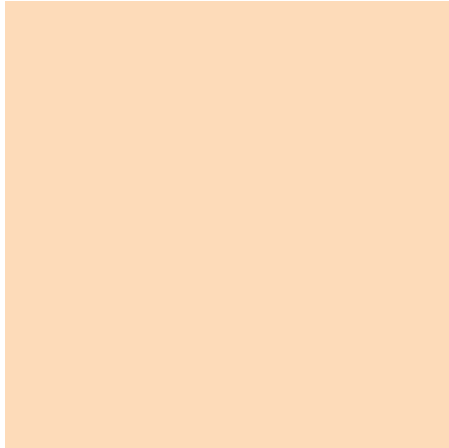


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October 2017

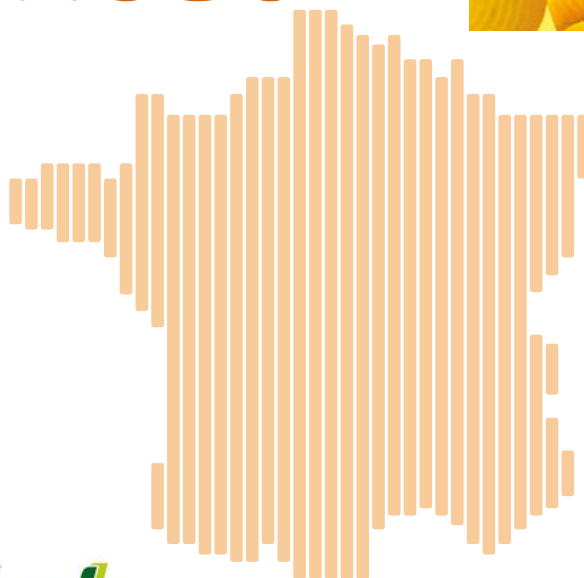
# HARVEST 2017



# Quality of French durum wheat



AT DELIVERY TO INLAND  
COLLECTION SILOS





## DURUM WHEAT 2017: AMPLE VOLUMES AND PROTEINS

**French durum wheat production is estimated to be over 2Mt due to an atypical year in 2016. The quality of the harvest, characterised by high protein contents, varies according to harvesting conditions in the different regions.**

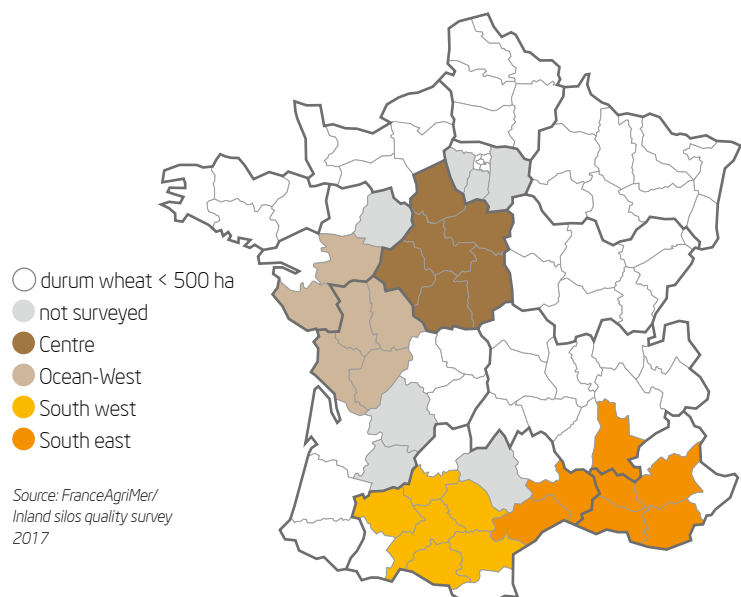
**D**espite a slight reduction in wheat area following 2 years of strong increase, the French durum wheat production is almost at 2.14 Mt, i.e. up 12% compared to the 2012-2016 average. This is due to an increase in yields to 56.1 q/ha (+9% compared to the 2012-2016 average). France thus reaffirms its position as a major and reliable producer of durum wheat in the European Union.

In terms of quality, the strong growing potential established during the beginning of the grain filling period owing to dry and sunny weather led to specific weights exceeding 78kg/hl on average in most production areas. As a result, 88% of wheat exceeds the 76kg/hl threshold. In line with the dry conditions at the end of the cycle, Hagberg falling numbers are very good in the south of the country. In the Ocean-West and Centre production areas, the Hagberg falling numbers were degraded for the wheat harvested following the rain in early July, but remained good for the wheat cut early.

The high amounts of nitrogen available in the soil at the end of winter and the good plant rooting in most areas resulted in high protein content nationwide - 14.8% on average. Vitreousness, which depends on grain protein content and pluviometry at the end of the cycle, was over 80% on average in most production areas. The rate of mottled grains returned to a very good level, with a national average of 2.2%. Finally, owing to high temperatures at the end of the cycle and good genetic characteristics of the French varieties, the wheat had a very nice colour, with a high yellow index and a low brown index.

### FOUR PRODUCTION AREAS SURVEYED

**C**ollection survey includes silos from twenty five department located in four production areas - Centre, Ocean-West, South-West and South-East. Over the last five campaigns, these four areas alone represented 98% of the national durum wheat harvest - 32% for the South-West, 26% for the Centre, 24% for the Ocean-West area and 16% for the South-East. The average results from the four production areas are shown on the following pages, represented in the maps by circles.



## WATER CONTENT AND SPECIFIC WEIGHT

### WATER CONTENTS ARE COMPATIBLE WITH GOOD STORAGE

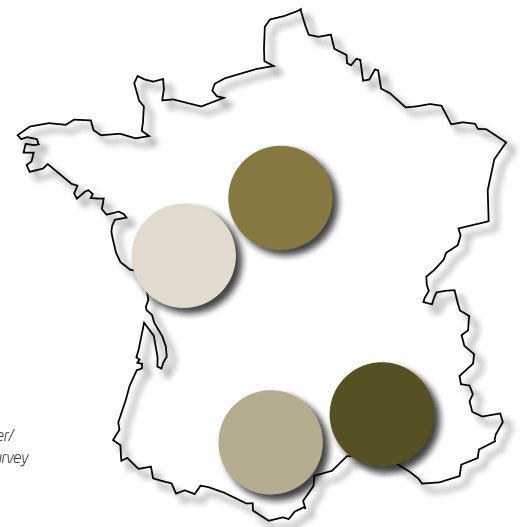
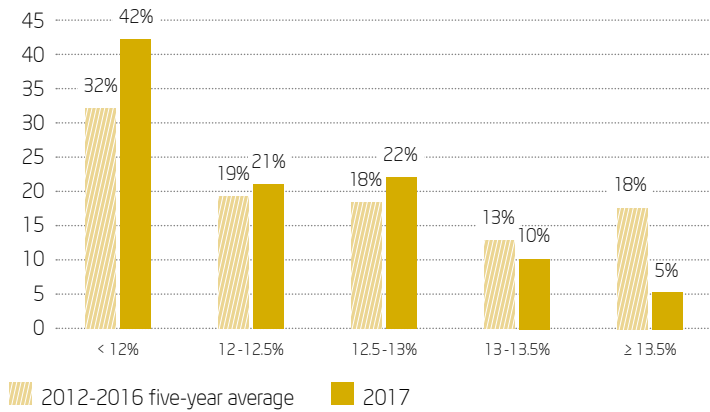
> Water content is 12.1% on average, which is conducive to good grain storage. The four production areas have water content of 13% or less. The driest wheat is found in the South-East, with an average value of 10.9%. This year, 85% of wheat is under 13%.

Water content of

# 12.1%

on average

in % of the volumes collected



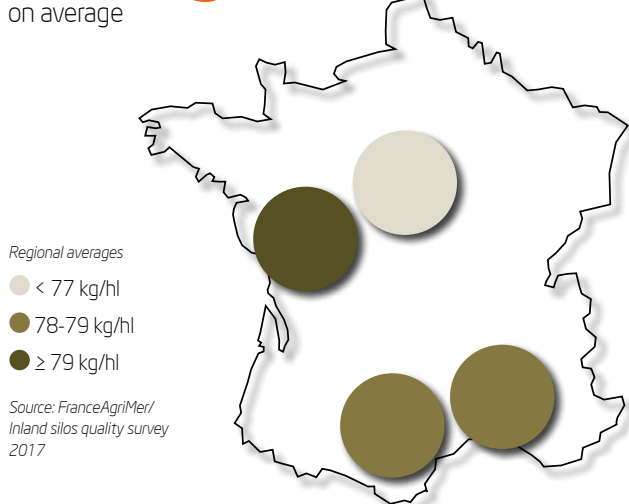
### MOST SPECIFIC WEIGHTS AT A GOOD LEVEL

Specific weight: 3 production areas exceed

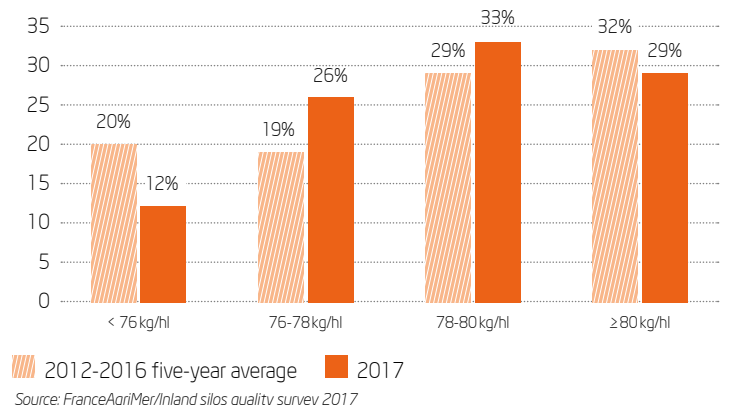
# 78 kg/hl

on average

> Due to dry and sunny weather conditions during the grain filling period, the specific weights are good on the whole. They exceed 78 kg/hl in the South-East, South-West and Ocean-West production areas. The Ocean-West area has the best results, with an average of almost 80 kg/hl. The national average is 78.3 kg/hl at delivery to inland collection silos. In total, 88% of wheat has a specific weight over 76 kg/hl, and 62% are above 78 kg/hl.



in % of the volumes collected



# PROTEINS AND VITREOUSNESS



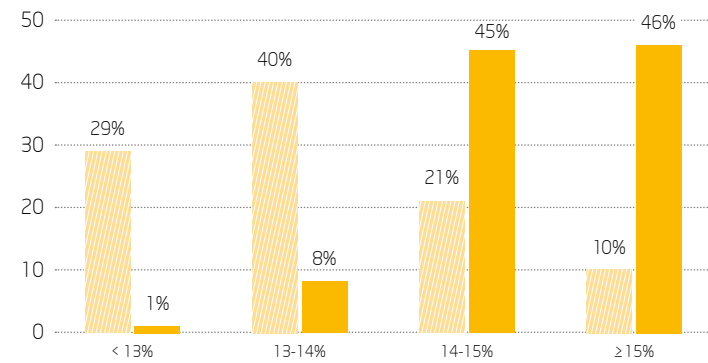
## HIGH TO VERY HIGH PROTEIN CONTENTS

> In 2017, the national protein content is high, at almost 15%. This is partly due to large quantities of nitrogen remaining in the soil at the end of winter. Moreover, the dry winter was conducive to plant rooting in most areas, which allowed better absorption of the nitrogen available in the soil. In total, 91% of wheat has a protein content above 14%.

# 14.8%

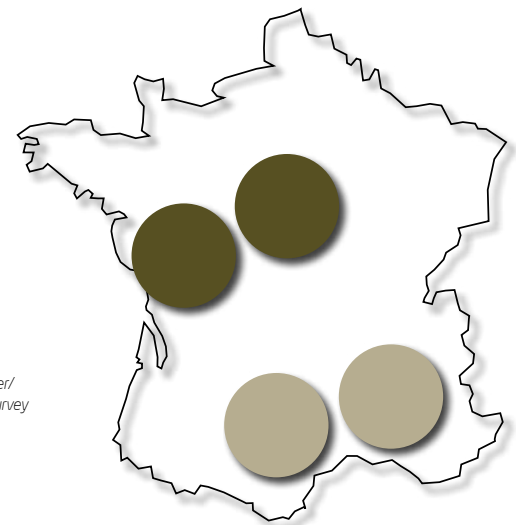
on average

in % of the volumes collected



2012-2016 five-year average 2017

Source: FranceAgriMer/Inland silos quality survey 2017

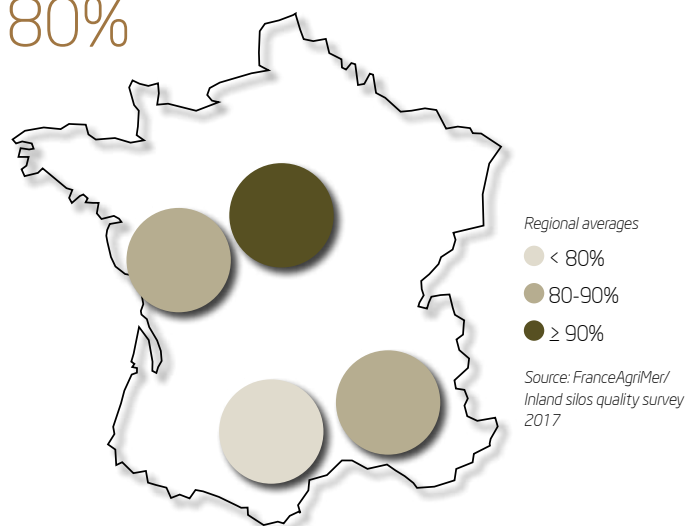


## 85% VITREOUSNESS ON AVERAGE

# 3/4

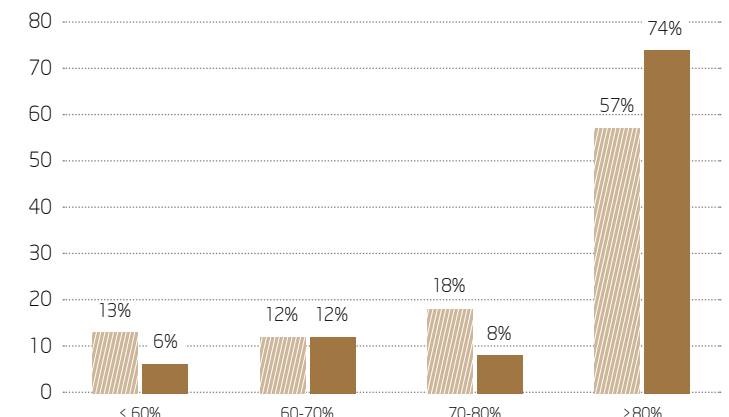
of wheat over

# 80%



> There is a good level of vitreousness in most cases, in line with the protein levels and generally dry weather at the end of the cycle. The national average is 85.4% and 74% of wheat has a vitreousness of over 80%.

in % of the volumes collected



2013-2016 four-year average 2017

Source: FranceAgriMer/Inland silos quality survey 2017

# SPROUTED, MOTTLED AND FUSARIUM-DAMAGED GRAINS AND BLACKSPOT



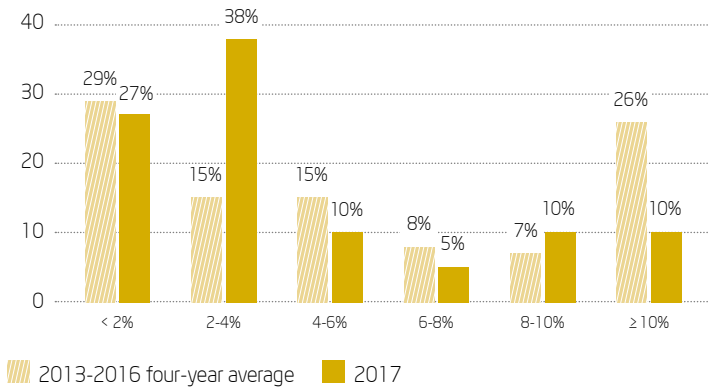
## RATE OF SPROUTED, MOTTLED AND FUSARIUM-DAMAGED GRAINS OF UNDER 5% ON AVERAGE

> Reflecting the healthy state of the crops, the rate of sprouted, mottled and fusarium-damaged grains is 4.4% on average this year. The levels vary somewhat between the regions. The South has very good results - under 2% in the South-East and 4% in the South-West. In total, 65% of wheat has a sprouted, mottled and fusarium-damaged grains rate of less than 4%.

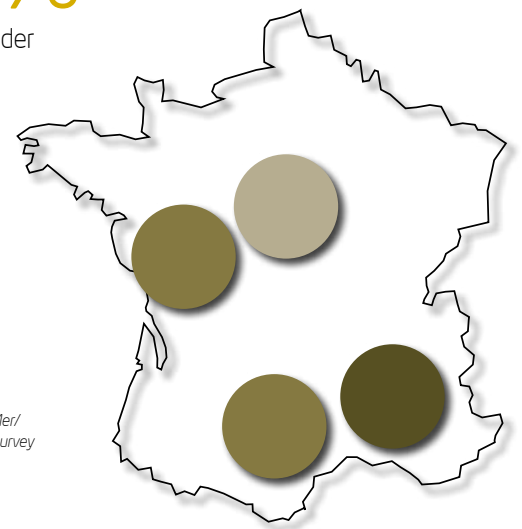
Sprouted, mottled and fusarium-damaged grains:

**65%**  
of wheat under  
**4%**

in % of the volumes collected



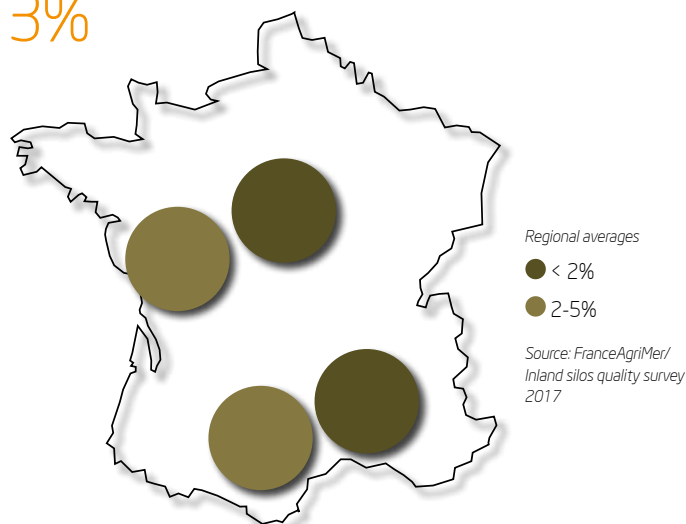
Source: FranceAgriMer/Inland silos quality survey 2017



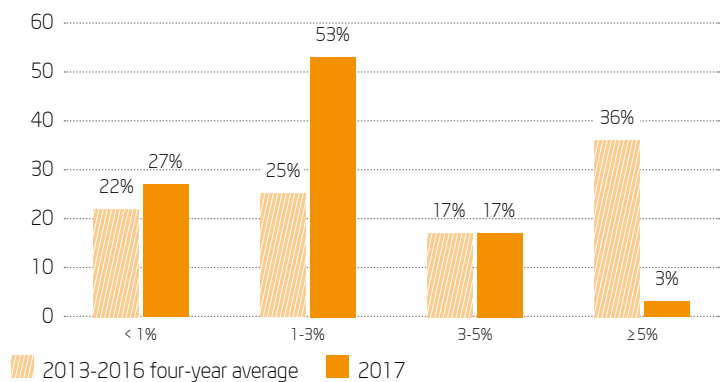
## AN AVERAGE MOTTLED GRAINS RATE OF 2.2%

**80%**  
under  
**3%**

> The rate of mottled grains, which is highly dependent on climatic conditions around the flowering period, returns to a very good level, with an average of 2.2%. It is particularly low in the South-East and the Centre. The four production areas have averages of 3% or lower. 80% of the collection is under 3%.



in % of the volumes collected



Source: FranceAgriMer/Inland silos quality survey 2017

# BROKEN GRAINS AND HAGBERG

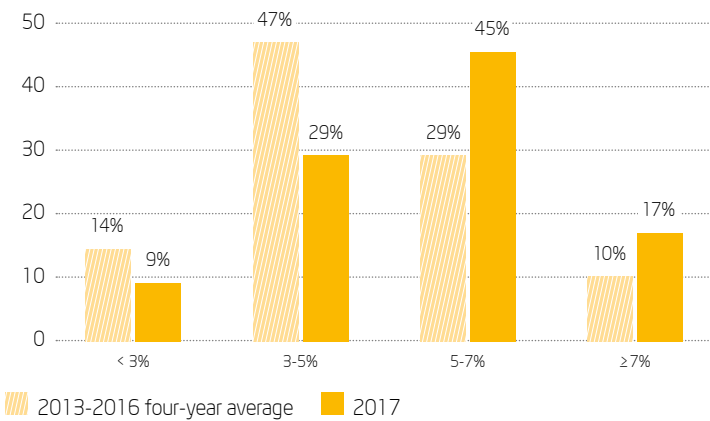


## 5.6% BROKEN GRAINS ON AVERAGE

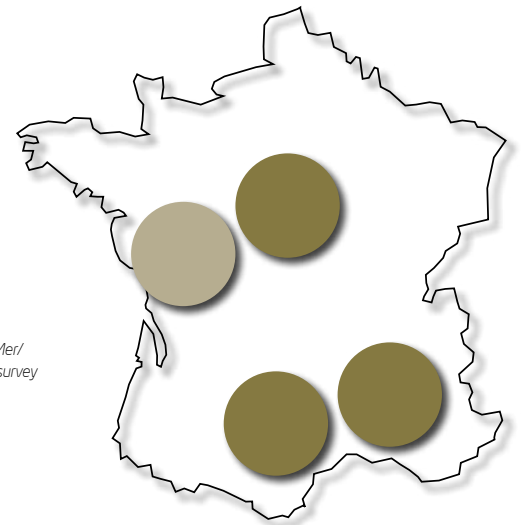
> The rate of broken grains is quite homogeneous in the different production areas. The national average is 5.6%. Almost 38% of the collection is lower than 5%.

**5.6%**  
broken grains on average

in % of the volumes collected



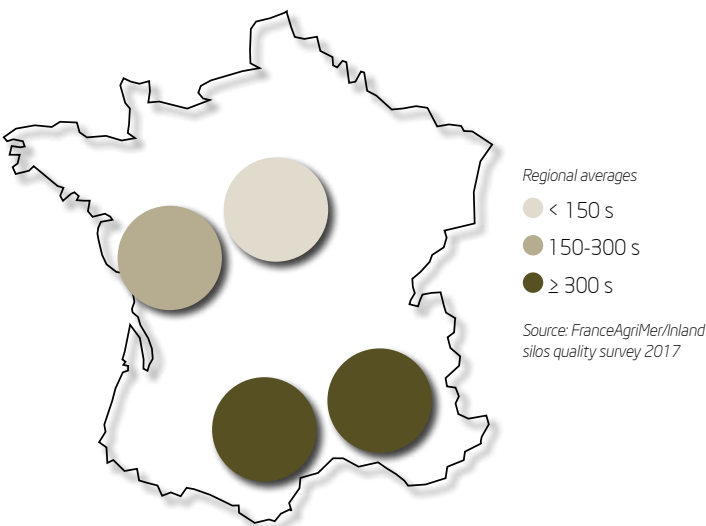
Source: FranceAgriMer/Inland silos quality survey 2017



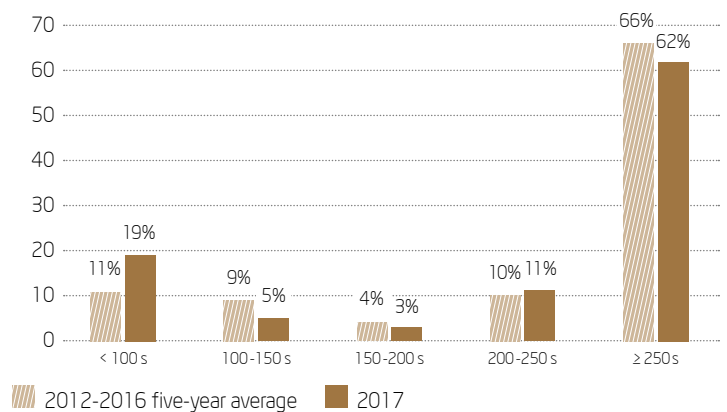
## HAGBERG FALLING NUMBERS VARY BETWEEN THE PRODUCTION AREAS

The **2** production areas of the South have Hagberg falling numbers above **250s**

> The Hagberg falling number, which is highly dependent on rainy conditions at the end of the cycle, was degraded to varying degrees depending on the area. The levels are very good in the South, with 95% of the wheat analysed in the South-West and 100% in the South-East over 250 seconds. The falling numbers are degraded in the West and especially in the Centre. In total, 62% of wheat has a falling number above 250 seconds.



in % of the volumes collected



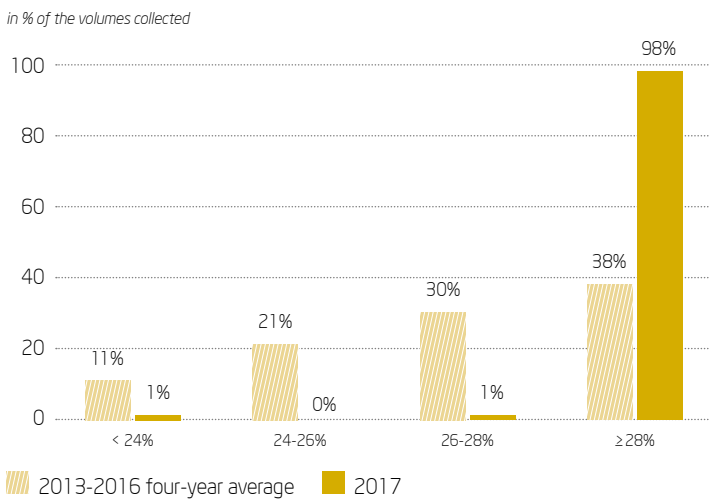
Source: FranceAgriMer/Inland silos quality survey 2017

# GLUTEN

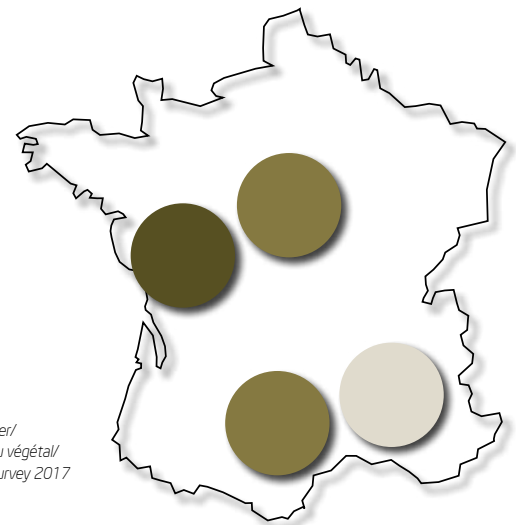


## HIGH WET GLUTEN CONTENT

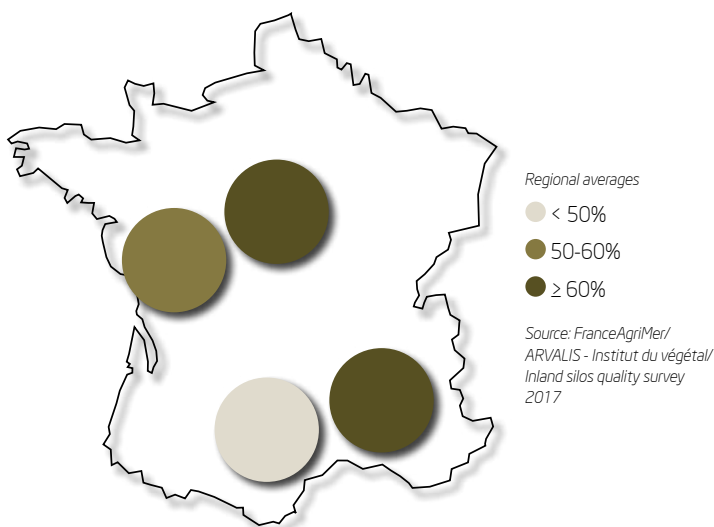
> Closely linked to protein content, the average wet gluten is 31.4%. The highest values are found in the Ocean-West and South-West production areas. In total, 98% of wheat has a wet gluten content of over 28%.



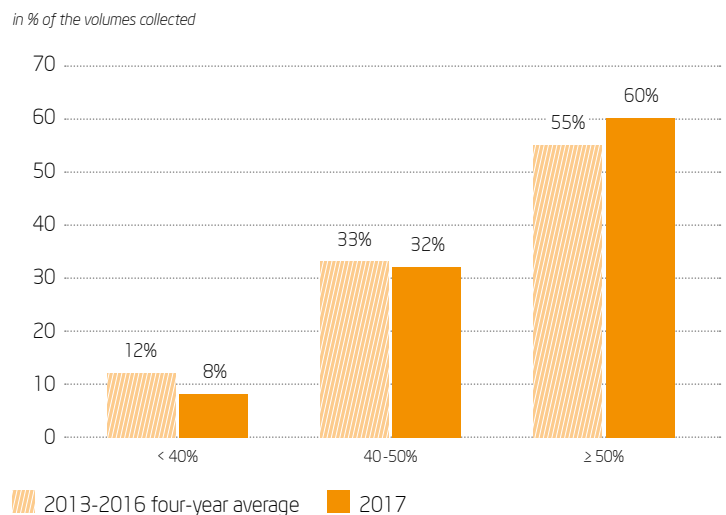
Source: FranceAgriMer/ARVALIS - Institut du végétal/Inland silos quality survey 2017



## GLUTEN INDEX OF 54 ON AVERAGE



> The gluten index, a quality indicator of the proteins, is 54 on average. The South-East and Centre production areas particularly stand out with an average above 60%. In total, 60% of wheat has a gluten index value of over 50.

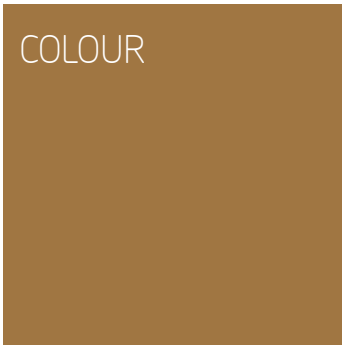


Source: FranceAgriMer/ARVALIS - Institut du végétal/Inland silos quality survey 2017



Analyses of the wet gluten content and the gluten index, conducted by the Pôle Analytique d'ARVALIS, are covered by Cofrac accreditation no. 1-0741.

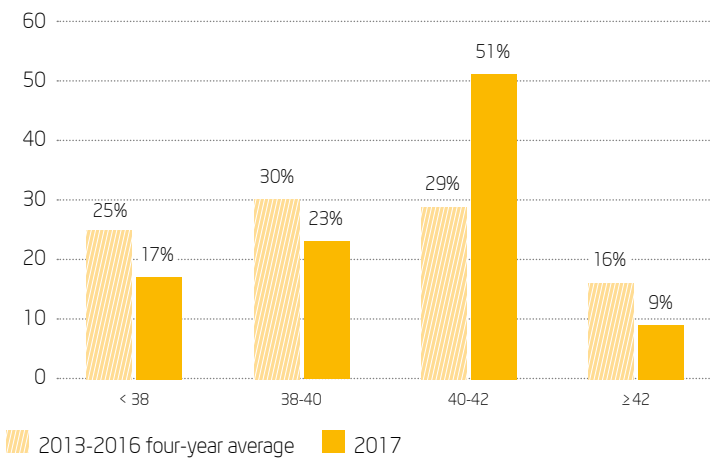
## COLOUR



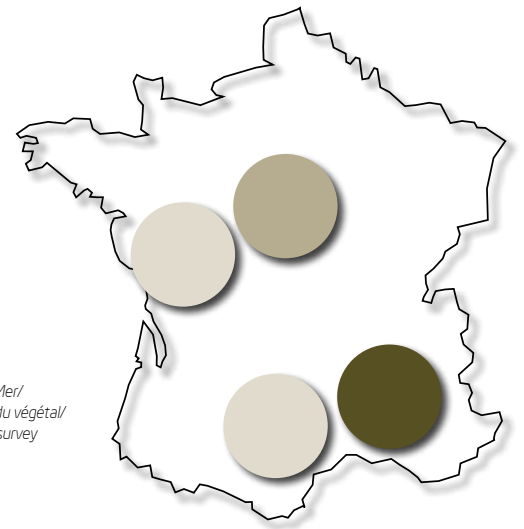
## HIGH YELLOW INDEX

> The yellow index is high - 40 on average. These results are linked to the continuous improvement work carried out in terms of French selection on this criterion. It is as well related to the high temperatures at the end of the cycle. In general, the collection areas have a yellow index of over 39.

in % of the volumes collected

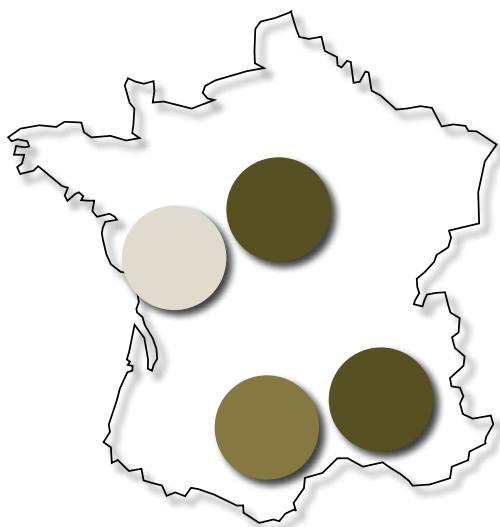


Source: FranceAgriMer/ARVALIS - Institut du végétal/Inland silos quality survey 2017

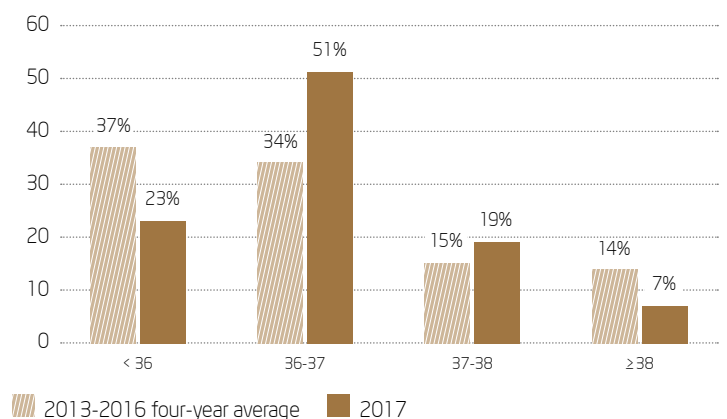


## GOOD BROWN INDICES

> The brown indexes are good at 36.4 on average. The lowest values are seen in the South-East and the Centre. Almost 74% of wheat has a brown index of less than 37.



in % of the volumes collected



Source: FranceAgriMer/ARVALIS - Institut du végétal/Inland silos quality survey 2017

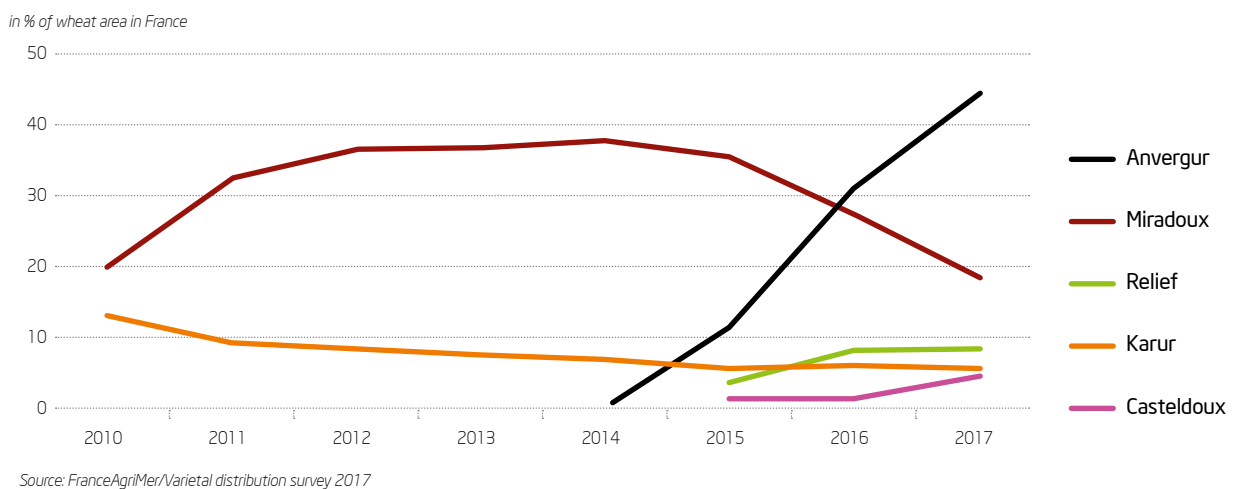


## VARIETAL DISTRIBUTION



## NATIONAL EVOLUTION OF THE MAIN VARIETIES

> The Anvergur variety remains in the top position, with 43.5% of soil nationwide, in front of Miradoux, which continues its decrease to 19.4%. Far behind, Relief and Karur hold on to the third and fourth places, with only 7.3% and 4.6% of French soil respectively. In fifth position, Casteldoux features in the national top 5 for the first time.



## VARIETAL BREAKDOWN BY REGION

### OCEAN-WEST: high varietal concentration

Anvergur: 43% / Miradoux: 38% / Karur: 5% / Sculptur: 5% / RGT Voilur: 4% / Tablur: 1%

In this region, Anvergur takes the top spot, with over 43% of wheat area. Miradoux closely follows in second position, with 38% of wheat area. The Sculptur, RGT Voilur and Tablur varieties are far behind.

Wheat area of departments surveyed: 88,950 ha.

### CENTRE: Anvergur holds on to the top spot

Anvergur: 45% / Relief: 19% / Miradoux: 14% / Karur: 12% / Sculptur: 4% / Tablur: 3%

Anvergur continues to dominate, with over 45% of wheat area, ahead of Relief and Miradoux in second and third positions with 19% and 14% of wheat area respectively. These three varieties are followed by Karur, Sculptur and Tablur, which remain stable.

Wheat area of departments surveyed: 88,630 ha.

### SOUTH-WEST: Anvergur still in front

Anvergur: 49% / Miradoux: 15% / Casteldoux: 10% / Relief: 8% / Isildur: 3% / Pescadou: 3%

Anvergur holds on to the top spot and continues to grow, while Miradoux is losing ground.

Casteldoux goes straight to third place in the classification, with 10% of wheat area. Relief and Isildur are increasing and Pescadou remains stable.

Wheat area of departments surveyed: 108,800 ha.

### SOUTH-EAST: sharp increase of Anvergur

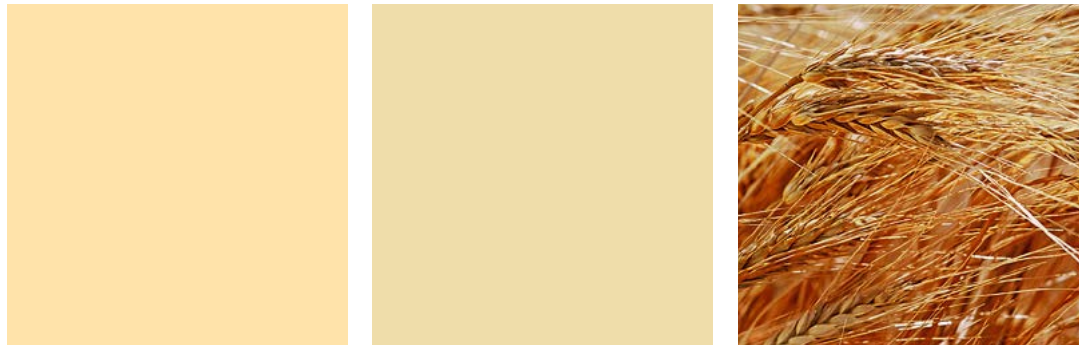
Anvergur: 39% / Claudio: 15% / Miradoux: 14% / Atoudur: 7% / Qualidou: 3% / Dakter: 2%

Anvergur holds on to the top spot and is gaining significant ground, while Miradoux drops to third place. Claudio and Atoudur remain stable. Qualidou and Dakter wheat areas are declining.

Wheat area of departments surveyed: 73,069 ha.

Source: FranceAgriMer/Varietal distribution survey 2017

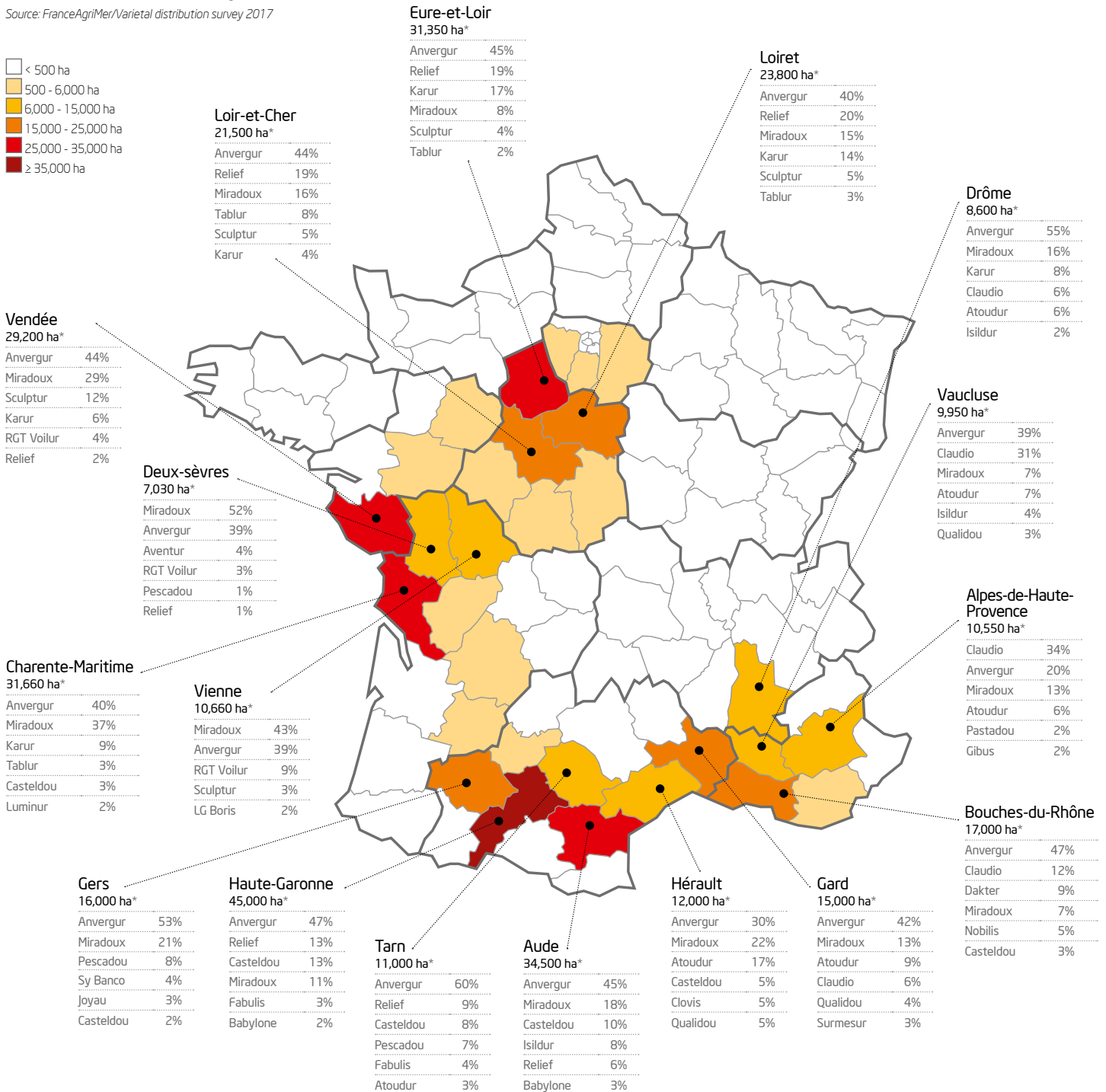
# VARIETAL DISTRIBUTION



## THE MOST WIDELY SEEDED VARIETIES BY DÉPARTEMENT

In % of wheat areas surveyed in 2017

Source: FranceAgriMer/Varietal distribution survey 2017



\* Wheat area estimates in the departments surveyed - SSP July 2017

# A SURVEY PERFORMED AT INLAND COLLECTION SILOS

The Quality of Durum Wheat survey is conducted by FranceAgriMer and ARVALIS - Institut du végétal, with the support of Intercéréales, and the Groupement National Interprofessionnel des Semences et Plants (GNIS).

The aim of the survey is to provide information about the quality of the durum wheat harvested in 90 silos belonging to storage organisations, cooperatives and private merchants. At the time of the harvest, 153 samples were taken by FranceAgriMer agents during delivery from farms to inland collection silos. These samples, representative of the different sorting classes put in place by the harvesters, are then sent to the laboratories of FranceAgriMer and ARVALIS- Institut du végétal for analysis.

## ANALYTICAL METHODS

### > Water content - 153 samples

The protein content is measured on whole grains by near infra-red spectroscopy.

### > Mass per hectolitre or specific weight (NF EN ISO 7971-3) - 153 samples

It is obtained with a Niléma-litre and expressed in kg/hl on the sample as is. Since 1<sup>st</sup> July 2012, the results obtained have been corrected using the following equation:  $(0.9078 \times \text{mass per hectolitre}) + 6.6025$ .

### > Hagberg-Perten falling number value (NF EN ISO 3093) - 153 samples

This indirectly measures the level of alpha-amylase activity, which can become excessive due to the presence of grain which has germinated or is in the process of germinating. The falling number is expressed in seconds and corresponds to the time it takes a stilet to reach the bottom of a tube containing a mixture of milled wheat and water, immersed in a bath of boiling water. A short duration means high amylase activity and therefore a degraded quality.

### > Protein content - 153 samples

The protein content is measured on whole grains by near infra-red spectroscopy. The protein content is calculated using coefficient 5.7 and refers to dry matter (DM).

### > Piebalding (XP V03-779) - 63 samples

The rate of grains which have been subject to piebalding is determined with a grain cutter in accordance with the XP V03-779 standard. Grains which have been subject to little piebalding have a good level of vitreousness. Vitreousness is calculated as being the opposite of piebalding on a scale from 0 to 100.

### > Impurity testing (NF EN 15587-A1) - 63 samples

The method used allows the percentage of impurities in durum wheat to be gauged. Impurities are detected by visual examination of a sub-sample of 50 to 100g of durum wheat after sieving with 3 sieves (1 mm, 1.9mm and 3.5mm).

### > Wet gluten content and gluten index (NF EN ISO 21415-2) - 64 samples

These values are used to assess:

- the quantity of gluten extracted by mechanically kneading and washing a mixture of milled wheat and salted water,
- and the viscoelastic quality of gluten by centrifugation through a sieve. The higher the index, the more tenacious the gluten.

### > Predicted dough colour - 31 samples

The brown and yellow indexes are measured using a Minolta CR 310 chromameter on discs of dough made by kneading and compressing semolina and water.

*NB: the previous results are shown as the five-year average (2012-2016) or the four-year average (2013-2016) depending on the date when the analyses were carried out on the current methodological basis.*

*In addition, a postal survey carried out by FranceAgriMer among 45,150 farmers selected at random in 67 departments from March to June 2017 gave an insight into the distribution of varieties by département and by region. 10,749 questionnaires were returned, i.e. a response rate of 24%.*



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