.00	1.850
307	La Paz	3996	O/G	71.90	3.32	0.66	1.52	0.80	12.6	22.84	1.740
308	Gualeguay	4066	O/G	76.00	3.56	1.80	1.24	0.80	12.5	24.33	1.660
309	Gualeguay	4005	O/G	74.40	4.36	1.12	1.86	0.70	12.4	23.17	1.860
310	Gualeguaychú	4007	3	75.70	2.62	2.18	0.66	0.60	12.5	24.22	1.800
311	Gualeguaychú	4015	3	77.00	2.90	0.80	0.66	0.60	12.3	24.14	1.720
312	Nogoyá	4048	O/G	71.20	8.30	0.54	1.02	0.90	12.8	22.74	1.720
313	Nogoyá	4054	O/G	74.20	6.00	0.60	0.82	0.50	12.5	25.00	1.710
314	Conc. del Uruguay	4000	O/G	74.20	3.22	1.72	1.30	0.60	12.5	23.52	1.620
315	Victoria	4059	O/G	72.80	6.22	0.66	1.86	0.80	12.9	23.65	1.560
316	Victoria	4040	3	78.80	2.34	0.66	0.58	0.60	13.0	26.61	1.480

Subregion III Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
300	Paraná	30.8	10.9	480	67.8	61.8	6.5	7.9	97	89	86	258	1.03	0.653
301	Paraná	31.1	11.2	450	66.1	59.3	6.4	6.6	114	57	122	210	0.47	0.570
302	Paraná	30.1	10.8	441	66.7	61.5	7.5	8.7	83	89	99	285	0.90	0.641
303	Paraná	31.0	10.8	439	66.4	59.1	5.5	6.4	107	53	135	209	0.39	0.540
304	Diamante	30.6	10.8	436	65.9	58.9	6.6	7.5	98	77	87	214	0.89	0.640
305	Diamante	30.4	10.8	452	65.0	58.4	6.2	7.5	127	52	117	200	0.44	0.575
306	Diamante	31.2	11.1	410	67.3	60.0	5.3	6.2	122	58	108	187	0.54	0.638
307	La Paz	30.6	10.7	419	65.4	59.4	6.0	8.2	82	59	114	207	0.52	0.592
308	Gualeguay	28.8	10.5	417	66.9	60.5	5.5	6.7	99	64	93	199	0.69	0.513
309	Gualeguay	29.4	10.6	451	65.8	59.5	7.0	8.0	81	61	125	236	0.49	0.549
310	Gualeguaychú	28.9	10.4	443	68.2	58.6	10.4	13.7	72	83	103	306	0.81	0.551
311	Gualeguaychú	29.6	10.7	457	65.7	59.4	5.3	7.0	90	68	102	205	0.67	0.560
312	Nogoyá	27.9	10.1	445	66.5	59.5	6.0	7.4	95	70	104	257	0.67	0.471
313	Nogoyá	28.0	10.3	434	67.3	59.5	6.0	7.7	94	67	104	226	0.64	0.501
314	Conc. del Uruguay	28.8	10.3	424	66.6	58.2	9.1	11.1	85	65	123	266	0.53	0.752
315	Victoria	30.4	10.9	446	65.8	58.9	5.5	6.9	96	58	109	186	0.53	0.597
316	Victoria	31.2	11.3	437	64.9	61.9	6.7	7.4	85	78	108	263	0.72	0.543

Subregion IV
Background for the crop

Climatic conditions were favorable for wheat development during the complete 2001/02 crop cycle. Rains were unusual: 1089 mm were registered till November, 48 % superior to historical mean over twenty years.

Those exceptional conditions originated a great biomass, with all cultivars showing excellent appearance. Till the beginning of December soil humidity was very good, in some moments a bit excessive. This situation changed when grains entered the filling stage. Rains stopped and big foliar areas permitted a quick loss of humidity. Even when temperatures were moderate, the occurrence of windy days collaborated to dry the soils.

As a result of the lack of rains of December and negative effect of leaf and root illnesses, yields dropped significantly. Grain size and test weight also diminished. Influence of diseases seemed to be more severe than the lack of humidity since the application of fungicide treatments caused important increases of yield which, in some cases, reached 2000 kg/ha.

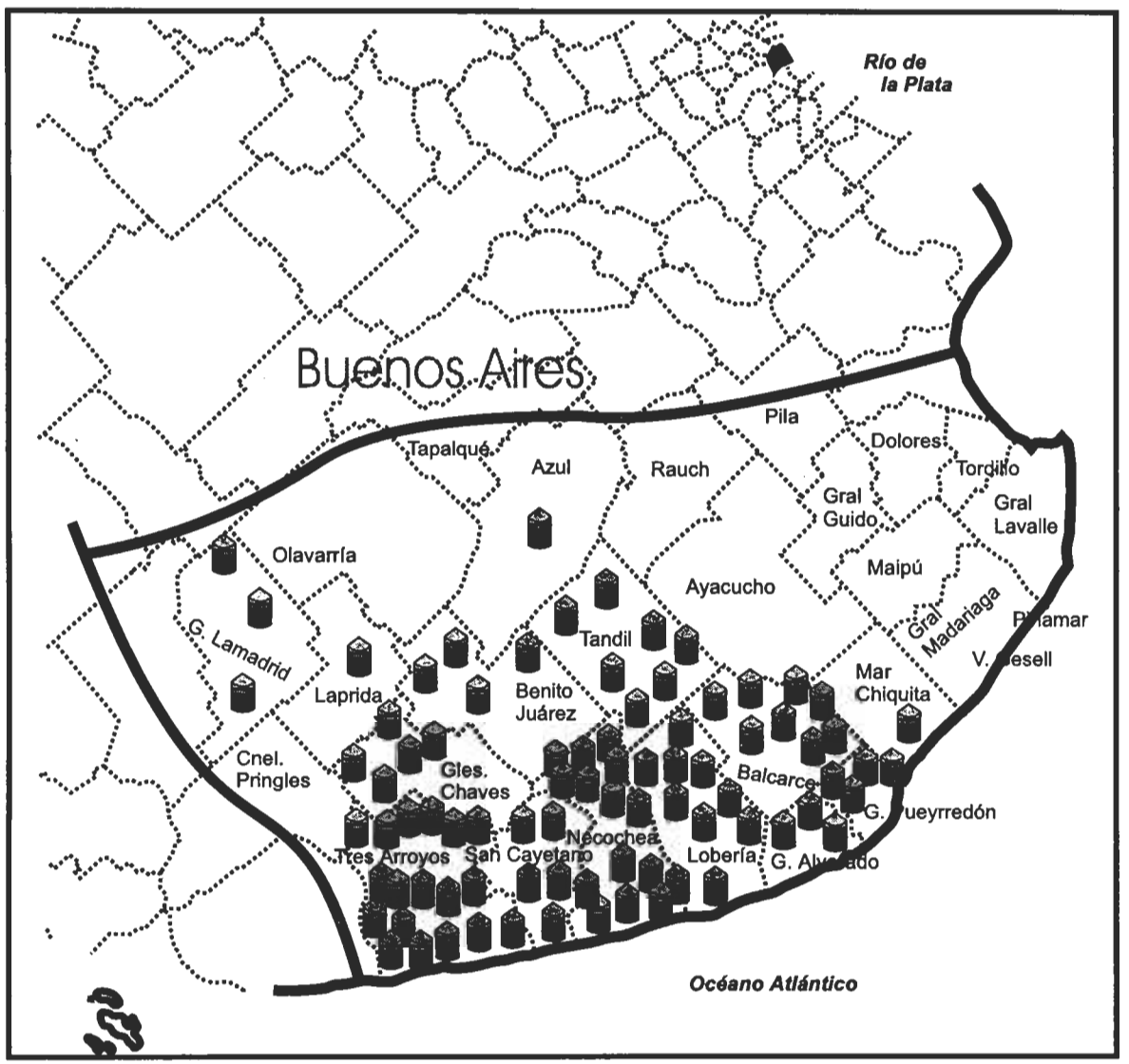
Most relevant leaf diseases were orange rust (Puccinia recondita) and septoriosis (Septoria tritici). Both of them were evident before heading, something that is strange in our region. As cool days with high relative humidity continued during the reproductive stage, a new disease appeared in several varieties: bacteriosis (attributed to Xanthomonas spp.). In spite of the described conditions there was no Fusariosis in the zone.

Rains at the end of December and the beginning of January caused washing of the grain with the consequent fall in test weight. As a conclusion we may say that, lack of rains in the grain filling stage and early appearance of diseases made the expected record crop drop. In brief, yields were from regular to very good, affected by sanity of varieties, vegetative cycle, date of sowing and previous cultivation (*Take all* incidence).

Average yield in our region was 3,500kg/ha, with a minimum of 1,200 kg/ha and a maximum of 7,800 kg/ha. The cost strip of San Cayetano, Tres Arroyos and Cnel. Dorrego produced 4,100 kg/ha while the rest of Cnel. Dorrego's area obtained 2,500 kg/ha. Districts of San Cayetano, Tres Arroyos y Gonzales Chaves (excluding the cost) reached 3,700 kg/ha.

Fertilization was similar in rate to the 2000/01 crop but was done earlier. Rains of September and October washed part of the nitrogen in the soil, the subsequent nutritional deficit generated inferior yields than expected and problems in grain quality: low protein and yellow berry.

Subregion IV Wheat



Each reference represents near 4,000 tns sampled

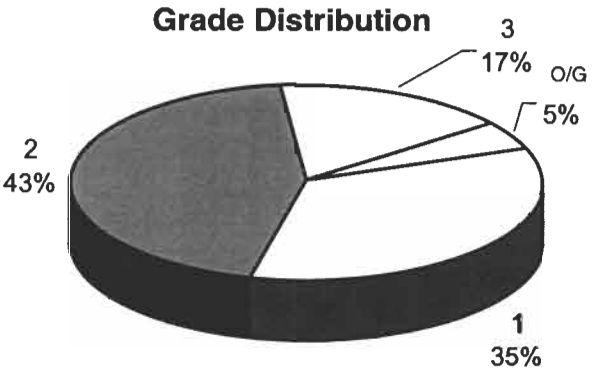
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	77.00	83.95	79.75	1.4	0.02
Total Damaged Kernels (%)	0.16	4.39	1.44	0.89	0.62
Foreign Material (%)	0.08	0.89	0.32	0.17	0.52
Shrunken and Broken Kernels (%)	0.23	1.62	0.69	0.22	0.32
Yellow Berry Kernels (%)	0.00	8.80	1.82	2.35	1.29
Protein (13,5% Moisture) (%)	9.5	12.1	10.5	0.5	0.04
Weight of 1000 Kernels (gr.)	28.81	39.90	35.13	1.98	0.06
Ash (% dry basis)	1.673	1.940	1.833	0.051	0.03

Total damaged kernels includes 0.01% heat damaged kernels, 0.01% frosty kernels 1.07% sprouted kernels, 0.18% clacinated kernels, 0.13% insect chewed kernels and 0.05% germen chewed kernels.

Ref:O/G: Out of Grade



Flour Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	19.5	31.6	23.0	2.1	0.09
	Dry Gluten (%)	7.2	11.7	8.5	0.8	0.09
	Falling Number (sec.)	287	423	370	30	0.08
	Flour Yield (%)	59.1	70.5	65.9	2.53	0.04
	Ash (dry basis) (%)	0.476	0.657	0.553	0.032	0.06
FARINOGRAM	Water Absorption (14 % H°) (%)	54.0	63.8	57.9	1.8	0.03
	Development Time (min.)	1.7	15.4	7.3	2.8	0.38
	Stability (min.)	1.5	26.9	14.6	4.8	0.33
	Degree of Softening (12 min.)	3	98	41	16	0.39
ALVEOGRAM	P (mm)	62	140	95	13	0.13
	L (mm)	59	141	87	15	0.17
	W Joules x 10^{-4}	214	356	284	34	0.12
	P / L	0.44	2.12	1.09	0.31	0.29

These results were elaborated with 84 composite sample prepared proportionally from 2181 primary samples (farmer deliveries).

Subregion Data:

In this subregion the wheat production was 4,515,000 tons., the 29.78 % of the national total. Were sampled 336,087 tons., the 7.44 % 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	Coronel Vidal	4,003	3	78.15	2.77	0.69	0.55	0.00	10.8	32.1	1.909
401	Necochea	4,022	3	77.00	2.79	0.34	0.76	0.40	10.4	36.7	1.887
402	Necochea	4,100	3	78.35	2.24	0.20	0.70	0.00	10.5	33.7	1.890
403	Balcarce	3,975	2	80.35	1.88	0.15	0.52	0.46	10.9	35.9	1.817
404	Balcarce	3,997	3	79.00	2.27	0.36	0.58	0.24	11.3	38.3	1.813
405	Balcarce	4,079	2	79.90	1.22	0.23	0.63	0.00	11.1	37.4	1.820
406	Tandil	4,000	1	79.90	0.63	0.12	0.57	0.25	10.8	32.2	1.827
407	Tandil	4,000	1	80.35	0.55	0.28	0.61	0.28	11.1	36.1	1.820
408	Necochea	4,000	2	80.35	1.53	0.23	0.55	0.65	10.7	39.6	1.771
409	Necochea	4,000	3	79.90	2.88	0.23	0.69	3.77	10.6	34.8	1.810
410	Lobería	4,301	2	79.25	1.57	0.23	0.50	0.00	10.6	33.3	1.860
411	Lobería	4,001	2	80.80	1.79	0.18	0.76	0.04	10.3	33.9	1.835
412	Lobería	4,592	3	78.35	2.27	0.41	0.92	0.23	10.3	37.3	1.861
413	Necochea	4,000	2	79.45	1.30	0.47	1.02	0.86	10.5	34.8	1.860
414	Necochea	4,003	2	78.35	0.85	0.34	0.94	0.37	10.5	35.9	1.873
415	Tandil	3,999	1	79.00	0.80	0.34	0.72	0.48	10.8	38.6	1.860
416	Tandil	4,000	2	78.60	1.38	0.45	0.54	0.00	10.8	33.6	1.840
417	Balcarce	4,008	2	79.45	1.45	0.20	0.50	0.52	11.6	34.2	1.853
418	Balcarce	4,000	1	79.90	0.88	0.46	0.44	0.00	11.0	35.1	1.804
419	Balcarce	4,060	2	79.00	1.25	0.36	0.87	0.00	10.7	39.9	1.800
420	Necochea	4,000	3	78.35	2.45	0.15	0.60	0.10	10.4	34.4	1.900
421	Necochea	4,008	3	77.90	2.60	0.34	0.28	0.06	11.2	38.9	1.870
422	Benito Juárez	4,000	1	80.35	0.92	0.25	0.63	0.63	10.1	35.1	1.847
423	Benito Juárez	4,000	1	80.35	0.87	0.15	0.48	0.56	10.5	34.8	1.886
424	Benito Juárez	4,000	2	79.25	1.49	0.12	0.68	1.04	10.0	38.2	1.820
425	Benito Juárez	4,000	1	79.90	0.86	0.38	0.72	0.35	10.5	35.8	1.890
426	Balcarce	3,974	2	77.90	1.88	0.48	0.59	0.24	11.4	33.6	1.937
427	Tandil	4,009	1	79.45	0.77	0.21	0.43	0.45	10.8	34.9	1.866
428	Tandil	4,019	1	79.45	0.88	0.37	0.58	1.96	10.5	36.1	1.879
429	Tandil	3,985	2	79.25	1.22	0.26	0.51	0.62	10.3	35.5	1.868
430	General Pueyrredón	4,000	2	79.90	1.34	0.69	0.44	0.18	11.6	32.5	1.906
431	General Pueyrredón	4,000	2	79.25	1.67	0.32	0.53	0.22	11.4	31.3	1.902
432	General Alvarado	4,000	2	79.45	0.86	0.89	0.61	0.00	11.5	38.1	1.850
433	General Alvarado	4,000	2	80.35	1.23	0.19	0.34	0.13	11.5	34.9	1.836
436	Necochea	4,000	3	79.90	2.86	0.31	0.59	0.16	10.6	36.2	1.887
437	Necochea	4,000	1	82.15	0.34	0.22	0.56	0.66	10.7	35.3	1.884
438	Necochea	4,000	3	80.15	2.60	0.39	0.73	0.17	10.4	34.9	1.854
439	Necochea	4,000	2	81.25	1.20	0.23	0.39	0.10	10.4	35.9	1.892

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) (%)
440	Necochea	4,000	1	82.15	0.20	0.08	0.23	0.22	10.5	34.0	1.867
441	Balcarce	4,050	2	79.00	1.43	0.20	0.41	0.06	10.9	34.6	1.815
442	Gral. Pueyrredón	4,004	1	79.00	0.94	0.42	0.55	0.60	11.1	37.5	1.850
443	Lobería	4,002	O/G(3)	79.00	3.38	0.23	0.51	0.00	10.3	32.1	1.865
444	Lobería	4,026	O/G(3)	77.00	4.39	0.36	0.65	0.15	10.5	32.2	1.873
445	Lobería	3,991	O/G(3)	79.45	3.38	0.41	0.84	0.00	11.1	34.2	1.878
446	Lobería	3,968	2	77.00	1.94	0.28	0.56	0.40	10.6	32.3	1.852
447	Lobería	4,070	O/G(3)	78.35	3.80	0.23	0.50	1.17	10.3	33.6	1.845
448	Lobería	4,043	2	79.00	1.41	0.34	1.02	0.23	10.2	38.9	1.870
449	Gral. Alvarado	4,020	2	80.80	1.71	0.56	0.93	0.77	11.1	34.0	1.889
451	Necochea	5,115	2	79.00	1.20	0.35	0.81	1.41	9.9	34.3	1.764
452	Necochea	4,036	2	78.35	1.25	0.22	0.75	1.13	10.7	35.9	1.810
453	Mar del Plata	4,008	3	77.00	2.36	0.72	0.52	0.13	10.9	36.0	1.820
454	Azul	3,212	2	78.60	0.44	0.38	0.46	0.14	12.1	28.8	1.940
500	General Lamadrid	4015	1	79.25	0.26	0.39	0.89	0.90	10.4	35.53	1.761
501	General Lamadrid	4017	1	79.25	0.16	0.39	1.13	3.60	10.4	32.32	1.764
502	General Lamadrid	4004	1	79.70	0.34	0.49	1.08	2.80	10.3	35.51	1.820
503	Gonzales Chaves	4003	2	80.35	1.25	0.26	0.83	5.60	10.7	34.82	1.792
504	Gonzales Chaves	4026	1	79.25	0.99	0.39	0.89	1.10	10.5	37.54	1.758
505	Gonzales Chaves	4011	2	81.50	1.38	0.28	1.12	2.20	9.9	35.32	1.840
506	Gonzales Chaves	4018	1	79.90	0.96	0.60	0.72	8.30	10.2	35.94	1.815
507	Gonzales Chaves	2904	1	80.60	0.94	0.42	0.72	3.40	10.1	35.93	1.851
514	Laprida	4003	1	80.80	0.67	0.29	0.62	1.80	10.5	34.96	1.769
515	San Cayetano	4002	2	80.35	1.55	0.17	0.91	2.40	10.3	33.03	1.808
516	San Cayetano	4009	2	79.25	1.22	0.17	0.60	4.00	10.2	34.20	1.797
517	San Cayetano	4009	1	80.60	0.96	0.26	0.79	8.10	10.1	32.04	1.828
518	San Cayetano	4015	1	83.05	0.32	0.28	0.88	6.40	9.9	31.56	1.876
519	San Cayetano	3236	1	79.90	0.71	0.19	1.18	2.00	10.1	33.33	1.803
524	Tres Arroyos	4009	1	82.85	0.23	0.29	1.03	5.10	9.5	34.77	1.804
525	Tres Arroyos	4014	1	79.90	0.85	0.26	0.92	2.10	10.1	35.72	1.776
526	Tres Arroyos	4000	2	79.25	0.67	0.83	1.62	3.20	10.4	33.90	1.820
527	Tres Arroyos	4000	3	80.80	2.53	0.83	0.79	3.00	10.2	35.33	1.808
528	Tres Arroyos	4004	2	79.45	1.59	0.47	0.70	8.60	10.1	35.10	1.830
529	Tres Arroyos	4000	1	80.35	0.38	0.41	0.61	6.40	10.0	35.48	1.825
530	Tres Arroyos	4011	1	83.50	0.24	0.29	0.53	5.80	9.9	35.43	1.890
531	Tres Arroyos	4017	1	81.50	0.26	0.13	0.64	1.50	10.0	33.51	1.807
532	Tres Arroyos	4010	2	79.90	1.69	0.21	0.71	2.80	10.2	36.45	1.703
533	Tres Arroyos	4001	3	79.70	2.53	0.12	0.59	4.90	10.6	36.99	1.673
534	Tres Arroyos	4018	2	79.00	1.97	0.39	0.60	1.70	10.7	35.09	1.704
535	Tres Arroyos	4005	3	79.00	2.34	0.28	0.75	1.80	10.8	34.74	1.824
536	Tres Arroyos	4023	1	83.95	0.34	0.21	0.95	1.70	10.2	34.03	1.852
537	Tres Arroyos	4000	1	83.05	0.32	0.16	0.75	2.70	10.2	36.10	1.827
538	Tres Arroyos	4001	2	79.90	1.17	0.1	0.77	4.60	10.3	36.38	1.809
539	Tres Arroyos	4007	2	81.25	1.91	0.19	0.76	8.80	10.2	36.40	1.763
540	Tres Arroyos	4013	2	79.45	1.59	0.1	0.64	6.30	10.0	36.14	1.694
541	Tres Arroyos	4002	2	79.70	1.6	0.2	0.69	7.20	10.1	36.02	1.785

Subregion IV Wheat

Appendix of Locality Composite Samples.

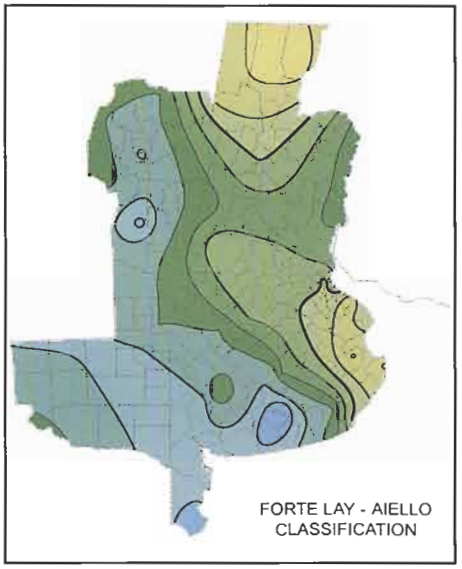
SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
400	Coronel Vidal	31.6	11.7	398	69.8	61.3	6.3	7.2	88	91	91	255	1.00	0.621
401	Necochea	23.2	8.6	312	67.4	54.7	6.3	13.6	39	97	66	227	1.47	0.520
402	Necochea	24.5	9.1	350	69.4	57.5	3.7	14.2	27	96	63	232	1.52	0.509
403	Balcarce	23.5	8.7	340	65.8	58.2	6.9	18.6	28	88	118	346	0.75	0.531
404	Balcarce	23.9	8.8	395	59.3	57.3	10.9	17.0	56	86	108	315	0.80	0.559
405	Balcarce	24.1	8.9	362	66.9	57.5	7.7	16.8	34	88	94	282	0.94	0.529
406	Tandil	23.8	8.8	384	70.0	57.8	10.9	18.2	41	99	83	287	1.19	0.580
407	Tandil	23.0	8.5	318	66.2	56.8	11.8	18.4	42	100	85	297	1.18	0.613
408	Necochea	23.5	8.7	327	70.5	57.3	7.5	14.1	45	87	85	242	1.02	0.553
409	Necochea	23.0	8.5	357	66.6	60.8	8.1	14.2	44	99	75	265	1.32	0.544
410	Lobería	24.0	8.9	368	66.2	59.8	5.9	15.2	32	110	60	244	1.83	0.528
411	Lobería	23.4	8.7	318	65.4	58.5	9.9	15.4	44	95	102	315	0.93	0.592
412	Lobería	22.6	8.4	370	68.1	56.3	10.7	18.1	38	85	101	284	0.84	0.520
413	Necochea	22.1	8.2	363	68.5	56.8	11.6	21.3	29	95	92	298	1.03	0.543
414	Necochea	20.6	7.6	359	67.2	54.7	12.0	22.1	28	80	102	286	0.78	0.543
415	Tandil	24.7	9.1	356	67.5	58.3	9.9	15.5	44	107	68	261	1.57	0.476
416	Tandil	21.7	8.0	365	69.3	55.1	15.4	26.9	23	83	113	329	0.73	0.545
417	Balcarce	27.1	10.0	330	67.3	60.5	9.5	15.2	48	112	92	335	1.22	0.521
418	Balcarce	24.2	9.0	363	65.8	57.0	10.2	18.1	38	82	108	289	0.76	0.545
419	Balcarce	24.7	9.1	355	67.6	57.3	6.5	13.4	42	102	73	263	1.40	0.530
420	Necochea	23.4	8.7	313	69.0	57.5	5.2	11.1	55	86	95	252	0.91	0.520
421	Necochea	24.0	8.9	331	66.5	56.0	7.8	14.6	48	76	101	263	0.75	0.561
422	Benito Juárez	21.3	7.9	374	66.8	56.9	6.5	18.0	27	105	67	261	1.57	0.554
423	Benito Juárez	20.7	7.7	414	62.2	56.5	14.4	22.1	31	95	61	219	1.56	0.564
424	Benito Juárez	20.7	7.7	409	67.6	54.1	12.0	20.3	35	75	87	222	0.86	0.537
425	Benito Juárez	23.5	8.7	380	67.1	57.7	10.0	16.2	40	99	71	252	1.39	0.520
426	Balcarce	25.5	9.5	377	65.2	57.2	7.2	19.2	25	76	136	320	0.56	0.574
427	Tandil	22.2	8.2	391	65.5	57.2	9.5	22.1	23	95	90	290	1.06	0.553
428	Tandil	22.0	8.1	372	65.5	56.9	12.7	25.7	20	95	88	298	1.08	0.564
429	Tandil	22.4	8.3	374	65.5	56.9	9.3	17.1	36	89	76	234	1.17	0.598
430	General Pueyrredón	26.9	10.0	378	65.5	57.3	7.3	16.0	38	94	100	295	0.94	0.564
431	General Pueyrredón	25.2	9.3	349	64.7	57.2	5.5	13.3	45	76	100	243	0.76	0.657
432	General Alvarado	26.8	9.9	359	66.7	58.0	7.1	17.2	34	92	97	287	0.95	0.585
433	General Alvarado	25.4	9.4	370	63.2	58.0	9.6	20.4	29	94	100	330	0.94	0.621
436	Necochea	23.4	8.7	343	66.7	57	7.7	13.6	43	86	84	235	1.024	0.551
437	Necochea	24.4	9.0	399	59.5	59.9	9.0	13.4	40	101	88	299	1.148	0.571
438	Necochea	23.3	8.6	337	66.5	57.1	10.2	16.6	40	93	82	256	1.134	0.540
439	Necochea	24.1	8.9	365	62.6	57.7	7.9	13.4	52	94	95	287	0.99	0.572
440	Necochea	25.8	9.6	365	69.3	60.6	10.4	14.9	38	130	65	310	2	0.558
441	Balcarce	23.5	8.7	340	64.2	54.0	4.5	14.6	32	84	69	214	1.217	0.490
442	Gral. Pueyrredón	24.4	9.0	327	67.6	54.9	8.1	15.7	40	74	97	239	0.763	0.490
443	Lobería	21.6	8.0	335	67.9	59.0	9.0	15.8	38	117	75	301	1.56	0.515

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec.)	Flour Yield (%)	% WA (14 % H°)	D. T. (min.)	Stability (min.)	Degree Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
444	Lobería	22.6	8.4	320	67.8	57.5	4.5	13.4	37	94	93	288	1.011	0.613
445	Lobería	25.8	9.5	300	70.0	61.2	4.7	11.0	55	98	89	301	1.101	0.529
446	Lobería	22.4	8.3	372	68.1	55.5	10.5	18.4	41	83	101	280	0.822	0.556
447	Lobería	21.1	7.8	287	69.0	57.7	4.9	10.6	55	92	84	258	1.10	0.536
448	Lobería	23.4	8.7	342	64.7	56.7	3.8	11.0	44	95	79	247	1.20	0.505
449	Gral. Alvarado	24.4	9.1	376	66.3	57.8	6.9	11.8	55	100	87	285	1.15	0.508
451	Necochea	20.9	7.7	351	65.0	54.6	6.4	16.2	31	81	85	229	0.95	0.519
452	Necochea	25.9	9.6	344	66.0	55.8	6.3	12.8	48	75	115	266	0.65	0.584
453	Mar del Plata	25.2	9.4	360	64.7	56.1	4.6	8.3	98	75	93	220	0.81	0.549
454	Azul	29.6	11.0	417	66.0	59.2	7.2	9.7	70	62	141	267	0.44	0.606
500	General Lamadrid	23.1	8.4	400	65.1	58.9	6.1	9.2	60	85	93	255	0.91	0.588
501	General Lamadrid	22.7	8.2	400	68.8	59.8	4.9	11.7	43	108	74	294	1.46	0.577
502	General Lamadrid	23.9	8.6	384	62.0	58.9	5.8	12.0	43	83	102	293	0.81	0.589
503	Gonzales Chaves	22.5	8.1	387	67.1	58.6	6.0	13.4	37	104	73	283	1.42	0.578
504	Gonzales Chaves	21.5	7.9	393	65.8	58.2	1.7	2.6	63	99	79	295	1.25	0.561
505	Gonzales Chaves	20.5	7.4	392	67.5	60.5	1.7	1.9	73	114	59	260	1.93	0.567
506	Gonzales Chaves	20.1	7.5	392	65.0	58.2	1.7	5.3	62	89	96	310	0.93	0.572
507	Gonzales Chaves	20.5	7.5	396	66.8	59.1	5.9	14.6	33	111	77	324	1.44	0.565
514	Laprida	23.3	8.4	412	63.3	60.1	6.1	10.5	49	99	81	276	1.22	0.551
515	San Cayetano	21.6	7.9	388	67.3	60.1	2.0	2.1	79	101	88	323	1.15	0.564
516	San Cayetano	19.5	7.2	393	63.8	57.0	1.7	2.0	78	94	77	285	1.22	0.563
517	San Cayetano	20.8	7.6	385	67.9	57.6	4.7	15.1	26	100	79	294	1.27	0.552
518	San Cayetano	21.2	7.7	423	59.3	58.6	6.6	16.6	28	104	85	312	1.22	0.591
519	San Cayetano	20.8	7.6	397	67.3	58.1	4.3	13.2	3	110	78	322	1.41	0.546
524	Tres Arroyos	20.4	7.5	418	61.6	57.3	8.4	19.4	25	100	79	300	1.27	0.577
525	Tres Arroyos	21.8	7.9	373	66.2	58.9	5.8	13.5	37	106	78	317	1.36	0.531
526	Tres Arroyos	20.5	7.5	396	63.7	59.1	7.1	18.0	24	96	90	325	1.07	0.540
527	Tres Arroyos	22.2	8.1	323	63.5	58.2	5.8	15.1	32	96	86	312	1.12	0.505
528	Tres Arroyos	21.5	7.9	367	63.7	57.5	7.5	16.8	31	91	95	326	0.96	0.557
529	Tres Arroyos	20.6	7.5	388	65.4	58.1	5.9	17.4	26	98	81	289	1.21	0.528
530	Tres Arroyos	21.3	7.7	413	59.1	60.2	7.2	16.9	28	119	80	356	1.49	0.582
531	Tres Arroyos	21.3	7.7	401	62.7	59.8	7.9	16.5	29	115	76	325	1.51	0.544
532	Tres Arroyos	21.8	7.8	400	63.6	57.7	9.4	16.9	24	93	78	270	1.19	0.535
533	Tres Arroyos	22.7	8.2	375	65.0	59.2	6.3	13.4	31	96	84	290	1.14	0.501
534	Tres Arroyos	23.4	8.4	375	64.2	57.7	7.0	15.8	26	83	109	317	0.76	0.536
535	Tres Arroyos	23.1	8.4	360	64.3	57.9	7.3	16.7	26	96	92	333	1.04	0.558
536	Tres Arroyos	23.3	8.3	418	68.0	63.8	5.3	11.1	40	140	66	347	2.12	0.584
537	Tres Arroyos	22.8	8.2	403	61.7	60.5	6.5	13.6	35	113	82	335	1.38	0.587
538	Tres Arroyos	21.4	7.8	391	69.6	59.1	7.9	15.9	30	110	78	325	1.41	0.533
539	Tres Arroyos	22.5	8.1	407	66.3	57.6	7.4	15.5	34	88	85	271	1.04	0.564
540	Tres Arroyos	20.4	7.5	386	68.7	58.5	1.7	1.5	83	95	72	258	1.32	0.523
541	Tres Arroyos	20.6	7.6	377	66.8	55.7	8.0	15.9	31	88	93	302	0.95	0.564

SOIL HUMIDITY CLASSIFI

MAY 2001



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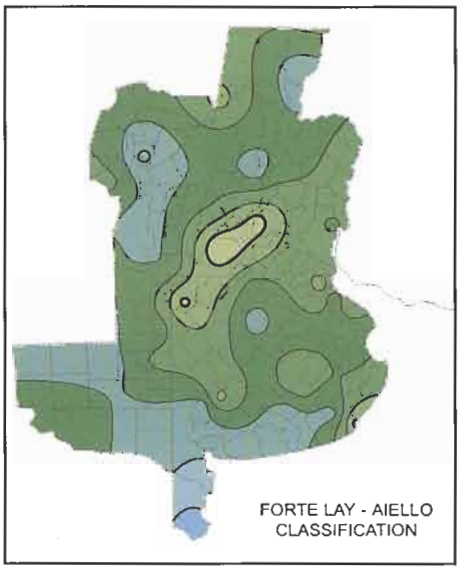

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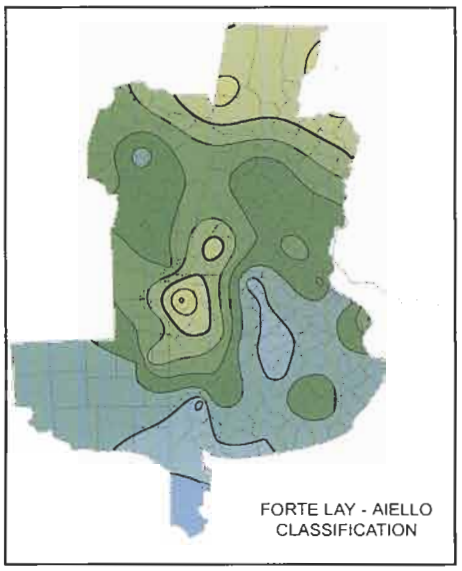

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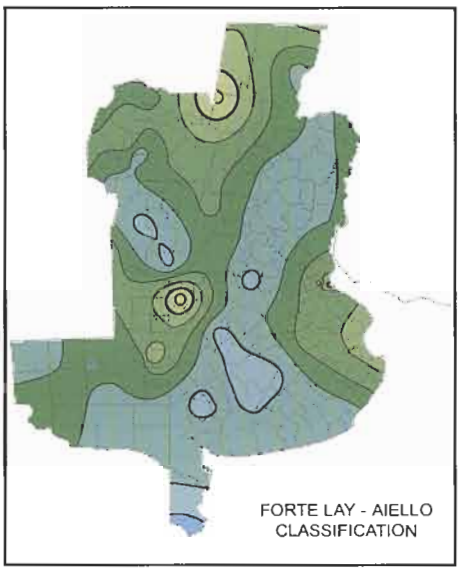

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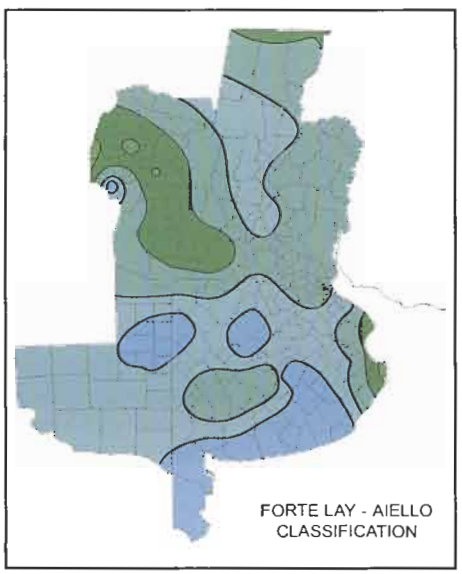

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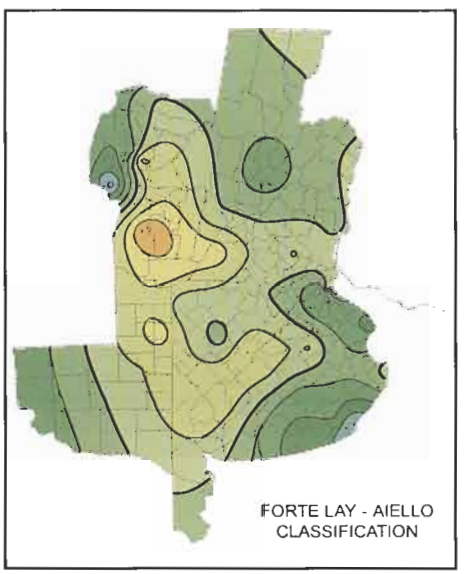
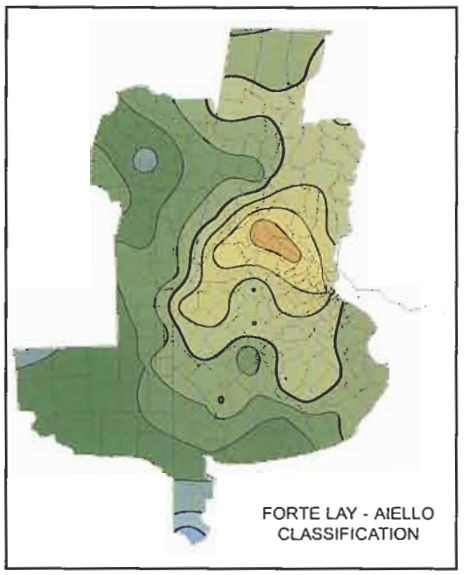


ON 2001/2002 WHEAT CROP

JULY 2001



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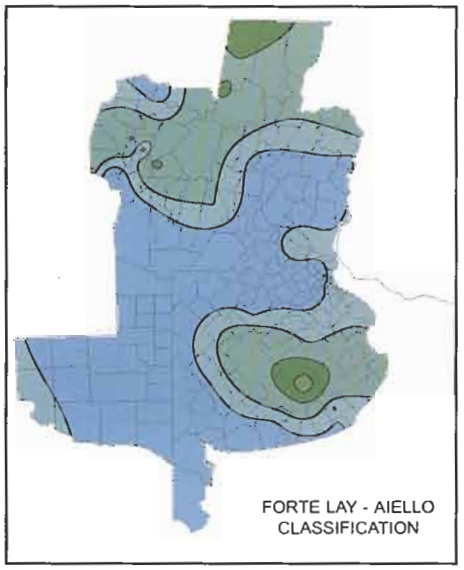
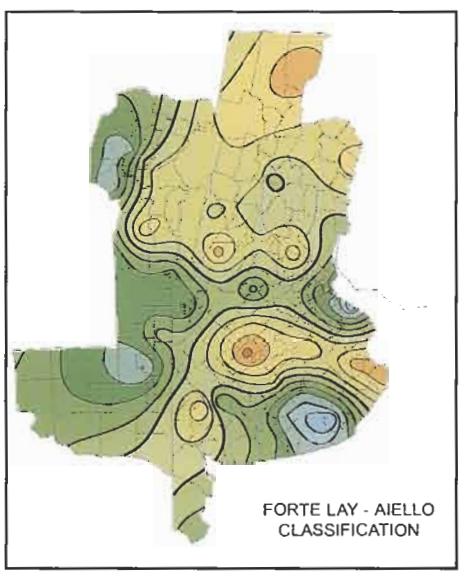


Extremely wetter than usual.
Much wetter than usual.
Wetter than usual.
Approximately normal for the season.
Drier than usual.
Much drier than usual.
Extremely drier than usual.

JANUARY 2002



Climatology 2001/2002

Climate and Wheat crop 2001 – 2002 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 south-east of the wheat region.

May 2001

We began the analysis in this month, just when the sowing in the wheat sub regions from the north begins; we observe that in west central Cordoba, one of the areas which is normally dry for this culture, presented edaphic humidity above the habitual level, creating an advantage for the concretion and evolution of the first sowings of the long cycle cultivars. However, to the north of Buenos Aires and Entre Ríos, normal conditions or little over them determined some excesses which delayed the laboring of the soil for the first sowing. In the south and south-west of Buenos Aires and La Pampa, humidity conditions went far over the normal degree with excesses during the month but the sowings, which are later there, were not affected.

June 2001

Rains had only some importance in the eastern side of the region, resulting in new excesses. However, to the end of the month, the weather conditions improved, allowing for the laboring of the soil and the sowing. The average map of the month went on showing edaphic humidity conditions above the habitual values, specially in the western and south-western regions, which turned out to be a favorable condition for the culture.

July 2001

This month there was a rain distribution similar to the previous period and approximately in accordance with the climatic patterns of winter, with the higher numbers to the eastern side of Buenos Aires. However, there were still some excesses which came to the center of the province causing some delay in the late sowing. The map of the average situation of the month shows some negative anomalies, particularly in the north of Buenos Aires, south-east of Santa Fe and south-west of Entre Ríos, determining, in the worst of cases, light deficiencies in the superficial humidity for the wheat lots. Good conditions were seen for the rest of the wheat region specially in the south end of Buenos Aires, where the strongly positive anomalies resulted in a favorable situation for the sowing.

Subreg.	Water Absorption		Subreg.	D.T. (min.)		Subreg.	Stability (min.)		Subreg.	Degree Soft.	
IV	57.9	a	V South	5.5	a	I	6.9	a	IV	41	a
II South	58.6	ab	I	5.6	a	II North	7.6	ab	V South	55	b
III	59.7	bc	II South	6.3	ab	III	7.9	ab	V North	58	b
V North	60.2	c	II North	6.3	ab	II South	8.3	ab	II South	78	c
V South	60.2	cd	III	6.6	ab	V North	9.9	b	II North	78	c
I	60.8	cd	V North	6.8	ab	V South	9.9	b	I	94	d
II North	61.5	d	IV	7.3	b	IV	14.6	c	III	96	d

Subreg.	P		Subreg.	L		Subreg.	W		Subreg.	P/L	
III	68	a	V South	79	a	II South	224	a	III	0.62	a
I	70	a	IV	87	a	I	227	a	I	0.63	a
II South	73	ab	V North	90	ab	III	230	ab	II South	0.72	a
II North	79	b	II South	101	bc	II North	257	bc	II North	0.75	a
V North	91	c	II North	106	c	V North	262	c	V North	1.01	b
IV	95	cd	III	108	c	V South	282	c	IV	1.09	b
V South	104	d	I	110	c	IV	284	c	V South	1.31	b

Subreg.	Flour Ash	
IV	0.553	a
III	0.581	ab
II North	0.582	ab
II South	0.584	ab
V North	0.588	abc
V South	0.616	bc
I	0.621	c

Statistical Analysis Wheat

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 rang corresponding to each one of the remaining variables (central column), the percentages are also shown from eac range to national level.

PROT. RANGE	Average Gluten W Estab	% Country
< 10,0	20.7 269 10.1	13.47
10,0 - 10,9	**23.0** **284** **12.2**	**37.13**
11,0 - 11,9	26.9 266 11.5	13.47
12,0 - 12,9	29.7 248 8.0	32.04
13,0 - 14,0	31.5 235 7.1	3.89

WET GLUTEN RANGE	Average Prot W Stabil.	% Country
< 21,0	9.7 267 10.3	11.08
21,0 - 24,9	**10.3** **284** **12.3**	**38.32**
25,0 - 27,9	11.5 275 11.4	13.77
28,0 - 31,9	12.4 244 7.8	34.43
32,0 - 35,0	12.9 251 6.8	2.40

Alveograph W RANGE	Average Gluten Prot Stabil.	% Country
< 190	28.0 11.9 5.6	2.99
190 - 249	27.6 11.8 8.6	26.65
250 - 299	**25.3** **11.1** **10.4**	**50.00**
300 - 349	23.8 10.7 12.9	18.86
350 - 400	25.9 11.1 14.7	1.50

Farinograph STABIL. RANGE	Average Gluten Prot W	% Country
1,0 - 4,9	20.6 10.0 260	4.49
5,0 - 9,9	**28.1** **11.9** **246**	**50.89**
10,0 - 14,9	23.7 10.5 287	29.04
15,0 - 19,9	23.2 10.7 297	13.17
20,0 - 30,0	21.9 10.6 284	2.39

Composite Sample of each Subregion

Along with the analisis of samples corresponding to different localities, a further evaluation as 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.

Subregion Composite Samples Wheat

Results of the Analyses

	Quality Parameters	Subregions I	II N	II S	III	IV	V N	V S	Weighted* Average
WHEAT	Test Weight (kg/hl)	74.50	77.00	78.35	74.70	79.51	76.10	81.05	79.00
	Weight of 1000 Kernels (gr.)	28.95	28.10	29.15	24.60	34.12	28.6	32.98	37.57
	Ash (dry basis) (%)	1.850	2.040	1.946	1.680	1.788	2.133	1.808	1.848
	Protein (13,5% Moisture) (%)	12.8	12.4	12.1	12.7	10.5	12.2	10.2	11.1
MILLING	Flour Yield (%)	65.8	62.3	63.4	66.3	67.0	64.3	66.3	65.7
	Ash (dry basis) (%)	0.632	0.633	0.590	0.590	0.517	0.647	0.578	0.574
FLOUR	Moisture (%)	14.50	14.70	15.30	14.00	14.90	15.00	13.50	14.3
	Wet Gluten (%)	30.5	29.5	28.8	29.0	22.8	28.3	22.0	24.7
	Dry Gluten (%)	11.1	10.7	10.2	10.4	8.2	9.8	8.1	8.9
	Gluten Index (%)	83	96	93	86	100	94	99	97.00
	Falling Number (sec.)	364	394	360	412	392	387	387	384
	Zeleny Test (cc)	34	36	34	32	41	38	38	38
	FARINOGRAM								
	Water Absorption (%)	61.2	60.8	60.0	59.7	59.3	60.1	59.0	59.6
	Development Time (min.)	4.8	5.5	5.0	6.3	7.4	6.6	5.6	6.1
	Stability (min.)	6.4	8.7	8.0	8.5	12.4	9.5	11.6	10.7
	Degree of Softening	108 U.F.	71 U.F.	77 U.F.	115 U.F.	40 U.F.	57 U.F.	55 U.F.	61 U.F.
	MIXOGRAM								
	Development Time (min.)	3:30 (B)	3:20 (B)	3:15 (B)	3:40 (A)	4:40 (A)	3:15 (B)	4:40 (A)	4:13 (A)
	Scale	6	5	5	6	7	5	7	6
	ALVEOGRAM								
	P (min)	67	73	68	72	106	78	103	93
	G	25	23	24	22	19	24	20	21
	L (mm)	125	109	112	99	76	107	77	88
	W (Joules x 10-4)	240	241	231	231	284	257	285	269
	P/L	0.54	0.67	0.61	0.72	1.40	0.72	1.33	1.06
	BAKING								
	Absorption (%)	61.0	61.0	61.0	61.0	62.0	62.0	62.0	61.7
	Time of Kneading (min)	2' 30	2' 30	2' 30	3' 00	3' 30	3' 00	3' 30	3' 12
	Fermentation time (min.)	160'	160'	160'	160'	160'	160'	160'	160'
	Loaf Volume (cc)	765	705	770	710	720	700	655	700
	Inner Appearance**	B-MB 7,0	B 6,0	B-MB 6,5	B 6,0	B 6,0	B 6,0	B 6,5	B 6,3
	Specific Volume	5.8	5.5	6.0	5.5	5.4	5.3	4.9	5.3

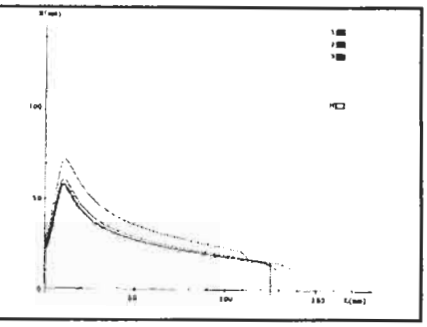
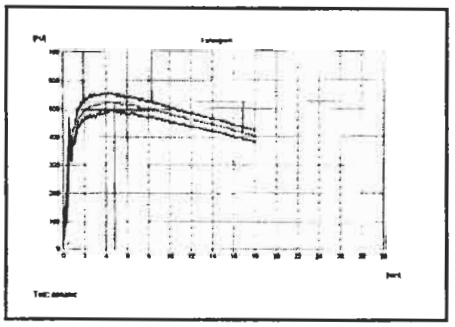
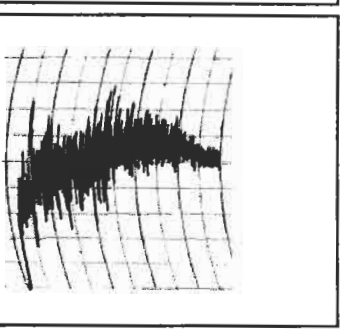
*Weighting basis: Tonnage of the production sampled by Subregion, according to chart data, on page 6.

** R: Regular, B: Good, MB: Very Good

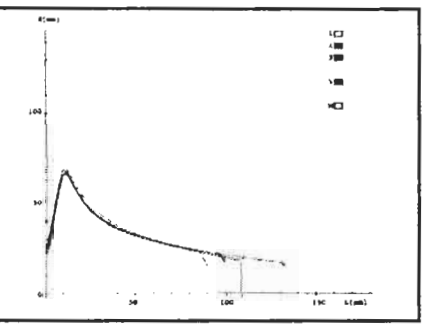
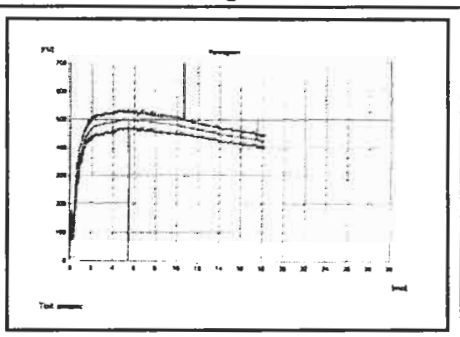
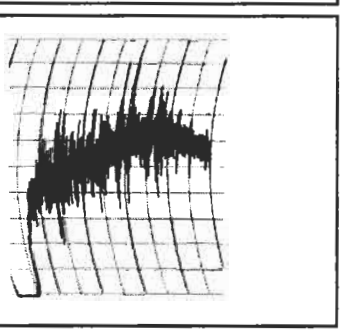
Results of the Analyses

Subregion Composite Samples Wheat

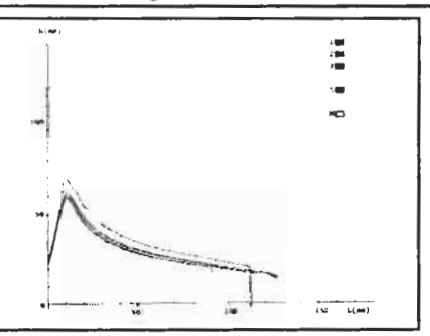
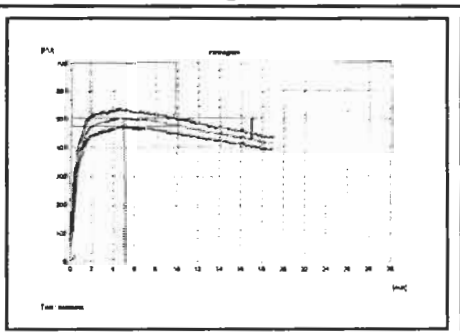
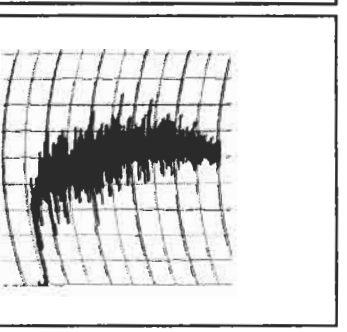
Subregion I

Alveogram	Farinogram	Mixogram
		

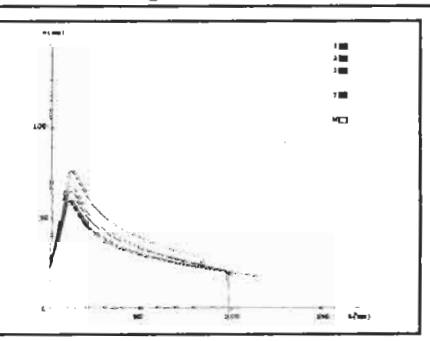
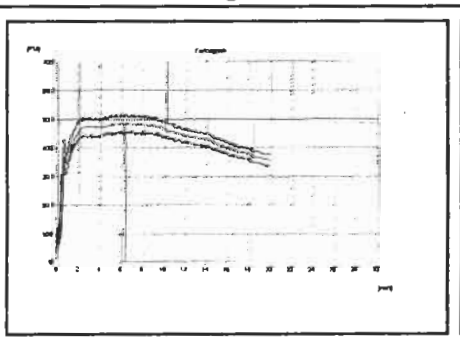
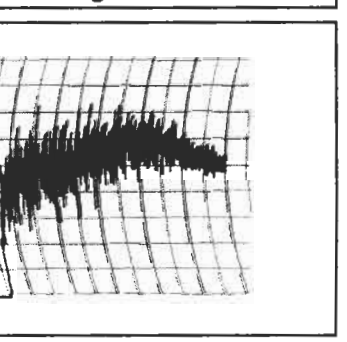
Subregion II North

Alveogram	Farinogram	Mixogram
		

Subregion II South

Alveogram	Farinogram	Mixogram
		

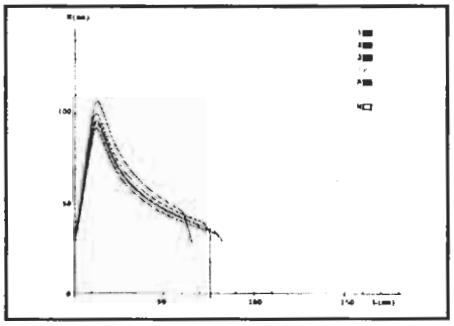
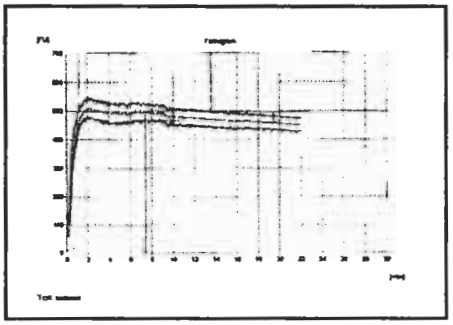
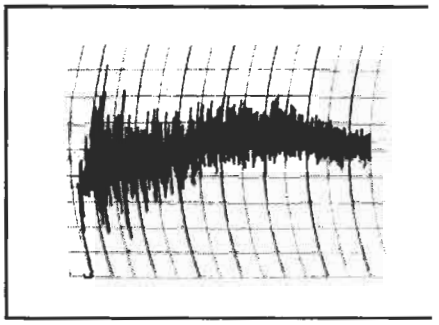
Subregion III

Alveogram	Farinogram	Mixogram
		

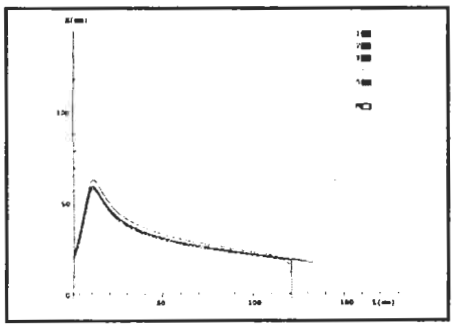
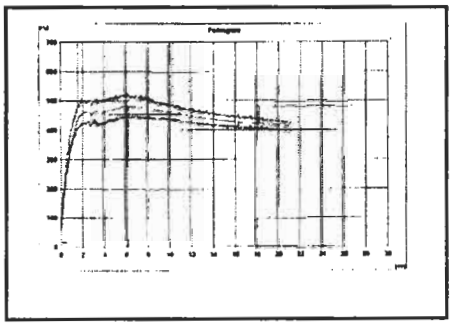
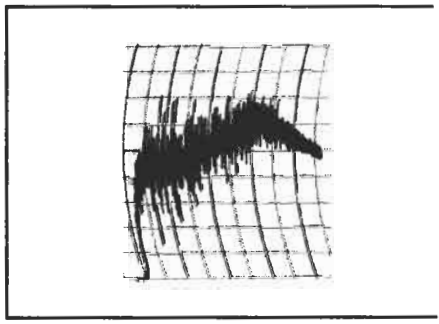
Subregion Composite Samples Wheat

Results of the Analyses

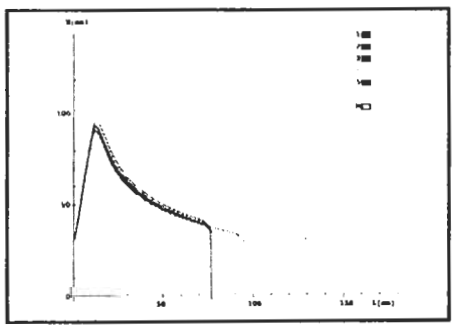
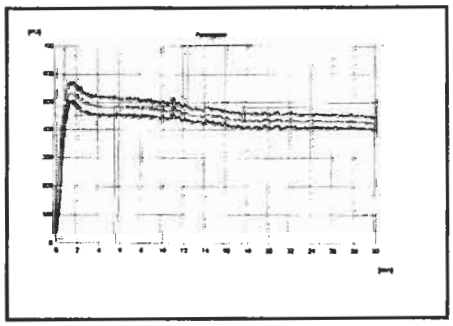
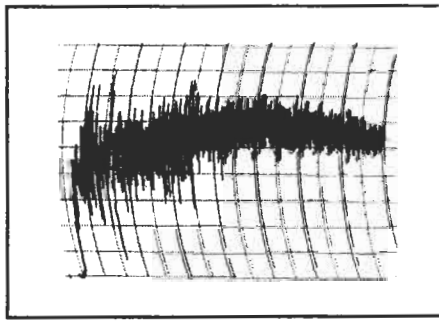
Subregion IV

Alveogram	Farinogram	Mixogram
		

Subregion V North

Alveogram	Farinogram	Mixogram
		

Subregion V South

Alveogram	Farinogram	Mixogram
		

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.

01/02 Crop

Sown Area (ha)	47,650
Harvested Area (ha)	47,250
Average Yield (qq/ha)	28.8
Production (tn)	136,160

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 28 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, Nº 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 Nº1075/94 - Standard XXI. Ex Secretariat of Agriculture, Livestock and Fishery)

GRADE	Test Weight Min. (Kg/hl)	PERCENT MAXIMUM LIMITS OF					Insect Bored Kernels Max. (%)	Sweet Clover Seeds Melilotus spp Seeds/ 100 g. Max.	MOISTURE Max. (%)	Wheat (Triticum aestivum) Max. (%)	Vitreous Kernels Min (%)
		Foreign Material (%)	Damaged Kernels		Shrunken and Broken Kernels (1) (%)	Smutty Kernels (%)					
			Heat Damaged Kernels (%)	Total (%)							
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%

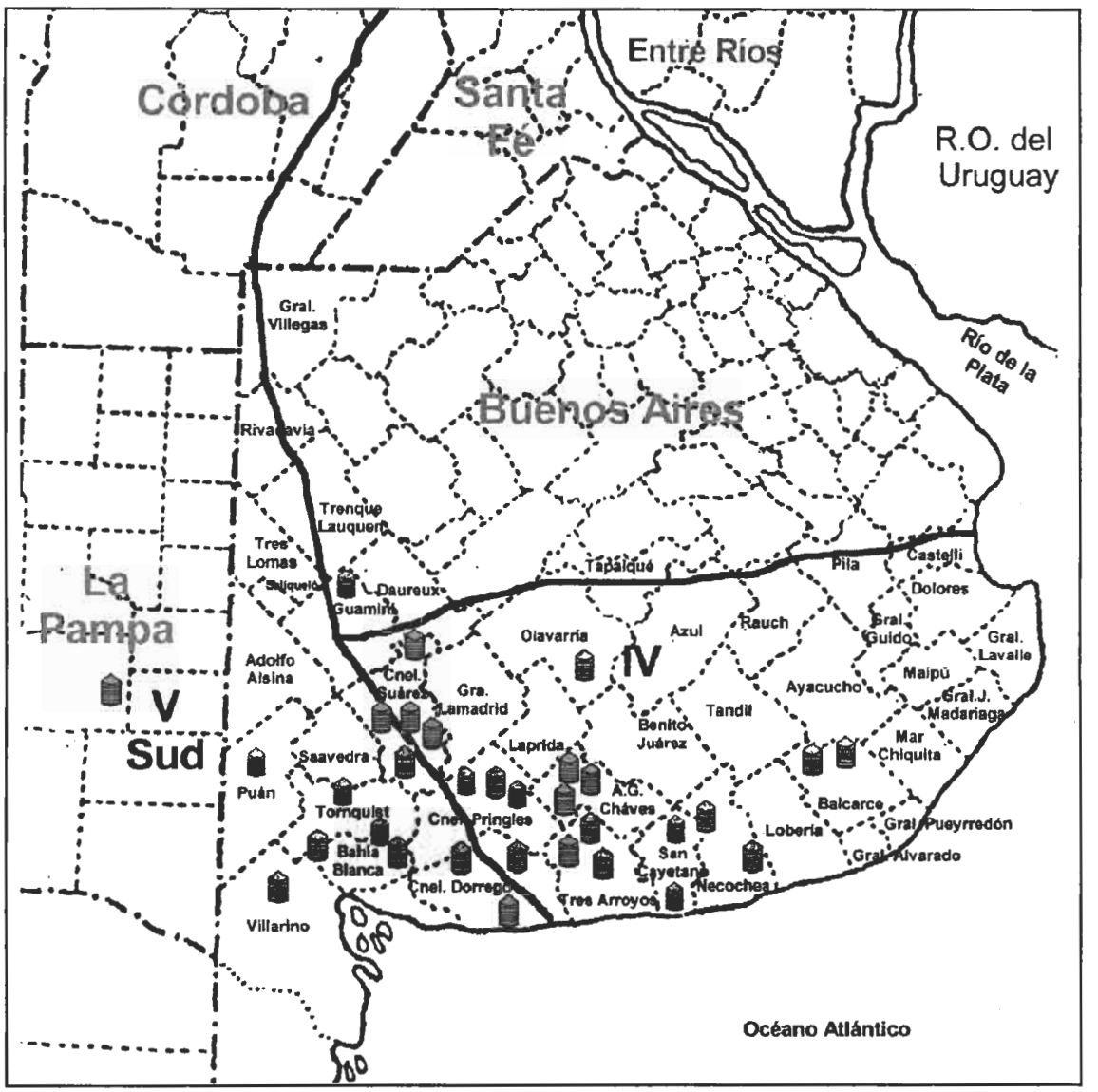
PROTEIN

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
Gral. Villegas
Rivadavia
Trenque Lauquen
Tres Lomas
Salliqueló
Guaminí
Daireaux
Tapalqué
Pila
Castelli
Dolores
Olavarría
Azul
Rauch
Gral. Guido
Gral. Lavalle
Maipú
Ayacucho
Gral. J. Madariaga
Mar Chiquita
Tandil
Benito Juárez
Adolfo Alsina
Cnel. Suárez
Gra. Lamadrid
Laprida
Saavedra
Puán
Tornquist
Cnel. Pringles
A.G. Chaves
Balcarce
Gral. Pueyrredón
Loberia
Gral. Alvarado
Bahía Blanca
San Cayetano
Necochea
Cnel. Dorrego
Tres Arroyos
Villarino
Océano Atlántico

Results of the Analyses

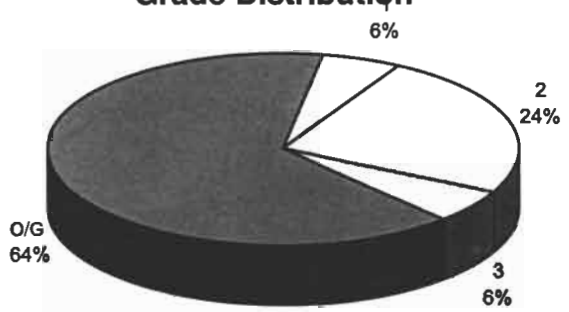
Composite Samples by Locality. Averages were weighted by Tonnage.

Subregion IV Durum Wheat

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	73.7	80.2	77.4	1.4	0.02
Total Damaged Kernels (%)	0.10	1.77	0.90	0.46	0.51
Foreign Material (%)	0.18	2.42	0.58	0.51	0.88
Shrunken and Broken Kernels (%)	0.57	2.20	1.20	0.40	0.33
Yellow Berry Kernels (%)	24	72	38	14	0.35
Protein (13,5% Moisture) (%)	0.14	2.90	1.21	0.79	0.65
Weight of 1000 Kernels (gr.)	9.4	11.2	10.3	0.5	0.05
Ash (% dry basis)	35.85	44.20	40.28	2.78	0.07
	1.799	2.026	1.920	0.061	0.03

Grade Distribution

Ref:O/G: Out of Grade



Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec.)	394	540	459	40	0.09
	Color (b)	23.8	28.8	26.7	1.6	0.06
	Wet Gluten (%)	22.4	27.7	24.8	1.7	0.07
	Gluten Index (%)	40	91	65	13	0.20
FARINOGRAM	Energy Level	27.3	48.6	41.1	4.8	0.12
	Degree Softening (%)	13	33	26	6	0.22

These results were elaborated with 17 composite samples.

Subregion V South Durum Wheat

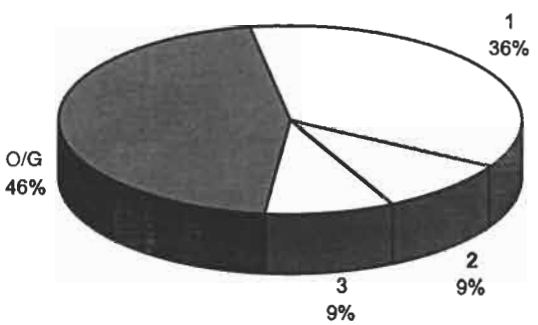
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.10	83.50	79.62	2.21	0.03
Total Damaged Kernels (%)	0.10	1.00	0.45	0.28	0.63
Foreign Material (%)	0.24	1.22	0.65	0.31	0.48
Shrunken and Broken Kernels (%)	0.84	3.40	1.62	0.89	0.55
Vitreous Kernels (%)	16	70	43	19	0.43
Wheat (Triticum aestivum) (%)	0.22	2.34	1.22	0.60	0.49
Proteins (13,5% Moisture) (%)	8.7	10.9	9.6	0.8	0.08
Weight of 1000 Kernels (gr.)	31.34	50.03	42.31	5.28	0.12
Ash (% dry basis)	1.599	1.996	1.885	0.109	0.06

Grade Distribution

Ref:O/G: Out of Grade



Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec.)	365	499	438	41	0.09
	Color (b)	21	33.1	26.6	3.0	0.11
	Wet Gluten (%)	19.5	26.7	23.0	2.4	0.10
	Gluten Index (%)	31	89	65	16	0.25
FARINOGRAM	Energy Level	32.5	43.4	38.3	3.3	0.09
	Degree Softening (%)	19	35	27	5	0.18

These results were elaborated with 11 composite sample.

Appendix of Locality Composite Samples.

Durum Wheat

SAMPLE IDENTIFICATION			WHEAT ANALYSIS									
Sample Number	Sub-region	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) (%)
6862	IV	Tres Arroyos	O/G 2	76.80	1.10	0.69	1.34	24	1.26	9.8	41.6	1.834
6863	IV	Gonzales Cháves y De La Garma	2	76.80	0.96	0.48	1.10	44	1.24	10.5	38.14	1.933
6865	IV	Coronel Suárez	O/G3	73.65	1.09	0.61	1.27	37	0.14	10.5	36.98	2.026
6866	IV	Balcarce	2	78.15	1.77	0.43	1.12	72	0.39	11.1	38.99	1.965
6867	IV	San Cayetano	O/G2	76.55	1.40	0.82	1.54	29	0.86	10.1	39.57	1.940
6868	IV	Zona de la Costa (San Fco. De Belloq, Lincalel, Claromecó)	O/G 2	79.00	1.33	0.47	0.57	36	1.19	9.9	43.39	1.862
6869	IV	Necochea	2	76.10	1.40	0.32	1.24	45	2.52	11.2	36.68	1.954
6870	IV	Coronel Pringles	O/G 2	77.70	0.48	0.33	1.07	29	1.03	9.7	40.86	1.895
6871	IV	Gonzales Cháves	O/G 2	77.45	0.86	0.42	2.20	30	0.98	10.3	35.85	1.878
6872	IV	Tres Arroyos	O/G 2	77.70	0.92	0.29	0.69	26	0.66	10.2	38.05	1.881
6874	IV	Balcarce	2	77.45	0.95	0.76	1.01	57	2.09	10.8	37.91	1.962
6875	IV	Coronel Suárez	O/G 2	78.15	0.46	0.38	1.60	27	0.51	9.9	42.72	1.885
6877	IV	Olavarria	O/G 1	78.60	0.67	0.19	0.82	28	0.80	10.1	39.64	1.799
6881	IV	Coronel Pringles	O/G 2	76.10	0.49	0.35	1.11	36	2.36	9.9	43.14	2.019
6882	IV	Coronel Suárez	O/G 2	77.00	1.13	0.18	0.83	26	1.04	11.1	43.79	1.939
6948	IV	Coronoel Suárez - Pringles	3	78.35	0.10	2.42	1.68	48	2.90	9.4	43.27	1.902
6944	IV	Tres Arroyos - Necochea	1	80.15	0.16	0.72	1.14	55	0.64	10.4	44.2	1.971
6864	VS	Coronel Dorrego	1	81.50	0.58	0.38	1.31	46	1.40	9.4	40.87	1.851
6873	VS	La Pampa	3	76.10	0.25	0.66	3.40	70	0.93	10.7	31.34	1.910
6876	VS	Coronel Dorrego	2	76.80	0.46	0.56	0.86	52	0.56	10.4	39.06	1.963
6878	VS	Bahía Blanca	O/G2	78.60	0.16	1.20	1.15	25	1.26	9.3	42.42	1.917
6879	VS	Bahía Blanca	O/G1	81.05	0.21	0.72	1.06	20	1.01	9.1	44.5	1.909
6880	VS	Bahía Blanca	1	80.35	0.70	0.62	1.40	65	1.15	9.8	38.81	1.941
6943	VS	Coronel Dorrego	O/G3	78.15	1.00	1.22	3.32	39	1.90	9.0	38.68	1.996
6945	VS	Tres Picos	1	83.50	0.24	0.24	1.38	49	0.22	8.8	46.57	1.933
6946	VS	Villa Iris	O/G2	80.80	0.10	0.38	1.58	31	1.70	9.5	45.57	1.599
6947	VS	Ascasubi	1	78.35	0.66	0.66	0.84	63	1.00	10.9	47.53	1.797
6949	VS	Guaminí	O/G1	80.6	0.64	0.52	1.50	16	2.34	8.7	50.03	1.917

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			SEMOLIN ANALYSIS					
Sample Number	Suregion	Locality, district or department	Falling Number (sec.)	Color (b)	Wet Gluten (%)	Gluten Index (%)	Farinogram Energy Level	Farinogram Degree of Softening (12 min.)
6862	IV	Tres Arroyos	461	26.2	24.2	55	41.4	30
6863	IV	Gonzales Cháves y De La Garma	447	24.9	25.0	77	44.1	22
6865	IV	Coronel Suárez	534	28.5	27.7	65	37.8	25
6866	IV	Balcarce	438	28.8	27.2	44	46.1	33
6867	IV	San Cayetano	450	23.8	23.9	71	40.5	13
6868	IV	Zona de la Costa (San Fco. De Belloq, Lincalel, Claromecó)	444	25.6	22.8	91	41.5	21
6869	IV	Necochea	412	27.8	27.6	78	45.5	32
6870	IV	Coronel Pringles	512	26.8	23.1	65	38.9	24
6871	IV	Gonzales Cháves	428	28.5	24.2	76	40.1	23
6872	IV	Tres Arroyos	468	27.7	24.5	53	37.7	25
6874	IV	Balcarce	394	27.9	26.2	40	42.7	33
6875	IV	Coronel Suárez	445	28.0	23.0	64	39.6	29
6877	IV	Olavarria	474	27.7	25.4	65	42.4	29
6881	IV	Coronel Pringles	540	25.5	23.4	75	39.3	19
6882	IV	Coronel Suárez	489	27.3	25.3	58	27.3	21
6948	IV	Coronoel Suárez - Pringles	421	25.0	22.4	67	46.0	31
6944	IV	Tres Arroyos - Necochea	454	24.2	25.3	66	48.6	30
6864	VS	Coronel Dorrego	466	28.2	24.4	68	39.1	19
6873	VS	La Pampa	485	33.1	24.5	66	37.0	31
6876	VS	Coronel Dorrego	394	24.8	26.6	58	42.3	26
6878	VS	Bahía Blanca	433	26.7	21.7	73	35.5	27
6879	VS	Bahía Blanca	467	25.3	19.9	84	34.6	27
6880	VS	Bahía Blanca	499	28.7	22.9	70	38.2	25
6943	VS	Coronel Dorrego	397	26.4	22.4	62	41.8	27
6945	VS	Tres Picos	446	24.4	22.2	31	38.6	22
6946	VS	Villa Iris	447	27.8	22.0	89	38.5	35
6947	VS	Ascasubi	421	26.6	26.7	46	43.4	35
6949	VS	Guamini	365	21	19.5	70	32.5	27

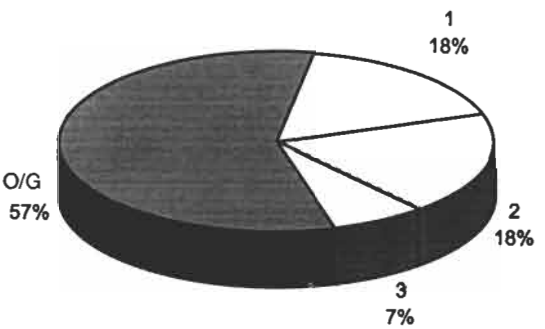
Durum Wheat Averages

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	73.7	83.5	78.3	2.1	0.03
Total Damaged Kernels (%)	0.10	1.77	0.72	0.45	0.62
Foreign Material (%)	0.18	2.42	0.61	0.44	0.72
Shrunken and Broken Kernels (%)	0.57	3.40	1.36	0.66	0.48
Vitreous Kernels (%)	16	72	40	16	0.39
Wheat (Triticum aestivum) (%)	0.14	2.90	1.22	0.71	0.58
Proteins (13,5% Moisture) (%)	8.7	11.2	10.0	0.7	0.07
Weight of 1000 Kernels (gr.)	31.34	50.03	41.08	3.99	0.10
Ash (% dry basis)	1.599	2.026	1.906	0.083	0.04

Grade Distribution

Ref:O/G: Out of Grade



Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec.)	365	540	451	41.3	0.09
	Color (b)	21	33.1	26.7	2.2	0.08
	Wet Gluten (%)	19.5	27.7	24.1	2.1	0.09
	Gluten Index (%)	31	91	65	14	0.21
FARINOGRAM	Energy Level	27.3	48.6	40.0	4.4	0.11
	Degree Softening (%)	13	35	26	5	0.20

Country elevators, Cooperatives and Mills that contributed in the sampling

LOCALITY	DENOMINATION
BUENOS AIRES PROVINCE	
América	Prunder S. A.
Balcarce	Scorziello y Galella S.A.
Balcarce	Acopio Balcarce S.A.
Bajo Hondo	Acopio ACA
Benito Juárez	Campoamor S.A.
Bolívar	Coop. Agrop. de Bolivar Ltda.
Cabildo	Cooperativa Agrícola Ganadera e Industrial Sombra de Toro Ltda.
Carabelas	Coop. Agrop. Ltda. de Carabelas
Carhué	Cooperativa Agrícola Ganadera Ltda. de Adolfo Alsina
Carmen de Patagones	Novick y Cía.
Carmen de Patagones	Cooperativa Agrícola Ganadera e Industrial de Patagones y Viedma
Coronel Dorrego	Raúl H. Perez
Coronel Dorrego	Casa Balda S. A.
Coronel Pringles	Pucará S. A.
Coronel Suárez	Agro Coronel Suárez
Coronel Suárez	Cooperativa Agropecuaria Gral. San Martín Ltda.
Chacabuco	Trigalia
Daireaux	Camafer S.A.
Darregueira	La Emancipación Sociedad Cooperativa Mixta de Consumo Ltda.
Gral. Lamadrid	Productores Gral. Lamadrid
General Pinto	Rucamalen S.A.
General Viamonte	Coop. Rural Gral. Viamonte
General Villegas	Sigra Villegas S.A.
Guaminí	Cooperativa Agrícola Ganadera Guaminí Ltda.
Junín	Junarsa S.A.C.I.F.A.
Junín	Liga Agrícola Ganadera Coop. Ltda.
Irineo Portela	Luis A. Ducret S.A.
Laprida	Vagnini y Mañana S.R.L.
Lartigau	Cooperativa Agrícola Ganadera de Lartigau
Licenciado Matienzo	Cantabria S.A.
Lobería	Pedro Ramón Cabeza S.A.
Lobería	Forner Hnos. S.A.
Lobería	Barón y Cía. S.A.
Mar Chiquita	Camposur S.R.L.
Mar del Plata	Villar
Mar del Plata	Quaglia
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Necochea	Fernández Candia, Caraffo, Premrou S.A.
Necochea	Alea y Cía. S.A.
Necochea	Pro-Agro
Necochea	Evasio Marmetto S.A.
Necochea	Cooperativa Gral. Necochea
Necochea	Cooperativa Agropecuaria Gral. Necochea Ltda.
Necochea	Promotora Agropecuaria Necochea
Piedritas	Semillera Fuertes S.A.
Pigüé	La Alianza Cooperativa Agrícola Ganadera Ltda.
Pigüé	Molino Cañuelas
Puán	Torre Hnos.

LOCALITY	DENOMINATION
Puán	Cooperativa Agrícola Ganadera Ltda. de Puán
Quequén	Promotora Agropecuaria Necochea
Rojas	Gear S.A.
Saavedra	Oregui Productores de Goyena
Saladillo	Coop. Agricol. Ganad. de Saladillo Ltda.
Salliqueló	Ganadera Salliqueló
San Antonio de Areco	Coop. Agropecuaria de San Antonio de Areco
San Cayetano	Gazaneo, Julio Gustavo
San Cayetano	Molino Balatón
San Sinena	Hernán Gutierrez
Stroeder	Cooperativa Agropecuaria de Stroeder Ltda.
Tandil	Usandizaga Perrone y Juliarena S.A.
Tandil	Rural Ceres S.A.
Tandil	Cooperativa Agropecuaria de Tandil
Tandil	Cooperativa Agropecuaria de Tandil Ltda.
Tornquist	Los Vascos Cereales
Tornquist	Cooperativa Rural Ltda. de Tornquist
Trenque Lauquen	Juan Carlos Latour
Tres Arroyos	Agarraberes, Oscar Pedro
Tres Arroyos	Agro El Carretero S.A.
Tres Arroyos	Agroservicios Sudeste S.A.
Tres Arroyos	Bellingeri e Hijos, Francisco
Tres Arroyos	Goñi, Héctor Jesús
Tres Arroyos	Cooperativa Agraria de Tres Arroyos Ltda.
Tres Arroyos	La Pampa Cooperativa Agrícola Ganadera de Colonización y Consumo Ltda.
Tres Arroyos	Cooperativa Rural Alfa Ltda.
Tres Lomas	Morero Semillas
Veinticinco de Mayo	Cereales 25 de Mayo
Villarino	Barraca Mitre
	Sanchez y Cía. S.C.
	Mateos
	Siagro
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	Centro de Acopiadores de Cereales de Daireaux
	Soc. de Cerealistas del Norte de la Pcia. de Bs. Aires
	Soc. de Acopiadores de Cereales Zona Bahía Blanca

LOCALITY	DENOMINATION
CÓRDOBA PROVINCE	
Adelia María	Merlo y Manavella S.A.
Idiazábal	Ortega Hermanos S.A.
Justiniano Posse	Cooperativa Agrícola Ganadera de Justiniano Posse Ltda.
La Carlota	Manisur S.A.
Marcos Juárez	INTA - Estación Experimetal Agropecuaria
Monte Cristo	Miguel Gazzoni e Hijos S.R.L.
Oliva	A.C.A. Acopio Oliva
Oliva	Oliva Agropecuaria
Pilar	Mariani Bertino y Cía. S.R.L.
Río Cuarto	Antonio Carlos Calvo
Serrano	Santi Rossano y Cía. S.A.
Ucacha	Ucacha Cereales S.A.
Villa del Rosario	A.C.A. Acopio Villa del Rosario
Villa del Totoral	Pronor S.A.
	Seis Hermanos
	Sociedad de Acopiadores de Granos de la Pcia. de Córdoba
ENTRE RIOS PROVINCE	
Crespo	La Agrícola Regional Coop. Ltda.
Diamante	Agromoya S.R.L.
Galarza	Coop. La Protectora Ltda.
Gualeguay	Dowery S.A.
Gualeguay	Maribey S.A.
Gualeguaychú	Unión Cerealera Ltda.
Hasenkamp	Ultragrain S.A.
Hasenkamp	León Rabey e Hijos S.A.
La Paz	Coop. La Paz
Larroque	Tierra Greda S.A.
Lucas González	Coop. El Progreso Ltda.
María Luisa	Héctor Bolzán y Cía.
Ramírez	Coop. La Ganadra Gral. Ramírez Ltda.
Rincón del Nogoyá	Agrosur S.A.
Sauce Pinto	Dellizzotti Hnos. S.R.L.
Urdinarrain	Coop. Fed. Agríc. Ganad. de Urdinarrain
Viale	Santiago D. Trocello S.A.
Victoria	Granero S.R.L.
Villa Fontana	Cereales Bolzan S.R.L.
	Centro de Acopiadores de Granos de Entre Ríos

LOCALITY	DENOMINATION
LA PAMPA PROVINCE	
Anguil	Trabajadores Unidos Coop. Mixta Ltda. de Anguil
Arata	P. U. de Arata S.R.L.
Catriló	Lartirigoyen y Cía. S. R. L.
Colonia Barón	Pincen S. R. L.
Cnel. Hilario Lagos	Productores Asociados S. A.
Doblas	Cooperativa Agropecuaria de Doblas Ltda.
Eduardo Castex	Brandemann y Cía
Eduardo Castex	Acción Cooperativa Agropecuaria Ltda. de Eduardo Castex
General Pico	A.C.A. Acopio
General Pico	Acopagro S. A.
General Pico	Cereales Anahi Ruca S. A.
General Pico	Agronomía Pico
General Pico	Dominguez Carlos
General San Martín	Sociedad Cooperativa Agrícola Ganadera Ltda. de Gral. San Martín
Guatraché	Acopio A.C.A.
Ingeniero Luiggi	Agronomía Fernández
Ingeniero Luiggi	C.A. de Granos
Ingeniero Luiggi	El Campo S. A.
Intendente Alvear	Caivano-Chapaleufú S. A.
Intendente Alvear	Grainco Pampa
Macachín	Atreu-có Cooperativa Agropecuaria Ltda.
Miguel Riglos	Trimag S.A.
Miguel Riglos	Cooperativa Agropecuaria de Miguel Riglos Ltda.
Quemú Quemú	Cereales Quemú
Quemú-Quemú	Garcia Rouco y Bouza
Realicó	Cooperativa Alta Italia Ltda.
Sta. Rosa	Silvera Omar
Uriburu	Alvarez Hnos.
Uriburu	Agro Ganadera Don Enrique S. A.
Villa Mirasol	Comercial Mirasol
	Centro de Acopiadores de Cereales de La Pampa y Limítrofes
SANTA FE PROVINCE	
Avellaneda	Unión Agrícola de Avellaneda Coop. Ltda.
Belgrano	Felipe Crosetti S.A.
Belgrano	Boni Hnos.
Caseros	Jakas K. e Ivan.S.A. Bigand
Caseros	Jakas K. e Ivan.S.A. Chabás
Caseros	Acopio Arequito S.R.L
Caseros	Theiler Hnos y Cia S.R.L.
Caseros	Prince Cereales S.R.L.
Caseros	Campo Lindo S.R.L.
Caseros	Semillero Cardini S.R.L.
Caseros	Acopio ACA San José de la Esquina
Castellanos	Domingo Sapino Ltda. S.A.
Constitución	Cooperativa de Alcorta
Constitución	Jakas K. e Ivan. S.A. Alcorta
Constitución	Cooperativa Agropecuaria Ltda. de Máximo Paz
Gral.López	Cerealoeste S.A.
Gral.López	Cerealista Hugues S.R.L.
Gral.López	Chapuy Cereales S.A.
Gral.López	A. Permingeat S.A.

LOCALITY	DENOMINATION
Gral.López	Jakas K. e Ivan. S.A. Carreras
Gral López	Don Regino S.C.A.
Gral. Obligado	Coop. Agrop. de Malabrigo Ltda.
Iriondo	Cooperativa Agríc. Mixta de Cañada de Gómez
Rosario	Del Teglia & Cía S.R.L.
Rosario	Santa Sylvina S.A.
Rosario	Olega S.A.
Rosario	Moscoloni Hnos S.R.L.
San Jerónimo	Melica Hnos S.C.
San Jerónimo	Vuelta Hnos. S.A.
San Jerónimo	E.Toya e Hijos S.A.
San Jerónimo	Cooperativa Agrop. Mixta de Irigoyen
San Justo	Coop. A. G. y de Consumo de Freyre Ltda.
San Justo	Rigran S.A.
San Lorenzo	Rogelio Rogani S.R.L.
San Martín	Landeta Cereales
Vera	Coop. Agríc. Mixta de Margarita Ltda.
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	Sociedad Gremial de Acopiadores de Granos (Rosario)

SALTA PROVINCE

Salta	Molinos Cañuelas

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WHEAT DURUM

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Molinos Río de la Plata
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