

# Collaborative Project AGROVEGETAL-CIMMYT Produced High Yielding Durum Wheat Varieties with Improved Industrial Quality for Southern Spain.



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## Introduction

During the last ten years, Agrovegetal S.A. collaborated with CIMMYT in developing high quality durum wheat adapted to the agro-ecological conditions of Southern Spain. In 2007, more than 7,500 tons of certified seed from improved cultivars produced in the project were sown commercially on 35,000 ha, representing approximately 10% of the durum area of Andalusia.

## Materials and Methods

Three cultivars, DON SEBASTIAN, DON FRANCISCO, and DON JOSE, were evaluated during 2005-06 and 2006-07 crop cycles in official testing by RAEA (Red Andaluza de Experimentacion Agraria) at seven sites in Andalusia and compared to the official commercial checks, VITRON, GALLARETA, DON PEDRO and SIMETO. The four checks are used as uniform reference set to determine the industrial quality indices used by the European Union to allocate quality premiums for commercial varieties.

## Results and Discussion

In both years, the average of the new Agrovegetal cultivars was superior compared to the average of the checks for all four end-use quality attributes used in the calculation of the general quality index: Grain Protein Content (GPC), Gluten Index (GI), Yellow Color (YC) and Test Weight (TWT).

The most significant improvement was observed for attributes with higher heritability such as GI (+15.7% above the average of checks) and YC (+4% above the average of checks). However, substantial improvements were although observed for quality traits with lower heritability subject to a greater degree of environmental influence. Compared to the checks, the new cultivars displayed a higher GPC (+2% on average, +4.9% in the case of DON SEBASTIAN) and higher TWT (+1.4% on average, +2.2% in the case of DON SEBASTIAN). The cultivar DON SEBASTIAN demonstrated exceptional performance by combining the highest GPC and TWT in spite of the inverse relationship usually observed between these two traits under Mediterranean conditions.

### Quality Trials Results in ANDALUSIA 2005-06 y 2006-07 (Average data from seven locations each year)

	Grain Protein Cont.	Test Weight	Yellow color	Gluten Index
<b>official checks average 2006</b>	14,4	80,9	23,0	67,6
<b>official checks average 2007</b>	13,3	82,6	23,8	67,6
<b>official checks average 2006 &amp; 2007</b>	<b>13,9</b>	<b>81,8</b>	<b>23,4</b>	<b>67,6</b>
<b>average %</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>
	Grain Protein Cont.	Test Weight	Yellow color	Gluten Index
<b>Agrovegetal varieties average 2006</b>	14,8	82,8	24,1	78,6
<b>Agrovegetal varieties average 2007</b>	13,5	83	24,6	77,9
<b>Agrovegetal varieties average 2006 &amp; 2007</b>	<b>14,1</b>	<b>82,9</b>	<b>24,3</b>	<b>78,2</b>
<b>average %</b>	<b>102,0</b>	<b>101,4</b>	<b>104,0</b>	<b>115,7</b>
	Grain Protein Cont.	Test Weight	Yellow color	Gluten Index
<b>DON SEBASTIAN average 2006</b>	15,1	84,0	23,7	77,7
<b>DON SEBASTIAN average 2007</b>	14,0	83,1	24,1	80,9
<b>DON SEBASTIAN average 2006 &amp; 2007</b>	<b>14,5</b>	<b>83,5</b>	<b>23,9</b>	<b>79,3</b>
<b>average %</b>	<b>104,9</b>	<b>102,2</b>	<b>102,0</b>	<b>117,3</b>

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