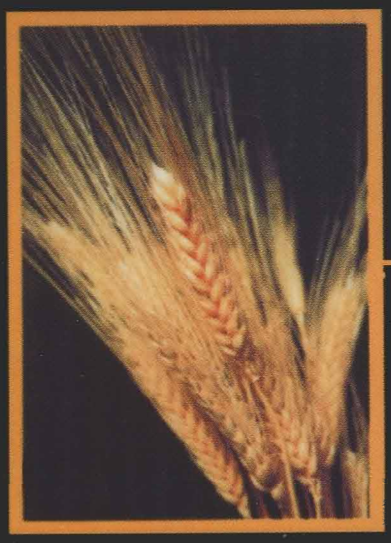


2000-2001 Crop

ARGENTINE WHEAT

Institutional Quality Report

Argentine Wheat

Institutional Quality Report

2000/2001 Crop

Argentine Wheat

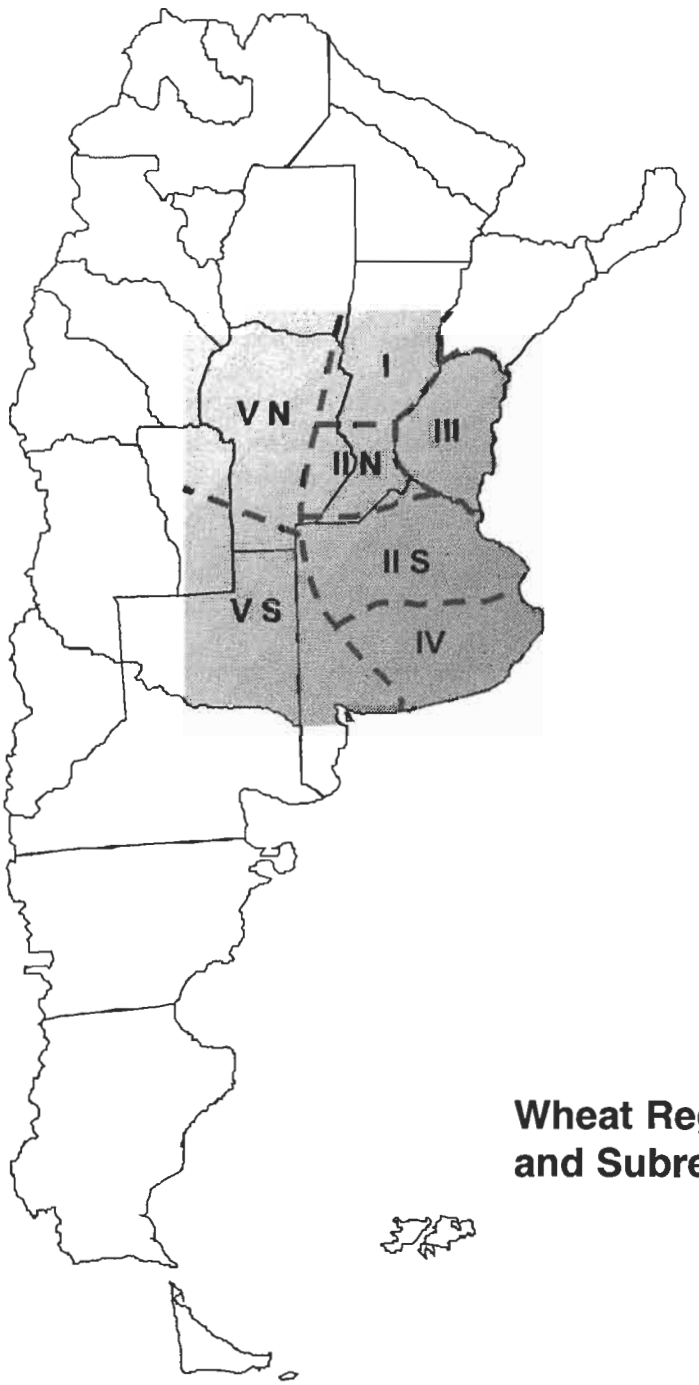
Institutional Quality Report
2000/2001 Crop

Elaborated by:

- **Asociación de Cooperativas Argentinas Cooperativa Limitada.**
  Argentine Cooperatives Association LTD Coop.
- **Bolsa de Cereales de Bahía Blanca.**
  Bahía Blanca Grain Exchange.
- **Bolsa de Cereales de Buenos Aires.**
  Buenos Aires Grain Exchange.
- **Bolsa de Comercio de Rosario.**
  Rosario Stock Exchange.
- **Cámara Arbitral de Cereales de Bahía Blanca.**
  Bahía Blanca Grain Arbitration Chamber.
- **Cámara Arbitral de Cereales de Entre Ríos.**
  Entre Ríos Grain Arbitration Chamber.
- **Cámara Arbitral de Cereales de la Bolsa de Comercio de Rosario.**
  Rosario Stock Exchange Grain Arbitration Chamber.
- **Cámara Arbitral de Cereales de la Bolsa de Comercio de Santa Fe.**
  Santa Fé Stock Exchange Grain Arbitration Chamber.
- **Cámara Arbitral de la Bolsa de Cereales de Buenos Aires.**
  Buenos Aires Grain Exchange Arbitration Chamber.
- **Cámara de Cereales y Afines de Córdoba.**
  Córdoba Grain Arbitration Chamber.
- **Centro de Exportadores de Cereales.**
  Grain Exporters Association.
- **Comisión Nacional de Actividades Espaciales.**
  National Commission 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 – MAGyA)**
  Barrow Experimental Station.

Argentine Wheat
Institutional Quality Report
2000/2001 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 313 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	14	56,856	869,000	6.54
II North	66	189,551	2,230,000	8.50
II South	42	169,323	2,134,300	7.93
III	17	71,416	601,900	11.87
IV	81	314,258	4,469,950	7.03
V North	16	66,424	875,000	7.59
V South	75	285,717	4,112,280	6.95
Nortwest of the Country	1	20,000	352,000	5.68
Northeast of the Country	1	4,010	95,000	4.22
Rest of the Country	-	-	8,632	-
TOTALS	**313**	**1,177,555**	**15,748,062**	**7.48**

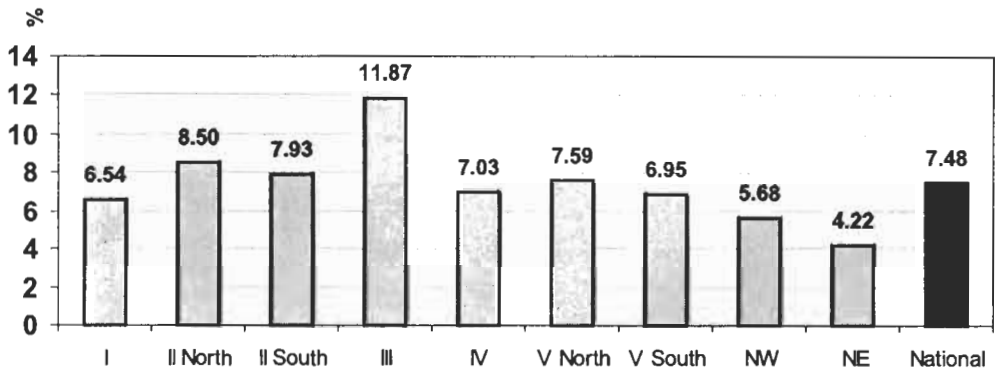
Based on preliminary data about production from the Secretariat of Agriculture, Livestock, Fishery and Food. May 2001

1 It comprises samples from Salta and Tucumán provinces.

2 It comprises samples from Chaco province.

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 4502 samples used for this sampling program, in such a way a sampled tonnage of 7.48 % of the national wheat production, which amounted to 15,748,062 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 .

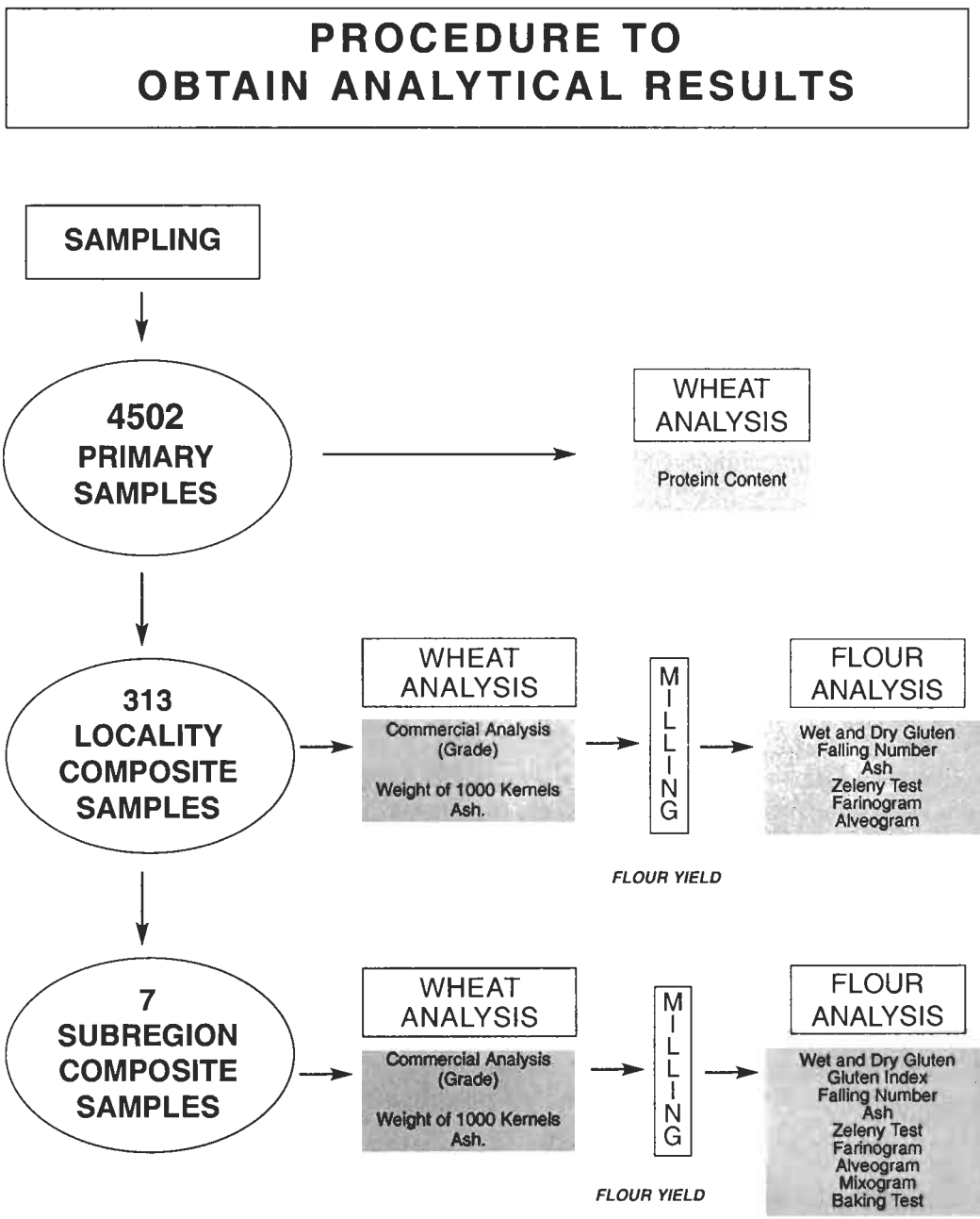
The composite samples were sent to the SENASA Laboratory to carry out the Bühler grinding, reserving a part in order to prepare the Subregion Composite Samples. It was decided to use only one mill for all the composite samples by locality, so as to minimize differences in the flour features due to the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

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.

* References: IRAM: Instituto Argentino de Normalización (Argentine Standards Institute).

Argentine Standard for Wheat

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

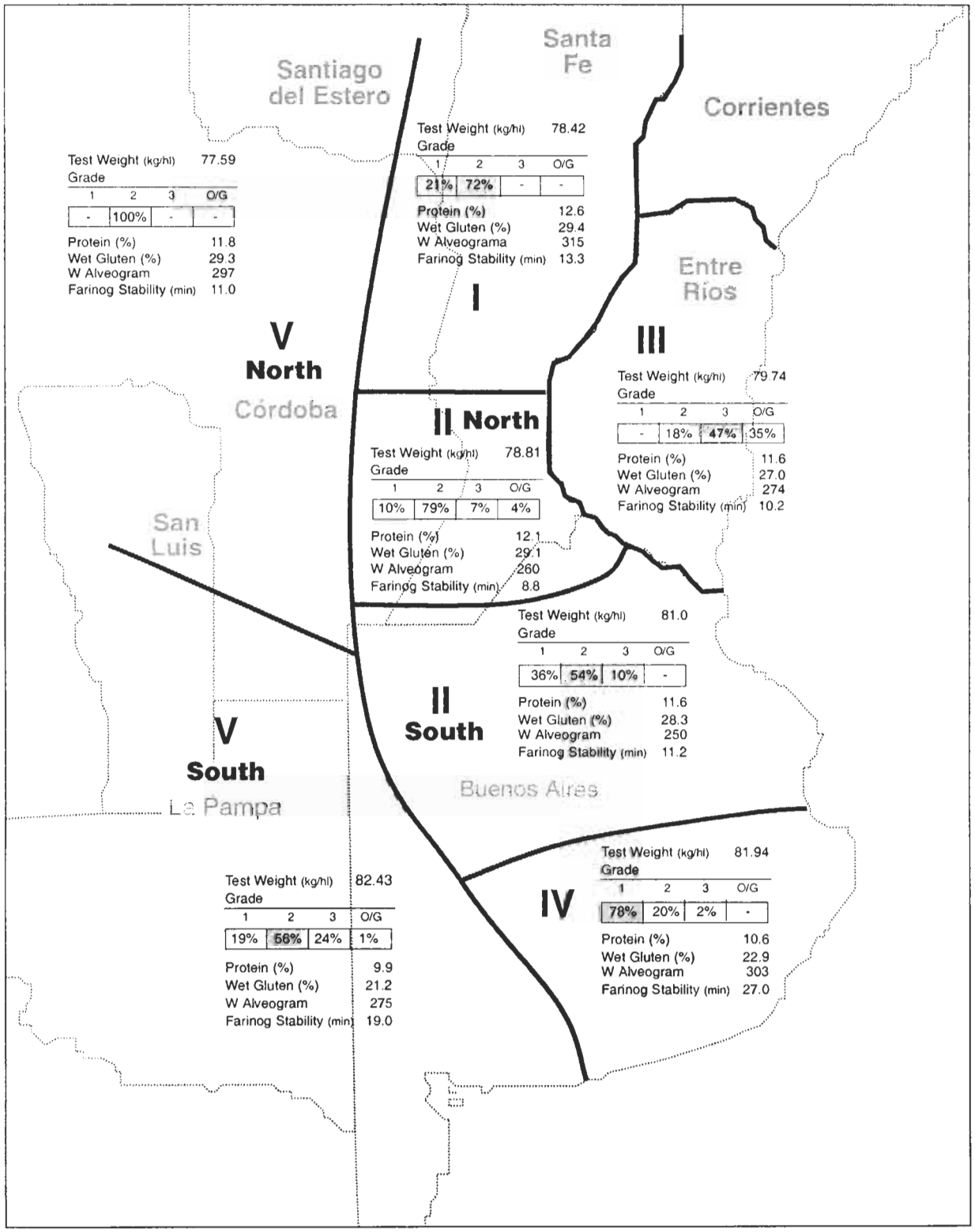
GRADE			1	2	3
Minimum Test Weight per hectoliter (Kg/hl)			79	76	73
PERCENTS MAXIMUM LIMITS OF	Foreign Material %		0.60	1.25	3.00
	Damaged Kernels	Heat Damaged Kernels (%)	0.50	1.00	1.50
		Total (%)	1.00	2.00	3.00
	Smutty Kernels (%)		0.10	0.20	0.30
	Yellow Berry Kernels (%)		15.00	25.00	40.00
	Shrunken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

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

Protein content: basis 11% (moisture basis of 13,5%)
According to protein content there will be bonifications or discounts of 2% for each % or fraction. Those lots which test weight is under 76 Kg/hl are excluded.

Argentine Wheat
Main Quality Parameters

Main Quality Parameters Wheat



Note: * Proteins basis 13.5% moisture
W Alveogram in Joules x 10^{-4}

O/G: Out of Grade

Subregion I
Background for the crop

Wheat planting begun at the middle of May till the beginning of June, except San Jerónimo district, where as a consequence of rains excess the sowing begun at the middle of June. In the whole area the crop begun its cycle with high content of edaphic water, between 130 to 190 mm of useful water in the soil profile (1,20 m). During January-April period rains between 400 to 670 mm were registered, over 40-70 % the historical averages (1931/99).

Early in the cycle leaf diseases were observed in the whole subregion (Dreschlera sp.), being stronger its incidence in San Martín and San Jerónimo districts. In those cases where chemical control was not applied leaf area was seriously affected.

Between tillage and the beginning of staking (end July-beginning September) rains were 15-30 % higher than historical records, and this made necessary a second chemical control against fungal diseases (Septoria, rusts). The fungal diseases had a negative effect (2 to 8 tons/ha) where the control was not applied or it was not on time.

Between the end of staking to maturing (October-November) water was enough and rain records were similar or slightly higher than the historical averages.

The yields were not the ones expected because of Fusarium incidence. Losses varied between 600 - 1.200 kg/ha. As a result, the test weight at the beginning of the harvest was low (75 to 62 kg/hectoliter).

The maximum medium and minimum medium temperatures during the tillering were lower than the historical average, climatic conditions were adequate to produce more tillers for unit of area and for the growing of the reproductive apical meristem giving long size ears.

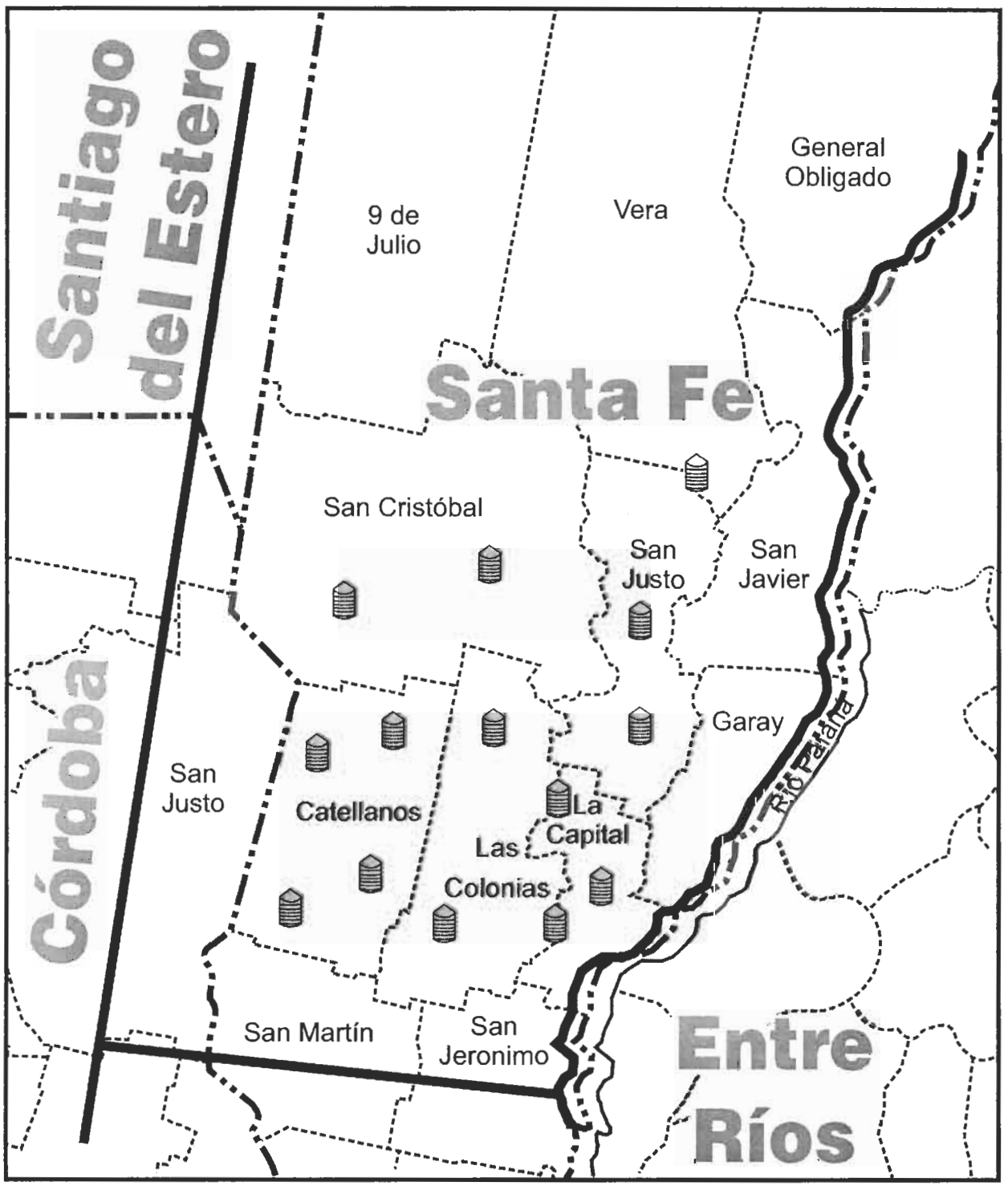
Some places into Castellanos and San Martín districts registered frosts during tillering affecting the crops in different ways causing sometimes the death of plants but in most cases, crops grew and developed again, delaying their cycle in 20 days approximately. Since September, the minimum and maximum medium temperatures were similar to the historical averages, favoring the grain filling.

Direct drilling (non tillage) was the main system, being favored by the offer of specific equipment and good performances in latter years.

The main crops used were of long cycle, having a better yield potential and a better soil covering. Generally soybean was the previous crop being the maize not so usual.

Fertilization was 20 % higher with regard to the previous year, being Nitrogen the most used and in a second place the Phosphorus. Sulphur use was significantly increased because of researches, which confirmed deficiencies in many areas. Mixtures used were N (50%)-P (35 %)-S (15 %). Micronutrients started to use in low dose, specially B, Fe, Zn and Mo. Fertilizers are used mainly in San Justo, San Jerónimo and The Capital districts.

During this crop important incidence of fungous, diseases of leaf, stalk and ear were registered, causing lower yields in relation to the previous crop in 1999 and 2000. Insect attacks were not important and harvest conditions were normal.



Each reference represents near 4,000 tns sampled.

Subregion I Wheat

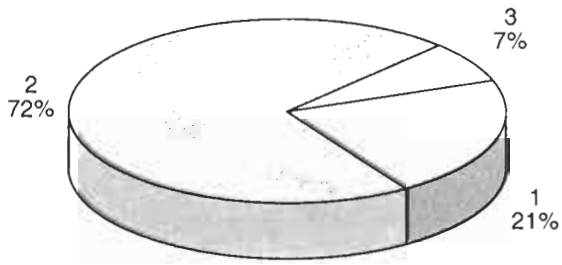
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.00	81.20	78.42	1.53	0.02
Total Damaged Kernels (%)	0.10	2.90	0.85	0.63	0.74
Foreign Material (%)	0.04	1.32	0.41	0.34	0.84
Shrunken and Broken Kernels (%)	0.76	2.18	1.26	0.35	0.28
Yellow Berry Kernels (%)	0.00	0.00	0.00	0.00	0.00
Protein (13.5% Moisture) (%)	12.0	13.0	12.6	0.3	0.02
Weight of 1000 Kernels (gr.)	29.32	32.38	31.37	0.81	0.03
Ash (% dry basis)	1.711	2.253	2.051	0.137	0.07

Total damaged kernels include mainly sprouted kernels, insect chewed kernels and calcinated kernels.

Grade Distribution



Flour Analisys		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	27.3	30.9	29.4	1.0	0.03
	Dry Gluten (%)	9.7	10.8	10.4	0.3	0.03
	Falling Number (sec)	232	447	389	51	0.13
	Flour Yield (%)	66.00	70.50	68.21	1.40	0.02
	Ash (dry basis) (%)	0.525	0.650	0.593	0.035	0.02
FARINOGRAM	Water Absorption (14 % H°) (%)	57.2	61.7	59.5	1.3	0.22
	Development Time (min.)	7.4	14.3	9.8	2.1	0.25
	Stability (min.)	10.2	20.7	13.3	3.4	0.26
	Degree Softening (12 min.)	28	82	51	13	0.16
ALVEOGRAM	P (mm)	74	116	90	14	0.09
	L (mm)	84	111	100	9	0.12
	W Joules x 10-4	263	383	315	37	0.24
	P / L	0.68	1.32	0.90	0.22	0.06

These results were elaborated with 14 composite sample prepared proportionally from 104 primary samples (farmer deliveries).

Subregion Data:

In this region the wheat production was 869,000 tn., the 5.52% of the national total. Were sampled 56,856 tn., the 6.54% 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 Kernels (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
1	Castellanos	4055	3	76.3	2.90	1.32	1.26	0.00	12.9	32.02	2.193
2	Castellanos	4200	2	77.3	1.24	0.76	1.20	0.00	12.7	31.20	2.153
3	Castellanos	4007	2	76.0	0.46	0.62	2.18	0.00	12.4	32.38	2.253
4	Castellanos	3991	2	78.6	0.74	0.22	1.28	0.00	12.4	29.32	1.980
5	Las Colonias	4007	2	78.3	0.72	0.28	1.10	0.00	12.4	30.54	2.168
6	Las Colonias	4094	2	78.2	0.68	0.18	0.76	0.00	12.5	31.72	2.210
7	Las Colonias - La Capital	4050	2	79.0	1.00	0.36	1.40	0.00	12.6	31.47	2.002
8	Las Colonias - La Capital	4031	1	80.0	0.88	0.44	1.12	0.00	13.0	31.30	2.090
9	Las Colonias - La Capital	4115	2	77.8	0.62	0.50	1.00	0.00	12.8	30.98	1.947
10	San Cristobal	4035	2	81.2	0.06	0.04	1.68	0.00	12.7	30.99	1.969
11	San Cristobal	3901	1	79.3	0.60	0.10	0.94	0.00	12.7	32.05	1.979
12	San Justo	4203	2	78.6	0.54	0.10	1.54	0.00	12.0	30.71	2.003
13	San Justo	4055	2	76.5	0.54	0.72	1.20	0.00	12.6	32.34	2.063
14	San Justo - Vera - Gral. Obligado	4112	1	80.8	0.90	0.08	0.92	0.00	12.9	32.21	1.711

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
1	Castellanos	30.2	10.6	365	68.1	60.6	9.4	12.1	49	96	99	333	0.98	0.643
2	Castellanos	29.5	10.6	232	68.8	59.6	8.2	10.3	82	84	108	319	0.78	0.600
3	Castellanos	29.2	10.1	412	66.0	60.3	8.5	11.0	61	89	102	314	0.88	0.650
4	Castellanos	29.0	10.3	367	69.7	60.2	8.7	10.7	57	85	104	296	0.81	0.636
5	Las Colonias	30.5	10.7	390	66.9	60.8	8.9	11.6	57	74	109	271	0.69	0.605
6	Las Colonias	28.3	9.9	430	68.5	59.7	9.7	12.7	49	82	91	263	0.90	0.584
7	Las Colonias - La Capital	30.2	10.6	379	66.6	61.7	12.5	16.0	37	116	90	383	1.29	0.556
8	Las Colonias - La Capital	30.9	10.7	417	68.8	59.2	7.4	10.2	62	76	111	282	0.68	0.600
9	Las Colonias - La Capital	29.8	10.3	413	70.1	59.2	8.2	10.7	56	83	105	290	0.79	0.597
10	San Cristobal	29.1	10.5	378	66.8	60.3	13.8	19.8	28	116	88	375	1.32	0.561
11	San Cristobal	28.7	10.3	403	67.3	57.2	9.4	13.7	48	78	106	297	0.74	0.606
12	San Justo	27.3	9.7	447	67.6	57.3	8.9	12.5	52	86	98	299	0.88	0.564
13	San Justo	28.7	10.2	400	70.5	57.6	9.9	14.6	45	82	109	325	0.76	0.580

Subregion II North
Background for the crop

The region had irregular contributions of water, standing out the southeast of Córdoba for its deficiency until earing stage (34,9 mm), while there were excesses in the south center of Santa Fe and north of Buenos Aires. The southeast of Córdoba had, from end of May to beginning of October, a rain of 13 mm at the beginning of August and the rest of the rains were of scarce magnitude along the whole cycle. Then in October rains begun to be generalised, and they coincided with the earing stage until they ends of grain filled with 300 mm, favouring the development of some illnesses.

Another important environmental factor was the occurrence of moderate to slow temperatures that delay the development of wheat. This effect was beneficial because it allowed the wheat to go deferring the water and nutrition requirements in the moments of low contributions of rains. 51 freezes were registred, including two days in July of -10ºC, producing damage in leaves and shafts in some wheat lots. The moderate temperatures continued during the grain filling.

The early planting of ends of May was difficulted by the excess of superficial humidity. This causes delay in planting that concluded with he use of varieties of shorter cycle.

The production of the present crop year was increased in relation to the previous one. Among the causes that can be mentioned: the increase of the sowed surface, the good general state of the lots that arrived to maturity under good to very good conditions, that it made suppose outstanding yields. When the harvest begun, it could be observed that the yields did not reach the previous estimates. There were several reasons.

Extremely low temperatures in the winter that in many cases altered the cycle of the varieties affecting mainly the short cycle. Some varieties of long cycle were favoured with a bigger spike size.

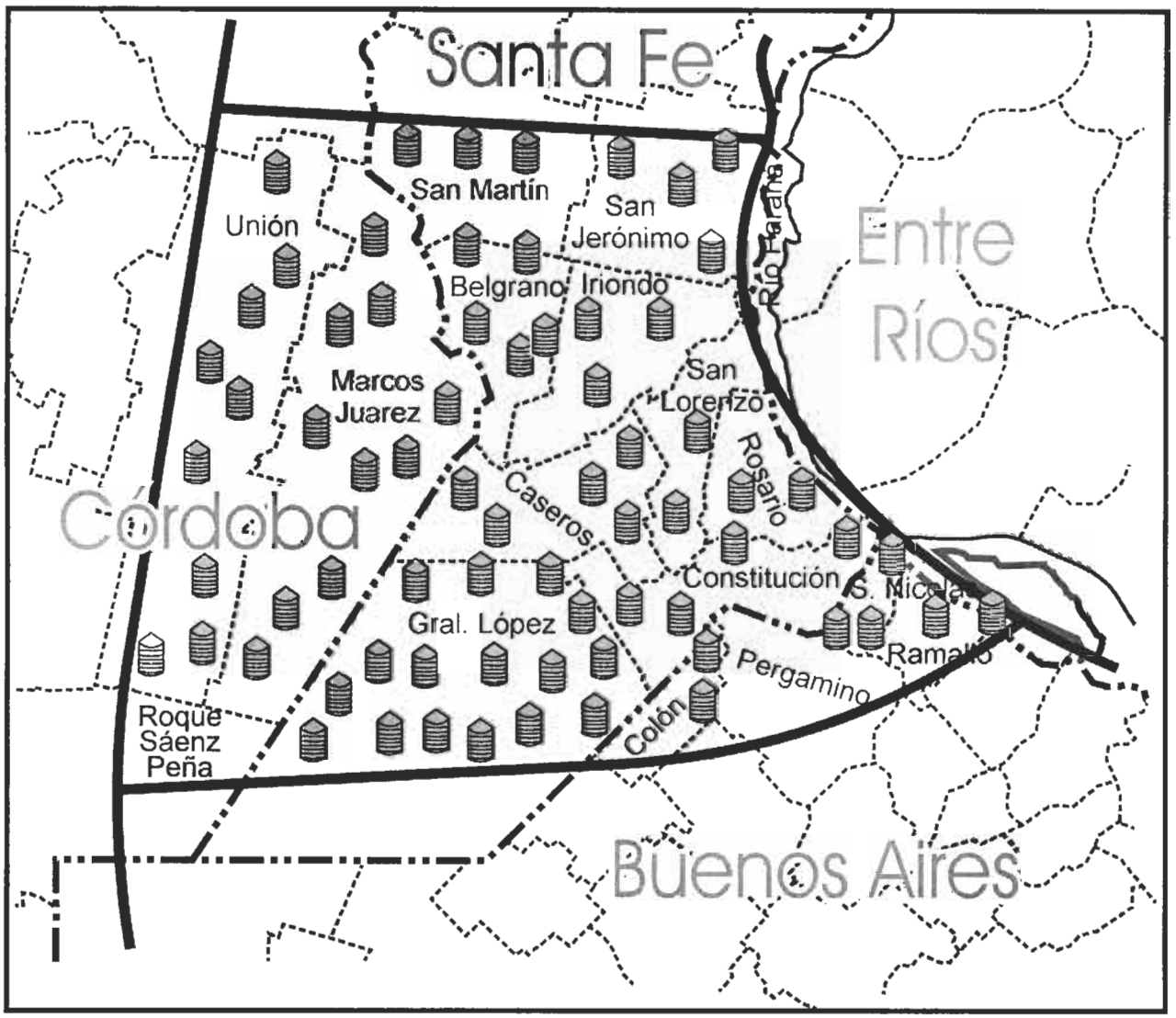
Illnesses caused by leaf rust and leaf yellow spot, that generated important damages in leaves, forced to carry out treatments. Later on in flowering and grain filling, continuous days of high relative humidity and temperatures near to 25ºC favoured the appearance of Fusarium. Although damaged was smaller than the waited one by the aspect of the crop before maturity. The incidence and severity was not the same in the whole region, with differences according to areas, cycles and susceptibility of the varieties. The main affected areas were the south of Santa Fe and north of Buenos Aires provinces, although the final percentage of damaged grains was relatively low because of great part of them were eliminated at harvest.

Planting was carried out principally in non tillage system. Only a small proportion was in minimun tillage.

Fertilization is already a common practice in the Subregion II North. Combined fertilization of phophorous and nitrogen was used at planting. Nitrogen alone was applied in some cases at tillering. It was also used sulfur in a small percentage of lots.

Conditions at harvest were good. Yields averages were among 2.3-2.6 t/ha according to areas, with great variation among them with productions between from 1.5 to 4.8 t/ha.

Subregion II North Wheat



Each reference represents near 4,000 tns sampled.

Results of the Analyses

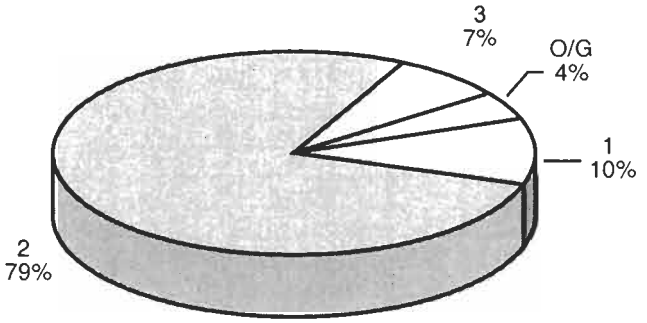
Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.10	82.00	78.81	1.34	0.02
Total Damaged Kernels (%)	0.30	3.30	1.22	0.70	0.57
Foreign Material (%)	0.10	1.30	0.42	0.23	0.54
Shrunken and Broken Kernels (%)	0.60	2.20	1.31	0.33	0.25
Yellow Berry Kernels (%)	0.00	0.00	0.00	0.00	0.00
Protein (13.5% Moisture) (%)	11.2	13.0	12.1	0.3	0.03
Weight of 1000 Kernels (gr.)	25.05	31.42	28.31	1.35	0.05
Ash (% dry basis)	1.848	2.257	2.010	0.070	0.04

Total damage kernels include 0.09% sprouted kernels, 0.03% insect chewed kernels, 0.47% germen chewed kernels and 0.63% calcinated kernels.

Grade Distribution

Ref: O/G: Out of Grade



Flour Analisys		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	26.4	32.1	29.1	1.2	0.04
	Dry Gluten (%)	9.7	11.4	10.4	0.4	0.03
	Falling Number (sec)	278	449	395	31	0.08
	Flour Yield (%)	63.50	71.70	67.51	1.78	0.03
	Ash (dry basis) (%)	0.507	0.656	0.581	0.033	0.06
FARINOGRAM	Water Absorption (14 % H°) (%)	58.20	64.90	61.10	1.51	0.02
	Development Time (min.)	2.0	11.2	6.7	1.8	0.27
	Stability (min.)	4.6	18.6	8.8	3.2	0.37
	Degree Softening (12 min.)	32	106	66	15	0.22
ALVEOGRAM	P (mm)	56	108	81	12	0.15
	L (mm)	11	130	101	16	0.16
	W Joules x 10-4	169	389	260	49	0.19
	P / L	0.49	1.47	0.80	0.22	0.27

These results were elaborated with 66 composite samples prepared proportionally from 790 primary samples (farmer deliveries)

Subregion Data:

In this region the wheat production was 2,230,000 tn., the 14.2% of the national total. Were sampled 189,551 tn., the 8.5% 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	5800	2	78.60	1.50	0.30	1.50	0.00	12.4	27.33	2.004
102	San Martín	5500	2	76.90	0.90	0.60	1.70	2.10	12.0	28.28	2.031
103	San Martín	4000	2	77.70	0.80	0.40	1.60	1.50	12.4	27.16	1.984
104	San Jerónimo	4200	2	78.80	1.70	0.20	1.40	0.00	12.4	29.21	2.049
105	San Jerónimo	3500	3	77.50	2.50	0.80	1.40	3.20	12.4	28.50	2.119
106	San Jerónimo	2800	2	77.20	1.80	0.40	1.50	3.20	12.8	25.05	2.070
107	San Jerónimo	2600	2	78.90	1.40	0.40	1.40	0.00	12.3	27.98	1.996
108	Belgrano	1700	2	78.10	2.00	0.20	1.60	1.50	11.8	27.13	2.032
109	Belgrano	1200	2	79.00	1.70	0.10	1.20	0.00	11.9	28.80	1.934
110	Belgrano	2000	2	79.40	0.60	0.20	1.40	0.00	11.6	28.36	1.985
111	Belgrano	1500	1	79.90	0.50	0.20	0.90	0.00	11.6	27.63	2.050
112	Belgrano	800	2	79.90	1.30	0.20	0.60	0.00	11.9	28.72	2.009
113	Iriondo	2800	2	78.60	1.70	0.20	1.40	1.50	11.6	27.07	2.078
114	Iriondo	2000	2	78.10	1.70	0.20	1.40	2.10	11.7	27.28	1.998
115	Iriondo	1500	2	77.30	1.60	0.20	1.70	3.30	12.1	28.12	2.019
116	Caseros	2500	2	76.90	1.10	0.50	1.90	5.80	12.1	26.06	2.257
117	Caseros	2500	2	79.50	0.90	0.40	1.50	0.00	11.9	27.75	2.009
118	Caseros	2500	2	78.60	1.70	0.70	1.40	0.00	12.1	27.27	2.013
119	Caseros	3500	2	79.30	0.70	0.50	1.50	0.00	12.1	29.91	2.032
120	Caseros	1200	2	78.90	1.10	0.20	0.80	0.00	12.1	26.73	2.002
121	San Lorenzo	2000	O/G	78.10	3.10	0.30	2.20	0.90	11.7	26.61	1.953
122	San Lorenzo	2700	O/G	78.00	3.20	0.20	1.60	0.00	11.8	27.12	1.954
123	Rosario	2000	2	77.20	1.90	0.50	1.00	4.50	12.5	28.04	2.064
124	Rosario	4000	1	79.40	1.00	0.20	1.00	0.00	11.7	27.22	1.892
125	Constitución	4500	3	78.60	2.50	0.50	1.10	1.20	11.7	27.67	2.053
126	Constitución	6500	2	77.90	1.60	0.50	1.40	2.70	11.9	27.53	2.039
127	Constitución	9000	2	77.30	2.00	0.70	0.90	2.50	12.0	27.21	2.037
128	Constitución	7800	2	78.60	1.20	0.60	1.90	0.80	12.0	26.06	2.132
129	General López	1600	3	79.90	2.40	0.60	0.80	0.00	12.0	28.91	1.923
130	General López	2100	2	77.00	1.50	0.60	0.90	3.10	12.0	28.57	1.930
131	General López	2100	2	79.80	1.10	0.50	0.90	0.00	12.0	27.67	1.851
132	General López	2800	1	80.80	0.40	0.30	0.90	0.00	11.7	30.09	1.848
133	General López	2800	1	80.80	0.50	0.10	0.80	0.00	11.8	29.66	2.013
134	General López	2000	3	78.50	0.70	1.30	1.00	1.70	12.5	28.36	1.965
135	General López	2000	3	78.40	0.60	1.30	1.00	0.00	12.5	27.98	1.950
136	General López	2000	2	79.00	1.50	0.30	1.40	0.00	11.9	28.07	2.048
137	General López	2000	2	78.70	0.80	0.40	1.40	1.50	11.8	27.81	2.110
138	General López	2000	2	79.50	0.50	0.80	1.50	0.00	12.3	29.37	1.996
139	General López	3000	2	80.80	1.10	0.80	1.40	0.00	12.1	28.85	2.023
140	General López	3000	2	82.00	0.50	0.20	1.40	0.00	11.2	29.94	1.936
141	General López	3500	1	81.90	0.60	0.30	0.90	0.00	11.3	29.60	1.942
142	General López	2100	2	78.70	0.70	0.40	1.50	1.60	11.9	31.39	2.036
143	General López	2000	2	77.50	0.80	0.50	0.80	3.90	12.2	27.45	1.959

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) (%)
144	General López	2000	2	78.80	0.80	0.40	1.00	2.20	12.3	28.84	1.928
145	Marcos Juárez	3500	2	80.80	1.10	0.30	1.60	0.00	12.2	27.90	2.066
146	Marcos Juárez	3500	2	78.10	0.70	0.30	1.10	2.00	12.2	29.02	1.967
147	Marcos Juárez	3500	2	76.10	0.50	0.30	0.80	4.10	12.3	27.80	1.957
148	Marcos Juárez	4000	2	79.60	1.20	0.20	0.80	0.00	12.9	31.42	2.075
149	Marcos Juárez	3500	2	77.00	1.10	0.90	1.50	2.70	12.3	28.97	1.875
150	Marcos Juárez	3500	2	77.50	1.10	0.20	1.10	2.50	11.8	28.21	2.006
151	Marcos Juárez	3000	O/G	79.70	3.30	0.10	0.80	0.00	12.0	30.65	1.990
152	Marcos Juárez	3500	2	78.60	0.80	0.50	1.00	0.00	13.0	31.40	2.038
153	Marcos Juárez	4500	1	80.10	0.90	0.50	1.10	0.00	12.2	30.81	1.976
605	Marcos Juárez	5851	2	77.00	1.80	0.52	1.26	0.10	11.7	27.90	1.947
154	Unión	2200	2	80.20	0.50	0.20	1.40	0.00	12.3	28.78	2.020
155	Unión	2000	2	79.90	0.30	0.40	1.70	0.90	12.3	28.17	2.032
156	Unión	2000	2	80.10	0.30	0.20	1.40	0.90	12.2	28.96	1.986
157	Unión	2000	2	78.90	0.50	0.20	1.60	0.80	12.1	26.96	2.010
158	Unión	1900	2	80.40	0.40	0.20	1.50	0.00	12.2	29.09	2.044
159	Unión	2400	2	79.90	0.30	0.30	1.40	0.00	12.2	27.35	2.065
160	Unión	2000	2	80.40	0.50	0.30	1.50	0.00	12.2	27.67	2.119
161	Unión	2000	2	80.00	0.30	0.20	1.70	0.00	12.2	29.95	2.120
162	Unión	2300	2	80.10	0.40	0.20	1.50	0.00	12.3	28.29	2.034
163	Colón - Ramallo - Pergamino	3000	2	81.00	0.60	0.30	1.70	1.10	12.4	28.22	1.945
164	Colón - Ramallo - Pergamino	2200	2	80.20	0.90	0.50	1.70	0.00	12.5	28.44	1.949
165	Colón - Ramallo - Pergamino	2000	1	79.90	0.80	0.40	1.00	0.00	11.9	29.01	1.855
166	Colón - Ramallo - Pergamino	1100	2	78.90	1.30	0.40	1.40	1.50	12.1	31.37	2.027

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
101	San Martín	30.4	10.8	368	64.7	59.2	6.0	8.1	66	65	130	250	0.50	0.523
102	San Martín	28.7	10.3	356	65.8	61.6	8.8	11.8	60	104	96	339	1.08	0.588
103	San Martín	29.3	10.4	387	66.9	58.4	9.5	12.2	53	78	122	312	0.64	0.542
104	San Jerónimo	31.3	11.0	386	68.3	61.2	6.7	7.4	84	81	105	264	0.77	0.556
105	San Jerónimo	29.0	10.1	409	67.4	58.7	5.6	8.7	67	62	126	239	0.49	0.542
106	San Jerónimo	29.9	10.4	449	69.7	62.8	5.8	7.0	86	79	97	234	0.81	0.610
107	San Jerónimo	29.1	10.5	431	68.5	59.1	6.5	9.0	74	82	99	269	0.83	0.552

Subregion II North Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
108	Belgrano	28.5	10.2	386	71.7	61.3	6.0	7.3	78	78	100	244	0.79	0.640
109	Belgrano	28.5	10.3	404	68.8	58.2	6.2	7.8	70	60	11.3	210	0.53	0.588
110	Belgrano	28.4	10.4	411	67.6	61.6	6.3	8.6	60	92	81	247	1.14	0.590
111	Belgrano	28.2	10.1	381	65.2	58.7	6.2	8.7	57	66	114	235	0.58	0.507
112	Belgrano	30.3	10.9	383	67.9	61.2	6.7	7.8	75	73	113	261	0.65	0.557
113	Iriondo	27.0	10.5	399	69.7	62.4	2.7	4.8	80	56	108	169	0.52	0.595
114	Iriondo	28.0	10.1	420	66.1	61.7	4.7	4.9	99	71	88	178	0.81	0.584
115	Iriondo	27.6	9.7	391	68.9	61.9	3.0	4.6	106	61	105	183	0.58	0.614
116	Caseros	28.5	10.1	388	67.4	59.3	6.5	7.4	71	65	115	227	0.57	0.588
117	Caseros	29.6	10.4	387	67.8	62.5	6.2	7.4	70	87	84	238	1.04	0.556
118	Caseros	30.2	10.0	401	67.3	60.5	5.7	6.9	67	73	95	215	0.77	0.586
119	Caseros	30.2	10.8	389	68.3	63.0	7.0	7.2	69	101	69	238	1.46	0.573
120	Caseros	30.7	10.8	408	66.7	59.4	6.3	7.5	62	66	104	218	0.63	0.584
121	San Lorenzo	27.8	10.2	436	69.9	61.8	5.4	5.0	95	72	83	180	0.87	0.630
122	San Lorenzo	28.2	10.4	406	63.5	61.7	4.7	5.5	82	79	80	196	0.99	0.583
123	Rosario	29.0	10.6	278	67.8	61.0	8.6	10.9	72	92	90	292	1.02	0.634
124	Rosario	28.0	10.0	424	67.0	59.9	5.5	6.8	63	71	90	200	0.79	0.617
125	Constitución	26.8	9.7	425	68.2	63.9	6.7	7.2	76	94	72	231	1.31	0.582
126	Constitución	28.3	10.1	338	66.1	59.2	5.8	8.2	70	73	110	259	0.66	0.589
127	Constitución	28.2	10.1	323	66.5	59.3	6.0	8.5	76	70	104	232	0.67	0.602
128	Constitución	29.4	10.4	416	68.8	60.7	5.5	6.1	79	67	113	221	0.59	0.626
129	General López	29.8	10.3	422	66.4	62.6	5.5	6.5	76	73	106	230	0.69	0.656
130	General López	30.6	11.0	426	66.6	64.9	6.3	6.8	77	96	82	258	1.17	0.561
131	General López	30.4	10.7	403	67.9	63.3	6.0	6.3	73	84	83	231	1.01	0.597
132	General López	30.2	10.5	429	63.5	61.1	6.3	6.9	68	73	108	241	0.68	0.577
133	General López	30.0	10.5	431	64.7	61.2	5.5	6.7	71	74	100	232	0.74	0.601
134	General López	31.5	10.9	402	69.7	64.7	5.7	5.5	76	90	88	242	1.02	0.618
135	General López	30.8	9.8	385	66.4	63.6	6.0	5.2	68	82	96	243	0.85	0.570
136	General López	28.3	10.3	409	66.5	62.2	5.3	5.2	82	73	99	217	0.74	0.620
137	General López	27.2	10.0	371	68.8	62.4	5.8	5.0	80	76	94	218	0.81	0.597
138	General López	29.8	10.3	403	67.9	62.6	5.3	5.9	81	78	93	228	0.84	0.606
139	General López	29.4	10.6	408	68.2	63.6	5.3	6.0	80	82	92	232	0.89	0.529
140	General López	27.1	9.7	393	65.3	62.7	4.5	6.0	79	83	82	216	1.01	0.525
141	General López	26.8	9.8	389	64.3	61.6	5.7	7.4	55	79	82	211	0.96	0.553
142	General López	28.4	10.2	412	64.7	61.4	5.9	6.7	68	70	105	229	0.67	0.598
143	General López	28.1	10.1	404	69.9	62.2	6.0	6.2	84	74	94	214	0.79	0.592
144	General López	28.0	10.4	412	66.9	62.8	6.5	6.6	77	78	101	247	0.77	0.581
145	Marcos Juárez	29.0	10.5	399	70.9	61.1	7.0	8.9	74	83	113	305	0.73	0.589
146	Marcos Juárez	29.5	10.6	386	68.6	60.6	8.7	9.6	63	80	109	303	0.73	0.641
147	Marcos Juárez	29.6	10.5	374	68.2	59.9	9.5	13.4	33	88	89	284	0.99	0.538
148	Marcos Juárez	31.1	10.8	414	67.5	61.2	10.0	11.7	50	97	101	343	0.96	0.528
149	Marcos Juárez	30.2	10.8	405	66.7	60.9	6.8	8.4	51	77	103	251	0.75	0.589
150	Marcos Juárez	28.4	10.2	411	69.1	59.9	2.0	12.8	35	86	110	325	0.78	0.573
151	Marcos Juárez	29.4	10.3	332	68.7	60.5	7.7	9.8	66	77	112	279	0.69	0.595
152	Marcos Juárez	32.1	11.4	412	69.8	62.0	7.7	8.9	75	85	105	309	0.81	0.576

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
153	Marcos Juárez	26.4	9.7	427	69.9	58.8	8.5	15.7	45	108	77	310	1.40	0.525
605	Marcos Juárez	28.9	10.3	407	65.0	61.8	8.0	10.3	62	96	104	332	0.93	0.574
154	Unión	29.6	10.6	406	66.8	61.4	10.5	13.9	53	98	101	341	0.97	0.584
155	Unión	29.5	10.7	428	68.1	60.6	8.7	13.8	47	87	116	334	0.73	0.563
156	Unión	29.6	10.6	400	65.5	61.3	10.7	16.8	39	102	104	378	0.98	0.518
157	Unión	29.6	10.6	402	70.1	60.9	8.0	14.0	45	82	122	330	0.67	0.583
158	Unión	28.5	10.5	443	65.2	61.6	10.7	18.6	32	103	108	389	0.95	0.631
159	Unión	29.3	10.5	416	68.7	60.0	10.5	18.3	35	99	101	351	0.98	0.569
160	Unión	28.5	10.5	400	68.3	62.5	8.9	16.2	39	107	95	364	1.13	0.585
161	Unión	30.0	10.5	404	69.0	60.8	11.2	14.1	50	100	111	367	0.90	0.551
162	Unión	29.1	10.7	387	68.6	59.5	9.4	15.6	42	79	120	311	0.66	0.613
163	Colón - Ramallo - Pergamino	30.3	10.6	379	68.8	61.0	6.7	8.1	59	69	120	254	0.58	0.623
164	Colón - Ramallo - Pergamino	30.7	10.7	397	65.6	62.3	7.0	7.7	61	70	120	263	0.58	0.573
165	Colón - Ramallo - Pergamino	29.7	10.4	412	70.1	63.5	5.2	5.8	77	80	88	224	0.91	0.630
166	Colón - Ramallo - Pergamino	30.0	10.7	406	64.3	63.6	6.2	6.4	70	82	85	224	0.96	0.530

Subregion II South
Background for the crop

Projections in the beginning of 2000/01 crop showed an increasing in the sowing area respect 1999/00, but by the end of the year it was registered a reduction of 15 % in it, in the north of the subregion and the same area in the south of the subregion (Alberti - 9 de Julio, etc.).

Respecting to crop yields, the situation was similar, resulting in the north 2500 kg/ha and in the south 3000 kg/ha.

The reasons were the following:

In general, the establishment of wheat was good, because of important rains during the month of May. This delayed in some cases the sowing of intermediate and long cycle varieties, which were sowed in the second fortnight of June and in the first fortnight of July.

During tillering and the beginning of stem elongation, rains in September and low temperatures happened during the end of August and the beginning of September, favoured the growing specially where high technology had been installed . In this period, in Pergamino (north of the subregion), there were 23 days with temperatures below 0 ºC and good humidity, both of them favoured tillering, in special for (in) intermediate and long varieties.

In these conditions, crops reached heading - flowering period with a delay between 6 - 10 days.

During flowering and grain filling (mid October - end November) rains reached the total of 400 mm distributed in 16 days.

Unfavourable climate and diseases during the end of grain filling had a negative influence in the potential of the different varieties resulting in yields below the (previous) expectations.

Main climatic factors during the first fortnight of December were high temperatures and low humidity, with temperatures higher than 30 ºC and humidity between 15 and 44 % in Pergamino. This produced rapid dehydration of grains, resulting in decrease of yields and hectolitre weight, specially in the intermediate and long cycle varieties, so in both cases it sowed late.

Short cycle varieties increased their area in relation with the previous crop because of the delay in the sowing produced by rains. An increase likewise vas registered in direct drilling (no tillage).

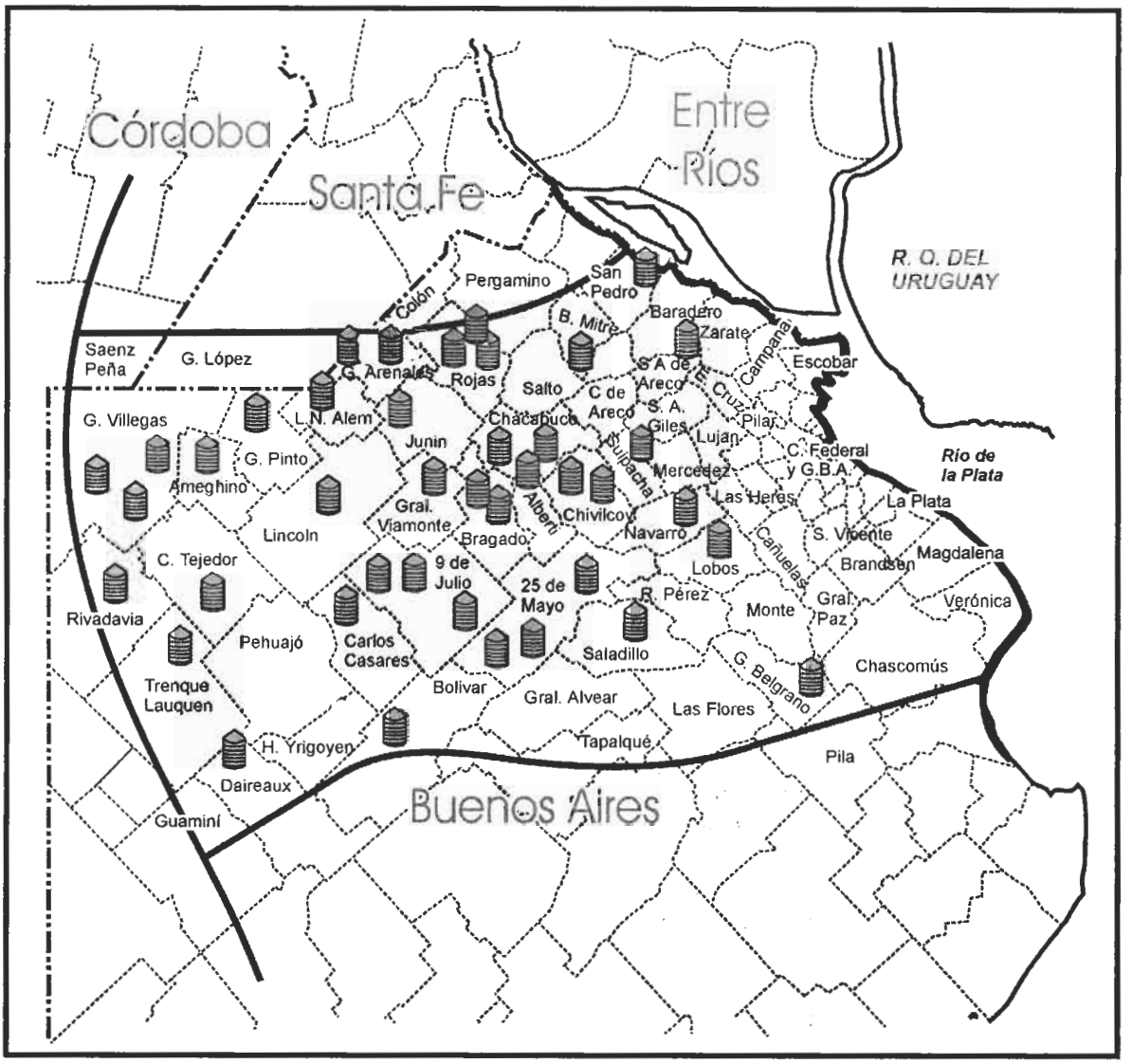
Phosphorus and Nitrogen were the basis in fertilization, which was adopted in the 90 % of the area. Sulphur use was higher than the former years.

Main diseases were Septoria in leaves and Fusarium in ears. Because of reiterative rains, chemical control were not carried out in a lot of cases. However, in the 50 % of the wheat area leaf funguicides were used.

"Leaf orange rust" levels were normal for the subregion. Other diseases were Dreschlera sp. according to the sowing system, and because of the great number of rainy days, bacterial diseases in isolation, which is unusual in this subregion.

Harvest was carried out in good climate conditions. Grain quality included high protein contents, low seed weights and low test weights of kernels resulting in different commercial grades since "one" to "out of standard".

Subregion II South Wheat



Each reference represents near 4,000 tns sampled.

Results of the Analyses

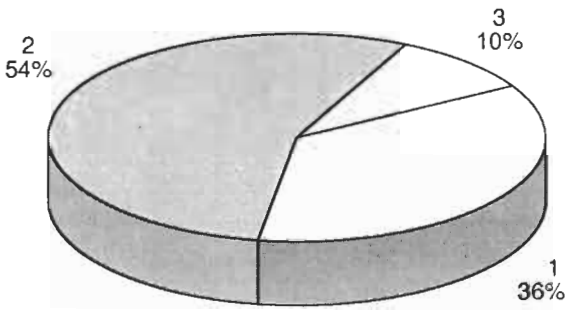
Composite Samples by Locality. Averages were weighted by Tonnage.

Subregion II South Wheat

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.4	83.5	81.0	1.7	0.02
Total Damaged Kernels (%)	0.20	3.00	0.86	0.55	0.64
Foreign Material (%)	0.10	1.50	0.66	0.34	0.52
Shrunken and Broken Kernels (%)	0.20	1.00	0.58	0.18	0.31
Yellow Berry Kernels (%)	0.00	8.00	1.01	1.42	1.41
Protein (13.5% Moisture) (%)	9.9	12.8	11.6	0.7	0.06
Weight of 1000 Kernels (gr.)	28.61	37.83	32.41	2.10	0.06
Ash (% dry basis)	1.601	1.996	1.865	0.086	0.05

Total damaged kernels include 0.03 frosty kernels, 0.03 green kernels, 0.05% sprouted kernels, 0.06% insect chewed kernels, 0.07% germen chewed kernels and 0.62% calcinated kernels.

Grade Distribution



Flour Analisys		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	23.0	32.5	28.3	2.3	0.08
	Dry Gluten (%)	7.1	12.0	9.8	0.9	0.10
	Falling Number (sec)	289	456	385	35	0.09
	Flour Yield (%)	60.50	71.30	67.52	2.39	0.04
	Ash (dry basis) (%)	0.491	0.687	0.572	0.048	0.08
FARINOGRAM	Water Absorption (14 % H°) (%)	58.0	66.0	61.9	2.0	0.03
	Development Time (min.)	1.3	10.8	5.5	1.9	0.34
	Stability (min.)	2.2	28.0	11.2	4.3	0.38
	Degree Softening (12 min.)	10	110	52	18	0.34
ALVEOGRAM	P (mm)	63	127	87	14	0.16
	L (mm)	50	119	87	17	0.19
	W Joules x 10-4	194	375	250	35	0.14
	P / L	0.57	2.20	1.00	0.36	0.34

These results were elaborated with 42 composite sample prepared proportionally from 762 primary samples (farmer deliveries).

Subregion Data:

In this region the wheat production was 2,134,300 tn., the 13.5% of the national total. Were sampled 169,323 tn., the 7.93% 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 Kernels (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
200	Mercedes/Suipacha	4000	1	81.70	0.24	0.38	0.74	0.10	12.6	35.94	1.906
201	Chacabuco	4082	2	79.70	1.82	1.06	0.70	0.18	12.2	31.48	1.996
202	Gral. Pinto	4085	1	82.85	0.22	0.46	0.53	0.00	11.4	32.33	1.811
203	9 de Julio	4114	2	81.70	0.48	0.78	0.40	2.00	11.0	33.44	1.792
204	Gral. Villegas	4087	2	80.60	0.36	1.02	0.76	0.92	11.3	32.18	1.919
205	Gral. Villegas	4074	1	80.35	0.76	0.20	0.60	0.94	11.6	31.58	1.892
206	Gral. Villegas	4093	3	80.35	0.97	1.30	0.63	0.62	11.5	30.20	1.929
207	Gral. Belgrano	4006	3	78.15	0.60	1.27	0.36	0.00	12.3	32.82	1.886
208	Rojas	4033	2	80.35	1.32	0.36	0.67	0.00	12.8	29.94	1.922
209	Gral. Arenales	4086	2	82.15	1.42	0.36	0.70	0.62	11.3	31.50	1.901
210	Gral. Arenales	4026	2	81.05	1.37	0.34	0.54	1.26	11.2	30.87	1.914
211	Saladillo	4000	1	82.15	0.85	0.58	0.30	1.64	10.3	34.27	1.757
212	Rivadavia	4004	1	83.50	0.28	0.52	0.46	1.06	10.5	35.45	1.842
213	Ameghino	4056	1	81.25	0.29	0.38	0.44	0.00	11.6	31.55	1.896
214	Gral. Viamonte	4085	2	82.85	1.21	0.34	0.40	0.44	11.2	33.74	1.815
215	Carlos Casares	4011	2	83.05	0.16	0.66	0.50	2.12	10.9	35.92	1.775
216	L. N. Alem	4009	3	80.15	2.95	0.94	0.98	0.32	11.6	30.21	1.963
217	San Antonio de Areco	4092	2	80.80	0.64	0.80	1.02	0.00	12.4	29.10	1.983
218	Bragado	4090	1	83.05	0.30	0.24	0.44	0.94	11.4	34.52	1.822
219	Bragado	4000	1	82.60	0.84	0.40	0.16	0.24	11.6	37.83	1.803
220	Bolivar	4014	2	80.15	0.24	1.04	0.36	0.74	10.0	34.15	1.601
221	25 de Mayo	4055	1	81.50	0.77	0.46	0.58	0.74	11.8	32.69	1.753
222	25 de Mayo	4000	2	81.70	1.22	1.18	0.48	1.22	11.6	33.20	1.823
223	9 de Julio	4039	2	82.15	0.68	1.14	0.42	1.64	10.6	34.93	1.745
224	25 de Mayo	4009	1	81.70	0.62	0.58	0.32	2.40	11.0	33.32	1.726
225	Lobos	4045	3	76.35	1.31	1.50	0.46	2.24	11.3	32.72	1.909
226	Lincoln	4042	2	81.50	0.35	1.20	0.50	0.62	11.4	32.32	1.931
227	Alberti	4000	2	79.45	1.86	0.65	0.80	0.00	11.9	31.72	1.871
228	Junín	4001	1	82.15	0.76	0.24	0.74	0.78	12.3	32.84	1.958
229	Trenque Lauquen	4006	2	81.95	0.74	0.65	0.90	8.12	10.5	33.79	1.758
230	9 de Julio	4005	2	80.80	1.52	0.82	0.56	3.60	11.2	33.23	1.813
231	San Pedro	4004	2	79.00	1.28	0.32	0.74	0.00	11.7	29.13	1.915
232	Navarro	4025	2	76.80	0.64	0.80	0.60	0.38	12.8	28.77	1.993
233	Chivilcoy	4025	2	79.25	1.24	0.52	0.48	0.80	12.1	32.92	1.904
234	Chivilcoy	4004	1	80.60	0.41	0.54	0.58	0.81	12.1	33.19	1.834
235	Baradero	4005	2	80.35	1.30	0.46	0.76	0.42	12.0	31.87	1.873
236	Chacabuco	4001	1	81.70	0.54	0.48	0.64	0.58	12.4	28.61	1.921
237	Chacabuco	4008	1	82.15	0.64	0.48	0.46	0.10	12.5	30.41	1.944
238	Daireaux	4002	2	81.25	0.46	1.00	0.64	3.47	9.9	35.20	1.723
239	Bartolomé Mitre	4000	2	76.80	0.58	0.86	0.75	0.00	12.2	29.10	1.957
240	Rojas	4000	1	82.60	0.72	0.12	0.72	0.62	12.3	31.70	1.931
241	Rojas	4000	2	82.15	1.20	0.32	0.64	0.00	12.7	30.82	1.935

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
200	Mercedes/Suipacha	29.6	10.2	414	64.9	63.5	4.5	7.0	75	92	81	265	1.14	0.580
201	Chacabuco	29.8	10.1	416	67.3	60.1	6.5	11.5	60	63	110	234	0.57	0.615
202	Gral. Pinto	30.5	10.4	385	61.3	63.3	5.0	9.0	60	99	68	237	1.46	0.588
203	9 de Julio	26.0	8.9	406	67.7	58.5	7.5	14.5	40	72	89	235	0.81	0.548
204	Gral. Villegas	28.3	9.7	403	60.5	62.5	6.0	10.0	50	91	76	236	1.20	0.626
205	Gral. Villegas	28.4	9.9	391	67.2	59.2	5.0	7.5	70	68	88	194	0.77	0.575
206	Gral. Villegas	29.3	9.8	419	69.5	61.7	5.5	9.5	60	85	90	258	0.94	0.617
207	Gral. Belgrano	32.5	10.8	415	71.0	58.0	7.0	12.0	45	69	106	264	0.65	0.585
208	Rojas	28.6	9.8	412	66.7	63.0	7.5	11.0	60	74	89	231	0.83	0.541
209	Gral. Arenales	28.2	9.6	402	69.0	61.0	5.0	8.5	60	77	82	218	0.94	0.578
210	Gral. Arenales	28.2	9.7	397	70.5	65.4	6.0	10.0	50	97	70	239	1.39	0.544
211	Saladillo	25.0	8.8	386	70.2	60.0	6.0	11.0	40	84	62	196	1.35	0.512
212	Rivadavia	25.6	9.0	394	67.0	66.0	2.0	7.5	40	110	50	216	2.20	0.608
213	Ameghino	28.7	9.8	413	69.2	60.7	5.0	9.5	50	73	86	217	0.85	0.677
214	Gral. Viamonte	28.4	9.6	377	69.2	60.6	5.5	9.5	60	74	92	229	0.80	0.510
215	Carlos Casares	27.3	8.8	376	69.0	62.8	5.8	14.0	40	107	69	255	1.55	0.523
216	L. N. Alem	29.6	9.5	387	68.2	60.4	4.3	9.9	80	66	109	213	0.61	0.578
217	San Antonio de Areco	28.6	9.3	385	69.0	61.6	7.1	14.3	50	79	112	278	0.71	0.555
218	Bragado	30.6	10.0	289	66.6	65.4	5.7	12.0	60	92	85	257	1.08	0.558
219	Bragado	28.1	8.8	392	64.6	66.0	6.0	12.9	60	107	73	275	1.47	0.588
220	Bolivar	23.0	7.1	355	66.1	64.2	1.7	4.1	40	100	59	223	1.69	0.520
221	25 de Mayo	29.7	11.0	335	65.6	62.4	6.0	8.1	54	93	82	256	1.13	0.535
222	25 de Mayo	28.3	10.5	307	66.0	62.2	6.4	8.3	54	101	68	247	1.49	0.512
223	9 de Julio	27.3	10.1	300	66.5	62.0	7.1	9.8	40	102	69	244	1.48	0.571
224	25 de Mayo	26.6	9.1	340	65.9	62.4	10.8	13.4	40	91	76	232	1.20	0.512
225	Gral. Belgrano	26.6	9.1	364	65.1	61.8	2.2	13.6	30	85	94	256	0.90	0.588
226	Lincoln	30.2	10.1	399	68.3	61.8	4.8	11.8	60	87	84	238	1.04	0.639
227	Alberti	29.7	10.3	378	64.7	64.0	5.2	11.9	60	77	110	257	0.70	0.517
228	Junín	31.7	9.1	381	67.4	61.6	4.3	8.4	80	71	97	215	0.73	0.588
229	Trenque Lauquen	24.7	9.1	386	63.8	58.0	9.8	14.6	52	80	116	278	0.69	0.526
230	9 de Julio	26.0	9.1	376	71.3	60.4	7.1	17.3	30	78	99	255	0.79	0.580
231	San Pedro	28.5	11.0	356	70.9	63.2	4.9	11.9	60	88	86	247	1.02	0.665
232	Navarro	27.5	9.7	371	67.7	60.0	5.4	19.2	10	99	108	360	0.92	0.532
233	Chivilcoy	26.8	9.1	410	69.3	58.2	5.5	15.2	30	73	117	270	0.62	0.494
234	Chivilcoy	28.4	9.8	371	69.4	61.0	5.1	15.7	30	91	104	312	0.88	0.491
235	Baradero	30.0	9.8	391	66.9	61.0	3.8	10.2	70	87	84	240	1.04	0.558
236	Chacabuco	23.5	8.7	435	69.4	60.6	2.3	28.0	25	127	74.1	375	1.72	0.601
237	Chacabuco	28.4	10.5	456	70.8	62.1	7.0	9.7	50	95	79.6	259	1.19	0.637
238	Daireaux	23.0	8.5	441	67.5	62.7	1.3	2.2	110	101	64.3	232	1.57	0.594
239	Bartolomé Mitre	32.1	11.9	421	68.5	64.5	5.0	14.2	30	85	87.9	234	0.96	0.616
240	Rojas	31.6	11.7	348	68.5	62.9	5.5	5.8	75	87	91	245	0.96	0.687
241	Rojas	32.5	12.0	374	67.6	61.2	7.0	7.1	54	76	119	260	0.64	0.555

Subregion III
Background for the crop

Wheat crop reached approximately 330,000 in this subregion.

Planting begun the 20th of May and continue until the 25th of June for long cycle crops (20% of total) and until 22 of August for short and intermediate cycles.

The excess of rains registered during autumn and winter produced delays and shortening of fallow period. Some of the practices were carried out with plane pulverization attending to the excessive humidity of the soil.

For those reasons varieties of long and intermediate cycle were planted with delays, but in the lower areas plantings couldn't be made.

The emergence was good, but many crops presented plants with low development and yellowness because of lixiviation of N produced by excess of rains and lower nitrogen fertilization.

During tillering (non tillage) and staking, although a number of plant and development of them were satisfactory, lacks of N and Zn were detected.

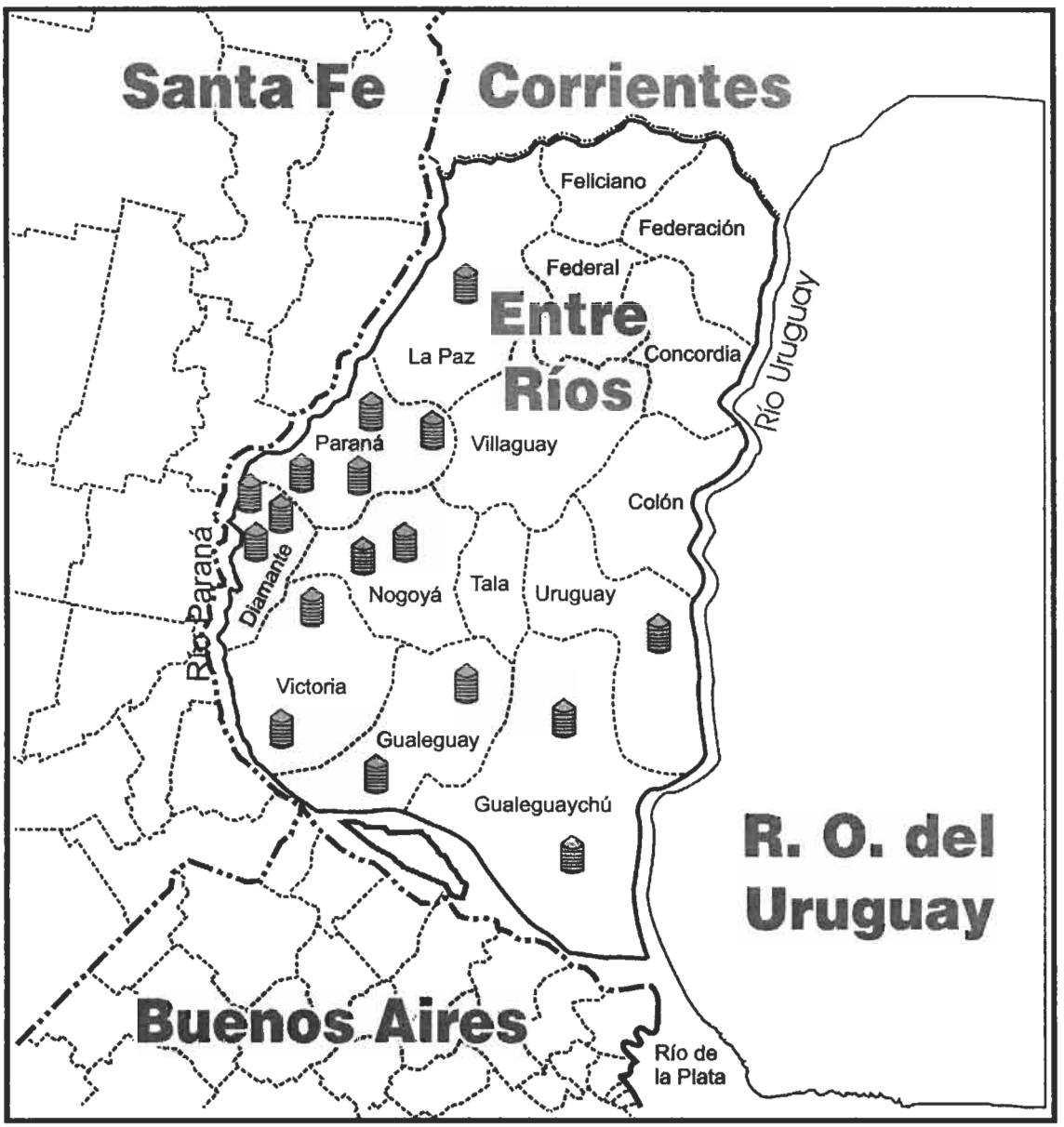
At heading some crops with incomplete ears and small kernels were observed, and in this stage different diseases were registered, particularly leaf rust and Fusarium. In addition to this, nightly temperatures were very low for the season.

Rains were over the crop requests along all the cycle, specially in the latter month of it, generating the fungous diseases mentioned.

Direct drilling was used in the 80 % of the crop, and this percentage is increasing. Traditional tillage was used in the rest.

Fertilization was lower than previous years because of economic-financial factors.

Average yields, 19,9 qq/ha, were below expectations two months before harvest. Main factors were, low fertilization level and Fusarium incidence.



Each reference represents near 4,000 tns sampled.

Subregion III Wheat

Results of the Analyses

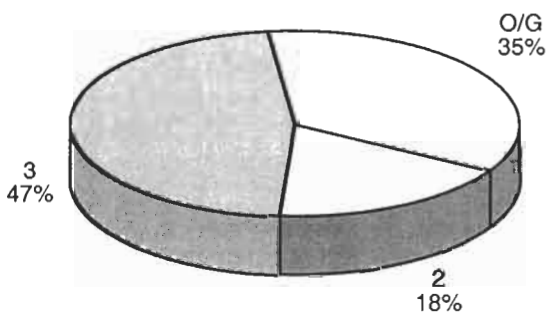
Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.40	83.30	79.74	1.67	0.02
Total Damaged Kernels (%)	1.20	4.70	2.64	0.94	0.36
Foreign Material (%)	0.30	1.50	0.73	0.37	0.51
Shrunken and Broken Kernels (%)	0.50	1.40	0.88	0.21	0.23
Yellow Berry Kernels (%)	1.00	3.00	2.05	0.61	0.30
Protein (13.5% Moisture) (%)	10.9	12.3	11.6	0.3	0.03
Weight of 1000 Kernels (gr.)	27.00	30.10	28.19	0.91	0.03
Ash (% dry basis)	1.150	2.260	1.767	0.312	0.18

Total damaged kernels include mainly calcinated kernels.

Grade Distribution

Ref: O/G: Out of Grade



Flour Analisys		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	25.0	28.6	27.0	0.9	0.03
	Dry Gluten (%)	9.1	10.3	9.7	0.3	0.03
	Falling Number (sec)	407	492	456	24	0.05
	Flour Yield (%)	67.40	72.80	69.55	1.52	0.02
	Ash (dry basis) (%)	0.477	0.629	0.545	0.044	0.08
FARINOGRAM	Water Absorption (14 % H°) (%)	57.0	62.4	60.0	1.4	0.02
	Development Time (min.)	2.2	9.7	7.7	1.7	0.22
	Stability (min.)	7.5	13.1	10.2	1.5	0.15
	Degree Softening (12 min)	20	87	69	15	0.21
ALVEOGRAM	P (mm)	60	92	77	10	0.13
	L (mm)	83	127	102	11	0.11
	W Joules x 10-4	229	330	274	33	0.12
	P / L	0.47	1.09	0.75	0.18	0.22

These results were elaborated with 17 composite sample prepared proportionally from 435 primary samples (farmer deliveries).

Subregion Data:

In this region the wheat production was 601,900 tn., the 3.82% of the national total. Were sampled 71,416 tn., the 11.87% 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 Kernels (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
300	Paraná	4139	3	80.20	2.24	0.41	0.89	1.50	11.5	27.60	1.250
301	Paraná	4108	O/G	78.90	3.30	0.34	1.11	1.80	11.6	27.40	1.920
302	Paraná	4142	3	79.30	2.28	0.52	0.94	1.50	11.5	27.20	1.480
303	Paraná	4105	O/G	79.10	3.14	0.49	1.18	2.10	11.7	27.40	1.150
304	Diamante	4205	O/G	77.80	3.86	0.64	1.10	3.20	11.3	28.60	1.470
305	Diamante	4089	O/G	80.30	3.71	0.60	1.35	2.80	11.8	27.60	1.350
306	Diamante	4470	O/G	76.40	3.70	0.35	0.95	2.50	11.3	28.20	1.930
307	La Paz	4241	2	80.80	1.18	0.39	0.81	1.20	12.3	28.60	1.700
308	Gualeguay	4171	3	80.60	2.55	0.54	0.61	1.40	11.4	28.40	1.930
309	Gualeguay	4241	3	80.10	2.64	1.34	0.70	1.60	11.6	27.60	2.260
310	Gualeguaychú	4225	2	83.30	1.21	1.09	0.77	2.10	11.9	28.40	1.910
311	Gualeguaychú	4261	3	81.20	1.61	1.53	0.76	2.30	11.3	30.10	1.690
312	Nogoyá	4262	3	80.60	2.10	1.15	0.94	3.40	11.8	28.60	2.040
313	Nogoyá	4345	2	79.70	2.00	1.05	0.70	1.90	11.4	27.20	1.930
314	C. del Uruguay	4263	3	80.70	2.23	0.95	0.77	2.10	10.9	29.80	1.810
315	Victoria	4092	O/G	76.40	4.67	0.61	0.91	1.70	11.8	27.00	2.030
316	Victoria	4057	3	80.30	2.54	0.29	0.52	1.70	11.5	29.40	2.160

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 of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
300	Paraná	27.5	9.8	409	68.7	57.0	2.2	13.1	20	70	106	283	0.66	0.522
301	Paraná	26.3	9.4	462	67.8	57.8	7.9	10.2	71	66	115	264	0.57	0.506
302	Paraná	27.0	9.7	407	70.9	57.8	8.8	10.9	71	63	107	243	0.59	0.589
303	Paraná	26.1	9.4	464	70.1	59.2	8.1	10.6	77	85	100	300	0.85	0.559
304	Diamante	27.3	9.7	477	72.8	59.4	6.9	7.9	87	75	95	233	0.79	0.629
305	Diamante	27.0	9.7	437	70.5	61.1	6.1	8.3	83	60	127	232	0.47	0.621
306	Diamante	27.5	9.8	468	72.0	58.7	8.0	10.2	65	62	117	255	0.53	0.530
307	La Paz	25.0	9.1	464	69.2	62.4	7.2	8.4	71	90	83	246	1.08	0.538
308	Gualeguay	27.7	9.8	492	70.6	60.3	8.5	10.2	66	76	109	298	0.70	0.564
309	Gualeguay	27.1	9.6	471	68.6	61.9	8.7	10.0	72	92	92	301	1.00	0.586
310	Gualeguaychú	27.0	9.6	445	67.6	60.8	9.3	12.5	56	89	94	320	0.95	0.496
311	Gualeguaychú	25.6	9.1	480	70.3	61.0	8.8	11.0	71	87	90	295	0.97	0.508
312	Nogoyá	27.1	10.0	425	69.4	60.7	9.7	11.5	80	86	105	330	0.82	0.594
313	Nogoyá	26.5	9.6	462	67.4	60.0	8.4	12.1	62	85	105	326	0.81	0.522
314	C. del Uruguay	27.3	9.7	455	69.3	60.1	7.3	10.3	59	82	88	252	0.93	0.477
315	Victoria	28.6	10.1	444	67.4	60.8	6.4	7.5	83	71	104	229	0.68	0.510
316	Victoria	28.2	10.3	482	69.6	60.5	8.2	9.2	73	72	89	255	0.81	0.518

Subregion IV
Background for the crop

Planting: (from June till mid-August); there were some delays in planting due to repeated rains (between July 8-25th), without consequences on crop establishment. Delays were longer in direct tillage, but its influence was also null.

Tillering: (most cases until the end of September); temperature and humidity conditions were excellent during vegetative cycle. Average temperatures from June to September varied between 6-10 °C, with little daily range. Total rainfall in that period was 182 mm. Under these conditions tillering was abundant, reflected on high density of spikes, observed visually and supported by high number of harvested grains/m2, in some cases more than 17.000/m2.

Reproductive period: Most of the varieties begun staking the first days of October with excellent humidity conditions and cool to cold days, that made staking 10-12 days longer. Heading happened then in mid-November. Up to that moment growing conditions were ideal (151 mm during October and an average temperature of 12,7 °C), with record foresight yields. Rains lacked since mid November, between flowering and maturing. This lack was made worse by the larger biomass which affected the available water. (November: 34 mm in 7 rainfalls; December: 55 mm in 6 rainfalls). Windy days increased loss of humidity since second part of November. Only cool temperatures during November and December were favorable (November: 16,1 ºC and December: 20,5 ºC, both average temperatures).

Harvest: It begun at the end of December but was interrupted by rains between January. 2-12 th. These rains caused the washing of the grain and a decrease in test weight of 4 kg/hl.
The grain size was the lowest of the last decade. Test weight before rains was normal. Frecuent cases of yellow berry were caused by nitrates washing (October), lower rates of nitrogen fertilizers and high biomass volume.

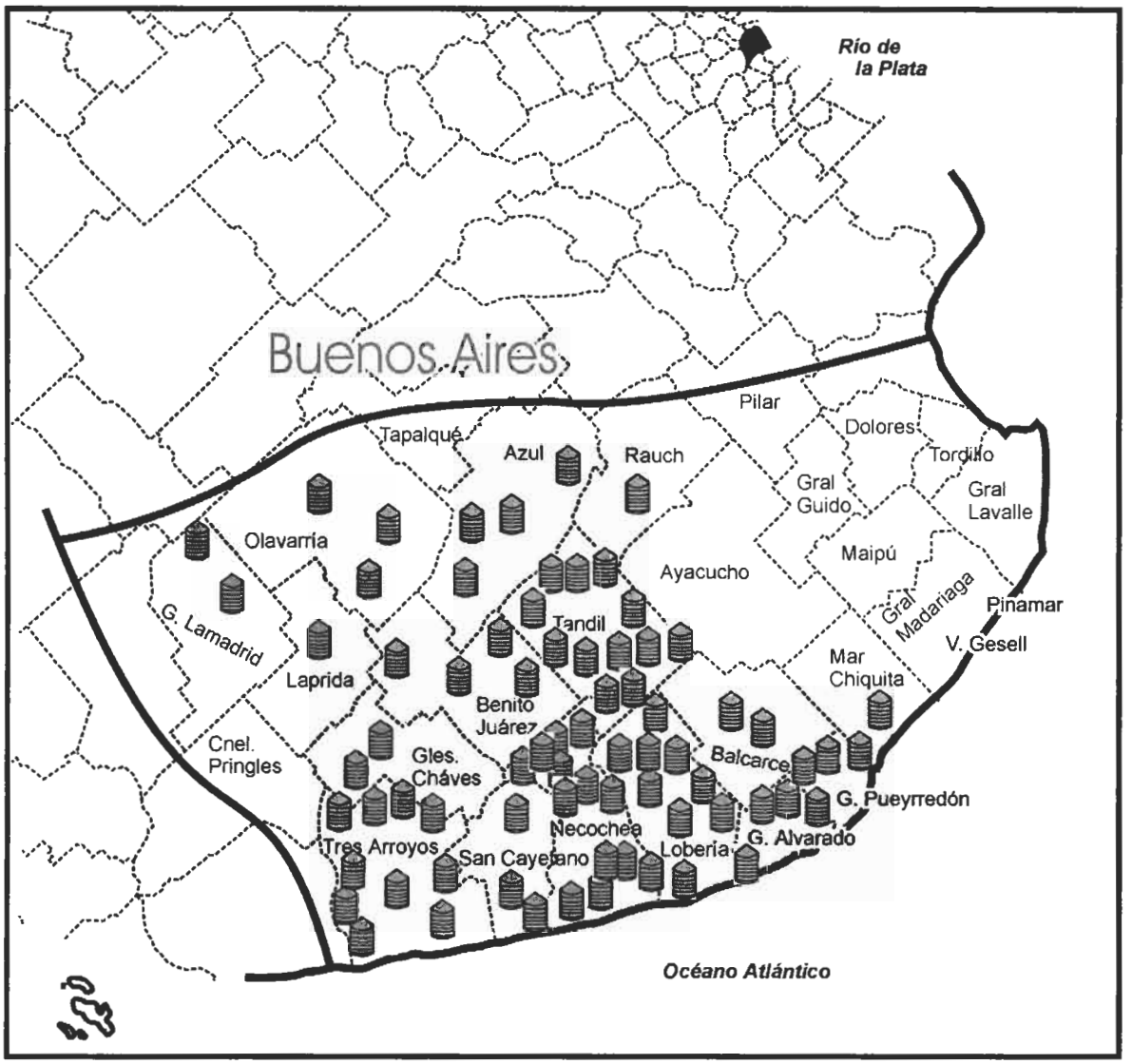
Yields: For Tres Arroyos, San Cayetano and Gonzales Chaves were estimated in 33 qq. Occasional yields of 6200 kg/ha in Tres Arroyos were reported; also cases of 3000 kg/ha.

Fertilization (aproximately data): There was no coincidence among consulted sources. Personal perception is that rates slightly diminished but not the fertilized area. We can estimate the use of 90-95 % fosfate compounds and 85 % nitrogen compounds.
Sowing rate for 18-46-0 was 80 kg/ha and urea rates between 60-100 kg/ha. Nitrogen compounds were applied either in sowing as in tillering stages; some farmers distribute total amount between both application moments. Fertilizer is rarely applied in reproductive period with the aim of increasing grain protein content.

Diseases: Important incidence of early Septoria tritici was observed. Puccinia recondita was moderate in susceptible varieties. Some varieties were affected by bacteriosis in preheading but the disease could not develop due to unfavorable climatic conditions. As usual, there were no spike diseases in this region.

Main grain quality problems (visually detected): yellow berry, low grain size, desuniformity, washing of the grain, low test weight in those susceptible varieties that filled the grain under unfavorable conditions.

Subregion IV Wheat



Each reference represents near 4,000 tns sampled

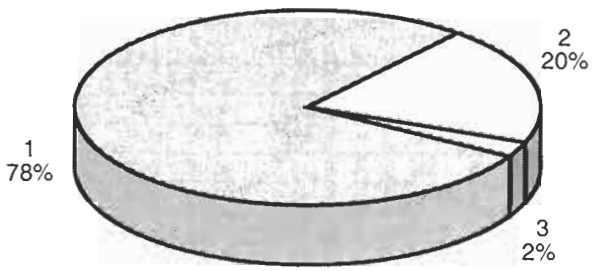
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	78.4	85.1	81.9	1.5	0.02
Total Damaged Kernels (%)	0.00	0.90	0.16	0.17	1.05
Foreign Material (%)	0.10	1.50	0.41	0.28	0.69
Shrunken and Broken Kernels (%)	0.30	2.00	0.80	0.29	0.37
Yellow Berry Kernels (%)	0.00	14.00	3.32	2.72	0.82
Protein (13.5% Moisture) (%)	9.4	12.1	10.6	0.5	0.05
Weight of 1000 Kernels (gr.)	31.99	40.60	35.88	1.73	0.05
Ash (% dry basis)	1.562	1.890	1.721	0.074	0.04

Total damaged kernels include 0.02 frosty kernels, 0.06% sprouted kernels, 0.02% insect chewed kernels and 0.06% germen chewed kernels.

Grade Distribution



Flour Analisys		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	18.6	30.1	22.9	1.8	0.08
	Dry Gluten (%)	6.9	11.1	8.4	0.6	0.07
	Falling Number (sec)	332	507	407	36	0.09
	Flour Yield (%)	61.00	70.40	65.95	1.86	0.03
	Ash (dry basis) (%)	0.470	0.640	0.549	0.046	0.08
FARINOGRAM	Water Absorption (14 % H°) (%)	54.8	63.4	58.4	1.6	0.03
	Development Time (min.)	1.3	32.0	11.1	7.6	0.68
	Stability (min.)	1.2	65.0	27.0	16.6	0.61
	Degree Softening (12 min.)	0	75	26	18	0.69
ALVEOGRAM	P (mm)	81	138	107	11	0.11
	L (mm)	33	117	73	14	0.19
	W Joules x 10-4	199	377	303	37	0.12
	P / L	0.73	4.18	1.47	0.48	0.31

These results were elaborated with 81 composite sample prepared proportionally from 705 primary samples (farmer deliveries).

Subregion Data:

In this region the wheat production was 4,469,950 tn., the 28.4% of the national total. Were sampled 314,258 tn., the 7.03% 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 Kernels (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
400	Balcarce	4020	1	83.05	0.06	0.25	0.73	0.46	11.2	36.10	1.698
406	Rauch	4000	1	81.95	0.06	0.39	0.56	0.62	10.5	37.68	1.620
408	Azul	4000	2	80.80	0.36	0.80	0.68	4.77	10.8	35.50	1.675
409	Azul	4003	2	82.15	0.15	0.95	0.55	5.42	10.2	35.10	1.720
410	Azul	4003	1	83.70	0.08	0.29	0.81	0.56	10.8	38.69	1.650
411	Azul	4002	1	79.45	0.64	0.24	0.51	0.73	12.1	36.10	1.647
412	Olavarría	3999	2	83.05	0.22	0.81	0.88	4.75	10.2	35.20	1.752
413	Olavarría	4152	3	81.05	0.44	1.49	0.64	1.35	10.3	37.40	1.843
414	Olavarría	3999	2	81.25	0.31	1.06	1.20	5.05	10.3	37.40	1.880
415	Necochea	4000	1	81.70	0.14	0.26	0.70	3.60	10.6	37.40	1.605
416	Necochea	4000	1	81.70	0.24	0.31	0.71	0.88	10.6	37.30	1.640
417	Necochea	4000	1	81.70	0.16	0.18	0.58	1.17	10.6	33.80	1.627
418	Lobería	4000	1	81.95	0.13	0.22	0.62	1.49	10.7	38.20	1.772
419	Lobería	4000	1	80.80	0.04	0.29	0.60	0.65	10.6	35.60	1.684
420	Lobería	4001	1	80.35	0.14	0.31	0.51	2.20	10.6	33.30	1.725
421	Alvarado	4000	1	83.25	0.04	0.24	0.74	0.93	11.4	37.20	1.630
422	Alvarado	4000	1	84.40	0.18	0.25	0.42	0.91	11.1	37.70	1.625
423	Alvarado	4000	1	81.25	0.10	0.08	0.65	0.38	11.6	39.50	1.649
424	Alvarado	4000	1	79.90	0.18	0.09	0.58	0.36	11.5	37.50	1.705
425	Gral. Pueyrredón	4000	1	81.05	0.12	0.15	0.74	0.00	10.8	39.40	1.705
426	Gral. Pueyrredón	4000	1	82.15	0.27	0.30	0.50	0.79	10.9	36.80	1.712
427	Balcarce	4000	2	78.35	0.94	0.25	0.36	0.18	11.7	38.30	1.704
428	Balcarce	4000	2	84.40	0.10	0.87	0.61	5.37	10.8	36.80	1.730
429	Necochea	4505	1	82.60	0.05	0.26	1.01	2.84	10.2	35.00	1.678
430	Mar Chiquita	4000	1	79.45	0.17	0.39	0.57	0.29	10.6	38.20	1.652
431	González Chávez	4049	1	81.70	0.04	0.55	0.70	1.94	9.9	34.60	1.726
432	González Chávez	4021	1	83.95	0.12	0.46	0.96	2.73	9.6	35.70	1.666
433	González Chávez	4012	2	83.95	0.12	0.82	1.02	5.71	9.4	35.80	1.725
434	Tandil	4000	1	84.85	0.08	0.28	0.77	2.34	10.4	40.60	1.730
435	Tandil	4000	1	85.05	0.20	0.28	0.91	4.14	9.6	36.60	1.760
436	Tandil	4009	1	80.35	0.24	0.16	0.34	2.38	10.1	39.20	1.732
437	Tandil	4001	1	82.15	0.34	0.13	0.81	1.07	10.6	36.30	1.716
438	Lobería	4000	1	82.15	0.13	0.18	0.82	4.11	10.3	35.60	1.725
439	Lobería	4016	1	81.70	0.18	0.20	1.15	2.60	10.6	32.40	1.723
440	Lobería	4001	2	82.60	0.20	0.25	1.64	1.36	10.6	35.10	1.746
441	Lobería	4000	1	82.15	0.04	0.22	1.00	1.21	10.3	33.80	1.795
442	Lobería	4003	1	81.25	0.17	0.12	0.76	3.08	10.4	33.80	1.723
443	Lobería	4001	1	82.15	0.21	0.31	1.01	2.69	10.3	33.10	1.762
444	Gral. Pueyrredón	4014	1	80.80	0.19	0.39	0.44	0.26	11.1	38.60	1.727
446	Benito Juárez	4038	2	83.95	0.17	0.96	0.75	2.77	10.1	34.80	1.667
447	Benito Juárez	4005	1	84.40	0.24	0.38	0.89	5.97	9.9	35.40	1.643
448	Benito Juárez	4000	1	82.60	0.19	0.42	1.01	4.35	10.0	36.10	1.622

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 Kernels (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
449	Benito Juárez	4025	1	84.40	0.06	0.13	1.06	2.31	10.20	36.20	1.617
450	Balcarce	4000	1	80.80	0.30	0.20	0.62	0.70	11.20	37.00	1.740
451	Balcarce	4006	1	83.95	0.16	0.24	0.58	4.93	10.7	35.70	1.712
452	Balcarce	4107	1	83.50	0.30	0.16	0.92	0.84	11.2	36.50	1.746
453	Balcarce	4000	1	82.85	0.16	0.21	0.95	0.94	11.2	36.40	1.706
505	Gral. Lamadrid	4018	1	81.70	0.38	0.24	0.94	1.80	10.5	34.42	1.854
506	Gral. Lamadrid	3992	1	82.60	0.92	0.46	0.76	3.40	10.2	36.83	1.735
507	Laprida	3175	2	81.05	0.00	0.56	1.70	1.60	10.3	31.99	1.776
508	Necochea	3994	1	80.15	0.00	0.60	0.72	5.10	10.3	34.72	1.680
509	Necochea	4017	1	79.70	0.00	0.60	0.76	3.90	10.3	34.54	1.562
510	Necochea	4000	1	80.15	0.00	0.58	0.64	5.80	10.5	34.53	1.586
511	Necochea	3999	2	83.70	0.06	0.86	0.88	3.20	11.0	35.39	1.736
512	Necochea	4000	1	82.40	0.00	0.34	0.66	0.60	9.9	36.22	1.634
513	Necochea	4000	1	83.05	0.00	0.50	0.72	3.70	10.6	36.64	1.722
514	Necochea	4000	1	81.50	0.06	0.46	0.56	3.30	11.0	35.87	1.634
515	Necochea	3998	1	82.85	0.18	0.10	1.16	2.50	10.7	35.18	1.679
516	Necochea	3900	1	79.70	0.06	0.14	0.68	1.80	11.4	34.18	1.769
517	Necochea	4015	3	83.50	0.04	1.38	1.28	0.90	10.1	32.92	1.889
524	San Cayetano	4000	1	81.25	0.12	0.54	0.70	11.30	10.0	35.62	1.864
525	San Cayetano	4000	1	81.95	0.12	0.52	0.50	9.70	10.1	35.28	1.890
526	San Cayetano	4007	1	81.05	0.00	0.18	0.80	2.20	10.6	33.48	1.772
532	Tandil	4002	1	79.70	0.06	0.22	0.82	4.20	10.5	35.31	1.693
533	Tandil	3849	1	80.35	0.00	0.36	0.68	3.40	11.4	36.93	1.765
534	Tandil	4059	2	79.70	0.20	0.82	0.68	1.10	11.4	36.58	1.691
535	Tandil	4035	1	80.15	0.36	0.10	0.88	5.60	11.1	37.27	1.666
536	Tandil	4005	1	80.80	0.12	0.22	0.44	7.70	10.8	36.14	1.704
537	Tandil	4011	1	82.85	0.12	0.32	0.54	4.80	10.9	36.15	1.803
538	Tandil	4042	1	82.60	0.00	0.34	0.52	3.90	10.9	36.51	1.782
539	Tandil	4009	1	83.95	0.00	0.42	0.46	4.60	10.8	37.39	1.802
540	Tres Arroyos	3999	1	82.60	0.00	0.32	0.84	9.10	10.0	34.52	1.878
541	Tres Arroyos	4005	2	83.05	0.12	0.64	1.82	3.70	10.2	33.06	1.878
542	Tres Arroyos	3994	2	81.95	0.40	0.36	1.28	7.20	10.5	34.13	1.715
543	Tres Arroyos	4000	1	79.90	0.30	0.22	0.88	5.70	10.4	35.15	1.797
544	Tres Arroyos	4000	2	81.95	0.00	0.64	0.66	14.40	9.9	33.95	1.663
545	Tres Arroyos	4066	1	81.70	0.10	0.38	0.80	7.60	10.4	36.45	1.676
546	Tres Arroyos	4002	1	81.95	0.00	0.46	1.08	5.80	10.5	34.74	1.768
547	Tres Arroyos	4014	1	81.25	0.00	0.36	1.22	2.70	10.5	32.80	1.819
548	Tres Arroyos	3980	1	81.25	0.24	0.50	1.12	6.60	10.3	36.17	1.768
549	Tres Arroyos	2104	2	82.40	0.08	0.82	1.98	7.60	10.2	32.76	1.783

Subregion IV Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
400	Balcarce	24.0	7.8	403	63.6	58.8	20.3	29.8	30	103	85	323	1.21	0.545
406	Rauch	24.8	8.7	397	64.6	58.0	25.5	30.6	30	117	71	338	1.65	0.513
408	Azul	25.6	8.2	379	67.9	61.2	25.2	30.3	20	116	69	316	1.68	0.487
409	Azul	21.7	8.0	352	66.0	56.3	9.5	22.1	17	107	59	257	1.81	0.537
410	Azul	22.7	7.6	363	66.7	57.5	26.2	34.4	40	103	69	283	1.49	0.489
411	Azul	24.2	8.4	397	68.8	61.0	2.6	28.7	10	133	69	338	1.93	0.506
412	Olavarría	23.4	8.6	345	67.3	57.7	8.4	15.6	34	101	78	291	1.29	0.555
413	Olavarría	22.7	8.4	363	66.8	56.1	9.9	18.5	27	89	82	273	1.09	0.619
414	Olavarría	20.8	7.7	371	69.0	58.2	2.2	2.6	48	103	60	244	1.72	0.604
415	Necochea	26.0	8.8	356	67.1	57.8	17.1	21.4	50	86	117	351	0.74	0.493
416	Necochea	24.8	8.7	395	67.1	59.6	28.5	34.0	40	109	70	309	1.56	0.516
417	Necochea	23.5	9.2	408	66.3	58.2	24.9	29.5	40	106	78	318	1.36	0.509
418	Lobería	22.6	7.7	403	63.5	58.6	27.0	29.5	60	110	66	294	1.67	0.517
419	Lobería	23.7	8.6	367	66.8	55.8	12.0	29.0	20	89	88	304	1.01	0.503
420	Lobería	23.1	8.2	366	66.2	54.8	11.5	28.0	20	81	78	252	1.04	0.487
421	Alvarado	23.9	8.6	392	65.0	56.8	12.0	45.0	0	89	73	264	1.22	0.471
422	Alvarado	24.9	8.9	389	62.1	58.3	10.0	22.0	35	101	66	277	1.53	0.560
423	Alvarado	25.2	9.1	391	61.0	60.4	12.5	29.0	25	99	77	311	1.29	0.537
424	Alvarado	25.3	9.3	372	66.9	58.4	11.0	28.0	20	95	89	342	1.07	0.512
425	Gral. Pueyrredón	26.1	9.3	332	64.5	59.9	9.0	17.0	40	91	85	301	1.07	0.497
426	Gral. Pueyrredón	24.0	8.7	363	67.0	58.8	22.0	8.0	20	95	82	299	1.16	0.560
427	Balcarce	24.4	8.7	361	69.5	54.8	11.0	33.0	10	89	95	332	0.94	0.470
428	Balcarce	24.0	8.6	414	65.0	57.1	15.0	50.0	5	113	77	352	1.47	0.513
429	Necochea	21.6	7.8	425	65.7	55.1	16.5	48.0	0	98	65	259	1.51	0.573
430	Mar Chiquita	24.3	8.7	430	67.7	58.3	9.0	23.5	25	107	76	306	1.41	0.567
431	González Chávez	21.4	7.8	395	63.9	58.8	8.0	55.0	15	115	55	262	2.09	0.599
432	González Chávez	21.0	7.6	401	65.5	56.8	12.0	50.0	10	101	70	274	1.44	0.624
433	González Chávez	22.6	8.3	435	65.6	59.8	26.0	65.0	0	107	49	223	2.18	0.568
434	Tandil	20.1	7.4	438	67.8	58.1	2.0	6.1	40	108	62.2	272	1.74	0.603
435	Tandil	19.4	7.2	434	65.1	57.1	9.8	24.7	21	113	48	221	2.35	0.613
436	Tandil	22.5	8.3	469	68.2	56.1	9.6	16.2	38	85	91.3	269	0.93	0.522
437	Tandil	22.2	8.2	473	65.4	56.0	12.4	38.1	7	93	84	286	1.11	0.505
438	Lobería	22.4	8.3	507	63.2	57.4	2.3	38.2	5	110	63	286	1.75	0.532
439	Lobería	23.1	8.6	438	64.8	56.9	2.0	24.0	20	99	78	305	1.27	0.575
440	Lobería	21.8	8.1	446	68.5	59.2	2.0	32.0	35	132	62	347	2.13	0.500
441	Lobería	21.2	7.9	468	64.8	56.2	2.0	31.0	35	117	58	285	2.02	0.506
442	Lobería	21.8	8.1	491	67.1	57.7	1.3	3.4	60	106	71	295	1.50	0.508
443	Lobería	23.0	8.5	458	65.1	57.0	2.0	4.4	50	106	80.4	328	1.32	0.512
444	Gral. Pueyrredón	22.5	8.3	409	67.1	60.8	2.3	4.3	50	125	74.9	366	1.67	0.577
446	Benito Juárez	21.8	8.1	450	65.8	58.2	10.1	27.8	12	116	61	281	1.90	0.549
447	Benito Juárez	21.0	7.8	447	65.3	61.5	2.0	6.3	35	130	48.2	267	2.69	0.566
448	Benito Juárez	22.0	8.2	449	65.6	57.5	1.4	5.1	40	87	92	295	0.95	0.553

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
449	Benito Juárez	23.1	8.6	438	64.5	59	2.2	17.0	35	94	100	332	0.94	0.557
450	Balcarce	23.9	8.9	371	69.7	57.0	11.4	41.3	10	107	83	349	1.29	0.511
451	Balcarce	22.7	8.4	383	70.4	58.6	11.1	46.4	14	117	58	284	2.02	0.508
452	Balcarce	30.1	11.1	410	65.5	61.7	6.5	8.7	60	92	88	278	1.05	0.571
453	Balcarce	24.6	9.1	381	67.8	60.2	6.4	16.9	30	123	61	308	2.02	0.640
505	Gral. Lamadrid	22.7	8.5	426	67.2	58.9	5.5	13.7	37	102	84	323	1.21	0.605
506	Gral. Lamadrid	22.3	8.1	393	67.4	60.9	4.9	13.8	33	117	69	309	1.70	0.553
507	Laprida	22.2	8.1	390	64.9	57.4	9.7	19.4	23	104	71	288	1.46	0.558
508	Necochea	22.5	8.4	382	61.5	59.6	1.7	2.5	49	112	76	335	1.47	0.485
509	Necochea	23.2	8.4	421	66.1	58.8	13.6	36.9	12	106	81	319	1.31	0.542
510	Necochea	22.9	8.4	448	65.9	58.2	17.5	46.6	2	107	73	306	1.47	0.540
511	Necochea	23.4	8.9	438	65.1	59.4	28.0	57.9	16	121	72	322	1.68	0.537
512	Necochea	22.3	8.1	439	65.3	59.3	15.5	59.0	0	108	73	287	1.48	0.488
513	Necochea	23.1	8.6	420	67.4	59.3	9.5	19.7	21	108	81	330	1.33	0.535
514	Necochea	24.1	9.0	446	65.3	59.5	20.0	58.4	0	120	80	370	1.50	0.485
515	Necochea	23.6	8.7	438	67.9	59.4	13.2	34.8	1	120	78	370	1.54	0.557
516	Necochea	24.7	9.4	401	65.4	59.6	16.5	48.5	0	117	76	343	1.54	0.488
517	Necochea	23.9	8.6	432	67.5	59.3	9.5	13.1	44	109	83	321	1.31	0.577
524	San Cayetano	21.3	8.1	438	65.1	59.5	1.7	2.2	60	118	57	281	2.07	0.573
525	San Cayetano	21.0	8.0	458	65.8	56.8	32.0	59.1	0	116	50	251	2.32	0.495
526	San Cayetano	22.9	8.5	391	67.7	57.4	8.4	21.2	23	107	75	315	1.43	0.509
532	Tandil	21.4	8.0	424	66.5	57.4	1.5	2.0	67	101	69	276	1.46	0.576
533	Tandil	21.4	8.1	401	62.8	57.2	8.8	26.7	22	104	73	310	1.42	0.550
534	Tandil	20.9	8.0	425	63.3	57.5	8.4	30.0	13	111	71	314	1.56	0.634
535	Tandil	24.4	9.0	385	64.3	58.2	7.9	16.9	30	96	103	358	0.93	0.607
536	Tandil	19.8	7.6	381	65.8	58.3	11.6	28.6	12	109	62	281	1.76	0.629
537	Tandil	24.9	9.2	389	66.7	59.5	14.0	24.9	20	113	84	369	1.35	0.583
538	Tandil	22.9	8.3	378	68.5	56.5	11.4	18.8	29	93	86	313	1.08	0.607
539	Tandil	23.5	8.9	363	67.3	59.3	10.0	21.7	19	107	95	377	1.13	0.603
540	Tres Arroyos	19.1	7.1	425	62.8	58.1	1.8	1.5	62	105	57	238	1.84	0.496
541	Tres Arroyos	20.0	7.6	432	66.7	57.3	12.0	59.0	3	116	63	307	1.84	0.517
542	Tres Arroyos	25.1	9.6	376	67.5	58.6	11.6	19.2	27	101	91	350	1.11	0.629
543	Tres Arroyos	22.5	8.4	368	66.5	60.3	12.0	23.5	21	110	78	336	1.41	0.597
544	Tres Arroyos	20.7	7.9	398	62.9	59.2	8.0	59.9	15	111	62	289	1.79	0.626
545	Tres Arroyos	24.4	9.0	360	64.5	60.9	9.2	14.0	30	112	77	320	1.45	0.628
546	Tres Arroyos	18.6	6.9	399	63.1	63.4	1.7	1.2	75	138	33	199	4.18	0.596
547	Tres Arroyos	20.6	7.8	382	66.3	58.3	17.9	41.3	16	100	61	258	1.64	0.588
548	Tres Arroyos	22.2	8.4	350	66.5	56.5	11.1	27.0	16	106	73	315	1.45	0.537
549	Tres Arroyos	21.0	8.0	398	64.7	60.2	1.7	1.9	72	114	60	277	1.90	0.597

Climatology 2000/2001

Climate and Wheat crop 2000 – 2001 in Argentina

Agreement between "Comisión Nacional de Actividades Espaciales" and "Federación de Centros y Entidades Gremiales de Acopiadores de Cereales" of Argentina

By Adriana Basualdo and Germán Hizenknecht

Describing the climatic behavior during the last year (2000-2001) of Argentine wheat, we use a methodology to calculate the soil water storage (water reserves) and its anomalies. It is called "Classification of Soil Moisture" these are calculated as a monthly average during the whole cycle of the wheat, and they come from a daily analysis. The classification of moisture is an excellent climatic indicator which summarizes the precipitation and its interaction with the evapotranspiration, but it depends on the air temperature, the radiation, the wind and the atmospheric humidity.

The presentation of the maps sequences about classification of soil moisture and a description of their behavior allow the reader to have a clear idea of the climatic evolution of the crop, although the agronomic considerations are described in another section of this document. The maps are used in an operative way and for any period of time, in this case they are monthly and contain a political subdivision in departments which can be associated to the well-known wheat areas of the country. Only 5 provinces from The Pampean region are represented.

May 2000

The sowing begun in the northern wheat subregions, presenting soil humidity levels higher than usual. Therefore, there was a good quantity of water in winter, which helped the nitrates washing.

June 2000

The Northwest and west of the Pampean region, (continental climate), is a place of limited rainfall It was observed a desiccation in Córdoba, Northwest of Santa Fe and Northeast of La Pampa, but there weren't low levels of water reserves (with respect to historical records), so they were classified as "Much wetter than usual". An "Extremely wetter than usual" area, which includes Buenos Aires, Entre Ríos and Southeast of Santa Fe.

July 2000

The "Extremely wetter than usual" area , cover the whole Entre Ríos province, where in this month, rains above 100 mm were registered. Center and West of Buenos Aires showed a little desiccation because of the lack of rains during July in this area. However, water reserves in all the wheat region were much higher than usual.

August 2000

During August there were no significant changes with respect to the previous month, although a little desiccation was shown in the Northwest of the wheat region (Córdoba and North of Santa Fe), as a result of the low rainfall. As the evaporation of this month is low, the moisture levels kept on being higher than the usual for the period.

September 2000

The rains condition in the Northwest of the wheat region had not changes, but during this month, in the West, there were similar characteristics because of the rains, which were lower than normal for this month. However, in La Pampa, the moisture soil levels kept on being the appropriate for this crop. In Entre Ríos, these levels were very high, and had a very little reduction, as a consequence of the rains, and had the same level in the East and Southeast of Buenos Aires, reaching the Center of Buenos Aires, where rains over 100 mm were registered.

October 2000

As the last months, reserves in October were between the optimum and excessives in almost the whole province of Buenos Aires, Southeast of Santa Fe and Southwest of Entre Ríos, mainly in the Center and Southeast of Buenos Aires, where the reserves levels were "extremely higher than the normal", as a result of the important rains during September and October. Córdoba and the North of Santa Fe showed a new desiccation, reaching the reserves the normal levels for the period, but they were not enough for wheat crop. Besides, storms and strong winds registered in Córdoba increased the lost area of wheat crop.

November 2000

The most important rains were registered in the Northern half of the wheat area, specially in Santa Fe and the North of Córdoba. This allowed a suitable recovery of the edaphic moisture levels in those places where it was more necessary, although climate conditions favoured Fusarium incidence. The Northwest of Buenos Aires registered important water excesses as a consequence of the outcrop of the phreatic layers.

On the contrary, rains in the South of the wheat region were lower than normal, drying quickly the South of La Pampa and Buenos Aires. However, wheat had already reached a critical stage, but in spite of this, it could developing favorably.

December 2000

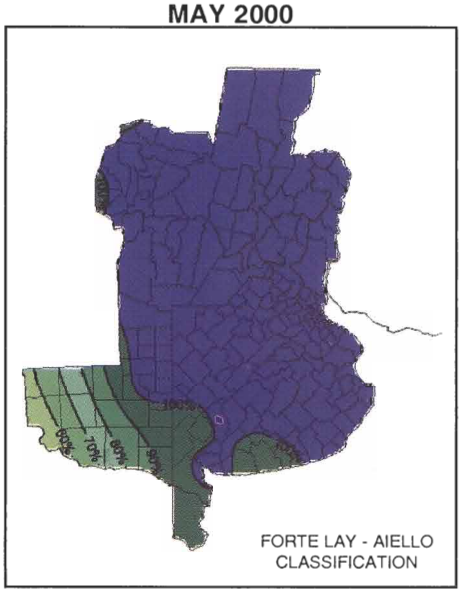
Rains were normal in the North of the wheat region (North of Córdoba, Center and North of Santa Fe and Entre Ríos), but in the rest of the region, rains were scarce. Consequently, there were an increase in the soil water reserves in the North and a desiccation in the South. Satisfactory yields were registered in Córdoba, Santa Fe and Entre Ríos.

January 2001

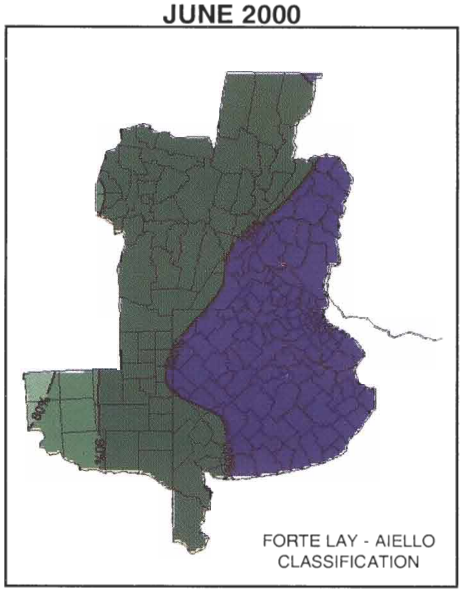
Rains distribution kept on during this month with respect to last one, increasing the dryness in the Southwest extreme of Buenos Aires and the Southwest of La Pampa. Important rains were registered in the Southeast of Buenos Aires, producing an increase in the amount of water reserves, and some temporary excesses which delayed the harvest in some cases, but the great evapotranspiration during January contributed to a rapid conclusion of this labour.

SOIL HUMIDITY CLASSIFIC

MAY 2000



JUNE 2000



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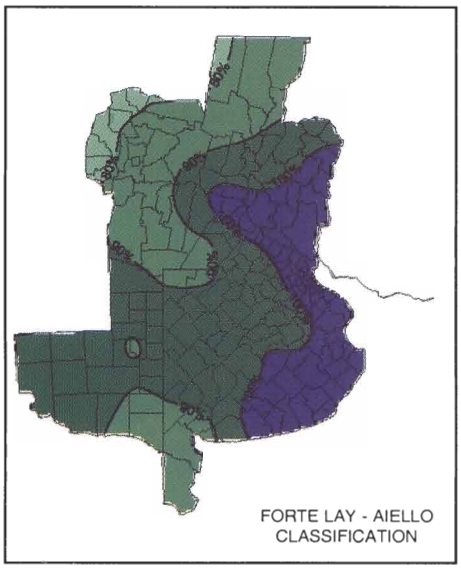

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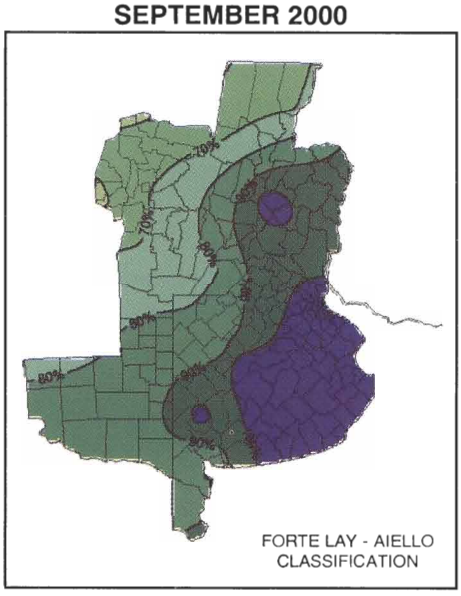

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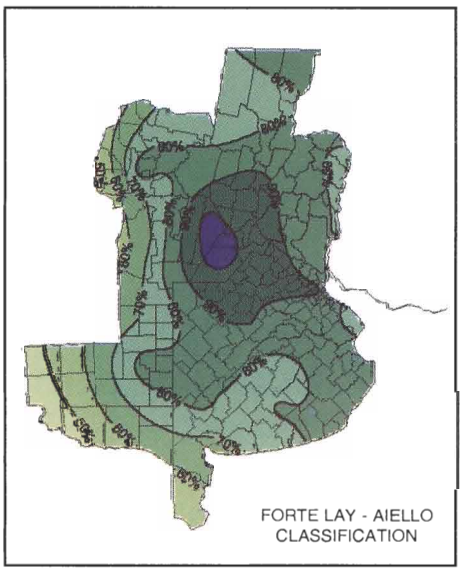
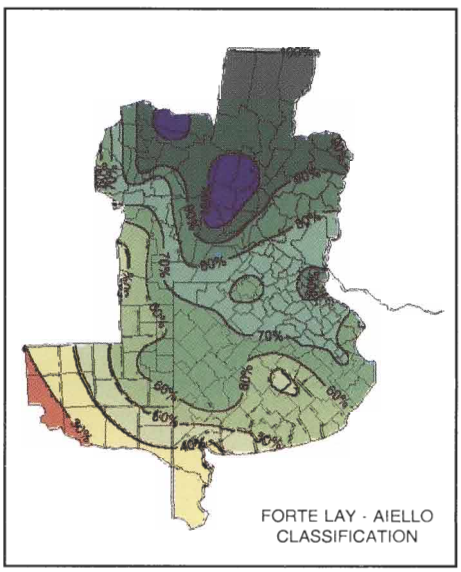
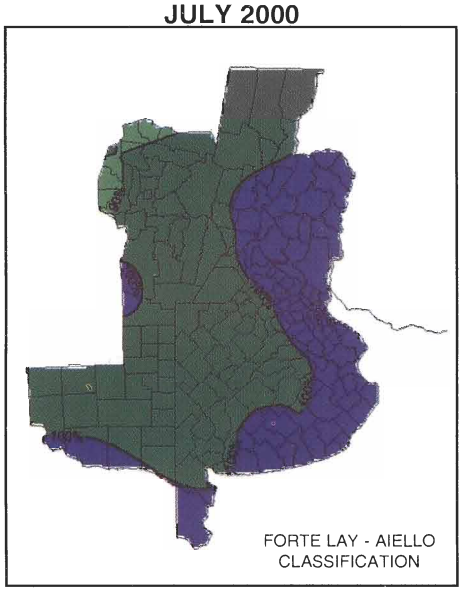


DECEMBER 2000

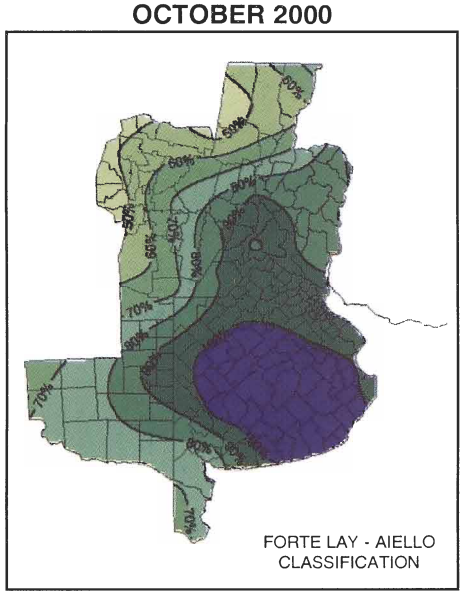


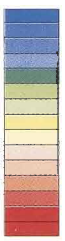
ION 2000/2001 WHEAT CROP

JULY 2000



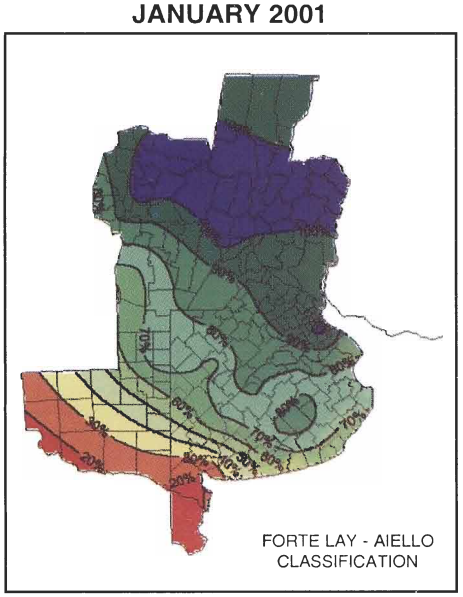
OCTOBER 2000





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 2001



Subregion V North
Background for the crop

The 2000 V North production, 875.000 tons, was up from last year, 728.500 tons. This represent 5,6 % over 2000/2001 Argentine wheat production.

Planted (425.000 has) and harvested (411.000 has) areas were increased particularly in Río Primero, Santa María, Río Segundo and Tercero Arriba districts.

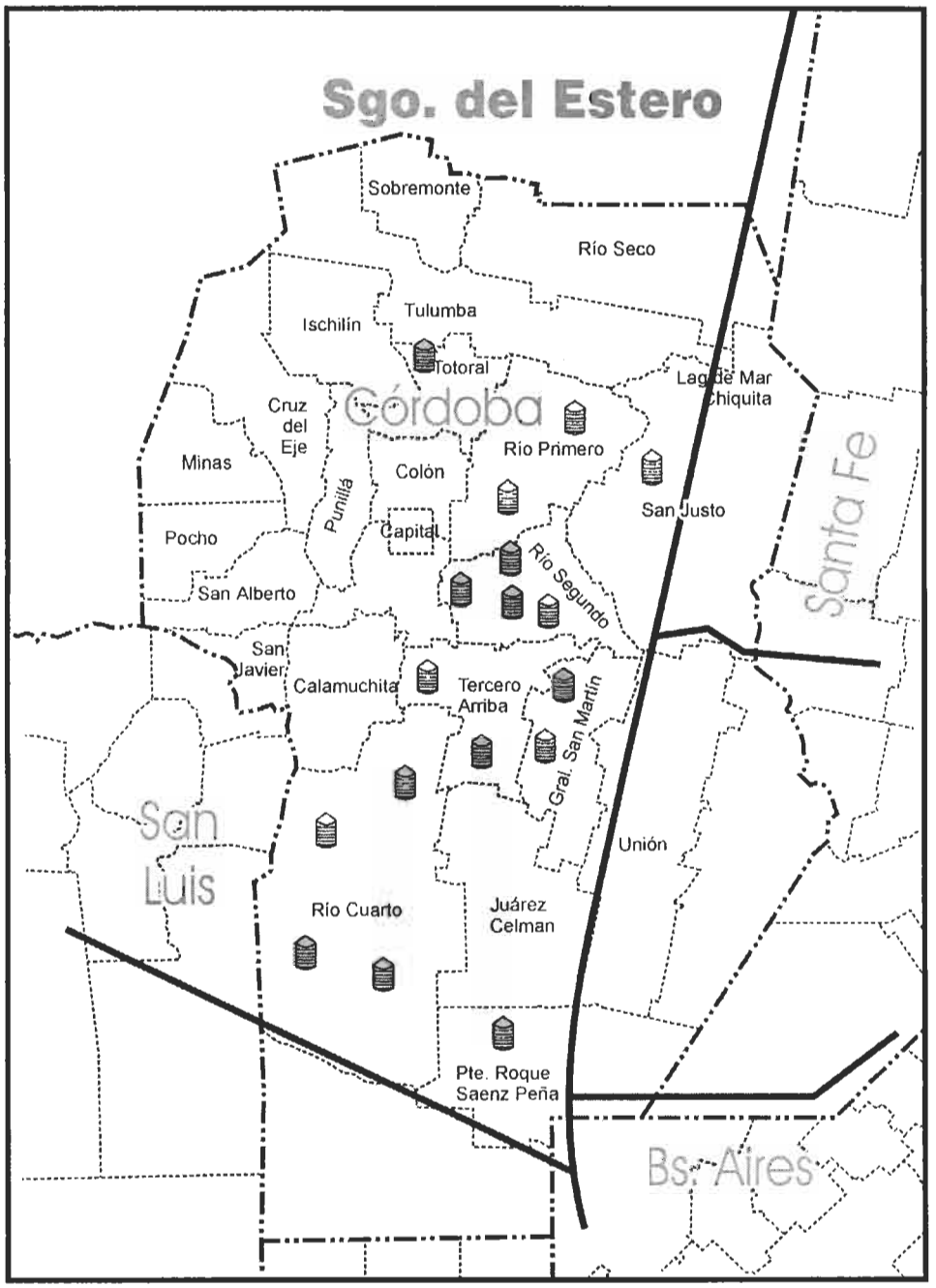
Climate conditions were favorable at planting (except Río Primero, where 30 % of planting was delayed), and normal growing conditions, but some areas reported loses produced by hail (Oliva and Oncativo).

Health conditions of the crops were acceptable, with light incidence of leaf diseases (yellow rust) and spike diseases (Fusarium and Septoria), and in general, free of insect attacks.

Average yield, 21,34 qq/ha was lower than the national one (24,9 qq/ha), like the tendency registered in previous years. Lower yields causes were: hails, low technology application, and limited or null use of chemical products (herbicides and insecticides).

The replace of the conventional agriculture by conservative methods added a plus in the price consideration, and as a result it changed the rule of wheat in farm production. Now it is not considerate as an individual crop, but it's a component of the crop rotation with soybean, corn or sorghum.

Subregion V North Wheat



Each reference represents near 4,000 tns sampled

Subregion V North Wheat

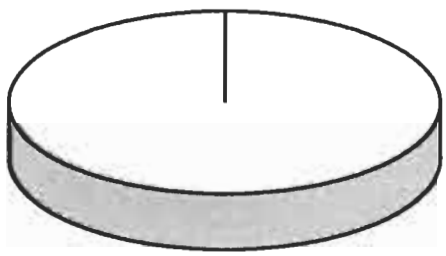
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.10	81.05	77.59	1.23	0.02
Total Damaged Kernels (%)	0.46	1.56	1.04	0.32	0.31
Foreign Material (%)	0.05	0.92	0.34	0.29	0.85
Shrunken and Broken Kernels (%)	0.42	1.85	0.91	0.37	0.41
Yellow Berry Kernels (%)	0.00	3.56	0.40	0.83	2.11
Protein (13.5% Moisture) (%)	10.5	12.8	11.8	0.6	0.05
Weight of 1000 Kernels (gr.)	27.40	34.20	30.50	1.60	0.05
Ash (% dry basis)	1.480	2.060	1.855	0.129	0.07

Total damaged kernels include 0.09 green kernels, 0.06 frosty kernels, 0.07% sprouted kernels, 0.19% insect chewed kernels, 0.34% germen chewed kernels and 0.29% calcinated kernels.

Grade Distribution



2
100%

Flour Analisys		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	26.0	32.7	29.3	1.8	0.06
	Dry Gluten (%)	9.3	11.2	10.4	0.5	0.05
	Falling Number (sec)	369	440	405	24	0.06
	Flour Yield (%)	63.40	71.70	67.45	2.78	0.04
	Ash (dry basis) (%)	0.461	0.643	0.567	0.049	0.09
FARINOGRAM	Water Absorption (14 % H°) (%)	59.2	61.8	60.7	0.7	0.01
	Development Time (min.)	5.5	10.2	8.3	1.3	0.15
	Stability (min.)	6.8	14.8	11.0	2.2	0.20
	Degree Softening (12 min.)	29	71	46	10	0.21
ALVEOGRAM	P (mm)	38	104	87	18	0.21
	L (mm)	67	135	99	18	0.18
	W Joules x 10-4	196	366	297	49	0.16
	P / L	0.61	1.53	0.88	0.27	0.28

These results were elaborated with 16 composite sample prepared proportionally from 271 primary samples (farmer deliveries).

Subregion Data:

In this region the wheat production was 875,000 tn., the 5.56% of the national total. Were sampled 66,424 tn., the 7.59% 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 Kernels (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
600	Tercero Arriba	3600	2	76.80	0.84	0.23	1.33	0.06	12.0	29.40	1.874
601	Tercero Arriba	3600	2	76.80	0.68	0.14	1.73	0.10	11.4	28.80	1.586
602	Río IV	4128	2	81.05	1.36	0.49	0.68	0.10	12.8	32.50	1.880
603	Río IV	4582	2	78.15	1.17	0.71	0.83	0.60	11.7	34.20	1.815
604	Totoral	4000	2	76.55	1.45	0.05	0.42	3.56	11.3	30.90	1.863
606	R. Saenz Peña	4011	2	78.60	1.12	0.81	0.81	0.73	10.5	32.00	1.480
607	Gral. San Martín	6600	2	77.00	0.93	0.23	1.03	0.00	12.2	28.40	1.863
608	Tercero Arriba	4000	2	78.80	0.46	0.22	0.96	0.00	12.1	30.90	1.951
609	Río II	6006	2	76.80	1.06	0.15	0.48	0.10	11.7	30.10	1.944
610	R. Saenz Peña	6697	2	76.10	1.56	0.92	0.67	0.03	11.0	29.80	1.882
611	Río I	3500	2	77.00	0.53	0.07	0.66	0.00	12.8	30.90	1.892
612	Río I	3500	2	77.00	0.64	0.12	0.68	0.00	12.1	31.20	1.845
614	Río II	3500	2	78.35	1.09	0.19	1.17	0.60	12.7	31.20	2.060
615	Río II	2600	2	77.70	0.94	0.19	1.85	0.30	12.3	29.80	1.931
616	Río II	3300	2	78.80	1.26	0.19	0.83	0.30	11.8	30.70	1.905
617	San Justo	2800	2	77.45	1.00	0.18	1.15	0.26	11.9	27.40	1.908

Subregion V North Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
600	Tercero Arriba	29.8	10.6	400	71.7	60.0	9.6	14.8	43	93	101	330	0.92	0.589
601	Tercero Arriba	28.1	9.9	397	67.8	60.5	8.2	13.5	34	86	99	290	0.87	0.554
602	Río IV	30.3	10.5	402	70.8	61.3	9.5	10.5	53	94	119	366	0.79	0.569
603	Río IV	26.0	9.3	369	65.5	59.2	8.7	12.0	39	103	67	249	1.54	0.513
604	Totoral	31.4	11.0	370	70.0	61.8	9.2	11.3	45	96	114	362	0.84	0.535
606	R. Saenz Peña	27.5	9.7	440	70.7	59.8	6.7	6.8	71	101	77	254	1.31	0.548
607	Gral. San Martín	31.3	10.8	434	64.5	61.3	9.3	11.8	40	85	119	321	0.71	0.595
608	Tercero Arriba	30.5	11.0	384	64.7	60.5	7.9	9.8	52	82	135	353	0.61	0.582
609	Río II	28.3	10.5	376	63.4	60.6	9.2	13.2	42	103	87	332	1.18	0.461
610	R. Saenz Peña	27.6	9.8	417	64.8	60.4	5.5	7.2	53	38	95	196	0.40	0.643
611	Río I	30.9	10.8	413	67.8	61.2	7.7	11.8	40	80	106	291	0.75	0.593
612	Río I	32.7	11.2	388	67.7	61.3	8.8	12.3	29	81	111	307	0.73	0.539
614	Río II	28.9	10.2	434	68.0	61.5	8.2	10.8	53	104	84	300	1.24	0.543
615	Río II	28.3	10.2	422	71.6	61.4	8.0	9.7	46	87	102	285	0.85	0.586
616	Río II	27.6	10.2	429	70.5	61.4	7.2	8.9	52	99	75	254	1.32	0.640
617	San Justo	29.8	10.6	420	68.6	59.8	10.2	13.3	32	89	93	302	0.96	0.592

Subregion V South
Background for the crop

The climatic variability that characterizes this subregion makes it impossible to predict harvest results. This uncertainty is due to irregular rainfall distribution within the crop cycle, the extreme temperatures, dry winds, and according to developmental stage, it may drastically reduce the quantity and quality of the harvested grain.

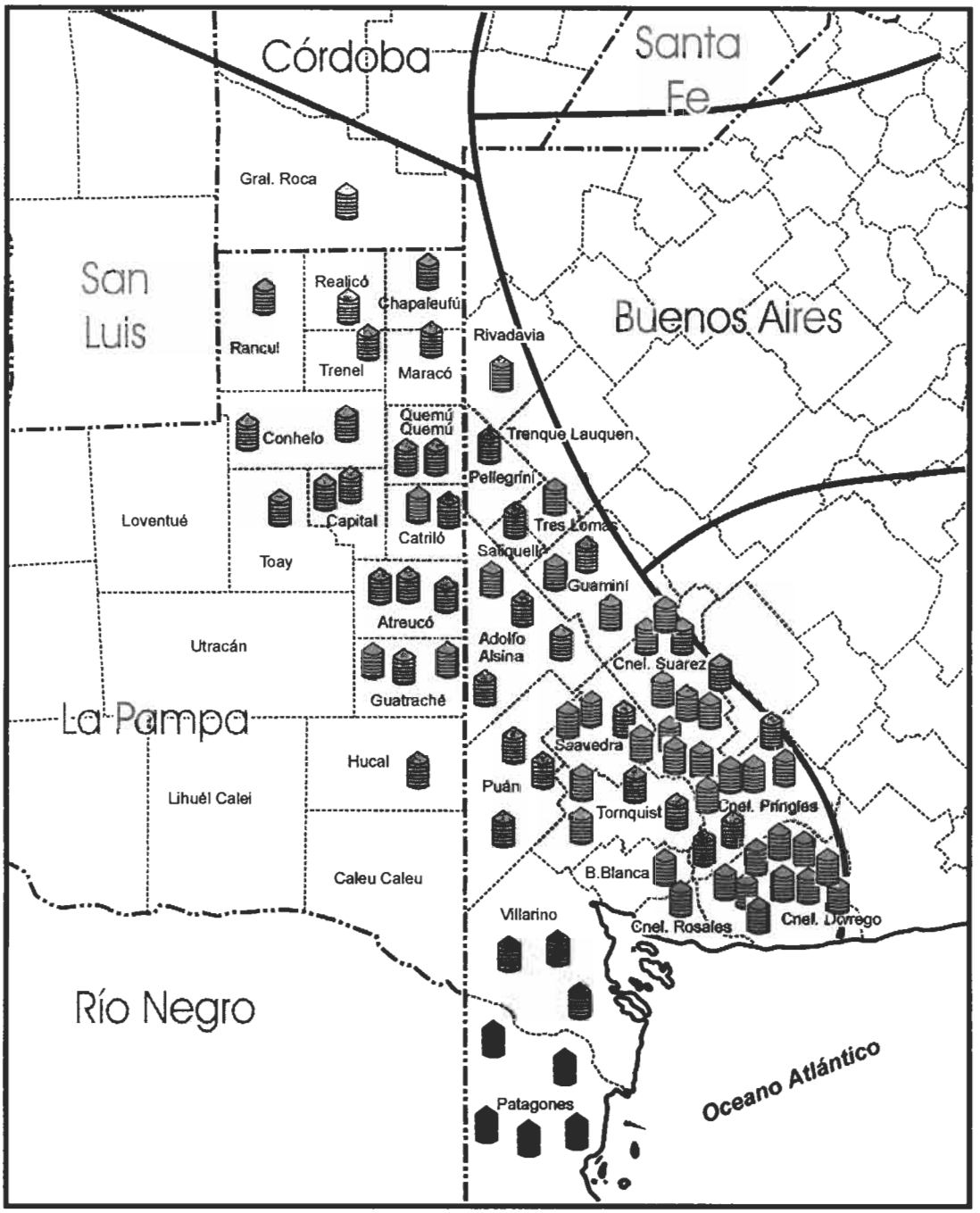
The crop year begun with fair summer rains which ceased by the end of the season. Therefore, seedbed preparation early in May and at the middle of June, the sowings were completed on time. On the other hand, the latest seeding dates, in July, were troubled by long periods of rainy days and even light snow fall. Low temperatures delayed emergence of late sown wheat crops and extended the tillering stage of the early and intermediate ones, giving growth to a larger number of tillers and more spikelets per spike. Towards the end of this stage, crops suffered a moderate drought.

The onset of the reproductive stage coincided with heavy rains that may have produced nitrogen leaching in soils. This episode helps to explain grain low protein contents, since N fertilization was scarce or null.

During springtime months climatic conditions were favorable and found wheat plants requirements during stem elongation up to the heading stage, bringing about good grain harvest perspectives. A very late frost happened at the beginning of grain filling but being of slight intensity it only produced moderate damage in some areas.

The kernel filling stage was shortened by severe drought and high temperatures late in spring and in the early summer. However, yields were higher than expected, averaging 2,248 kg/ha, over an estimated sown area of 3,450,000 ha in the influence domain of Port Ingeniero White. This harvest was the second best after the first success in 1997/98, the last "El Niño" year. In general, the grain exhibited low protein contents and, in spite of any prediction, it also had a very low yellow berry kernels content.

Subregion V South Wheat



Each reference represents near 4,000 tns sampled.

Results of the Analyses

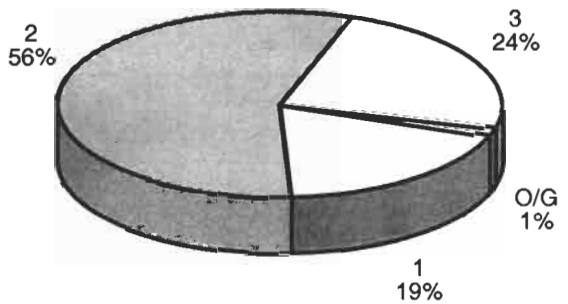
Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	80.20	85.30	82.43	1.12	0.01
Total Damaged Kernels (%)	0.00	0.80	0.12	0.14	1.13
Foreign Material (%)	0.10	1.90	0.83	0.43	0.51
Shrunken and Broken Kernels (%)	0.50	3.80	1.57	0.73	0.47
Yellow Berry Kernels (%)	1.00	45.00	8.16	6.71	0.82
Protein (13.5% Moisture) (%)	8.8	11.1	9.9	0.5	0.05
Weight of 1000 Kernels (gr.)	29.06	39.76	34.47	2.54	0.07
Ash (% dry basis)	1.669	1.966	1.822	0.082	0.04

Total damaged kernels include 0.01 frosty kernels, 0.04% sprouted kernels and 0.07% germen chewed kernels.

Grade Distribution

Ref:O/G: Out of Grade



Flour Analisys		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	17.6	25.0	21.2	1.7	0.08
	Dry Gluten (%)	6.5	9.2	7.8	0.6	0.07
	Falling Number (sec)	279	454	403	26	0.06
	Flour Yield (%)	57.40	69.40	64.86	2.51	0.04
	Ash (dry basis) (%)	0.399	0.644	0.574	0.053	0.09
FARINOGRAM	Water Absorption (14 % H°) (%)	55.0	64.5	59.2	1.8	0.03
	Development Time (min.)	1.4	32.0	7.7	6.3	0.82
	Stability (min.)	1.1	59.2	19.0	18.0	0.95
	Degree Softening (12 min.)	0	86	37	24	0.64
ALVEOGRAM	P (mm)	85	143	111	9	0.08
	L (mm)	43	89	64	11	0.17
	W Joules x 10-4	195	374	275	43	0.15
	P / L	1.13	2.65	1.73	0.38	0.21

These results were elaborated with 75 composite sample prepared proportionally from 1,435 primary samples (farmer deliveries).

Subregion Data:

In this region the wheat production was 4,112,280 tn., the 26.11% of the national total. Were sampled 285,717 tn., the 6.95% of the subregion production.

Subregion V South Wheat

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS								
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material Kernels (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
703	Atreucó	4009	2	83.95	0.08	0.28	1.14	22.40	9.3	39.19	1.858
704	Atreucó	4000	2	81.95	0.00	0.60	1.24	24.10	9.3	38.59	1.884
705	Atreucó	4014	3	83.05	0.28	1.32	1.46	16.70	9.6	38.32	1.809
706	Capital	3995	1	83.25	0.22	0.38	0.80	6.70	9.6	35.53	1.902
707	Capital	3991	1	83.70	0.00	0.06	0.60	10.40	9.8	39.76	1.900
708	Catriló	4007	2	81.50	0.06	0.92	1.04	2.90	9.9	33.32	1.741
709	Catriló	4001	2	82.85	0.12	0.88	0.94	4.20	9.9	34.85	1.721
710	Chapaleufú	4005	2	81.70	0.62	1.00	0.94	1.80	10.4	33.39	1.930
711	Conhelo	4002	1	83.05	0.40	0.24	0.52	7.40	11.0	37.02	1.966
712	Conhelo	4019	2	83.25	0.16	1.22	1.36	8.60	9.9	37.56	1.955
713	Guatraché	2773	3	82.85	0.00	1.42	1.32	13.70	9.5	33.62	1.761
714	Guatraché	4001	2	83.05	0.20	1.16	1.06	11.00	9.5	36.83	1.719
715	Guatraché	4017	2	81.50	0.18	0.58	2.12	1.20	10.1	32.24	1.740
716	Hucal	2363	3	81.25	0.36	1.34	3.76	13.80	9.7	31.11	1.812
717	Maracó	4000	1	82.15	0.26	0.20	1.02	3.90	10.4	34.03	1.856
718	Quemú Quemú	4001	2	82.85	0.20	0.90	0.64	9.30	10.0	36.86	1.772
719	Quemú Quemú	3995	2	83.05	0.20	0.82	0.94	4.30	9.3	36.01	1.885
720	Rancul	3990	2	82.60	0.32	0.96	1.02	3.10	9.5	35.13	1.820
721	Realicó	4015	3	81.25	0.78	1.76	0.56	4.70	10.3	34.77	1.911
722	Toay	1011	1	83.25	0.00	0.48	0.66	7.50	9.9	36.84	1.909
723	Trenel	3604	1	83.50	0.18	0.56	0.74	7.50	9.8	37.05	1.905
724	Adolfo Alsina	4003	2	83.50	0.00	0.74	1.02	11.90	9.4	36.11	1.804
725	Adolfo Alsina	3996	2	83.05	0.12	0.76	1.36	12.30	9.4	35.85	1.747
726	Adolfo Alsina	4020	1	81.70	0.08	0.42	1.06	9.20	9.5	36.32	1.767
727	Adolfo Alsina	3996	2	82.85	0.08	0.38	1.38	11.20	9.6	37.65	1.722
728	Bahía Blanca	4001	3	80.60	0.12	0.48	3.24	7.70	10.1	31.49	1.865
729	Cnel. Dorrego	4001	2	83.25	0.12	0.94	1.18	3.10	9.3	34.98	1.783
730	Cnel. Dorrego	3995	3	81.70	0.12	1.64	2.24	3.50	10.0	31.56	1.723
731	Cnel. Dorrego	4020	3	83.70	0.06	1.50	2.40	2.00	10.7	30.67	1.698
732	Cnel. Dorrego	4020	3	81.95	0.06	1.52	1.92	3.80	9.7	32.30	1.722
733	Cnel. Dorrego	4110	2	83.25	0.16	0.92	2.36	11.80	10.1	33.13	1.750
734	Cnel. Dorrego	4000	3	81.25	0.14	1.06	2.72	0.50	10.7	29.78	1.767
735	Cnel. Dorrego	4000	3	81.70	0.00	1.34	1.30	3.00	10.6	31.49	1.866
736	Cnel. Dorrego	4000	3	81.25	0.00	1.32	2.06	1.80	10.4	31.51	1.909
737	Cnel. Dorrego	4000	2	80.35	0.06	1.26	2.40	5.20	10.3	30.05	1.910
738	Cnel. Dorrego	4000	3	80.35	0.00	1.06	3.20	1.20	10.7	29.71	1.928
742	Cnel. Pringles	4000	2	81.25	0.00	0.56	2.26	1.60	10.5	32.04	1.888
743	Cnel. Pringles	4000	2	82.85	0.00	0.12	2.32	2.10	10.6	30.84	1.877
744	Cnel. Pringles	4018	2	82.85	0.12	0.38	1.48	4.90	10.5	31.84	1.899
745	Cnel. Pringles	4001	2	80.35	0.12	0.98	2.58	1.60	11.1	35.87	1.917

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 Kernels (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
746	Cnel. Pringles	4020	2	80.60	0.06	0.90	2.22	2.60	10.6	30.95	1.845
747	Cnel. Pringles	4003	2	81.70	0.06	0.86	2.24	2.80	10.2	32.84	1.921
748	Cnel. Pringles	4000	2	80.15	0.06	0.52	1.52	3.80	10.3	31.90	1.944
749	Cnel. Rosales	4000	3	81.25	0.00	1.16	2.82	6.40	10.4	32.52	1.863
750	Cnel. Suárez	4003	1	82.60	0.00	0.36	0.90	6.10	9.7	35.30	1.673
751	Cnel. Suárez	4000	3	83.05	0.12	1.42	1.10	2.20	9.6	35.41	1.671
752	Cnel. Suárez	4001	1	83.05	0.12	0.50	1.16	5.10	10.0	35.74	1.670
753	Cnel. Suárez	4001	2	82.60	0.00	0.58	1.30	7.70	9.7	34.85	1.766
754	Cnel. Suárez	4009	1	82.40	0.00	0.28	0.78	4.10	10.2	35.37	1.835
755	Cnel. Suárez	3955	1	83.70	0.00	0.08	0.98	6.80	9.9	36.27	1.880
756	Cnel. Suárez	4003	1	84.15	0.00	0.20	1.02	6.60	9.9	36.44	1.886
757	Guaminí	3838	1	83.50	0.30	0.48	0.88	9.40	9.9	35.12	1.904
758	Guaminí	4000	1	85.30	0.12	0.58	0.86	0.80	9.2	37.84	1.745
759	Guaminí	4000	2	82.15	0.00	0.72	1.16	4.80	9.3	36.00	1.679
760	Patagones	4019	3	82.60	0.12	1.42	1.36	12.70	9.6	29.06	1.779
761	Patagones	4005	2	83.50	0.00	1.18	1.80	9.50	10.3	33.71	1.911
762	Patagones	4004	2	84.40	0.06	0.96	2.00	9.90	10.1	37.39	1.870
763	Patagones	4006	2	83.95	0.16	0.80	1.66	11.80	9.6	30.51	1.669
764	Patagones	4001	2	83.95	0.22	0.76	0.94	5.80	9.8	32.67	1.736
766	Puán	4003	2	81.70	0.20	0.82	1.82	10.80	9.6	35.44	1.833
767	Puán	4002	2	81.70	0.08	0.60	1.48	14.20	9.8	37.16	1.881
768	Puán	4000	F/E 3	81.05	0.00	0.48	1.08	45.00	8.8	38.49	1.788
772	Saavedra	4015	2	81.70	0.22	1.02	2.00	4.70	10.0	32.02	1.838
773	Saavedra	4001	2	81.70	0.12	0.82	1.60	6.40	9.9	35.07	1.798
774	Saavedra	4000	2	83.95	0.00	0.14	1.86	12.10	9.1	38.12	1.720
775	Saavedra	4000	2	83.05	0.12	0.66	0.82	5.40	9.1	35.92	1.800
776	Salliquelló	3810	2	82.60	0.06	1.24	1.30	9.30	10.1	36.95	1.785
777	Tornquist	4001	2	81.25	0.00	1.20	2.24	7.50	10.3	32.77	1.850
778	Tornquist	4001	2	80.80	0.30	1.20	2.40	8.40	10.2	33.43	1.899
779	Tornquist	4006	2	81.95	0.12	0.34	2.10	13.10	9.6	34.24	1.917
780	Tornquist	4003	3	81.05	0.00	0.84	3.30	14.80	9.9	32.20	1.920
781	Tres Lomas	4001	3	83.50	0.12	1.88	1.14	5.70	9.6	34.30	1.747
782	Villarino	4001	3	81.70	0.06	1.18	2.58	15.10	10.1	35.17	1.846
783	Villarino	4000	2	83.05	0.12	0.68	1.62	17.10	9.8	35.36	1.846
784	Villarino	4011	2	83.70	0.26	1.14	1.52	20.00	9.1	34.30	1.714

Subregion V South Wheat

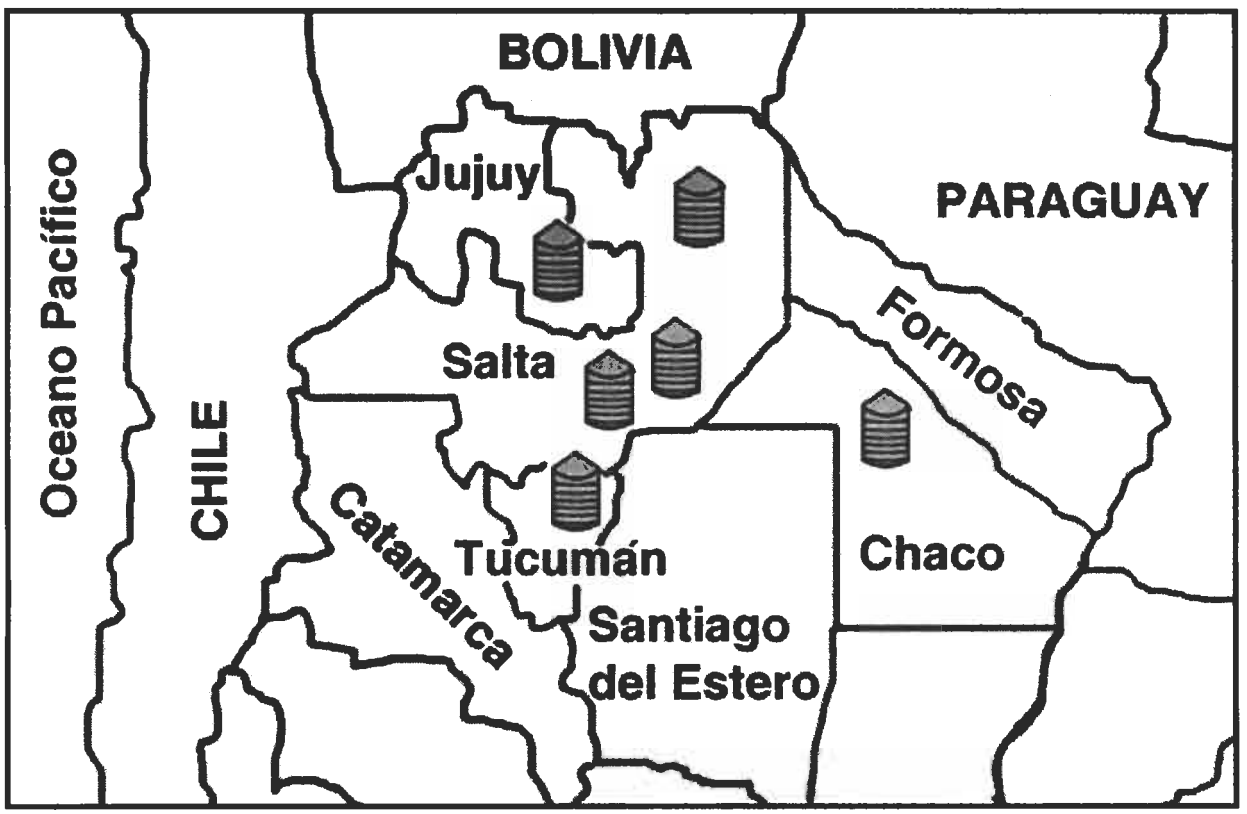
Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
703	Atreucó	18.9	7.2	428	66.7	59.0	1.9	1.6	75	116	56	273	2.07	0.584
704	Atreucó	17.6	6.7	385	65.0	58.7	1.7	1.6	79	108	54	232	2.00	0.530
705	Atreucó	19.5	7.2	430	67.3	59.7	1.5	1.8	77	104	61	247	1.70	0.600
706	Capital	21.7	7.8	399	63.3	60.5	6.4	13.0	28	117	54	245	2.17	0.513
707	Capital	20.0	7.2	388	64.0	58.7	6.2	13.2	29	106	63	249	1.68	0.581
708	Catriló	22.7	8.3	382	60.2	60.6	10.1	27.5	19	117	60	270	1.95	0.532
709	Catriló	21.9	8.2	382	62.5	60.2	9.7	15.4	20	111	53	226	2.09	0.590
710	Chapaleufú	24.7	8.7	408	63.7	60.5	6.6	9.4	52	95	79	251	1.20	0.584
711	Conhelo	24.3	8.5	397	64.2	60.8	7.5	11.7	46	106	84	315	1.26	0.623
712	Conhelo	22.6	8.0	394	63.3	59.6	7.9	13.5	33	106	67	266	1.58	0.606
713	Guatraché	19.5	7.2	397	65.0	55.7	13.8	24.0	18	95	66	247	1.44	0.604
714	Guatraché	20.0	7.3	367	65.5	61.7	1.9	1.2	72	114	43	201	2.65	0.603
715	Guatraché	20.9	7.8	408	62.8	57.7	14.6	54.6	0	114	72	318	1.58	0.564
716	Hucal	19.5	7.4	410	67.4	55.4	7.4	24.1	16	95	61	235	1.56	0.577
717	Maracó	25.0	9.2	388	62.4	61.7	6.0	8.6	55	102	79	273	1.29	0.635
718	Quemú Quemú	21.6	7.7	374	63.5	61.2	8.4	13.7	30	112	52	230	2.15	0.601
719	Quemú Quemú	21.3	7.7	393	61.2	60.9	5.2	10.0	37	107	48	202	2.23	0.577
720	Rancul	20.6	7.5	279	61.4	64.5	4.8	6.6	70	114	45	199	2.53	0.597
721	Realicó	23.3	8.2	348	64.6	62.8	6.9	9.1	63	109	67	261	1.63	0.623
722	Toay	21.4	7.7	368	62.0	62.8	4.2	8.8	44	120	54	248	2.22	0.624
723	Trenel	21.7	7.6	366	64.1	60.9	7.6	10.5	48	114	55	246	2.07	0.626
724	Adolfo Alsina	19.2	7.2	385	62.0	56.5	11.2	37.4	17	100	67	253	1.49	0.583
725	Adolfo Alsina	18.6	6.9	414	65.7	60.5	1.5	1.2	72	111	53	231	2.09	0.562
726	Adolfo Alsina	19.7	7.5	388	62.5	57.3	7.3	18.6	20	102	76	289	1.34	0.606
727	Adolfo Alsina	19.2	7.2	416	66.6	57.6	8.2	18.8	25	103	61	249	1.69	0.609
728	Bahía Blanca	22.4	8.3	378	64.7	61.3	1.9	3.1	50	120	67	312	1.79	0.644
729	Cnel. Dorrego	17.6	6.5	386	61.1	59.8	1.8	1.6	66	123	47	248	2.62	0.464
730	Cnel. Dorrego	20.9	8.0	403	66.9	57.2	8.4	35.1	1	119	63	311	1.89	0.621
731	Cnel. Dorrego	22.4	8.5	418	64.2	57.2	24.1	55.2	2	118	55	282	2.15	0.632
732	Cnel. Dorrego	20.0	7.6	392	62.6	58.5	1.8	1.8	72	122	53	273	2.30	0.600
733	Cnel. Dorrego	20.2	7.7	421	64.7	57.7	8.0	30.0	19	114	54	254	2.11	0.486
734	Cnel. Dorrego	21.6	8.1	417	63.7	56.7	8.2	42.7	16	100	70	280	1.43	0.532
735	Cnel. Dorrego	18.9	7.2	454	66.2	58.8	6.8	21.0	23	118	55	275	2.15	0.583
736	Cnel. Dorrego	19.8	7.4	447	66.7	58.3	6.1	18.5	24	110	61	282	1.80	0.559
737	Cnel. Dorrego	20.1	7.7	429	67.8	57.9	4.3	11.3	43	99	83	317	1.19	0.580
738	Cnel. Dorrego	20.7	7.9	452	67.2	58.7	1.8	2.9	66	104	63	267	1.65	0.622
742	Cnel. Pringles	23.2	8.6	388	67.4	58.3	7.3	18.4	25	112	72	309	1.56	0.557
743	Cnel. Pringles	24.4	8.9	374	65.4	59.9	5.9	14.0	40	112	81	335	1.38	0.552
744	Cnel. Pringles	23.3	8.5	381	67.3	60.4	4.8	15.0	30	118	79	347	1.49	0.602
745	Cnel. Pringles	24.3	9.1	434	61.3	57.3	6.8	45.9	15	107	85	359	1.26	0.527
746	Cnel. Pringles	24.6	8.9	355	62.0	59.9	7.6	11.6	45	101	89	319	1.13	0.597
747	Cnel. Pringles	22.7	8.4	399	66.2	57.9	17.8	34.8	19	111	72	317	1.54	0.585
748	Cnel. Pringles	22.6	8.3	413	68.7	57.6	20.0	58.8	0	115	75	334	1.53	0.560
749	Cnel. Rosales	21.8	8.2	419	68.0	57.8	18.3	51.0	9	115	78	348	1.47	0.634

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION		FLOUR ANALYSIS												
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
750	Cnel. Suárez	20.9	7.7	415	64.5	58.1	9.1	16.6	23	101	63	240	1.62	0.539
751	Cnel. Suárez	20.6	7.6	416	65.1	58.9	10.0	16.2	23	112	52	226	2.15	0.607
752	Cnel. Suárez	22.3	8.0	397	66.3	59.3	8.4	20.1	18	110	68	288	1.62	0.399
753	Cnel. Suárez	20.8	7.7	402	65.4	58.0	17.0	59.2	0	113	54	249	2.09	0.420
754	Cnel. Suárez	21.8	7.7	420	65.3	59.5	17.6	53.2	4	120	64	313	1.88	0.514
755	Cnel. Suárez	21.6	7.8	384	59.2	60.4	2.2	8.6	41	110	58	254	1.90	0.532
756	Cnel. Suárez	21.2	7.7	406	68.4	60.4	8.0	18.0	25	126	67	319	1.88	0.622
757	Guaminí	22.4	7.9	406	68.4	60.3	9.3	14.6	29	109	60	247	1.82	0.628
758	Guaminí	18.7	7.0	411	64.3	59.5	1.7	1.2	74	115	51	242	2.25	0.537
759	Guaminí	23.3	8.6	382	63.9	59.0	32.0	56.9	13	116	76	348	1.53	0.417
760	Patagones	19.8	7.3	406	57.4	59.4	8.4	16.9	32	129	57	287	2.26	0.632
761	Patagones	23.3	8.9	409	66.9	62.5	6.5	21.6	18	143	67	374	2.13	0.600
762	Patagones	23.4	8.7	409	60.8	58.9	10.4	18.7	33	110	86	340	1.28	0.585
763	Patagones	21.8	7.8	414	63.3	60.4	5.0	17.6	24	128	75	358	1.71	0.581
764	Patagones	22.6	8.0	403	60.7	61.2	3.6	12.0	38	125	59	293	2.12	0.631
766	Puán	19.1	7.2	427	67.3	60.3	1.7	1.6	66	108	56	240	1.93	0.601
767	Puán	19.9	7.4	417	65.5	58.1	1.7	1.9	67	103	79	305	1.30	0.603
768	Puán	19.1	7.2	413	67.9	56.5	1.4	1.5	81	85	66	224	1.29	0.513
772	Saavedra	22.1	8.0	383	64.1	60.8	1.7	3.0	58	113	72	308	1.57	0.640
773	Saavedra	21.5	7.6	432	65.6	56.7	12.4	29.1	14	99	69	267	1.43	0.464
774	Saavedra	17.9	6.7	400	69.3	61.4	1.8	1.6	86	113	43	195	2.63	0.551
775	Saavedra	20.8	7.6	390	64.0	57.1	8.0	12.1	37	90	80	254	1.13	0.541
776	Salliquelló	22.1	8.4	425	67.4	60.8	2.0	2.8	54	114	73	314	1.56	0.602
777	Tornquist	21.4	7.7	421	67.3	55.8	28.0	59.2	7	98	68	265	1.44	0.574
778	Tornquist	22.2	8.2	429	67.2	58.5	1.9	2.7	56	103	70	279	1.47	0.628
779	Tornquist	19.1	7.2	413	68.9	57.6	1.7	1.9	66	103	47	208	2.19	0.599
780	Tornquist	20.9	7.7	454	69.4	55.0	10.3	55.5	8	101	60	248	1.68	0.556
781	Tres Lomas	21.6	7.8	414	64.2	61.5	1.9	1.1	68	112	46	207	2.43	0.624
782	Villarino	20.6	7.9	434	66.0	59.5	1.9	2.4	55	120	64	305	1.88	0.527
783	Villarino	20.8	7.7	395	64.9	59.8	1.9	2.0	59	113	67	291	1.69	0.596
784	Villarino	19.4	7.1	410	66.1	56.6	18.4	59.2	4	109	64	271	1.70	0.599

North of the Country



Results of the Analyses

Composite Samples by Locality.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS								
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels(%)	Foreign Material Kernels (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
1	Noroeste	20000	F/E 3	79.25	6.36	1.30	0.60	0.00	11.3	37.10	1.773

SAMPLE IDENTIFICATION		FLOUR ANALYSIS											
						FARINOGRAM				ALVEOGRAM			
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
1	Noroeste	21.5	7.9	154	66.8	60.7	1.8	2.4	113	84	80	220	1.05	0.548

Subregion Relative Data:

In this region the wheat production was 352,000 tn., the 2.24% of the national total. Were sampled 20,000 tn., the 5.68% of the subregion production.

North East of the Country Wheat

Results of the Analyses

Composite Samples by locality.

SAMPLE IDENTIFICATION			WHEAT ANALYSIS								
Sample Number	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material Kernels (%)	Shrunken and Broken Kernels (%)	Yellow Berry Kernels (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
1	Chaco	4010	3	77.30	2.20	0.12	0.94	0.00	12.4	32.61	1.910

SAMPLE IDENTIFICATION		FLOUR ANALYSIS											
						FARINOGRAM				ALVEOGRAM				
Sample Number	Locality, district or department	Wet Gluten (%)	Dry Gluten (%)	Falling Number (sec)	Flour Yield (%)	% WA (14 % H°)	D.T. (min.)	Stability (min.)	Degree of Softening (12 min.)	P	L	W	P/L	Ash (dry basis) (%)
1	Chaco	28.2	9.9	175		61.4	2.4	2.7	95	79	107	295	0.74	0.554

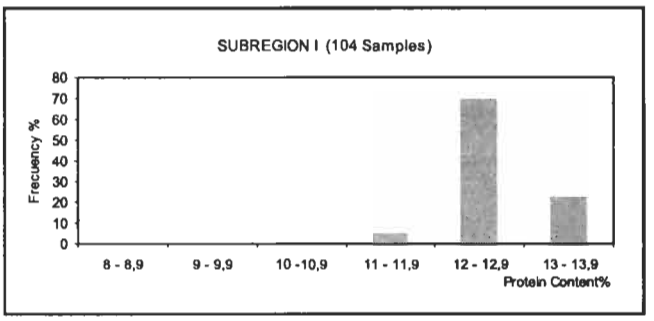
Subregion Relative Data:

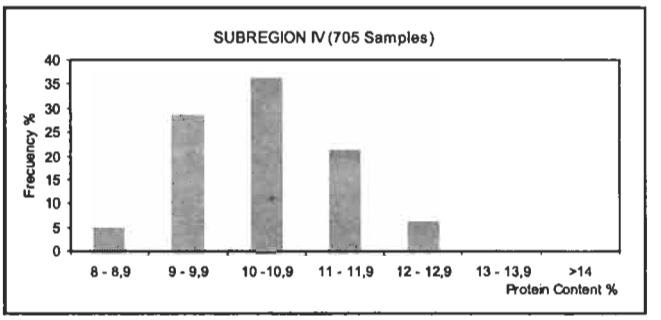
In this region the wheat production was 95,000 tn., the 0.60% of the national total. Were sampled 4,100 tn., the 4.22% of the subregion production.

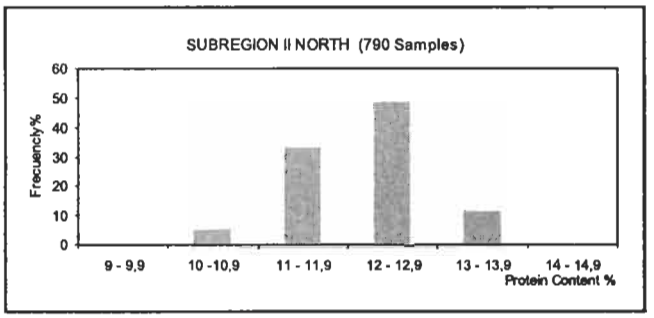
Protein Content

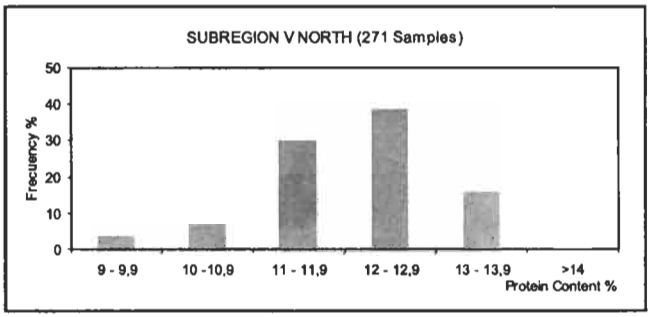
Distribution by ranges
Results obtained on 4502 Primary Samples

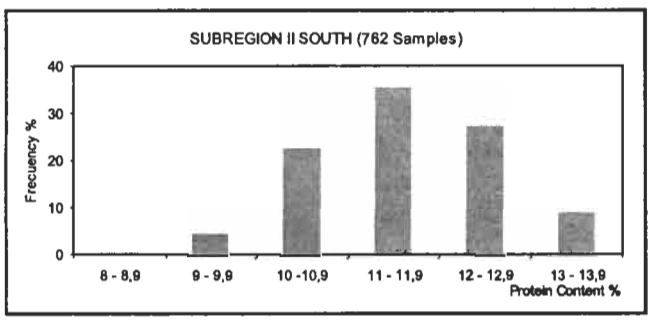
Protein Content Wheat

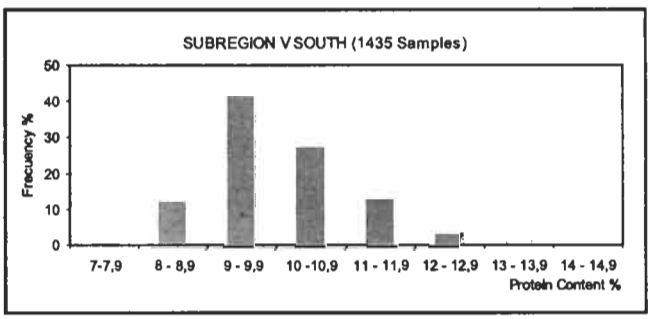


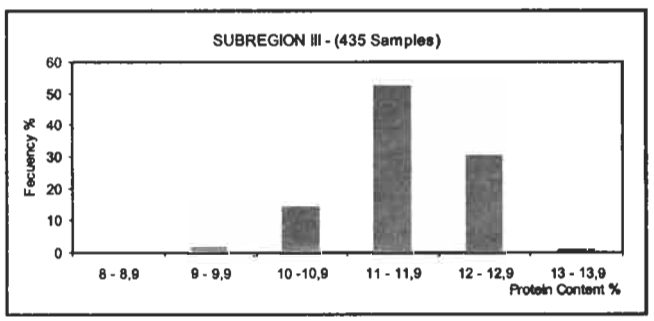


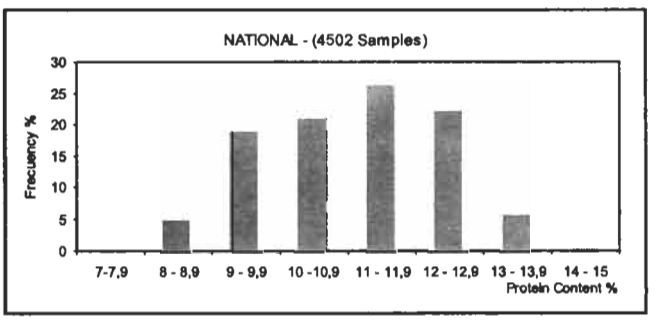












National Averages Wheat

Wheat National Averages

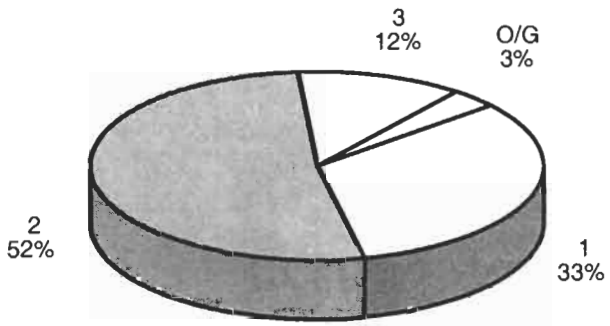
Results of the Analyses

Composite Samples by Locality. Averages were weighted by Tonnage.

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	76.0	85.3	80.8	2.1	0.03
Total Damaged Kernels (%)	0.00	4.67	0.66	0.81	1.23
Foreign Material (%)	0.04	1.88	0.57	0.38	0.67
Shrunken and Broken Kernels (%)	0.16	3.76	1.08	0.57	0.52
Yellow Berry Kernels (%)	0.00	45.00	3.41	4.73	1.39
Protein (13.5% Moisture) (%)	8.8	13.0	11.0	1.0	0.09
Weight of 1000 Kernels (gr.)	25.05	40.60	32.78	3.46	0.11
Ash (% dry basis)	1.150	2.260	1.842	0.155	0.08

Grade Distribution

Ref:O/G: Out of Grade



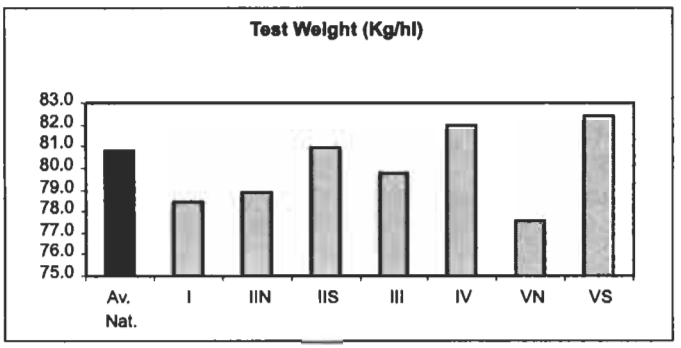
Flour Analisys		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Wet Gluten (%)	17.6	32.7	25.2	3.8	0.15
	Dry Gluten (%)	6.5	12.0	9.1	1.2	0.13
	Falling Number (sec)	232	507	403	36	0.09
	Flour Yield (%)	57.4	72.8	66.6	2.5	0.04
	Ash (dry basis) (%)	0.399	0.687	0.567	0.048	0.08
FARINOGRAM	Water Absorption (14 % H°) (%)	54.8	66.0	59.8	2.1	0.03
	Development Time (min.)	1.3	32.0	8.28	5.6	0.67
	Stability (min.)	1.1	65.0	17.1	14.5	0.85
	Degree Softening (12 min.)	0	110	44	24	0.54
ALVEOGRAM	P (mm)	38	143	97	18	0.18
	L (mm)	11	135	82	20	0.25
	W Joules x 10-4	169	389	280	46	0.16
	P / L	0.47	4.18	1.18	0.53	0.41

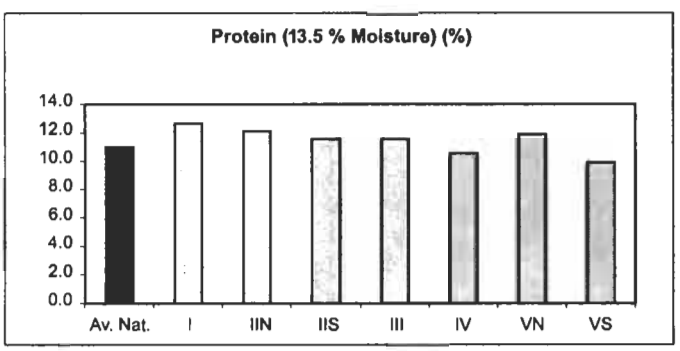
Wheat National and Subregions Averages

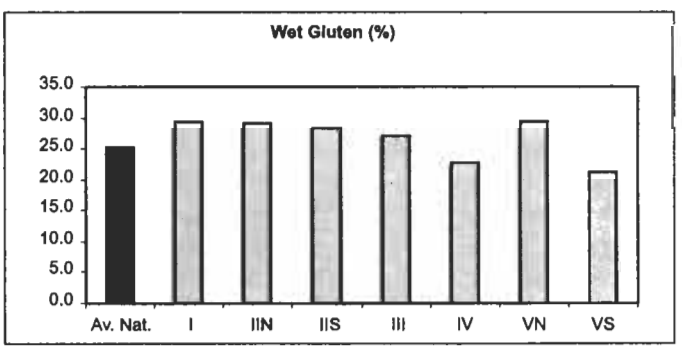
Comparative Graphics

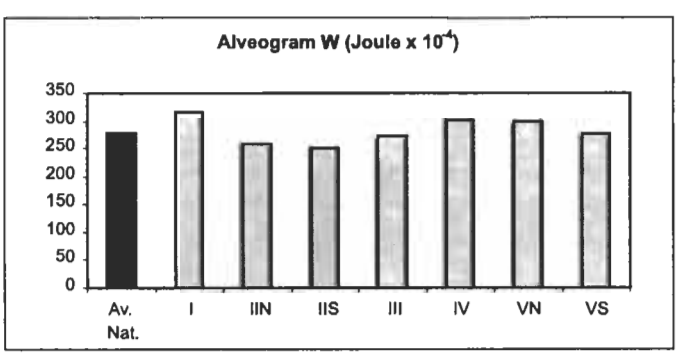
Composite Samples by Locality. Averages were weighted by Tonnage.

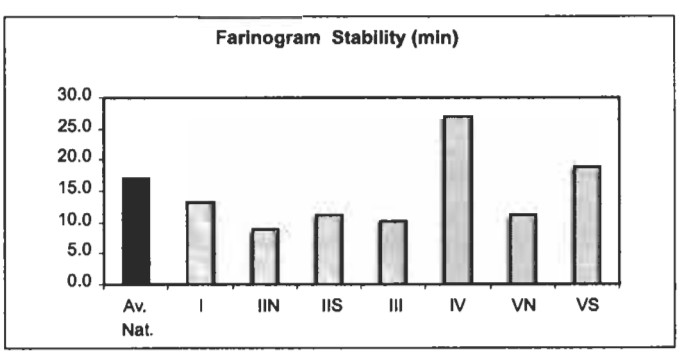
National Averages Wheat











Statistical Analysis. 2000/2001 Crop

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

Mean Comparison among Subregions:

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

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

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

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

Subreg.	N° Samples	Test Weight		Subreg.	Total Damaged Kernels		Subreg.	Foreign Material		Subreg.	Shrunken and Broken Kernels	
V South	75	82.4	a	III	2.64	a	V North	0.34	a	II South	0.58	a
IV	81	81.9	a	II North	1.20	b	IV	0.41	a	IV	0.80	a
II South	42	81.0	ab	V North	1.04	b	I	0.41	a	III	0.88	a
III	17	79.7	c	II South	0.86	b	II North	0.42	ab	V North	0.91	ab
II North	66	78.9	cd	I	0.85	b	II South	0.66	bc	I	1.26	bc
I	14	78.4	de	IV	0.16	c	III	0.73	c	II North	1.31	c
V North	16	77.6	e	V South	0.12	c	V South	0.83	c	V South	1.57	c

Subreg.	Yellow Berry Kernels		Subreg.	Protein		Subreg.	Weight 1000 Kernels		Subreg.	Ash	
I	0.00	a	I	12.6	a	IV	35.88	a	IV	1.721	a
V North	0.40	ab	II North	12.1	b	V South	34.47	a	III	1.767	ab
II South	1.01	b	V North	11.8	bc	II South	32.41	b	V South	1.822	bc
II North	1.10	b	II South	11.6	c	I	31.37	bc	V North	1.855	bc
III	2.05	b	III	11.6	c	V North	30.50	c	II South	1.865	c
IV	3.32	b	IV	10.6	d	II North	28.32	cd	II North	2.012	d
V South	8.11	c	V South	9.9	e	III	28.19	d	I	2.051	d

Subreg.	Wet Gluten		Subreg.	Dry Gluten		Subreg.	Falling Number		Subreg.	Flour Yield	
I	29.39	a	II North	10.39	a	II South	385	a	III	69.55	a
V North	29.26	a	I	10.38	a	I	388	a	I	68.22	ab
II North	29.11	a	V North	10.38	a	II North	395	a	II South	67.52	bc
II South	28.27	ab	II South	9.76	b	V South	403	a	II North	67.51	bc
III	26.98	b	III	9.67	b	V North	405	a	V North	67.45	bc
IV	22.86	c	IV	8.38	c	IV	407	a	IV	65.95	cd
V South	21.21	d	V South	7.81	d	III	456	b	V South	64.86	d

Subreg.	Water Abs.	Subreg.	D. T. (min.)	Subreg.	Stability. (min.)	Subreg.	Degree Softening
IV	58.4 a	II South	5.5 a	IV	26.8 a	III	69 a
V South	59.2 ab	II North	6.7 ab	V South	18.9 ab	II North	67 ab
I	59.5 abc	III	7.7 ab	I	13.3 b	II South	52 b
III	60.0 bcd	V South	7.7 ab	II South	11.2 b	I	51 bc
V North	60.8 cde	V North	8.4 ab	V North	11.1 b	V North	45 c
II North	61.3 de	I	9.8 b	III	10.2 b	V South	37 cd
II South	61.9 e	IV	11.0 b	II North	8.8 b	IV	27 d

Subreg.	P		Subreg.	L		Subreg.	W		Subreg.	P/L	
V South	111	a	III	102	a	I	315	a	III	0.79	a
IV	107	a	II North	100	a	IV	303	ab	II North	0.82	a
I	90	b	I	100	a	V North	297	ab	I	0.91	a
V North	87	b	V North	99	a	V South	275	bc	V North	0.95	a
II South	87	b	II South	87	b	III	274	bc	II South	1.06	a
II North	81	bc	IV	73	c	II North	260	c	IV	1.53	b
III	77	c	V South	64	c	II South	250	c	V South	1.78	b

Subreg.	Flour Ash	
III	0.545	a
IV	0.549	a
V North	0.567	ab
II South	0.572	ab
V South	0.574	ab
II North	0.581	ab
I	0.593	b

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

PROT. RANGE	Average Gluten W Estab	% Country
below 9.5	19.6 246 19.3	4.17
9.5 - 10.9	**22.2** **285** **21.3**	**42.53**
11.0 - 11.9	27.3 266 14.1	26.10
12.0 - 12.9	29.4 286 11.3	26.53
13.0 - 14.0	31.5 295 9.6	0.64

WET GLUTEN RANGE	Average Prot W Stabil.	% Country
below 21	9.8 258 18.0	14.74
21 - 24.9	10.4 300 25.0	33.97
25 - 27.9	11.4 265 12.2	14.42
28 - 31.9	**2.1** **272** **10.1**	**35.26**
32 - 35	12.5 275 10.9	1.61

Alveograph W RANGE	Average Gluten W Stabil.	% Country
below 190	27.6 11.8 4.8	1.28
190 - 249	25.7 11.0 9.9	30.77
250 - 349	**25.0** **11.0** **19.6**	**59.94**
350 - 399	26.6 11.6 22.2	8.01
400 - 490	--- --- ---	0.00

Farinograph STABIL. RANGE	Average Gluten Prot W	% Country
1 - 9.9	**26.1** **11.2** **247**	**38.45**
10 - 19.9	26.5 11.3 295	37.18
20 - 29.9	22.9 10.7 306	9.94
30 - 55	22.5 10.5 306	9.94
above 55	21.8 10.1 289	4.49

Composite Sample of each Subregion

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

Subregion Composite Samples Wheat

Results of the Analyses

	Quality Parameters	Subregions I	II N	II S	III	IV	V N	V S	Weighted* Avegrage
WHEAT	Test weight (kg/hl)	78.50	78.60	80.96	79.50	81.70	78.80	81.95	80.68
	Weight of 1.000 kernels (gr.)	31.40	28.56	32.40	28.80	35.10	30.30	33.47	32.38
	Ash (dry basis) (%)	2.031	2.067	1.865	1.840	1.760	1.920	1.864	1.879
	Protein (13.5% Moisture)%	12.6	12.1	11.6	11.4	10.5	12.3	10.0	11.1
Milling	Flour Yield (%)	69.0	65.1	67.3	66.3	67.3	66.6	63.8	66.1
	Ash (dry basis) (%)	0.624	0.555	0.532	0.442	0.582	0.610	0.552	0.558
FLOUR	Moisture (%)	13.5	13.4	13.6	14.0	14.2	14.8	13.0	13.7
	Wet Gluten (%)	29.0	28.4	27.1	27.9	22.3	29.4	21.9	25.0
	Dry Gluten (%)	10.1	10.0	9.4	9.9	8.2	10.4	8.2	9.0
	Gluten Index	93	91	91	82	99	93	98	95
	Falling Number (sec)	370	387	383	416	363	363	382	378
	Zeleny Test (cc)	35	34	36	34	41	35	38	37
	FARINOGRAM								
	Water Absorption (%)	60.0	61.0	62.0	61.3	58.1	61.1	58.9	59.8
	Development Time (min.)	7.6	7.4	7.0	7.2	14.4	7.7	7.9	9.4
	Stability (min.)	11.2	8.2	7.6	7.9	30.3	10.3	16.4	16.4
	Degree Softening	46	67	64	74	21	51	32	44
	MIXOGRAM								
	Development Time (min.)	4'30"(A)	3'40"(A)	3'20"(A)	4'00"(A)	5'30"(A)	4'30"(A)	5'30"(A)	4' 25" (A)
	Scale	6	6	5	6	7	6	7	6
	ALVEOGRAM								
	P (mm)	92	90	98	88	107	99	114	102
	G	21.8	20.9	18.8	21.1	19.2	20.9	17.1	19
	L (mm)	96	89	71	91	75	89	59	76
	W (Joules x 10^{-4})	305	270	250	266	303	307	261	277
	P/L	0.95	1.02	1.37	0.97	1.43	1.12	1.92	1.41
	BAKING								
	Absorption (%)	62.5	62.0	61.0	62.0	62.5	62.5	62.0	62.0
	Time of Kneading (min.)	3'00"	3'00"	2'30"	3'00"	3'30"	3'00"	3'30"	3' 11"
	Fermentation time (min.)	160'	160'	160'	160'	160'	160'	160'	160'
	Loaf Volume (cc)	705	688	653	765	620	770	565	644
	Inner Appearance **	B-MB 6.5	B-MB 6.0	B-MB 7.0	MB 6.5	B 6.5	MB 6.0	R-B 7.5	B 6,7
	Specific Volume	5.3	5.3	4.9	5.8	4.6	5.9	4.1	4.8

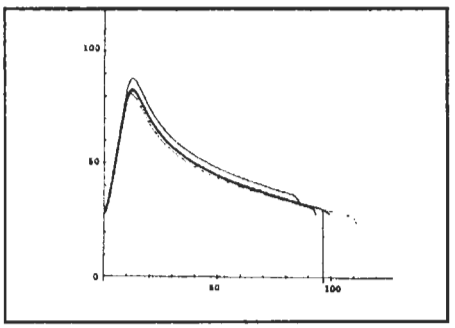
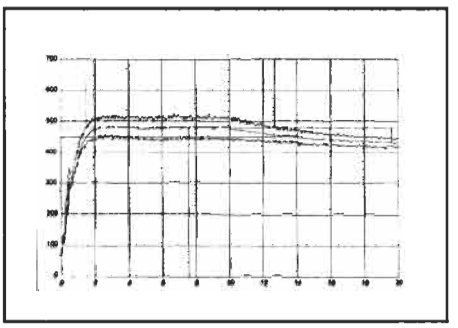
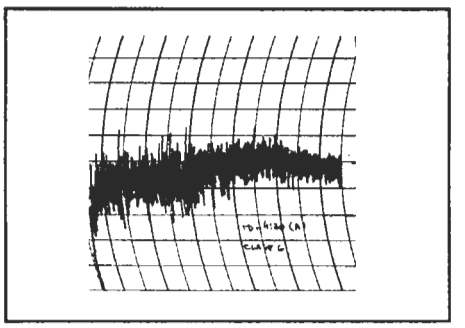
* Weighting basis: Tonnage of the production sampled by Subregion, according to chart data, on page 6.

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

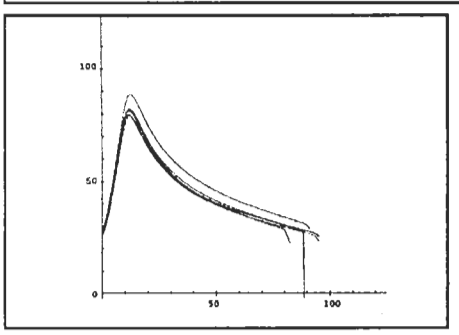
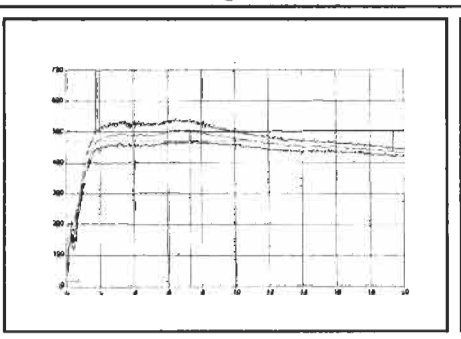
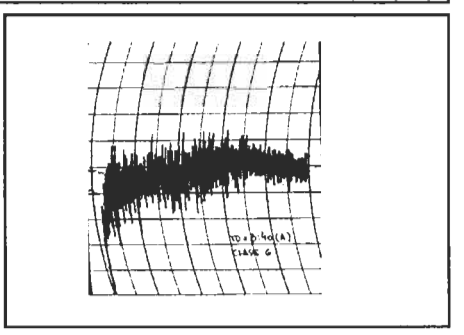
Results of the Analyses

Subregion Composite Samples Wheat

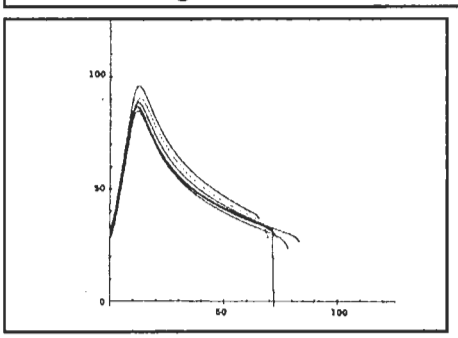
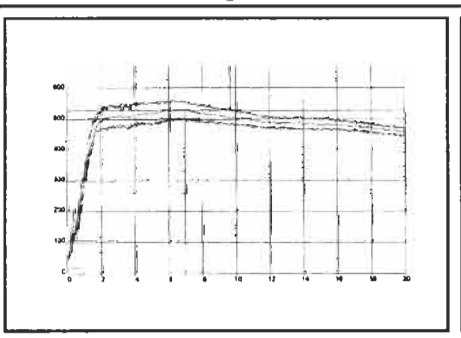
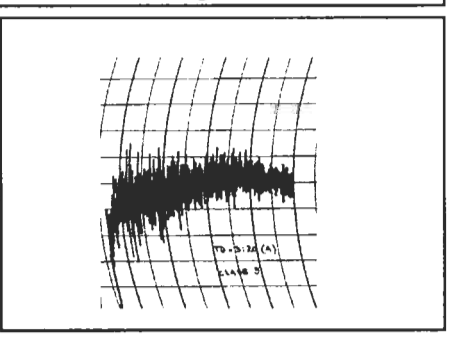
Subregion I

Alveogram	Farinogram	Mixogram
		

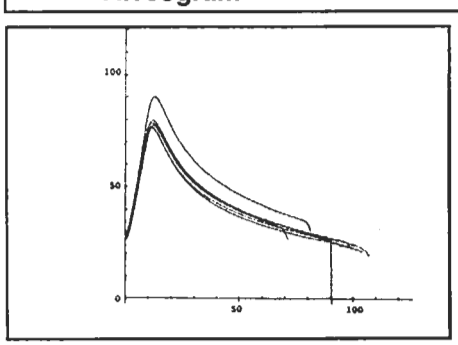
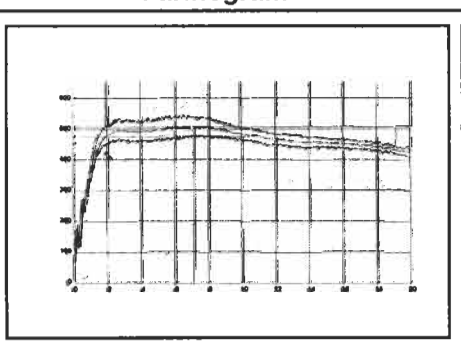
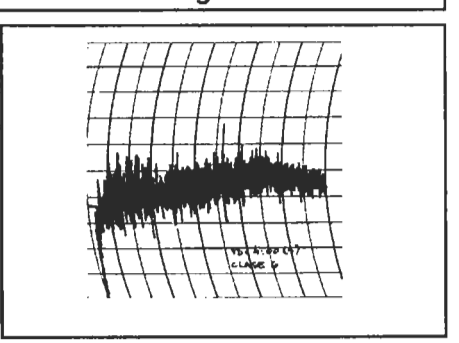
Subregion II North

Alveogram	Farinogram	Mixogram
		

Subregion II South

Alveogram	Farinogram	Mixogram
		

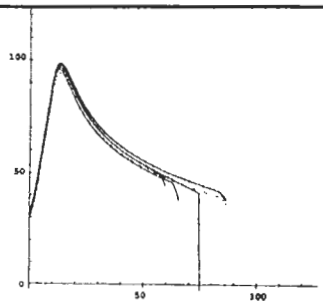
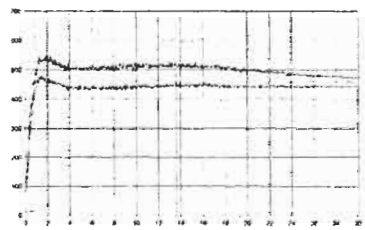
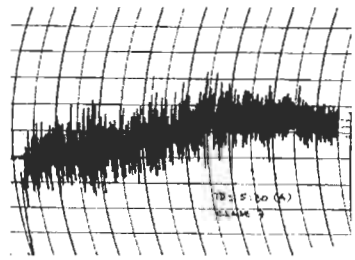
Subregion III

Alveogram	Farinogram	Mixogram
		

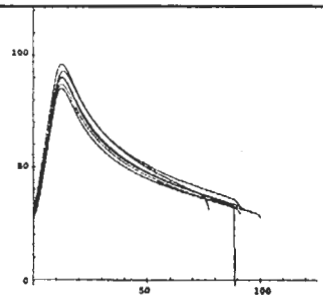
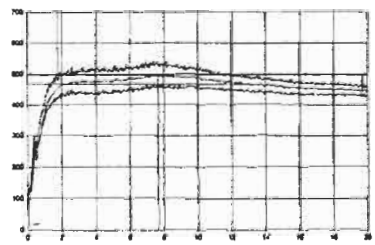
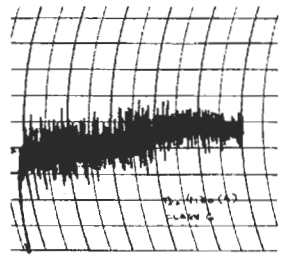
Subregion Composite Samples Wheat

Results of the Analyses

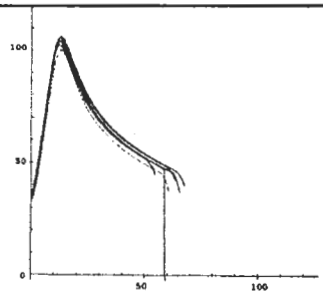
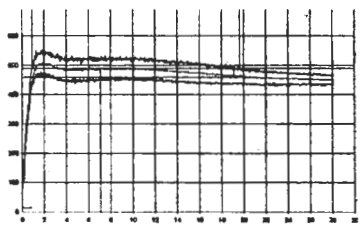
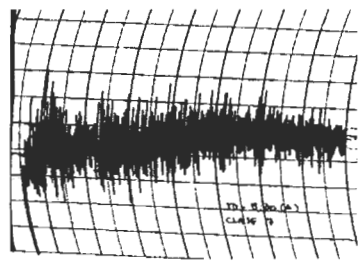
Subregion IV

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

The responsible Institutions of the Institutional Report on Argentine Wheat Quality have decided to include sampling and analysis of durum wheat in the 00/01 crop.

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.

00/01 Crop

Sown Area (ha)	68,150
Harvested Area (ha)	68,150
Average Yield (qq/ha)	28.4
Production (tn)	193,810

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.

Approximately 40% of the production area was sampled, giving 27 composite samples.
They were organized according to theirs origin region, mainly in the Subregions IV and V South.

Procedure

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

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

Methodology

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

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

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

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

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

GRAIN

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

MILLING (Experimental Milling Buhler 202-D)

Grain is dampered to 15,8 % humidity and tempered during 20 hours. Semolina yield (Particle size between 125-355 microns) is reported.

SEMOLINA

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

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

FARINOGRAM (Brabender's Farinograph)

The method in use is described by Irvine, Bradley and Martin's technique (Cereal Chemistry, Vol 38, Nº 2, 1961), using fixed water absortion (45 %), fixed time of kneeding (8 min) and small stainless steel bowl (50 g).
The following data are reported:

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

Argentine Standard for Durum Wheat

(Resolution Nº1075/94 - Standard XXI. Ex Secretariat of Agriculture, Livestock and Fishery)

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

VITREOUS KERNELS

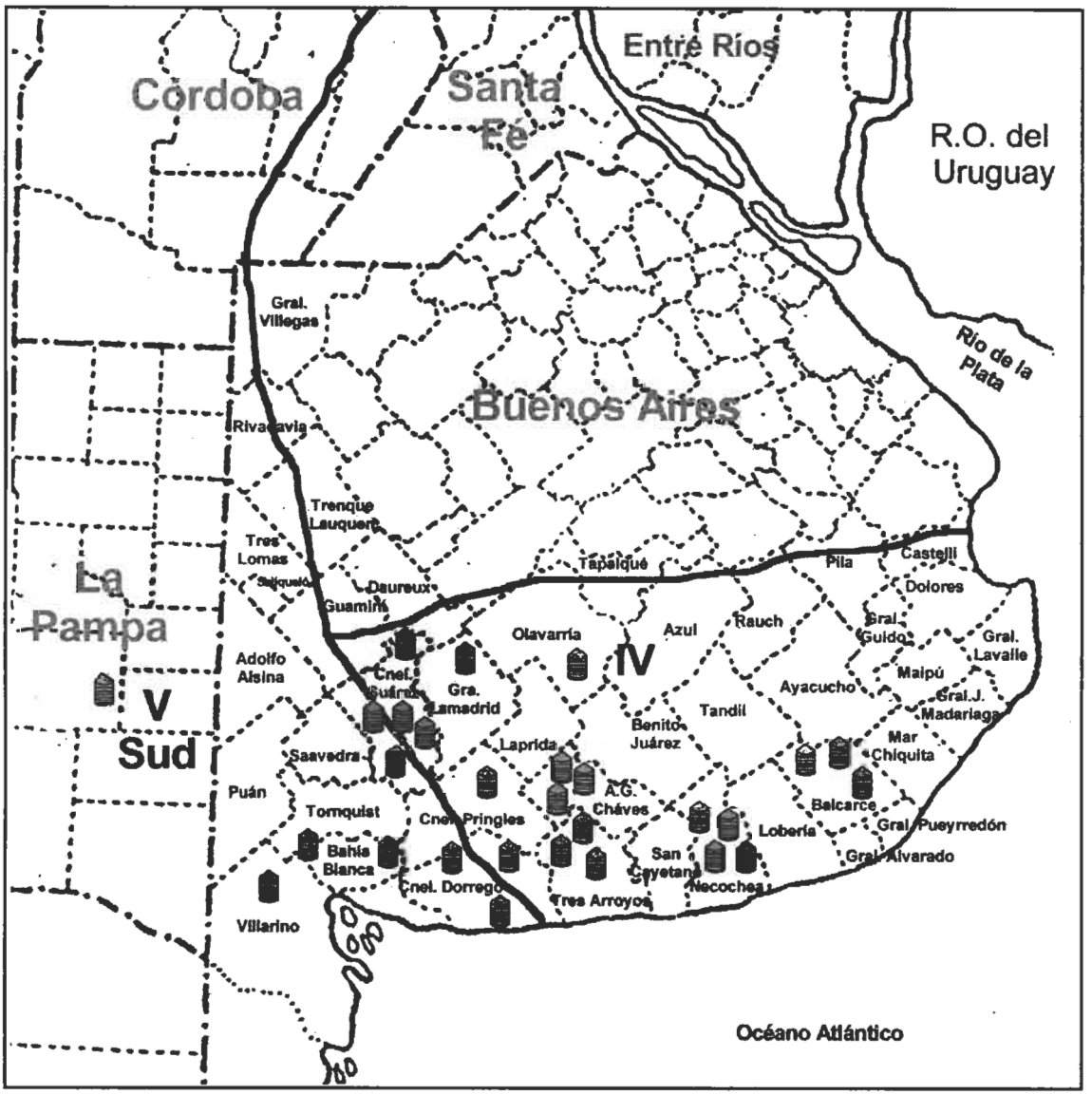
Bonifications	Discounts
51 a 55% 0,5 %	46 a 49% 1,0%
56 a 60% 1,0%	41 a 45% 3,0%
61 a 65% 1,5%	36 a 40% 5,0%
66 a 70% 2,0%	31 a 35% 7,0%
71 a 75% 3,0%	26 a 30% 9,0%
76 a 80% 4,0%	21 a 25% 11,0%
81 a 85% 5,0%	16 a 20% 13,0%
86 a 90% 6,0%	11 a 15% 15,0%
91 a 95% 7,0%	6 a 10% 17,0%
96 a 100% 8,0%	0 a 5%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

PROTEIN

More than 11% (moisture basis 13,5 %) there will be bonifications of 2 % for each % or fraction	Less than 10% (moisture basis 13,5 %) there will be discounts of 2 % for each % or fraction

LIVING INSECTS AND ARACHNIDS: FREE

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


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

Results of the Analyses

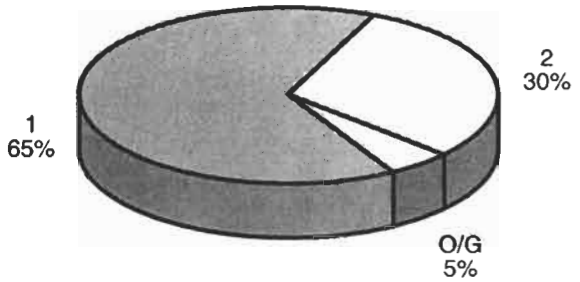
Composite Samples by Locality. Averages were weighted by Tonnage.

Subregion IV Durum Wheat

Wheat Analysis	Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
Test Weight (kg/hl)	77.7	84.0	80.8	1.9	0.02
Total Damaged Kernels (%)	0.00	0.16	0.07	0.07	0.99
Foreign Material (%)	0.08	1.50	0.67	0.47	0.70
Shrunken and Broken Kernels (%)	0.16	2.70	0.83	0.48	0.58
Vitreous Kernels (%)	33.00	98.00	65.84	11.69	0.18
Wheat (Triticum aestivum) (%)	0.00	1.84	0.75	0.62	0.83
Protein (13,5% Moisture) (%)	9.4	12.5	10.8	0.8	0.08
Weight of 1000 Kernels (gr.)	36.40	48.80	40.84	3.68	0.09
Ash (dry basis) %	1.638	1.934	1.778	0.055	0.03

Ref:O/G: Out of Grade

Grade Distribution



Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec)	452	557	478	20	0.04
	Color (b)	21.3	32.4	28.4	2.2	0.08
	Wet Gluten (%)	21.2	28.5	24.9	2.2	0.09
	Gluten Index (%)	35	94	84	12	0.14
FARINOGRAM	Energy Level	30.8	55.2	41.9	3.2	0.08
	Degree Softening (12 min.)	12	33	22	6	0.29

These results were elaborated with 20 composite sample.

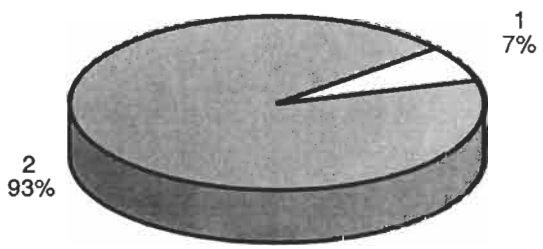
Subregion V South Durum Wheat

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)	76.40	82.60	78.64	1.17	0.01
Total Damaged Kernels (%)	0.00	0.88	0.20	0.21	1.05
Foreign Material (%)	0.52	0.98	0.83	0.15	0.17
Shrunken and Broken Kernels (%)	0.64	1.88	1.50	0.32	0.21
Vitreous Kernels (%)	48	90	81	11	0.14
Wheat (Triticum aestivum)(%)	0.52	1.36	0.87	0.25	0.28
Protein (13,5% Moisture) (%)	10.1	13.1	12.0	0.6	0.05
Weight of 1000 Kernels (gr.)	30.00	52.90	36.92	4.69	0.13
Ash (dry basis)%	1.709	1.881	1.761	0.030	0.02

Grade Distribution



Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec)	448	567	541	38	0.07
	Color (b)	23.7	33.6	28.4	1.8	0.06
	Wet Gluten (%)	25.5	31.0	29	1.6	0.06
	Gluten Index (%)	44	91	73	10	0.14
FARINOGRAM	Energy Level	32.8	43.6	38.2	2.3	0.06
	Degree Softening (12 min.)	21	37	28	3	0.11

These results were elaborated with 7 composite sample.

Appendix of Locality Composite Samples.

SAMPLE IDENTIFICATION			WHEAT ANALISYS										
Sample Number	Subregion	Locality, district or department	Tonnage	Grade	Test Weight (Kg/hl)	Total Damaged Kernels (%)	Foreign Material (%)	Shrunken and Broken Kernels (%)	Vitreous Kernels (%)	Wheat (Triticum aestivum) (%)	Protein (13,5% Moisture) (%)	Weight of 1000 Kernels (gr.)	Ash (dry basis) (%)
6485	IV	Cnel Suárez	2309	1	79.70	0.00	0.32	1.18	62	0.28	10.4	40.90	1.784
6486	IV	Cnel Suárez	865	1	79.25	0.12	0.62	1.26	51	0.68	11.3	38.60	1.795
6487	IV	Cnel Suárez	131	2	79.90	0.14	0.24	1.90	61	1.54	11.7	37.63	1.817
6488	IV	A.G. Cháves	500	1	79.25	0.08	0.34	0.62	77	0.14	11.7	38.50	1.915
6489	IV	A.G. Cháves	200	1	82.15	0.00	0.22	0.86	98	0.06	11.3	48.84	1.900
6490	IV	A.G. Cháves	160	2	78.35	0.00	0.22	2.7	89	1.28	11.4	38.70	1.763
6491	IV	Tres Arroyos	320	1	79.90	0.00	0.62	0.98	85	0.18	10.0	48.71	1.638
6492	IV	Gral. Lamadrid	500	1	82.15	0.00	0.56	0.50	87	0.24	12.5	39.15	1.826
6493	IV	Tres Arroyos	3700	1	79.70	0.12	0.46	0.44	81	0.54	11.4	36.41	1.835
6494	IV	Necochea	14000	2	78.80	0.00	1.50	0.68	62	1.84	11.6	38.90	1.760
6495	IV	Balcarce	2300	2	79.00	0.12	1.00	1.24	67	0.00	11.0	40.44	1.791
6497	IV	Olavarría	1400	F/E2	77.70	0.12	0.46	0.84	33	1.00	9.8	42.04	1.848
6499	IV	San Cayetano- Necochea	13532	1	83.95	0.00	0.48	0.16	56	0.36	9.4	47.14	1.708
6500	IV	Tres Arroyos	8031	1	81.50	0.16	0.52	1.02	82	0.62	11.3	37.18	1.849
6501	IV	Cnel. Suárez	1134	1	80.15	0.10	0.30	1.12	83	0.38	10.2	39.97	1.934
6502	IV	A.G. Cháves	7448	1	80.60	0.14	0.30	1.36	75	0.48	10.8	38.92	1.749
6504	IV	Balcarce	3360	1	80.35	0.12	0.08	1.50	52	0.00	10.9	41.87	1.830
6700	IV	Coronel Príngles	1145	2	79.70	0.00	0.74	1.96	60	0.92	10.9	38.24	1.787
6701	IV	Coronel Suárez	1627	1	80.80	0.00	0.16	1.02	60	0.42	10.9	42.49	1.801
6702	IV	Necochea	884	2	83.70	0.16	0.36	1.66	76	1.08	10.3	40.06	1.795
6496	V S	Cnel. Dorrego	700	2	77.25	0.14	0.66	1.34	72	0.92	13.1	31.62	1.760
6498	V S	La Pampa	500	2	76.35	0.06	0.98	1.88	89	1.36	11.4	29.97	1.881
6503	V S	Cnel. Dorrego	1185	1	79.00	0.10	0.52	0.64	71	1.36	11.3	38.64	1.709
6697	V S	Bahía Blanca	4005	2	78.35	0.12	0.98	1.56	88	0.92	12.1	36.85	1.783
6698	V S	Bahía Blanca	4020	2	78.60	0.12	0.70	1.82	90	0.52	12.1	36.51	1.763
6699	V S	Coronel Dorrego	4012	2	78.35	0.00	0.90	1.48	76	0.94	12.4	34.48	1.741
6703	V S	Villarino	1054	2	82.60	0.88	0.88	1.08	48	1.00	10.1	52.88	1.750

Appendix of Locality Composite Samples.

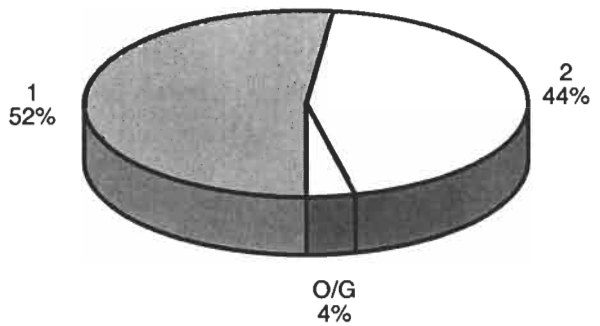
SAMPLE IDENTIFICATION			SEMOLIN ANALYSIS					
							FARINOGRAM	
Sample Number	Subregion	Locality, district or department	Falling Number (sec)	Color (b)	Wet Gluten (%)	Gluten Index (%)	Energy Level	Degree of Softening (12 min.)
6485	IV	Cnel Suárez	488	32.4	24.2	55	35.4	30
6486	IV	Cnel Suárez	484	27.6	27.0	35	41.1	33
6487	IV	Cnel Suárez	475	29.0	28.2	47	41.9	33
6488	IV	A.G. Cháves	493	24.7	27.1	88	52.0	19
6489	IV	A.G. Cháves	490	21.5	26.6	92	55.2	14
6490	IV	A.G. Cháves	455	24.8	26.4	87	45.2	32
6491	IV	Tres Arroyos	475	21.3	21.3	93	51.0	21
6492	IV	Gral. Lamadrid	519	28.1	28.5	78	49.9	33
6493	IV	Tres Arroyos	467	31.0	25.2	81	44.7	28
6494	IV	Necochea	470	29.8	26.4	86	43.0	26
6495	IV	Balcarce	466	29.4	25.6	75	40.8	29
6497	IV	Olavarría	452	28.4	23.0	78	40.3	30
6499	IV	San Cayetano- Necochea	467	24.9	21.2	94	43.1	12
6500	IV	Tres Arroyos	484	28.6	26.5	92	43.1	20
6501	IV	Cnel. Suárez	498	30.2	22.2	89	37.3	20
6502	IV	A.G. Cháves	501	28.8	25.0	92	40.2	19
6504	IV	Balcarce	454	30.8	27.6	71	42.5	26
6700	IV	Coronel Prìngles	557	27.7	26.5	60	30.8	29
6701	IV	Coronel Suàrez	489	28.8	26.0	62	33.8	30
6702	IV	Necochea	556	26.4	27.1	69	35.7	23
6496	V S	Cnel. Dorrego	499	32.4	30.6	77	43.6	37
6498	V S	La Pampa	463	33.6	26.8	80	36.2	29
6503	V S	Cnel. Dorrego	482	28.8	27.2	91	41.6	21
6697	V S	Bahìa Blanca	567	28.1	28.2	78	37.6	27
6698	V S	Bahìa Blanca	548	27.7	29.2	77	37.3	29
6699	V S	Coronel Dorrego	566	29.0	31.0	66	39.6	29
6703	V S	Villarino	448	23.7	25.5	44	32.8	32

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)	76.40	84.00	80.39	2.01	0.02
Total Damaged Kernels (%)	0.00	0.88	0.10	0.11	1.41
Foreign Material (%)	0.08	1.50	0.70	0.43	0.62
Shrunken and Broken Kernels (%)	0.16	2.70	0.96	0.53	0.55
Vitreous Kernels (%)	33	98	69	13	0.19
Wheat (Triticum aestivum) (%)	0.00	1.84	0.77	0.57	0.74
Protein (13,5% Moisture) (%)	9.4	13.1	11.0	0.9	0.08
Weight of 1000 Kernels (gr.)	30.00	52.90	40.07	4.20	0.10
Ash (dry basis) %	1.638	1.934	1.775	0.052	0.03

Grade Distribution



Ref:O/G: Out of Grade

Semolin Analysis		Minimum	Maximum	Average	Standard Deviation	Variation Coefficient
MILLING	Falling Number (sec)	448	567	491	34.9	0.07
	Color (b)	21.3	33.6	28.4	2.163	0.08
	Wet Gluten (%)	21.2	31.0	25.7	2.651	0.10
	Gluten Index (%)	35	94	82	13	0.15
FARINOGRAM	Energy Level	30.8	55.2	41.2	3.4	0.08
	Degree Softening (12 min.)	12	37	23	6	0.28

Country elevators, Cooperatives and Mills that contributed in the sampling

LOCALITY	DENOMINATION
BUENOS AIRES PROVINCE	
Alberti	Eduardo Beraza S.A.
América	El Indio S.A.
América	Prunder S.A.
Ascención	Coop. Agrícola Ganadera Ltda. de Ascención
Azul	Cooperativa Agraria de Azul Ltda.
Bajo Hondo	A.C.A. Acopio Bajo Hondo
Balcarce	Acopio Balcarce S.A.
Balcarce	Scorziello y Galella S.A.
Benito Juárez	Beain S.A.
Benito Juárez	Campoamor S.A.
Bolívar	Cooperativa Agropecuaria de Bolívar Ltda.
Bragado	Acopio A.C.A. de Bragado
Bragado	La Bragadense S.A.
Cabildo	Cooperativa Agrícola Ganadera e Industrial Sombra de Toro Ltda.
Carabelas	Cooperativa Agropecuaria Ltda. De Carabelas
Carhué	Cooperativa Agrícola Ganadera Ltda. de Adolfo Alsina
Carlos Casares	Tomás Hnos. y Cía. S.A.
Carlos M. Naón	Acopio A.C.A. de Carlos M. Naón
Carmen de Patagones	Cooperativa Agrícola, Ganadera e Industrial de Patagones y Viedma
Carmen de Patagones	Novick y Cía. S.A.
Colón	Graneros y Elevadores Argentinos de Colón Ltda.
Coronel Dorrego	Casa Balda S.A.
Coronel Dorrego	Raúl H. Perez
Coronel Pringles	Pucará S.A.
Coronel Suárez	Agro Coronel Suárez S.A.
Coronel Suárez	Cooperativa Agropecuaria Gral. San Martín Ltda. de Cnel. Suárez
Chacabuco	Cooperativa Defensa de Agricultores de Chacabuco
Chacabuco	Trigalia S.A.
Chivilcoy	Cooperativa Agrícola Ganadera de Chivilcoy Ltda.
Daireaux	Camafer S.A.
Darregueira	La Emancipación Sociedad Cooperativa Mixta de Consumo Ltda.
Dudignac	Coop. Agrícola Ganadera de Dudignac Ltda.
General Belgrano	Barensi S.A.C.I.F.I.A.
General Lamadrid	Productores de General Lamadrid S.A.
General Pinto	Rucamalén S.A.
General Pueyredón	Hector L. Villar
General Villegas	Acopio A.C.A. de General Villegas
Gonzáles Chaves	Ernesto Crespo e Hijos S.C.
Gonzáles Chaves	Hugo N. Flori
Guaminí	Cooperativa Agrícola Ganadera Guaminí Ltda.
Irineo	Portela Luis A. Ducret y Cía.
Junín	Junarsa S.A.C.I.F.A.
Laprida	Vagnini y Mañana S.R.L.
Lartigau	Cooperativa Agrícola y Ganadera de Lartigau Ltda.
Licenciado Matienzo	Cantabria S.A.
Lobos	Biroccio Cereales
Lobería	Barón y Cía S.A.
Lobería	Forner Hnos. S.A.
Lobería	Julio O. Mónaco y Cía. S.A.

LOCALITY	DENOMINATION
Lobería	Pedro Ramón Cabeza S.A.
Los Toldos	Cooperativa Rural General Viamonte Ltda.
Mar Chiquita	Camposur S.R.L.
Médanos	Barraca Mitre S.A.
Micaela Cascallares	Cooperativa Agrícola Ltda. de Micaela Cascallares
Navarro	Omar Echeverry S.R.L.
Necochea	Alea y Cía.
Necochea	Cooperativa Agropecuaria General Necochea Ltda.
Necochea	Dorrego, López y Noves S.A.
Necochea	Evasio Marmetto S.A.
Necochea	Fernández Candia, Caraffo, Premrou S.A.
Norberto de la Riestra	San Martín, Pérez y Aranaz y Cía.
Nueve de Julio	Ceres Agropecuaria S.A.
Nueve de Julio	Rubén Ghergo
Nueve de Julio	Ruta Cereales
O' Higgins	Agro Comercial O' Higgins S.A.
Olavarría	A.C.A. Acopio Olavarría
Pehuajó	Acopio A.C.A. de Pehuajó
Pergamino	Acopio A.C.A. de Pergamino
Pigüé	La Alianza Cooperativa Agrícola Ganadera Ltda.
Pigüé	Molino Cañuelas
Puán	Cooperativa Agrícola Ganadera Ltda. De Puán
Puán	Torre Hnos. S.A.
Quequén	Promotora Agropecuaria Necochea
Ramallo	Coop. Agrícola de Ramallo Ltda.
Rauch	Cooperativa Agícola Ganadera de Rauch Ltda.
Rojas	Gear S.A.
Saavedra	Oregui Productores de Goyena
Saladillo	Cooperativa Agrícola Ganadera de Saladillo Ltda.
San Antonio de Areco	Cooperativo Agropecuaria de San Antonio de Areco Ltda.
San Cayetano	Molino Balatón
San Pedro	Ramón Rosa y Cía S.A.
Salliqueló	Ganadera Salliqueló S.A.
Stroeder	Cooperativa Agropecuaria de Stroeder Ltda.
Suipacha	Coincer S.A.
Tandil	Cooperativa Agropecuaria de Tandil Ltda.
Tandil	Rural Ceres S.A.
Tandil	Usandizaga, Perrone y Juliarena S.A.
Tornquist	Cooperativa Rural Ltda. de Tornquist
Tornquist	Los Vascos Cereales
Treinta de Agosto	Acopio A.C.A. de Treinta de Agosto
Trenque Lauquen	Juan Carlos Latour
Tres Arroyos	Cooperativa Agraria de Tres Arroyos Ltda.
Tres Arroyos	La Pampa Coop. Agrícola Ganadera de Colonización y Consumo Ltda
Tres Arroyos	Cooperativa Rural Ltda. Alfa de Tres Arroyos
Tres Arroyos	Agarraberes, Oscar Pedro
Tres Arroyos	Agro El Carretero S.A.
Tres Arroyos	Francisco Bellingeri e Hijos
Tres Arroyos	Héctor Jesús Goñi
Tres Arroyos	Julio Gustavo Gazaneo
Tres Arroyos	Agroservicios Sudeste S.A.
Tres Lomas	Morero Semillas
Veinticinco de Mayo	Cereales Veinticinco de Mayo
	Centro de Acopiadores de Cereales
	Centro de Acopiadores de Cereales de Daireaux

LOCALITY	DENOMINATION
	Centro de Acopiadores de Cereales de Tres Arroyos
	Centro de Acopiadores de Cereales del Noroeste Bonaerense
	Centro de Acop. de Cereales Zona Oeste de la Pcia. de Bs. As.
	Centro de Acopiadores de Cereales Zona Puerto Quequén
	Sociedad de Acopiadores de Cereales Zona Bahía Blanca
	Sociedad de Cerealistas del Norte de la Pcia. de Buenos Aires
CÓRDOBA PROVINCE	
Adelia María	Merlo y Manavella S.A.
Guatimozín	Barreneche y Cía. S.A.
Hernando	Cooperativa Agrícola La Vencedora Ltda. de Hernando
Idiazabal	Ortega Hnos.
Justiniano Posse	Cooperativa Agrícola Ganadera de Justiniano Posse Ltda.
La Carlota	Manisur S.A.
Laguna Larga	Francisco y José Barbero
Leones	Unión Agrícola Soc. Coop. Ltda de Leones
Marcos Juárez	Cooperativa Agropecuaria Gral. Paz Ltda. de Marcos Juárez
Monte Cristo	Miguel Gazzoni S.R.L.
Oliva	A.C.A. Acopio Oliva
Oliva	Cooperativa Agropecuaria La Federación Ltda. De Oliva
Río Cuarto	Calvo Antonio Carlos
San Francisco	Cadasa S.R.L.
Serrano	Santi Rosano y Cía. S.A.
Ucacha	Ucacha Cereales
Villa del Rosario	A.C.A. Acopio Villa del Rosario
Villa del Totoral	Pronor S.A.
	Sociedad de Acopiadores de Granos de la Pcia. de Córdoba
ENTRE RÍOS PROVINCE	
C. del Uruguay	Glencore Cereales S.A.
Crespo	La Agrícola Regional Coop. Ltda. de Crespo
Diamante	Agromoya S.R.L.
Galarza	Coop. La Protectora Ltda.
General Ramírez	Cooperativa La Ganadera Ltda. de General Ramírez
Gualeguay	Dowery S.A.
Gualeguay	Maribey S.A.
Gualeguaychú	Unión Cerealera S.R.L.
La Paz	Cooperativa La Paz
Larroque	Tierra Greda S.R.L.
Lucas González	Cooperativa Agropecuaria El Progreso Ltda.
María Luisa	Héctor Bolzan y Cía.
Rincón del Nogoya	Agrosur S.A.
Sauce Pinto	Dellizzotti Hnos. S.R.L.
Urdinarrain	Coop. Fed. Ag. Gan. de Urdinarrain
Victoria	Granero S.R.L.
Victoria	Nidera S.A.
Villa Fontana	Cereales Bolzan S.R.L.
	Centro de Acopiadores de Granos de Entre Ríos

LOCALITY	DENOMINATION
LA PAMPA PROVINCE	
Alta Italia	Cooperativa Alta Italia Ltda.
Anguil	Trabajadores Unidos Coop. Mixta Ltda. de Anguil
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	Acción Cooperativa Agropecuaria Ltda. de Eduardo Castex
General Pico	A.C.A. Acopio
General Pico	Acopagro S.A.
General Pico	Cereales Anahi Ruca
General San Martín	Sociedad Cooperativa Agrícola Ganadera Ltda. de Gral. San Martín
Guatraché	A.C.A. Acopio Guatraché Ltda.
Ingeniero Luiggi	Agronomía Fernández
Ingeniero Luiggi	El Campo S.A.
Intendente Alvear	Caivano-Chapaleufú
Macachín	Atreu-có Cooperativa Agropecuaria Ltda.
Miguel Riglos	Cooperativa Agropecuaria de Miguel Riglos Ltda.
Quemú - Quemú	Cereales Quemú
Uriburu	Agro Ganadera Don Enrique S.A.
Villa Mirasol	Comercial Mirasol
	Agronomía Pico
	Alvarez Hnos.
	Brandemann y Cía.
	C.A. de Granos
	Comercial Antón
	García Rouco y Bouza
	Grainco Pampa
	P.U. de Arata S.R.L.
	René Thomas
	Trimag S.A.
	Centro de Acopiadores de Cereales de La Pampa y Limítrofes
SANTA FE PROVINCE	
Acebal	Del Teglia & Cía. S.R.L.
Acebal	Olega S.A.
Alcorta	Jakas, Kokic e Ivancich S.A.
Alvarez	Moscoloni Hnos. S.R.L.
Arequito	Acopio Arequito S.R.L.
Arteaga	Domizzi y Cía. S.A.
Avellaneda	Unión Agrícola de Avellaneda Coop. Ltda.
Cañada de Gómez	Cooperativa Agrícola Mixta de Cañada de Gómez Ltda.
Carcarañá	Cooperativa Agrícola Agricultores Unidos de Carcarañá Ltda.
Carreras	Jakas, Kokic e Ivancich S.A.
Carlos Pellegrini	Cereales Don Victorio S.R.L
Colonia Aldao	Casa Blanca Cereales S.A.
Conesa	Cooperativa Agrícola de Conesa Ltda.
Correa	Sociedad Agropecuaria de Correa Coop. Ltda.
Chabás	Jakas, Kokic e Ivancich S.A.
Díaz	Enrique Toya e Hijos S.A.
General Gelly	Cereales Triángulo S.R.L.
Hughes	Acopio A.C.A. Hughes
Hughes	Cerealista Hughes S.R.L.
Hughes	Centro Agríc. Modelo S.A.
Irigoyen	Adagri S.A.

LOCALITY	DENOMINATION
Irigoyen	Cooperativa Agropecuaria Mixta Ltda. de Irigoyen
Las Rosas	Ersa Cereales S.A.
Las Rosas	Fossati Cereales S.A.
Lopez	Melica Hnos.
Malabrigo	Cooperativa Agropecuaria de Malabrigo Ltda.
Margarita	Cooperativa Agropecuaria de Margarita Ltda.
Máximo Paz	Cooperativa Agropecuaria Ltda. de Máximo Paz
Monje	Cooperativa Agrícola Ganadera Tambera de Monje Ltda.
Montes de Oca	Felipe Crosetti S.A.
Pavón Arriba	Campagnaro Cereales S.A.
Pujato	Rogelio Pagani S.R.L.
Rafaela	Domingo Sapino Ltda. S.A.
Roldán	Roberto Amsler S.A.C.
Rosario	Juan María S.R.L.
Rosario	Santa Sylvina S.A.
Rufino	Cerealoeste S.A.
	Centro de Acopiadores de Cereales y Oleaginosas de Santa Fe
	Sociedad Gremial de Acopiadores de Granos (Rosario)

TUCUMÁN PROVINCE

S. M. de Tucumán	Centro de Acopiadores de Granos del N.O.A.

SALTA PROVINCE

Salta	Molinos Adelia María S.A.

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WHEAT

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WHEAT DURUM

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Molinos Río de la Plata
Terrabusi

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