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## **Morocco**

### **Grain and Feed Annual**

## **2011**

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**Report Highlights:**

Morocco's grain area in 2010/11 is estimated at 4.93 million HA, with 3.04 million HA planted with wheat and 1.89 million HA with barley. The grain crop is developing nicely under good growing conditions. The GOM revised total grain production forecast upward to 9 million MT, of which 5.9 million MT is for wheat and 3.1 million MT for barley. Morocco's wheat imports in 2010 reached 3.062 million MT, an increase of 30 percent over imports in 2009. Wheat imports from the U.S. totaled 394,784 MT and accounted for 13 percent share of the market. To alleviate the impact of rising international wheat prices, the GOM suspended duties on wheat imports and established an import subsidy scheme to reimburse wheat importers the difference between a government set-price and the actual import costs.

## **Executive Summary:**

Morocco's 2010/11 grain planting season started under favorable weather conditions, with timely and adequate rainfalls throughout most of the grain production regions. Total grain area is estimated at 4.93 million HA, with wheat area estimated at 3.04 million HA and area planted with barley estimated at 1.89 million HA. Overall, the grain crop is reported to be developing well under satisfactory growing conditions. The government has revised total grain production estimate for upward, from an initial estimate of 7 million MT to a fairly optimistic figure of 9 million MT. Total wheat productions is forecast at 5.9 million MT, while barley production is estimated at 3.1 million MT.

In CY 2010, Moroccan wheat imports totaled 3.062 million MT, representing an increase of 30 percent compared to imports in 2009. This increase was mostly due to a lower wheat production in 2009/10, compared to the record high crop in the year before. While Morocco's soft wheat imports increased by 60 percent in 2010, its imports of durum wheat experienced a 30 percent decline. France continued to control the largest share of the Moroccan soft wheat market, while Canada dominated the durum market. In 2010, U.S. wheat exports to Morocco totaled 394,784 MT and accounted for about 13 percent of the market, compared to 147,000 MT and a 6 percent market share in 2009. The increase in U.S. wheat exports in 2010 was mostly due to an almost full utilization of the tariff rate quotas (TRQs) for soft wheat under the U.S.-Morocco Free Trade Agreement.

In order to alleviate the impact of rising international wheat prices and ensure sufficient wheat supplies in the local market, the GOM in September 2010 suspended import duties on common wheat, and in November suspended import duties on durum wheat. In addition, the government has established import restitution (subsidy) scheme, through which Moroccan wheat importers are reimbursed for the difference between a government set-price (2600 dirham/MT) and their actual import costs.

## **Commodities:**

**Wheat**

**Barley**

## **Production:**

The 2010/11 grain planting season in Morocco started under favorable weather conditions, with timely and sufficient rainfalls throughout most of the grain production regions. Wheat planted area is estimated at 3.04 million hectare (HA), about 6.59 percent higher than area planted in the previous year. Area planted with barley is estimated at 1.89 million HA, which represents a decline of 1.77 percent compared to last year.

Overall, the 2010/11 grain crop is reported to be developing well under good growing conditions. Cumulative rainfalls during September- January reached 297 mm, recording a 38 percent increase above their normal levels, but were down 15 percent compared to the same time period in the year before. Water reserve for agricultural usage in Moroccan dams is estimated at 9.8 billion cubic meters, about 86 percent of their full capacity.

Early seeding in many areas accompanied by evenly distributed rainfalls through the planting and growing seasons are expected to result in a higher production for the 2010/11 grain crop. This year, the use of certified seed covered about 20 percent of the total grain planted area, with the government subsidizing 40-60 percent of the seed costs. Currently, seed subsidies are set at 170 dirham/Qt for durum wheat, 160 dirham/Qt for soft wheat, and 150 dirham /Qt for barley. Others measures to support grain production included various subsidies (30 to 70 percent) for the purchase costs of farm and irrigation equipment, and covering the cost of soil testing to optimize fertilizer usages in the grain fields.

For the 2010/11 crop, the government of Morocco has revised upward its preliminary estimate of total grain production, from an initial figure of 7 million MT to a fairly optimistic estimate of 9 million MT. This production level represents a 20 percent increase over grain production in 2009/10 that totaled 7.46 million MT. Total wheat production is projected to be 5.9 million MT, while barley production is forecast at 3.1 million MT.

The table below shows the breakdown of Morocco's grain area and production in the last five years, as well as their projection for the 2010/11 season. As indicated in this table, total area planted with grain (wheat and barley) in 2010/11 has increased by more than 3 percent. This increase in wheat and barley areas may be inconsistent with the overall long-term agricultural strategy stated by the Moroccan government. Under the "Morocco Green Plan" strategy, the government aims at increasing grain supplies through raising productivity and yields, while reducing area planted in order to free land resources for the expansion of high value export-oriented fruit and vegetable crops.

**Table 1: Production and Area Planted of Wheat and Barley**

Year of Harvest	2006	2007	2008	2009	2010	2011*	Average 06-11
<b>Area Planted (1,000 Hectares)</b>							
Durum Wheat	1,069	843	928	969	901	920	938
Soft Wheat	2,038	1,729	1,930	2,009	1,951	2,120	1,963
Tot. Wheat	3,107	2,572	2,858	2,978	2,852	3,040	2,901
Barley	2,189	1,993	2,181	2,183	1,922	1,888	2,059
Total Planted	5,295	4,565	5,039	5,161	4,774	4,928	4,960
<b>Production (1,000 MT)</b>							
Durum Wheat	2,096	514	1,027	2,100	1,640	1,800	1,530
Soft Wheat	4,231	1,069	2,703	4,300	3,247	4,100	3,275
Total. Wheat	6,327	1,583	3,730	6,400	4,887	5,900	4,805
Barley	2,535	763	1,272	3,800	2,570	3,100	2,340
Total Production	8,862	2,345	5,002	10,200	7,457	9,000	7,144

Source: Ministry of Agriculture.

(\*): FAS /Rabat Production projection figures for 2011.

### Consumption:

Wheat consumption in Morocco remained relatively stable. Total consumption in 2010 increased slightly by about 1.2 percent from the year before, but is expected to stabilize in the coming year. However, the increased urbanization and the prevalence of low income, a heavy bread-user population, and the lack of cheaper substitutes will likely continue to strengthen demand for wheat in the long term.

The GOM considers common wheat a politically and socially sensitive commodity. Passing on the increases in world wheat prices to the consumers have been avoided at very high costs to the Moroccan budget in recent years. The government devised a mechanism by which bread wheat prices have been successfully maintained at low levels and the government treasury has supported the difference in the costs. In addition, the GOM continues to subsidize more than one million MT of soft wheat flour commonly known as “National Flour” presumably to make flour available to the low-income consumers. Marketing of wheat to make subsidized flour is subject to heavy government control at all levels. The government has set up all processing parameters including the extraction rate, extraction margin, ex-mill prices, wholesale and retail prices. The wheat (whether local or imported through ONICL tenders) enters flour mills at the same price (2,600 DH/MT for the standard quality) and the government supports the difference. The government, however, does not get involved in marketing and pricing of durum wheat in the local markets.

Diversification of bread products started to occur especially in major cities where the higher income population tends to concentrate. Increasingly, wheat from the U.S. is viewed by many Moroccan millers as an “enhancer” of flour performance and hence some quality oriented mills have been buying it. The demand for the “enhancer” wheat is likely to increase with the rapid development of fast-food chains, industrial pre-baked and chilled dough products for the tourism industry.

There are about 144 common industrial wheat processing mills in Morocco with a capacity of about 8.7 MMT and about 51 durum industrial processing mills with a capacity of 1.4 MMT. In addition, there are literally thousands of traditional small wheat family-run processing mills located mostly in small towns and rural areas. The wheat mills capacity is generally underutilized which has opened an opportunity for the wheat millers to process wheat for exports, especially to African countries (see export section).

Barley is consumed mostly as animal feed in Morocco. With largely sufficient rainfalls during the months of September-January, pasture conditions have improved which will likely reduce consumption and thus demand for feed barley by livestock producers in Morocco this year.

### **Trade:**

Morocco has become one of the world's major wheat importers in recent years. Morocco's imports of common and durum wheat tend to fluctuate from year to year reflecting the swings in local production. Provided minimum specifications, Morocco remains a price oriented market and importers must compete with the cheaper origins. In CY 2010, Moroccan wheat imports totaled 3.062 million MT, an increase of 30 percent compared to quantities imported in 2009. The increase was mostly due to decline in wheat production in 2009/10 by a 27 percent, compared to the record high level in the year before. While Moroccan soft imports increased by 60 percent, imports of durum wheat experienced a 30 percent decline in 2010. France continued to control the largest share of the Moroccan soft wheat import market, while Canada dominated the durum wheat import market.

U.S. wheat exports to Morocco in CY 2010 totaled 394,784 MT, all soft wheat, and accounted for about 13 percent of the Moroccan wheat market. This is compared to 147,000 MT and a 6 percent market share in 2009. The increase in U.S. wheat exports in 2010 was mainly due to the utilization, almost fully, of the tariff rate quotas (TRQs) for U.S. soft wheat imports under the U.S.-Morocco Free Trade Agreement (See Policy section).

In general, the EU wheat suppliers have a competitive edge over U.S. suppliers because of their proximity to the Moroccan market and their ability to export the small size shipments desired by the Moroccan buyers. In addition, the EU has larger wheat TRQs under the Morocco-EU free trade agreement. In 2010, Morocco wheat imports from the EU exceeded 2 million MT, and came mainly from France. More than 85 percent of Morocco's durum wheat imports in 2010 were provided by Canada.

**Table 2: Morocco's Common and Durum Wheat Imports by Country of Origin (in MT)**

Year	2007	2008	2009	2010
Wheat Imports/Origin	MT	MT	MT	MT
<b>Common Wheat Imports</b>	<b>2,840,595</b>	<b>3,618,767</b>	<b>1,577,386</b>	<b>2,518,067</b>
U.S.A.	936,894	121,187	75,228	394,784
EU Total	<i>1,376,078</i>	<i>2,533,804</i>	<i>1,168,491</i>	<i>2,052,127</i>
-France	<i>1,121,157</i>	<i>1,957,661</i>	<i>989,074</i>	<i>1,883,798</i>
-Germany	<i>168,604</i>	<i>305,862</i>	<i>79,267</i>	<i>75,523</i>
-Lithuania	<i>86,317</i>	<i>270,281</i>	<i>100,150</i>	<i>6,760</i>
England	0	0	0	71,156
Russia	99,219	81,060	59,695	0
Ukraine	2,668	44,533	71,387	0
Argentina	0	248,381	0	0
Kazakhstan	183,572	60,382	0	0
Brazil	23,455	106,034	0	0
<b>Durum Wheat Imports</b>	<b>787,428</b>	<b>414,216</b>	<b>788,775</b>	<b>544,200</b>
U.S.A.	147,150	0	72,967	0
Canada	596,693	404,851	673,034	469,306
France	41,365	8,444	3,820	31,122
Australia				43,772
<b>Total Wheat</b>	<b>3,628,023</b>	<b>4,032,983</b>	<b>2,366,161</b>	<b>3,062,268</b>

Source: Official Moroccan Trade Date.

For MY 2011/2012, the total Moroccan wheat imports (durum and common) are expected to be lower than imports in MY 2010/2011. This would likely because of the larger wheat crop projected for this year, about 20 percent higher than production in the previous year.

**Table 3: Morocco's Barley Import by Country of Origin (1,000 MT)**

Years	2007	2008	2009	2010
U.S.A.	10	20	-	-
Spain	133	51	-	-
France	258	194	59	96
Hungry	17	-	-	-
Nederland	-	-	-	46
Germany	11	7	-	8
Bulgaria	7	-	-	-
Kazakhstan	25	-	-	-
Maldives	3	-	-	-
Russia	19	9	-	-
Turkey	-	-	27	-
Ukraine	44	17	167	-
Others	17	13	5	-
<b>Total Barley</b>	<b>544</b>	<b>311</b>	<b>258</b>	<b>150</b>

Source: Official Moroccan Trade Date

Morocco's barley imports declined sharply in 2010, due to reduced demand for feed barley by livestock growers. However, Moroccan barley imports started to rebound in 2011, and total imports in MY 2010/11 are likely reach similar level to that of MY 2009/10.

## Moroccan Flour Exports

Although Morocco is a net importer of wheat, it exports limited quantities of wheat flour to neighboring African countries. Morocco's wheat flour exports reflect the excess milling capacity situation in the industry; hence millers have been able to process wheat cheaply for export destinations.

**Table 4: Morocco's Wheat Flour Exports by Destination (in 1,000 MT)**

Year	2007	2008	2009	2010
<b>Destination:</b>				
Cuba	12	15	-	-
Guinea	20	15	49	54
Gambia	16	5	13	17
Cent. Africa. Rep.				3
Niger	2	1	2	8
Liberia	6	-	1	2
Mali	6	-	-	-
Libya	30	-	-	-
Burkina Faso	1	-	-	1
Benin	-	-	1	2
Guinea-Bissau	2	-	-	-
Others	9	30	2	1
<b>Total Exports</b>	<b>104</b>	<b>66</b>	<b>68</b>	<b>88</b>

Source: Official Moroccan Trade data

## Stocks:

Grain stocks held by farmers fluctuate significantly in Morocco, and they are very difficult to assess. Stocks held by agents licensed by the Cereal Office (grain merchants, cooperatives, processors) and government managed port silos are normally known. The table below provides data on grain stock holdings in Morocco by the end of February, 2011.

**Table 5: Morocco's Grain Stocks by Shareholder as of February 28, 2011 (in 1,000 MT)**

	Grain Merchants	Cooperatives	Millers & Processors	Port silos	Total
Soft Wheat	490	80	430	280	<b>1,280</b>
Durum Wheat	40	-	100	60	<b>200</b>
Barley	10	-	10	10	<b>30</b>
Corn	120	-	110	10	<b>240</b>
<b>Total</b>	<b>660</b>	<b>80</b>	<b>650</b>	<b>360</b>	<b>1,750</b>

Source: Moroccan Cereal Office

The current capacity of ports silos represents about 30 percent of the total 4.2 MMT storage capacity in Morocco. Wheat stored at these silos by the end of February represented about 20 percent of the total wheat stored in Morocco.

The Moroccan government policy concerning the strategic wheat stocks is to maintain available wheat supplies to cover three months of wheat consumption. In January 2011, the wheat reserves were estimated to cover only two months of consumption, and the government announced it will import about 400,000 MT to rebuild the strategic stocks and assure the public of the availability of wheat supplies in the local market.

### **Storage Facilities and Port Handling**

A large silo facility with a storage capacity of 42,000 MT and discharging capacity of 16,000 MT/day that was built by a private Moroccan investor in Jorf Lasfar port in 2008 is now fully operational. This facility contains two 400 MT/hour screw conveyors and a conveyor belt with a capacity of 800 MT/hour. The Jorf Lasfar port currently has the deepest berth (12 meters) of all grain docks in Morocco and is capable of handling grain ships with loads of up to 40,000 MT. Another private sector silo with a storage capacity of 66,000 MT (operational capacity of 55,000 MT) was built by Moroccan company in the port of Casablanca. This facility will expand the current capacity of the Casablanca Port to a total capacity of 110,000 MT, including the capacity of an old silo owned by the National Office of Cereals that has a total storage capacity of 50,000 MT, with a nominal discharging capacity of 900 MT/hour.

### **Policy:**

Morocco imposes tariffs on wheat imports on a periodical basis in order to protect the local grain producers from foreign competition. The government usually intervenes when the supply and demand situation in the local market requires such intervention. In January 2010, the government of Morocco imposed an import tariff rate of 80 percent on durum imports and of 90 percent on common wheat imports. With mounting pressure from rising wheat prices in international markets and local wheat supplies becoming very tight, import duties on soft and durum were suspended on September 16 and November 9, respectively. In December, the government extended the suspension of these customs duties until the end of April 2011 for soft wheat, and the end of May for durum wheat.

In addition to the suspension of import duties, the Moroccan government has taken other steps to alleviate the impact of rising wheat prices and ensure sufficient wheat supplies in the Moroccan market. These steps included the establishment of an import restitution (subsidy) scheme through which Moroccan wheat importers are reimbursed for the difference between a government set price (2600 dirham/MT, about \$325) and wheat prices in the international market. With rising world wheat prices, import restitutions have increased sharply, from 300 dirham/MT during in second half of January 2011 to its highest level of 865 dirham/MT (\$107/MT) in late February. Effective, September 16, 2010, the wheat import restitution scheme has been extended until the end of April.

## **Tariff Rate Quota for 2010/2011**

Moroccan wheat imports are subject to two sets of tariff rate quotas (TRQs) established under two separate trade agreements, one is with the European Union and the other is under the U.S.-Morocco Free Trade Agreement (FTA). Under these agreements, the TRQs for common wheat depend on the size of the local wheat crop in any given year. The implementation of the FTA with the U.S. continues to face some difficulties due to the divergence between the U.S. and the Moroccan government in the interpretations of the agreement concerning the reference year used to compute the size of the quota as well as the administrative procedures for implementing the TRQs.

Given the size of Moroccan wheat crop of MY 2010/11, the TRQs for U.S. common wheat exports under the FTA are set at their minimum level of 346,667 MT for CY 2011. The TRQs for U.S. durum wheat exports are set at 300,000 MT. According to the FTA, the applicable import tariff rate for common wheat is 83.7 percent and for durum wheat is 37.5 percent. With the suspension of wheat import duties until the end of April for common wheat and the end of May for durum, the preferential access for U.S. wheat exports into the Moroccan market will practically disappear and the TRQs will become ineffective. In 2010, the TRQs for U.S. soft wheat exports were almost fully utilized, with 303,000 MT imported out of the quantity of 333,333 MT tendered by the Moroccan National Office of Cereals (ONICL) in January and February 2010. For durum wheat imports under TRQs, no bids were submitted for the entire amount of 290,000 MT allocated to the U.S. exporters under the agreement for 2010.

## **Barley under the FTA**

Under the US-Morocco FTA, import duties on barley would be phased out in equal installments over 15 years. The base import duty for barley negotiated under the FTA was 35 percent. The tariff rate quota for 2011(the sixth year of the agreement) is set at 21 percent.

## **Marketing:**

### **Distribution Channels**

Moroccan wheat farmers have the option to sell their production in the local markets if prices are more appealing than the minimum government guaranteed price. To sell at the pre-set government price, farmers must deliver their crop to licensed grain merchants, cooperatives, or millers. The pre-set price is for a standard quality and deduction or bonuses apply to take into account deviations from the standard quality.

Common wheat accounts for most of the grain that goes through the official distribution channels in spite of the yearly variations caused by the size of the harvest. As of February 2011, the total quantity of common wheat delivered by farmers through the official channels (authorized grains merchants, grains cooperatives, and wheat millers) was estimated at about 1.76 million MT. This represents a 30 percent decline in the amount of wheat collected from farmers, compared to the same period of the previous year, but remains 8 percent higher than five-year average. The table below shows the fluctuation in the amounts of locally produced grain delivered through the ONICL licensed channels in the past 10 marketing years (1,000 MT).

**Table 6: Grain Channeled to Licensed Agents (1,000 MT)**

<b>Marketing Year</b>	<b>Common Wheat</b>	<b>Other Grains(*)</b>	<b>Total</b>
2000	811	58	869
2001	417	14	431
2002	1,092	42	1,134
2003	1,013	33	1,046
2004	1,507	45	1,552
2005	1,860	30	1,890
2006	1,651	20	1,671
2007	2,479	20	2,499
2008	519	13	532
2009	1,388	25	1,413
2010	2,658	42	2,700
<b>Average</b>	<b>1,400</b>	<b>31</b>	<b>1,431</b>

\* Include Durum, Barley and Corn. Source: Moroccan Cereal Office

In MY 2010/2011, grains merchants, flour mills, and cooperatives accounted respectively for 66 percent, 28 percent, and 6 percent of the grains collected through the official channels.

### **U.S. Wheat Marketing Activities**

The U.S. Wheat Associates Office in Casablanca continues to implement market development and promotional activities to expand U.S. wheat exports in Morocco and other North Africa markets. These activities include the support of a milling school that is managed by the Moroccan Miller Federation as well as other market development and trade servicing programs targeted at wheat buyers in the region. In December 2010, the U.S. Wheat Associates organized its annual Crop Quality Seminar in Casablanca to acquaint the Moroccan end-users (private millers, importers, and regulatory officials) with U.S. wheat supply situation, the quality attributes of the new U.S. wheat crop as well as and the advantages of purchasing from U.S. suppliers.

### **PRICES:**

Farmers in Morocco have the option to sell their common wheat production to government licensed traders (grain merchants, cooperatives, and mills) at a preset price (2,600 dirham/MT) or sell it in the free market. Prices of other grains (including durum wheat and barley) are freely negotiated in the market place. The average price of durum wheat and barley in the local markets for MY 2009/2010 declined by 21 and 36 percent, respectively, compared to prices in the previous year. The decline in the common wheat prices was less significant than that in durum wheat and barley prices. During the period June 2010-February 2011, soft wheat prices in the local markets averaged 2550 dirham/MT, durum wheat prices averaged 3150 dirham/MT, and barley prices average 2925 dirham/MT. The stability of soft (bread) wheat prices in the local market during this period reflects the success the government's measures have made in alleviating the impact of rising international wheat prices and ensuring sufficient wheat supplies in the Moroccan markets.

**Table 7: Grain Average Prices in Local Markets (Dh/MT)**

<b>Year</b>	<b>Common Wheat</b>	<b>Durum</b>	<b>Barley</b>
2005/2006	2,590	2,950	2,490
2006/2007	2,490	2,910	2,110
2007/2008	3,190	3,830	3,230
2008/2009	2,720	3,440	2,740
2009/2010	2,450	2,750	1,750

Source: Morocco's Cereal Office (ONICL) (Indicative exchange rate (1 USD = 8.45 dirham))

**Production, Supply and Demand Data Statistics:  
Wheat, Morocco (Areas in 1,000 HA and Quantities in 1,000 MT)**

Wheat Morocco	2009/2010			2010/2011			2011/2012		
	Market Year Begin: Jul 2009			Market Year Begin: Jul 2010			Market Year Begin: Jul 2011		
	USDA Official	Old Post	New Post	USDA Official	Old Post	New Post	USDA Official	Old Post	New Post
Area Harvested (1000 HA)	2,978	2,800	2,978	2,800	2,829	2,852			3,040
Beginning Stocks	1,060	535	1,060	1,623	1,605	1,573			1,470
Production	6,370	6,370	6,400	4,900	4,200	4,887			5,900
MY Imports	2,304	2,300	2,312	3,600	3,200	3,300			2,500
TY Imports	2,304	2,300	2,312	3,600	3,200	3,300			2,500
TY Imp. from U.S.	431	420	355	0	400	400			350
Total Supply	9,734	9,205	9,772	10,123	9,005	9,760			9,870
MY Exports	111	100	100	100	100	90			90
TY Exports	111	100	100	100	100	90			90
Feed and Residual	300	100	100	300	100	100			100
FSI Consumption	7,700	7,400	7,999	8,000	7,400	8,100			8,100
Total Consumption	8,000	7,500	8,099	8,300	7,500	8,200			8,200
Ending Stocks	1,623	1,605	1,573	1,723	1,405	1,470			1,580
Total Distribution	9,734	9,205	9,772	10,123	9,005	9,760			9,870
Yield (MT/HA)	2.	2.	2.1491	2.	1.	1.7135			1.9408

**Barley, Morocco (Areas in 1,000 HA and Quantities in 1,000 MT)**

Barley Morocco	2009/2010			2010/2011			2011/2012		
	Market Year Begin: Jul 2009			Market Year Begin: Jul 2010			Market Year Begin: Jul 2011		
	USDA Official	Old Post	New Post	USDA Official	Old Post	New Post	USDA Official	Old Post	New Post
Area Harvested (1000 HA)	2,183	2,180	2,183	1,910	1,910	1,922			1,888
Beginning Stocks	114	86	114	1,370	1,216	1,216			1,006
Production	3,800	3,800	3,800	2,600	2,900	2,570			3,100
MY Imports	256	130	225	200	110	220			190
TY Imports	256	130	225	200	110	220			190
TY Imp. from U.S.	0	0	0	0	0	0			0
Total Supply	4,170	4,016	4,139	4,170	4,226	4,006			4,296
MY Exports	0	0	0	0	0	0			0
TY Exports	0	0	0	0	0	0			0
Feed and Residual	1,900	1,900	1,900	2,300	2,100	1,950			2,200
FSI Consumption	900	900	1,023	900	900	1,050			1,050
Total Consumption	2,800	2,800	2,923	3,200	3,000	3,000			3,250
Ending Stocks	1,370	1,216	1,216	970	1,226	1,006			1,046
Total Distribution	4,170	4,016	4,139	4,170	4,226	4,006			4,296
Yield (MT/HA)	2.	2.	1.7407	1.	2.	1.3371			1.6419