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French Bread Wheat Harvest 2016
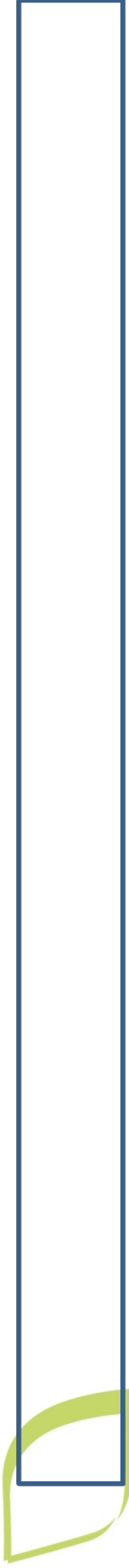
Autumn 2015 : 95 % bread wheat sown

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
BAU+BB	32%	27%	22%	17%	14%	12%	11%	10%	9%	7%	8%	8%	8%	8%	9%	9%	9%	6%	5%
BP+BPS+BAF	68%	73%	78%	83%	86%	88%	89%	90%	91%	93%	92%	92%	92%	92%	91%	91%	91%	94%	95%

BP+BPS+BAF ■ **BAU+BB**

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3
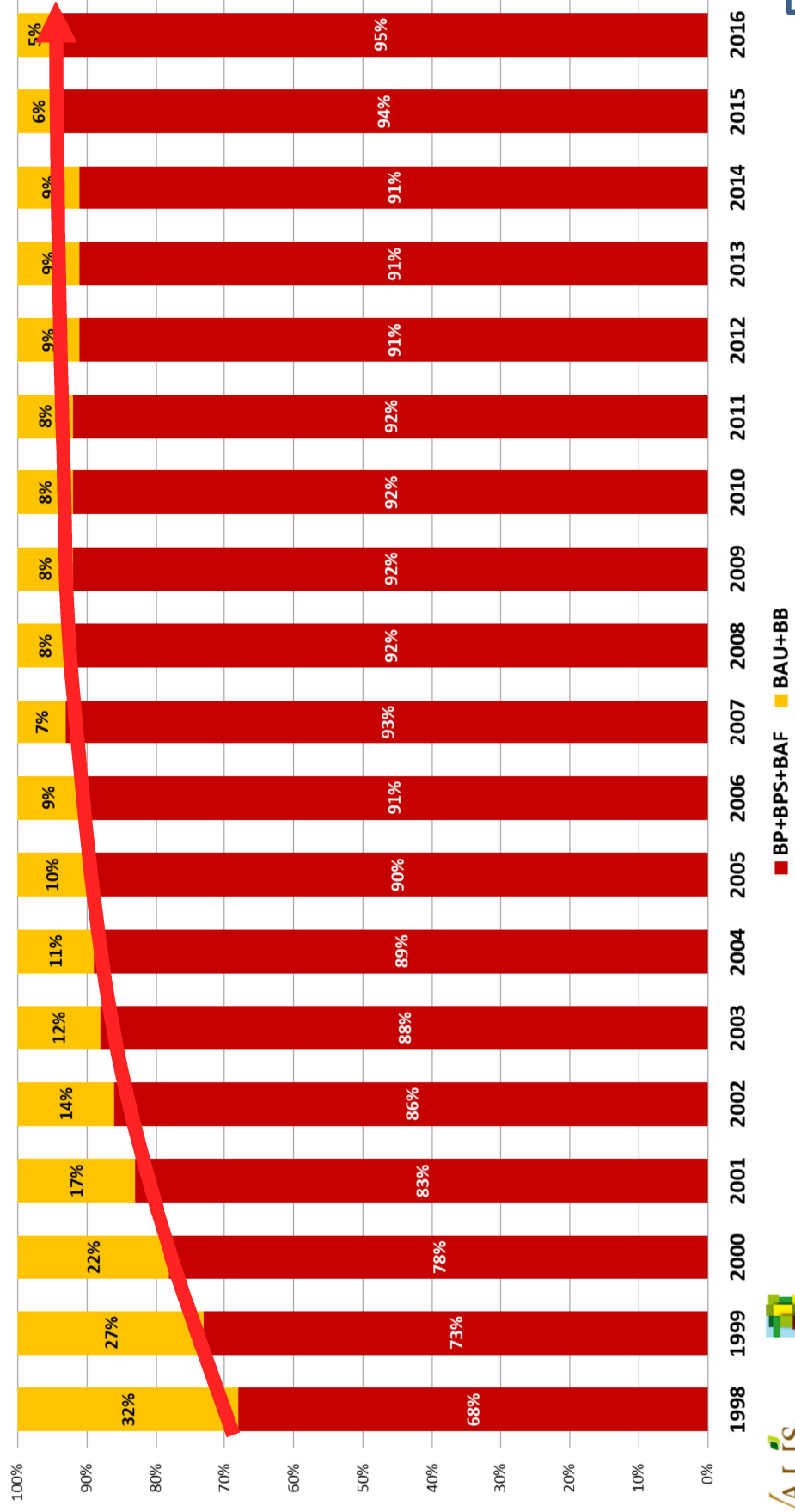
All indicators very favorable until May

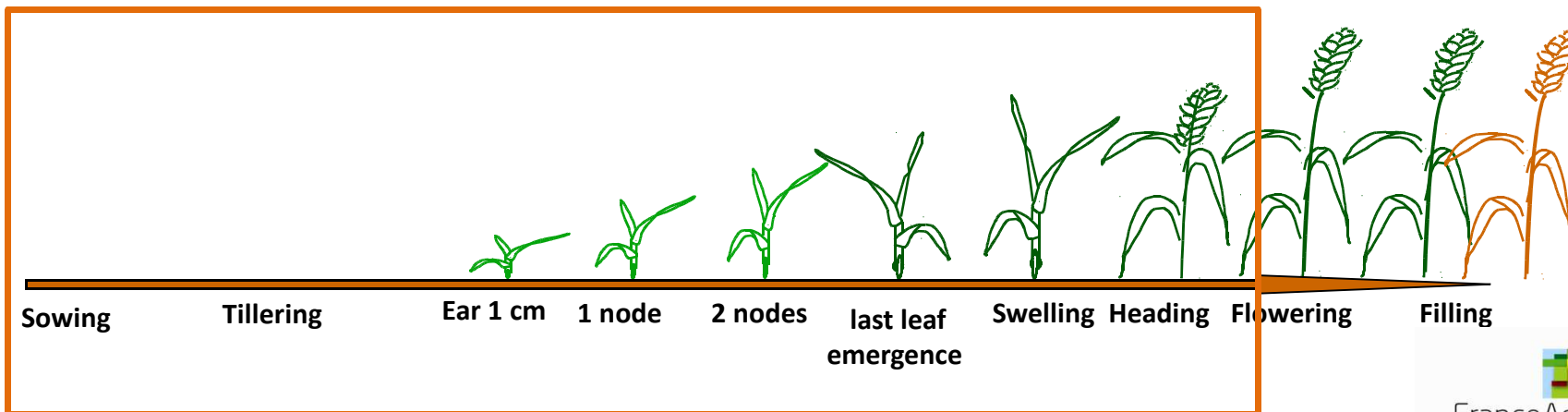**Mild temperatures in autumn and early winter :**

- Rapid growth
- Presence of aphids
- No winter freeze damage
- Weeds developing
- Inoculum of disease (rust)

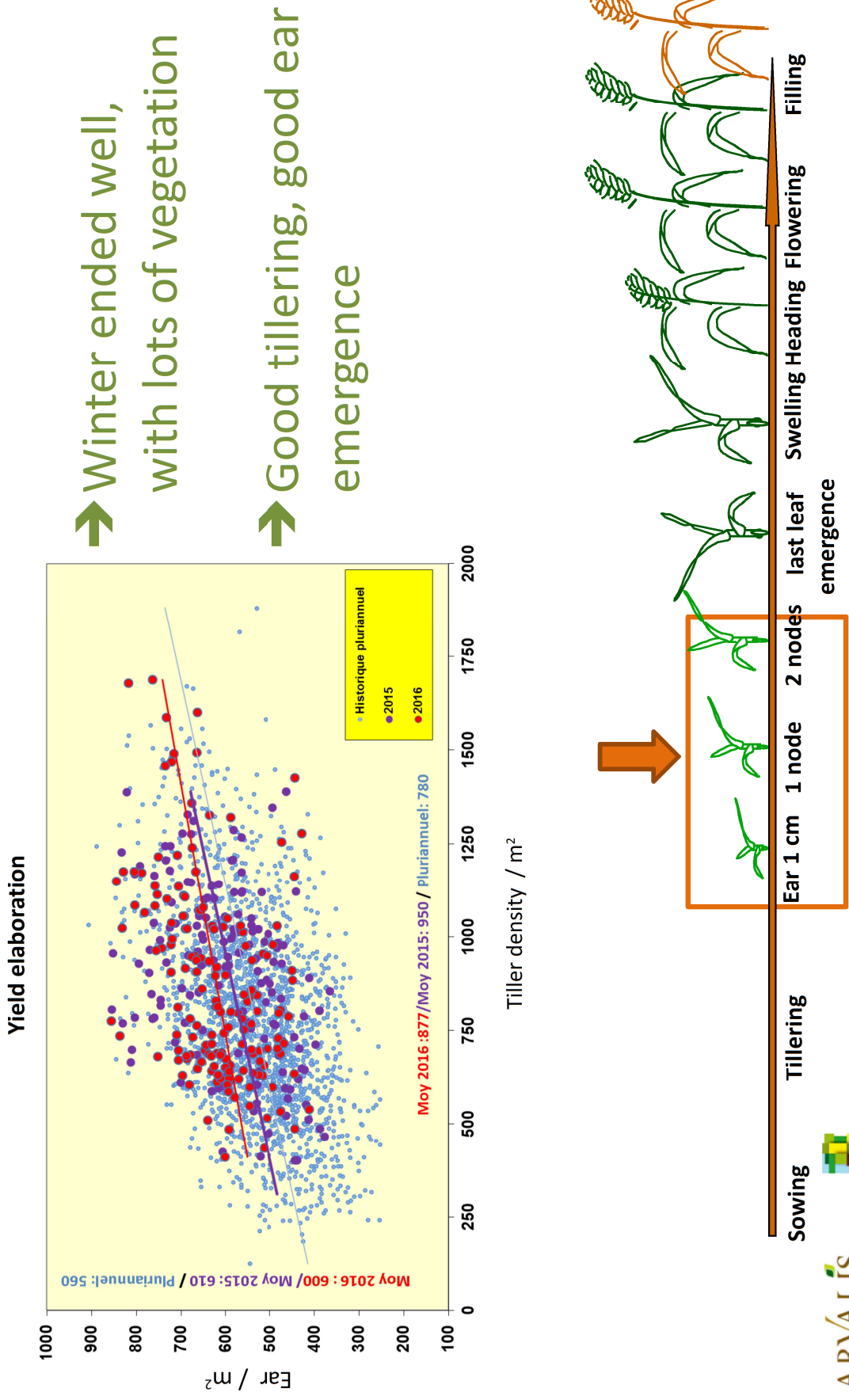**Cool weather at end of winter and start of spring :**

- Slowdown of growth stages
- Difficult weed control
- Biomass and tillering : normal - high
- Some late frosts, very limited consequences

Rainfall episodes in March and April :

- Good nitrogen uptake
- Good ear emergence
- Septoria beginning
- Good water reserves in May
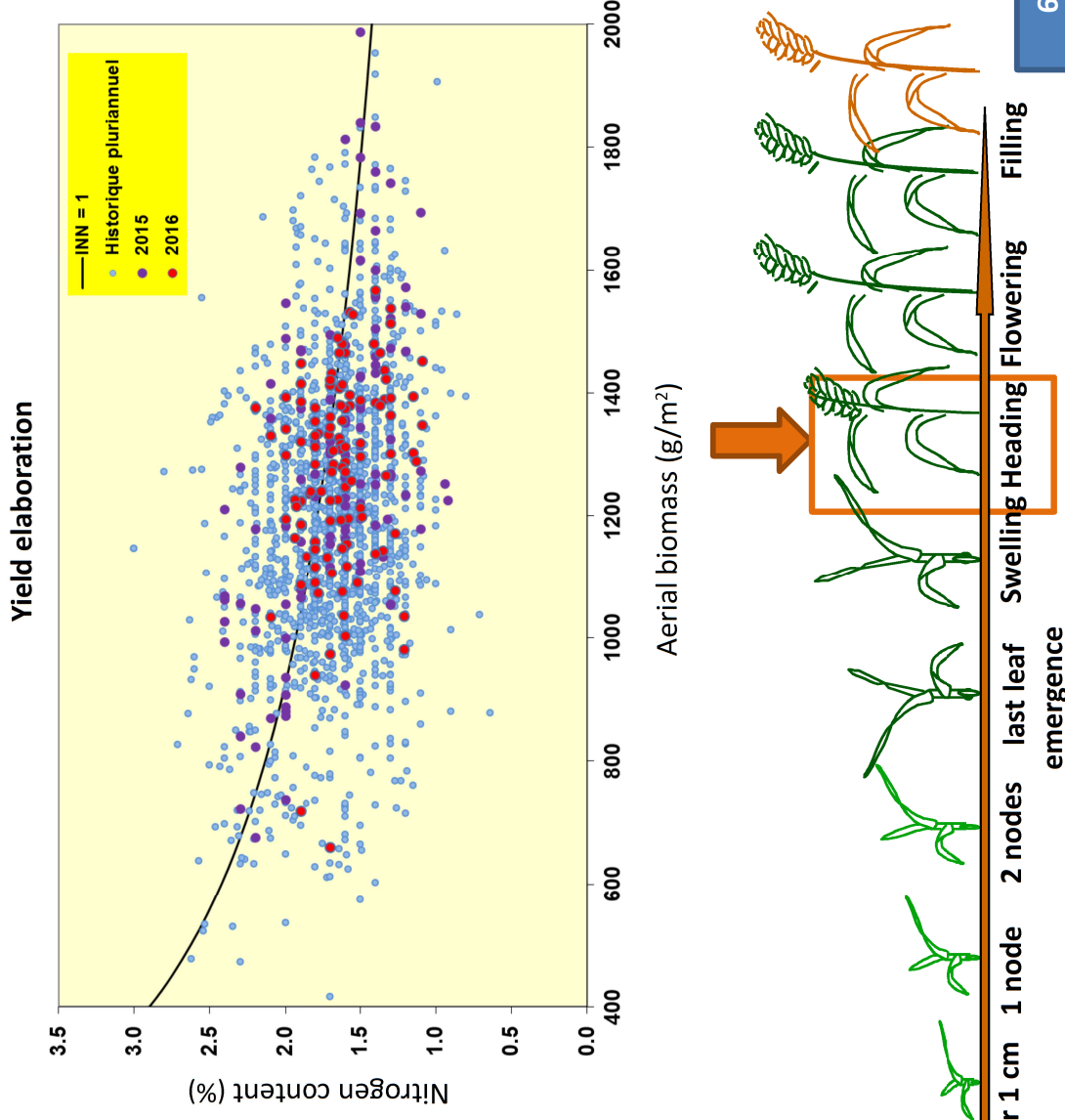- Exceptions:
    - South East very dry
    - West rather dry

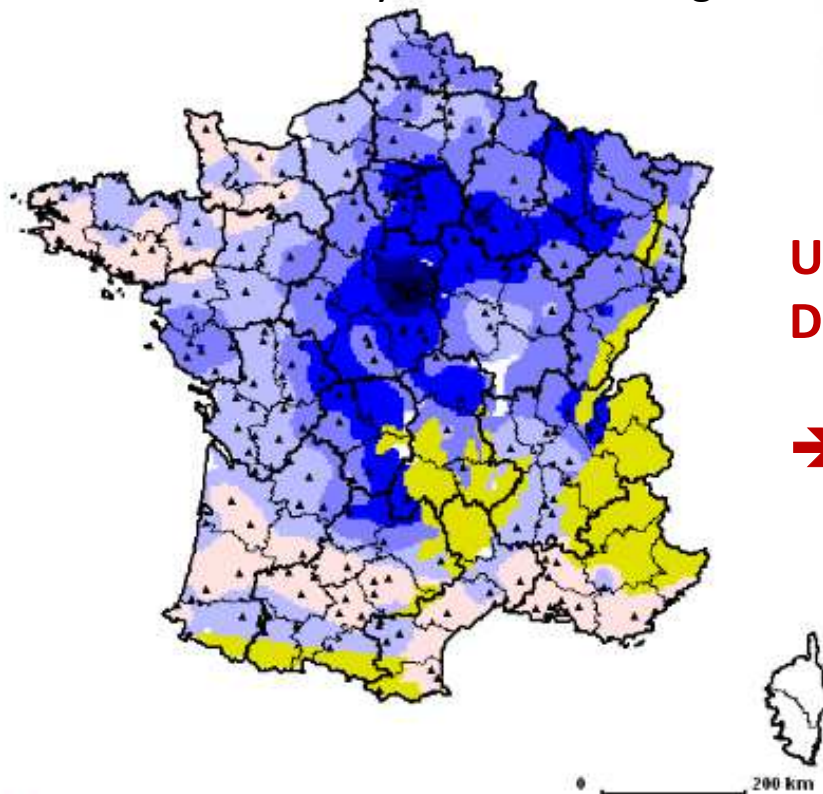Sowing   Tillering   Ear 1 cm   1 node   2 nodes   last leaf emergence   Swelling   Heading   Flowering   Filling

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All indicators very favorable until May

Yield elaboration

→ Winter ended well, with lots of vegetation

→ Good tillering, good ear emergence

Tiller density / m²

Moy 2016 : 600 / Moy 2015: 610 / Pluriannuel: 560

Moy 2016 :877 /Moy 2015: 950 / Pluriannuel: 780

Ear / m²

Historique pluriannuel
2015
2016

Sowing   Tillering   Ear 1 cm   1 node   2 nodes   last leaf   Swelling Heading Flowering   Filling
                                                      emergence

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All indicators very favorable until May

Yield elaboration

Nitrogen content (%)

3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0

INN = 1
Historique pluriannuel
2015
2016

Aerial biomass (g/m²)

400 600 800 1000 1200 1400 1600 1800 2000

At the end of May, the situation was favorable :

- optimum N uptake
- good plant nutrition

Sowing Tillering Ear 1 cm 1 node 2 nodes last leaf emergence Swelling Heading Flowering Filling

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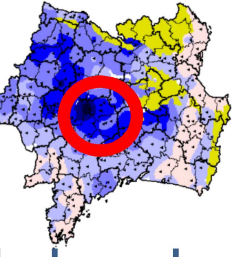Rainfall +/- 10 days from flowering

Unusual rain in QUANTITY and DURATION

➔ **End of the cycle is strongly disrupted**
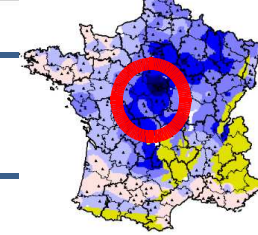
Modèle phénologique Arvalis - cumul en mm

4	· 40
40	· 80
80	· 120
120	· 160
160	· 200
200	· 227

0 _____ 200 km

Sowing   Tillering   Ear 1 cm   1 node   2 nodes   last leaf emergence   Swelling   Heading   Flowering   Filling

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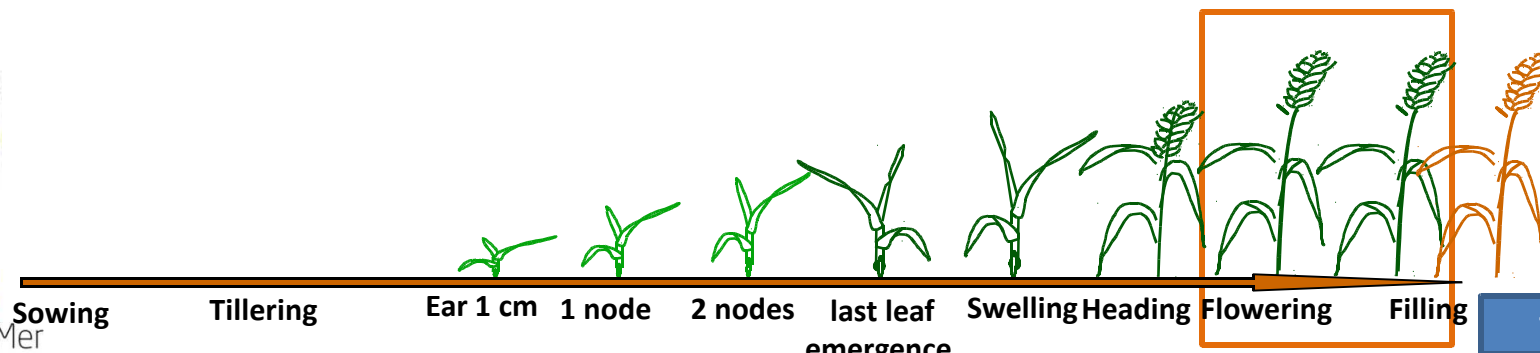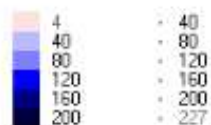
Examples of the center of France and the Parisian Basin

BOIGNEVILLE

2016   apache

Precipitation (mm)

Solar radiation (Cal/cm²/day)

Precipitations
T moy pluriannuelle
Stade

maturité
grain pâteux
grain laiteux
floraison
épaison
Méiose
F1
2N
1N
épi 1cm
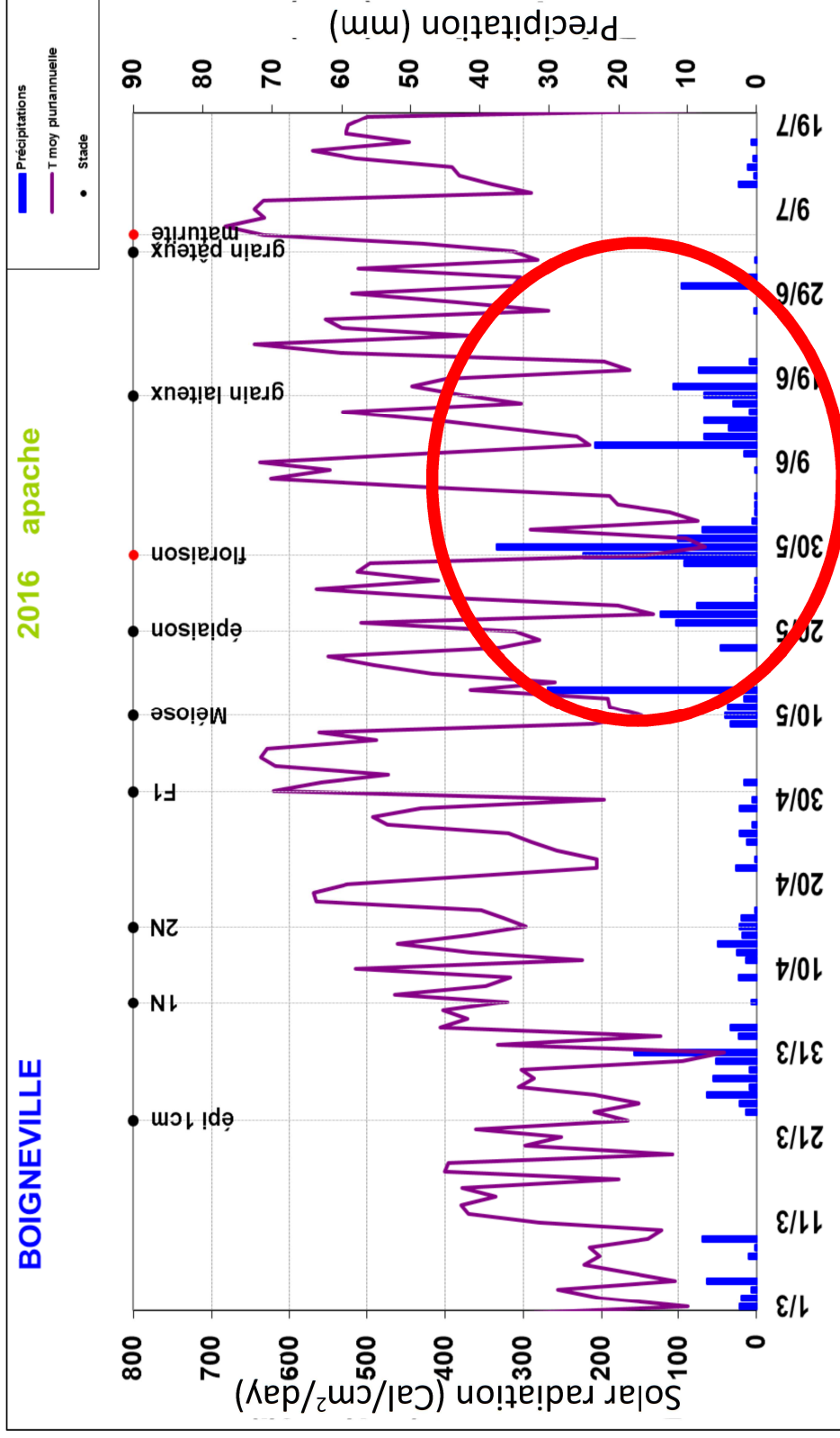
Unusual QUANTITY and DURATION of rain at flowering... then throughout filling !

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The flood water came up to the ears !

Cedric Benoist, FDSEA 45

Flooding : all agricultural sectors affected in Ile-de-France
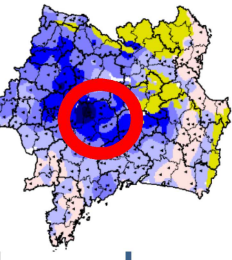
Par Lefigaro.fr avec AFP | Mis à jour le 03/06/2016 à 13:29 / Publié le 03/06/2016 à 11:34
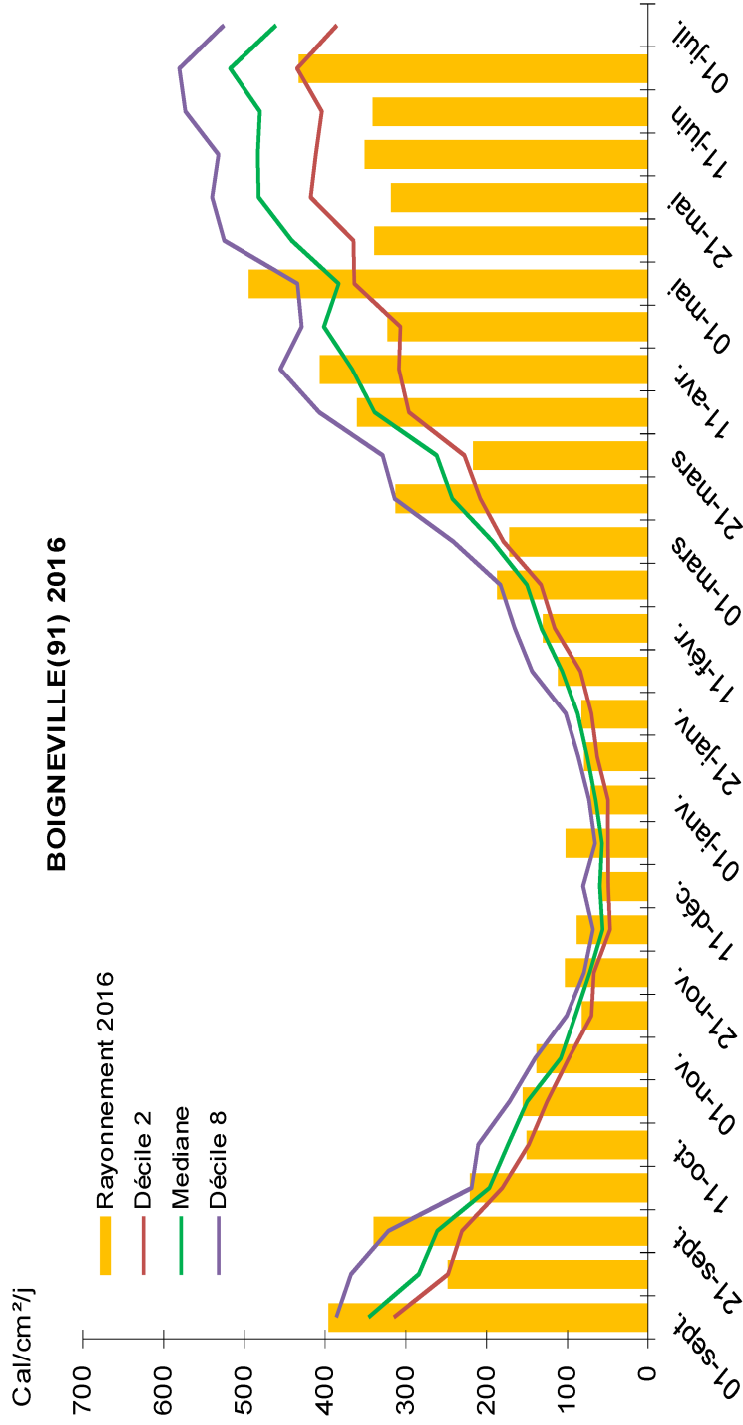

Une parcelle inondée dans le Loiret (FDSEA 45)
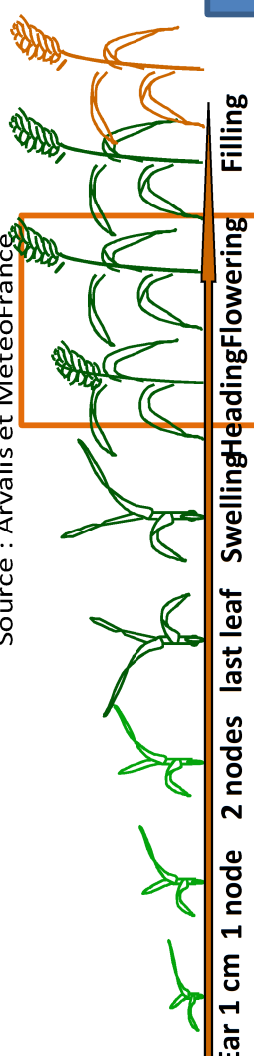

Floods that will stay in our memory.
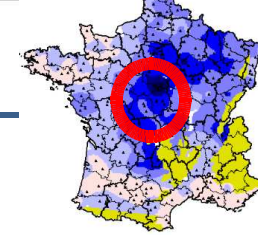
Example of the center of France and the Parisian Basin

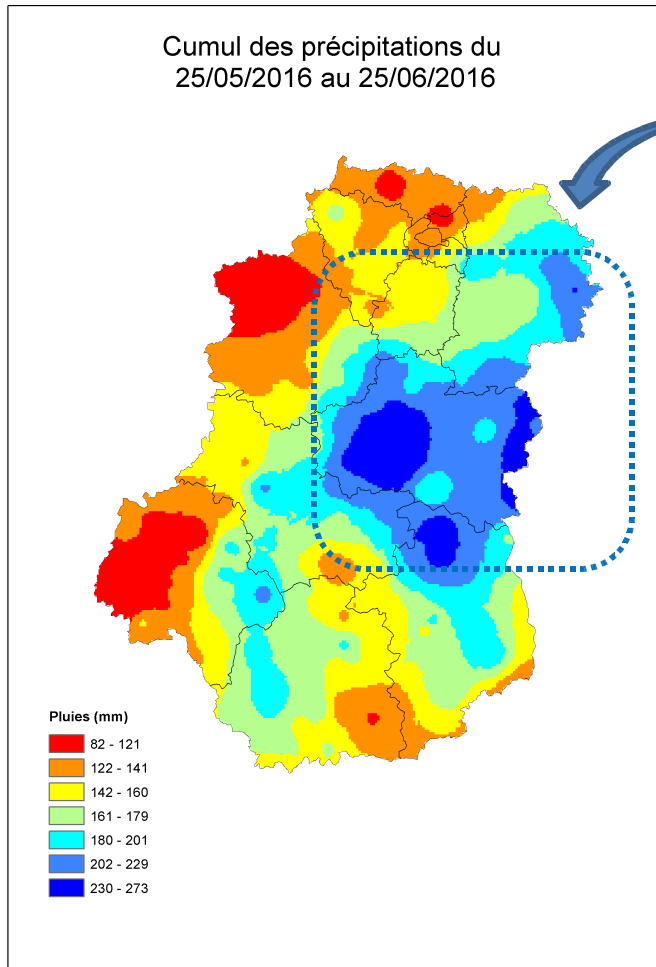## An exceptional sunshine deficit compared to historical levels

BOIGNEVILLE(91) 2016

Cal/cm²/j

Legend:
- Rayonnement 2016
- Décile 2
- Mediane
- Décile 8

Y-axis: 0, 100, 200, 300, 400, 500, 600, 700

X-axis: 01-sept., 21-sept., 11-oct., 01-nov., 21-nov., 11-déc., 01-janv., 21-janv., 11-févr., 01-mars, 21-mars, 11-avr., 01-mai, 21-mai, 11-juin, 01-juil.

Station météo Freq: BOIGNEVILLE

Source : Arvalis et MétéoFrance

Sowing | Tillering | Ear 1 cm | 1 node | 2 nodes | last leaf | Swelling | Heading | Flowering | Filling

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Example of the center of France and the Parisian Basin

Cumul des précipitations du 25/05/2016 au 25/06/2016

Pluies (mm)
- 82 - 121
- 122 - 141
- 142 - 160
- 161 - 179
- 180 - 201
- 202 - 229
- 230 - 273

Cumul du rayonnement du 25/05/2016 au 25/06/2016

Rayonnement (Joules/cm²)
- 38 508 - 42 623
- 42 624 - 45 046
- 45 047 - 46 833
- 46 834 - 48 349
- 48 350 - 49 445
- 49 446 - 50 514
- 50 515 - 52 030

The exceptional rainfall accumulation and the low levels of sunshine overlapped in the most affected areas
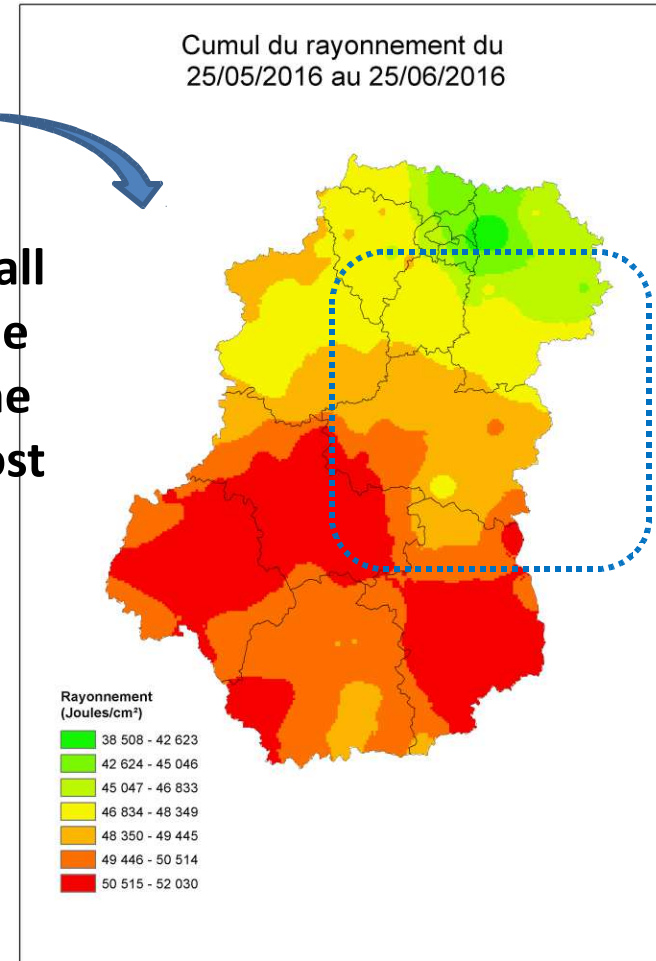
Extreme and historically low
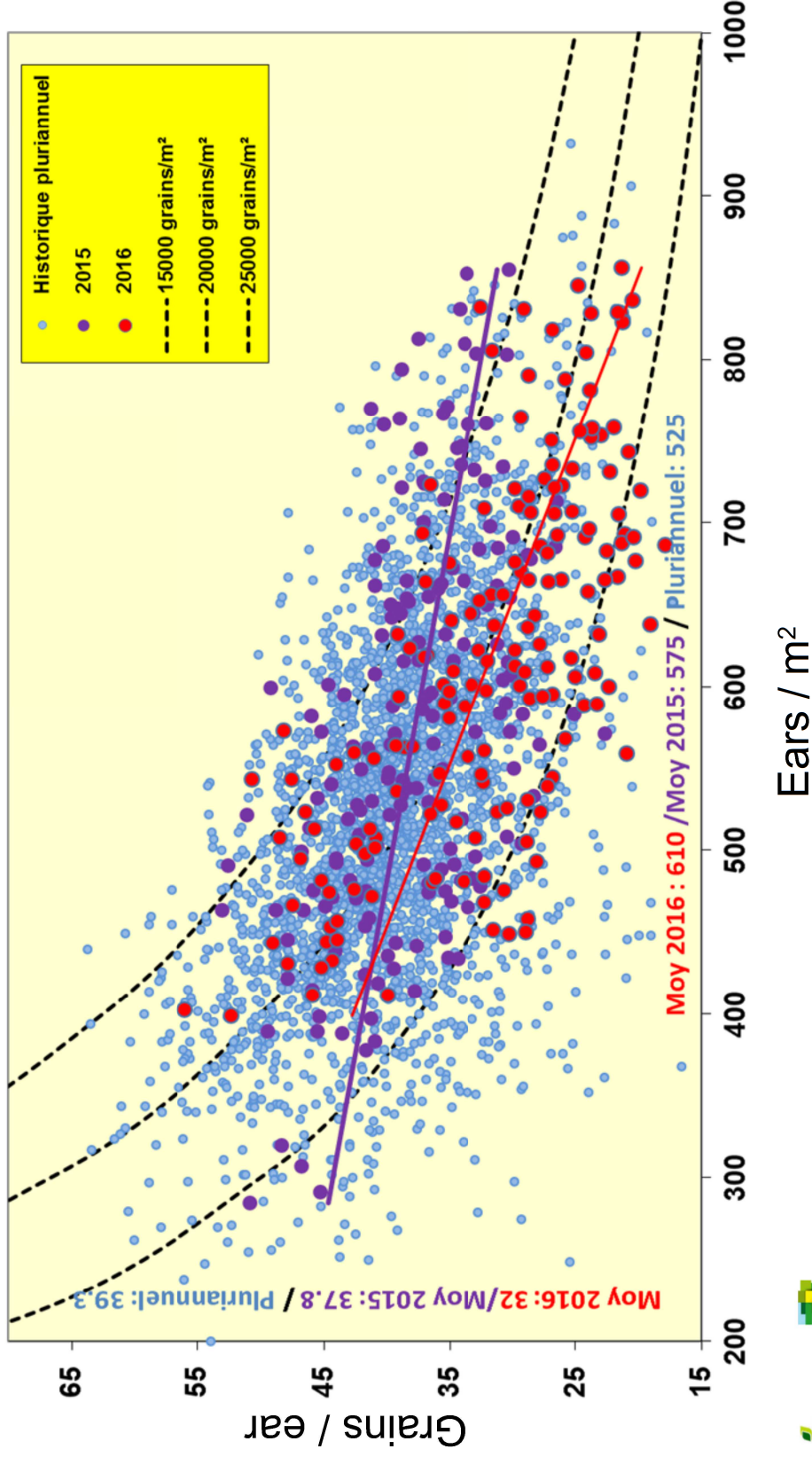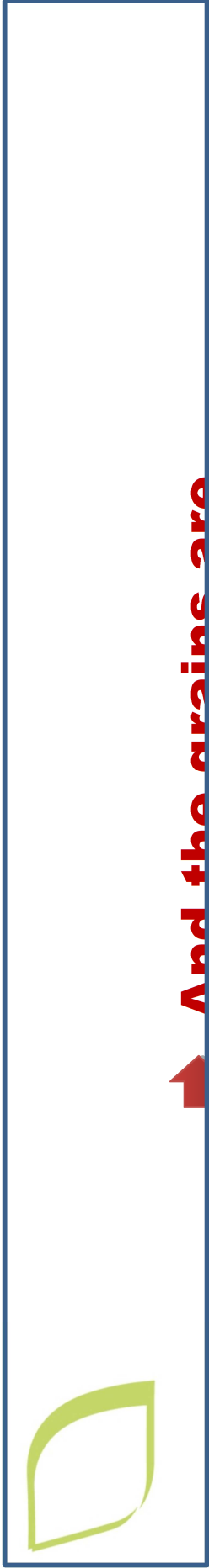# Specific Weights for French wheat

As a percentage of collected volumes

73 kg/hl en moyenne

Legend: Moyenne quinquennale 2011-2015, 2016

Categories: <68kg/hl, 68-70kg/hl, 70-72kg/hl, 72-74kg/hl, 74-76kg/hl, 76-78kg/hl, ≥78kg/hl

Values (2011-2015): 0%, 0%, 1%, 4%, 15%, 30%, 50%
Values (2016): 9%, 15%, 14%, 16%, 21%, 16%, 9%

Source : FranceAgriMer / Enquête entrée collecteurs 2016

ARVALIS Institut du végétal   FranceAgriMer
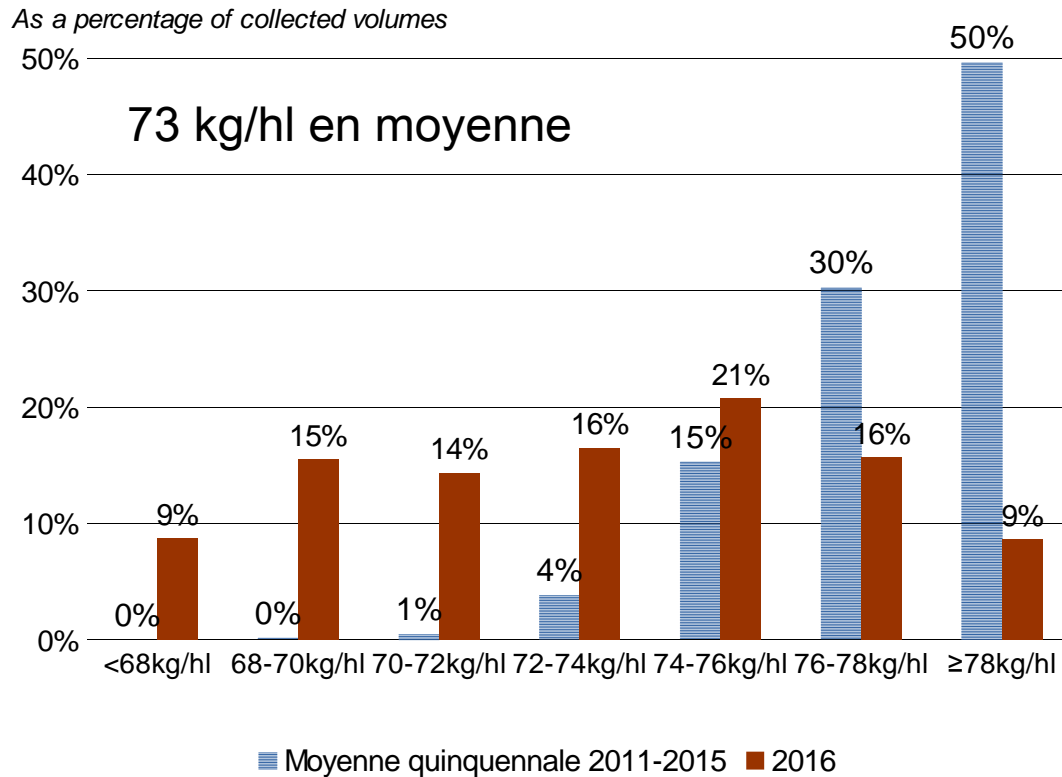
A lack of grains in the ear

Yield elaboration : Grains per ear

And the grains are

Yield elaboration : Ear filling
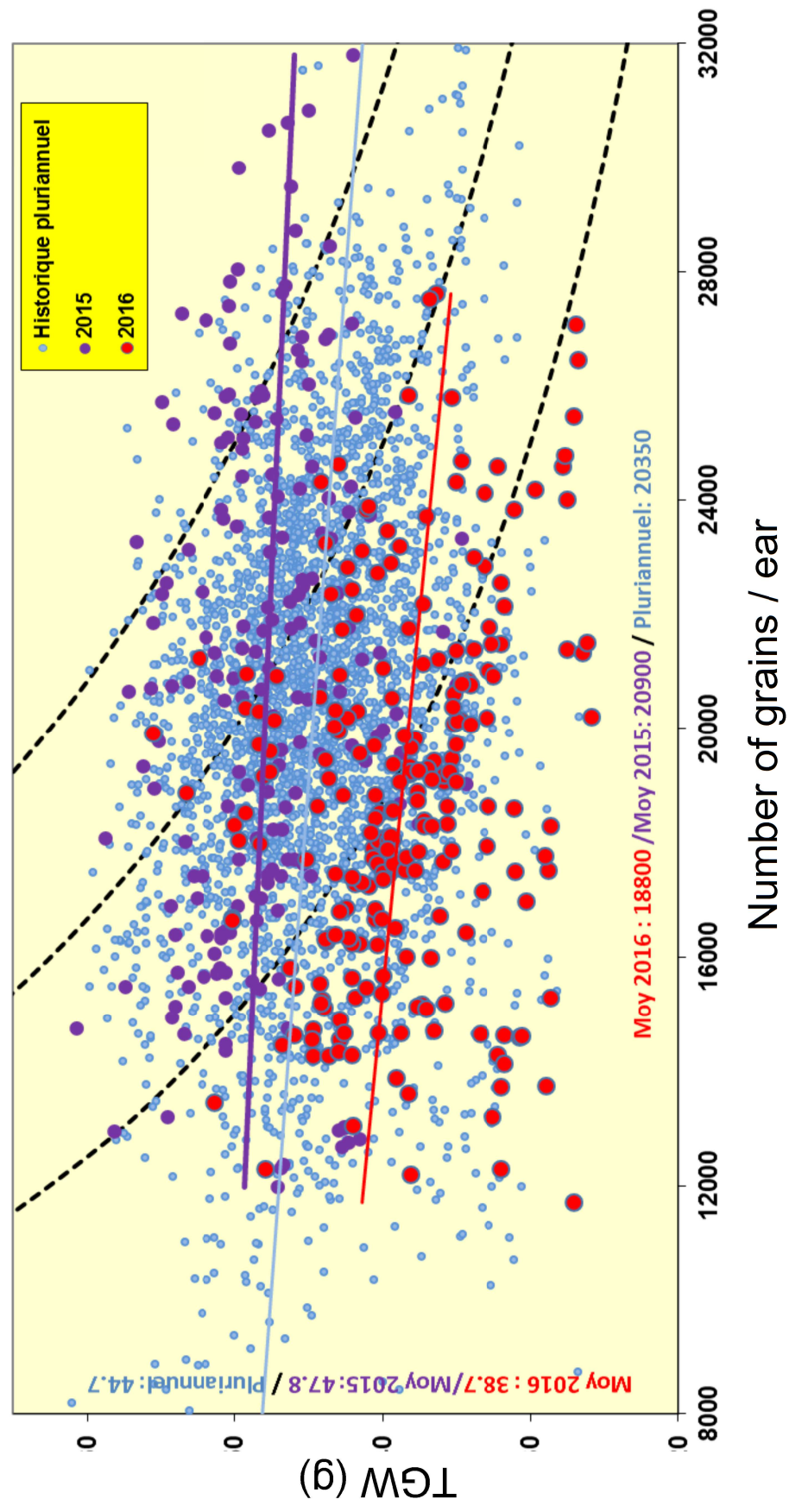
Number of grains / ear

TGW (g)

Historique pluriannuel
2015
2016

Moy 2016 : 18800 /Moy 2015: 20900 / Pluriannuel: 20350

Moy 2016 : 38.7 /Moy 2015:47.8 / Pluriannuel: 44.7

8000   12000   16000   20000   24000   28000   32000

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As a percentage of collected volumes

| | 0%-32 | 32-34 | 34-36 | 36-38 | 38-40 | 40-42 | 42-44 | 44-46 | 46-48 | 48-50 | >=50 |

Moyenne triennale 2013-2015 ■ 2016
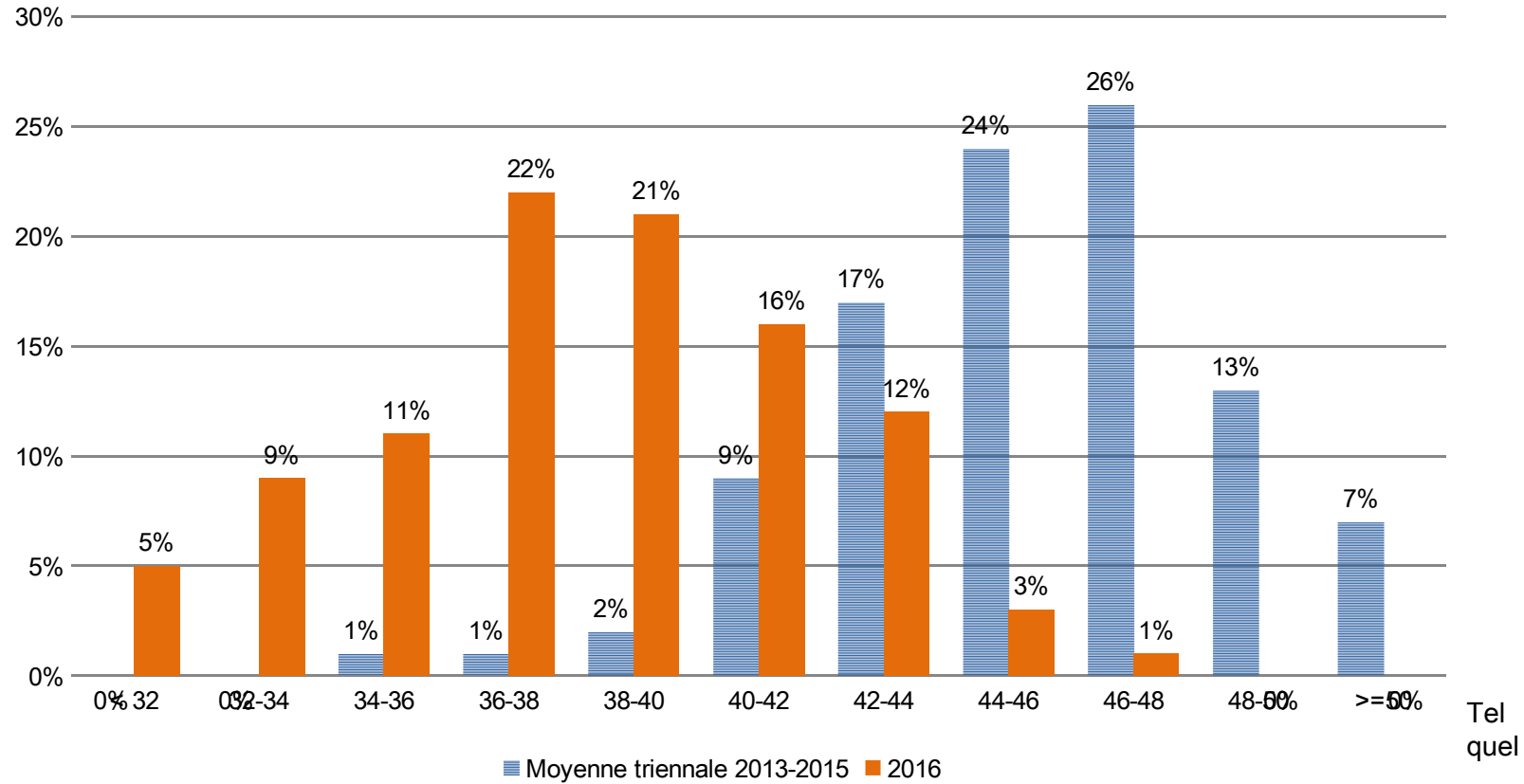
Source : FranceAgriMer / ARVALIS - Institut du végétal / Enquête qualité collecteurs 2016
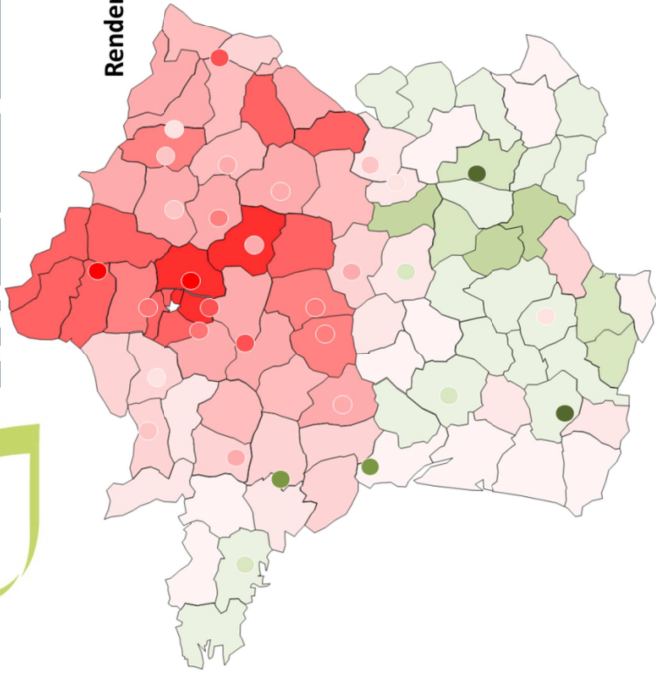
Yields observed by Agreste and Arvalis (colored circles),

- expressed in % of the multi-year average (2006-2015)

Blé tendre
Rendement 2016 / pluriannuel

-60%
-40%
-20%
+0%
+15%

EVOLUTION DU RENDEMENT ET DE LA PRODUCTION DE BLE TENDRE EN FRANCE DEPUIS 1996
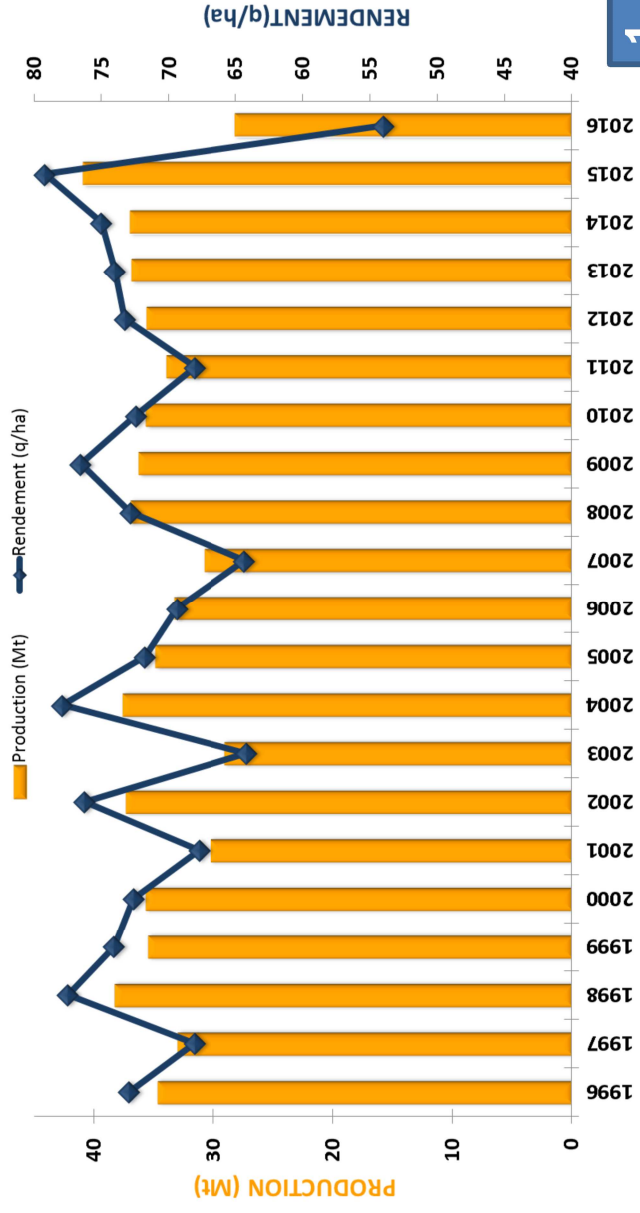
Sources : Agreste, estimation août-septembre 2016, et ARVALIS - Institut du végétal

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Institut du végétal FranceAgriMer
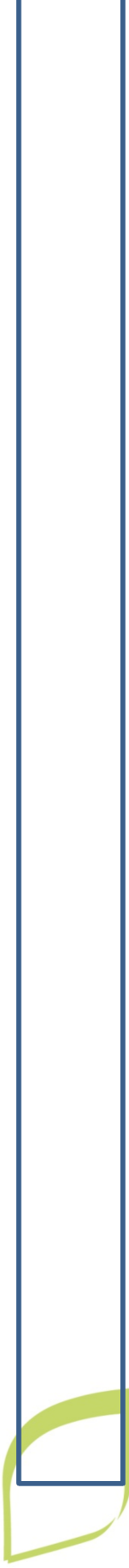
Lowest sunshine levels ever seen

+ Highest cumulative rainfall
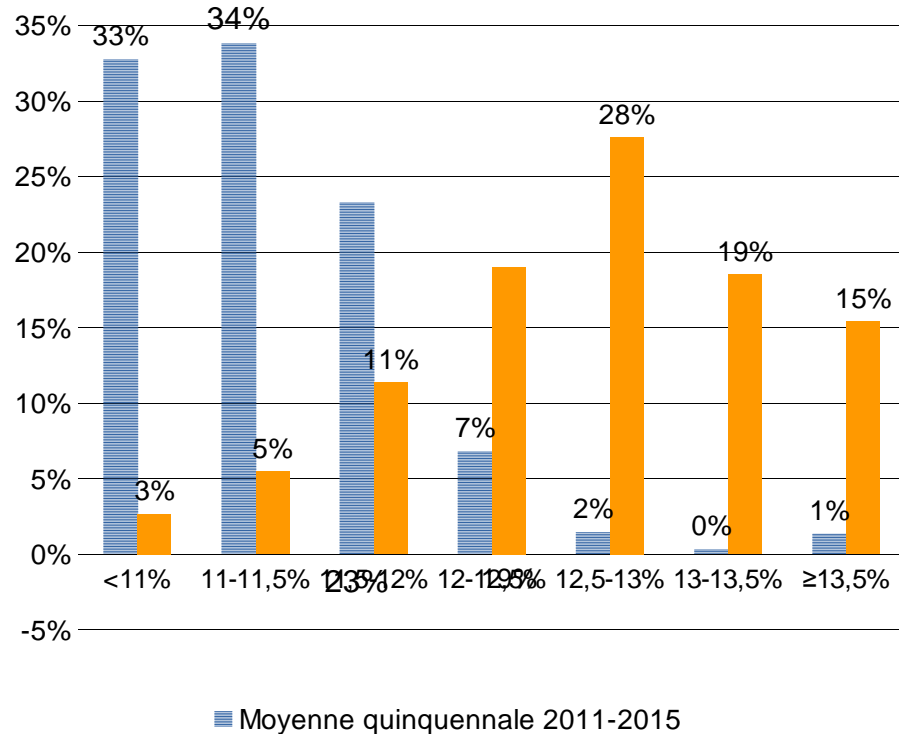
This combination is statistically improbable

France entière Variétés confondues

Historique
• 2015
• 2016

Moy 2016 : 73.6/Moy 2015: 94.4 / Pluriannuel: 89.6

Moy 2016 : 13.1/Moy 2015: 11.6 / Pluriannuel: 12.1

Yield (q/ha)
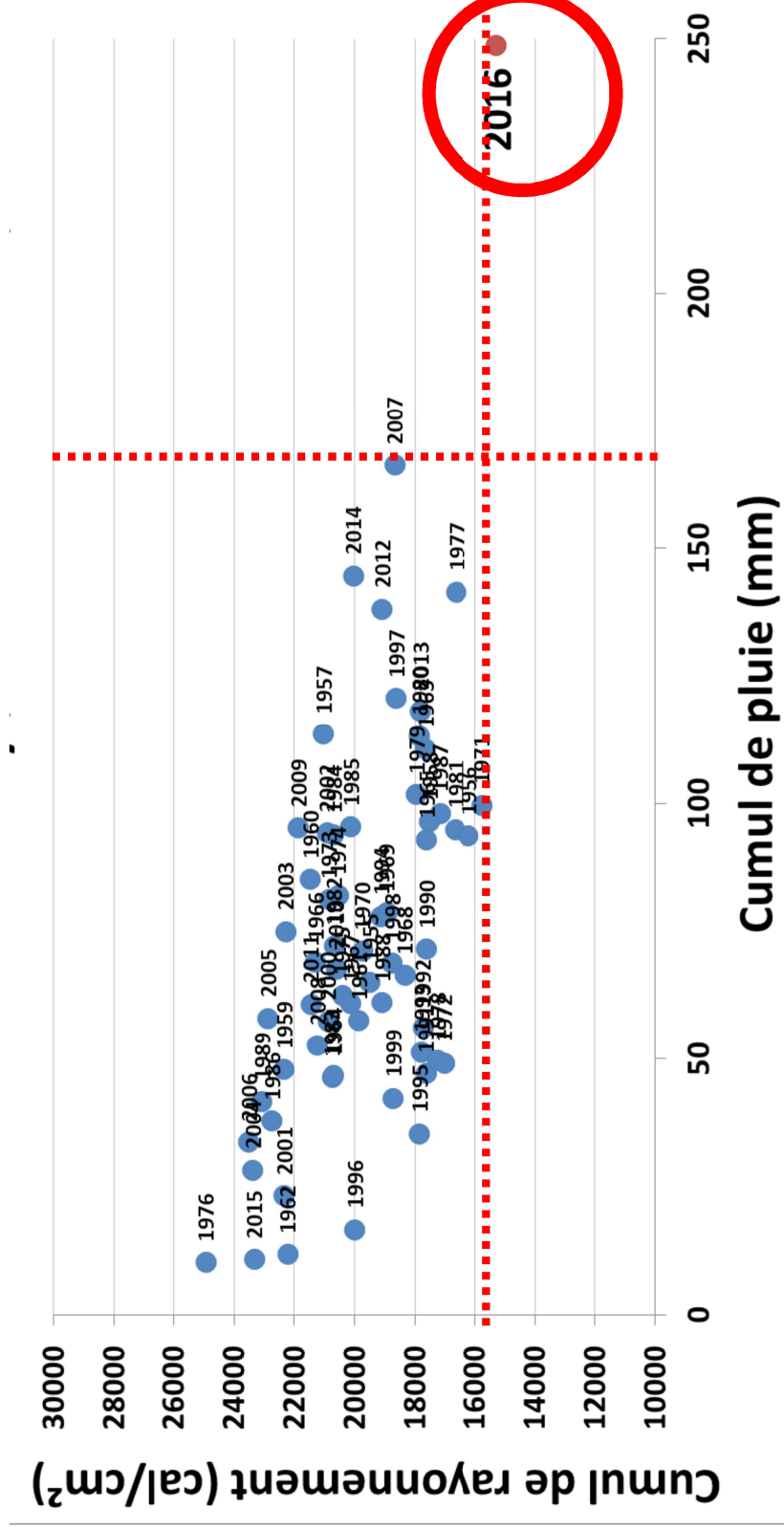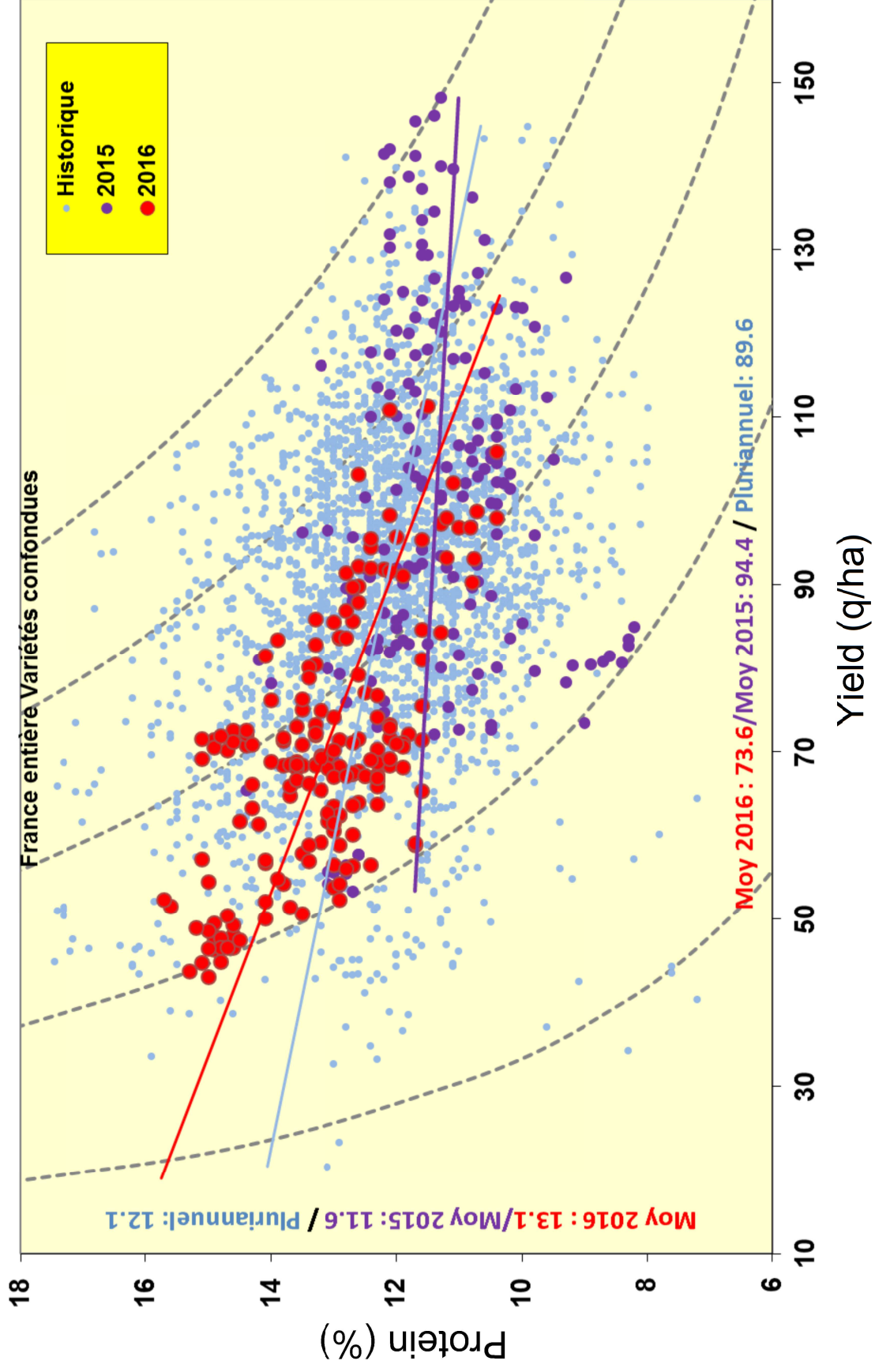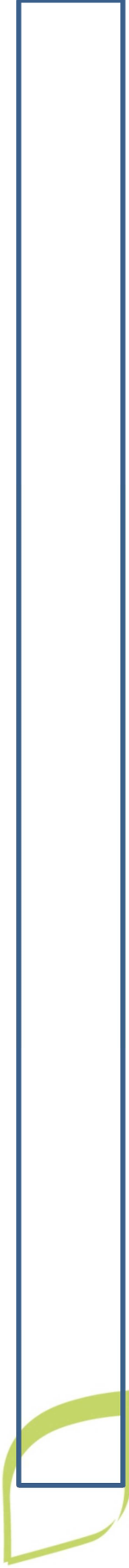
Protein (%)

Protein content

12,6 % average

As a percentage of collected volumes

■ Moyenne quinquennale 2011-2015

high wet gluten content

25,3 average

As a percentage of collected volumes

■ Moyenne triennale 2013-2015 ■ 2016

Source : FranceAgriMer / ARVALIS - Institut du végétal / Enquête qualité collecteurs 2016

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1
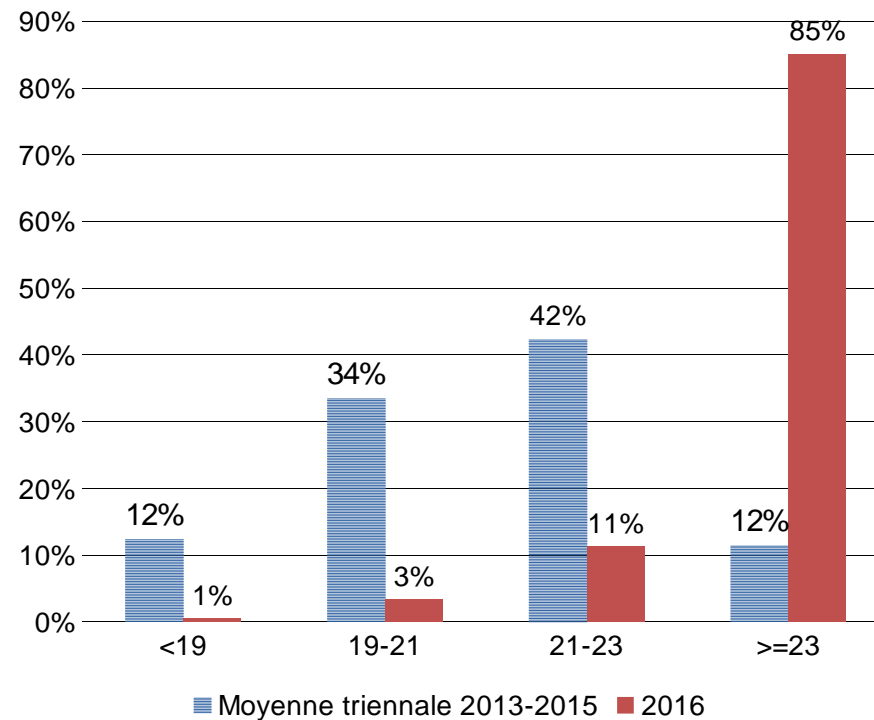
M.C on intake at silos : 13,6 % average

**Cumul de précipitations (mm)
du 1er au 31 juillet 2016**
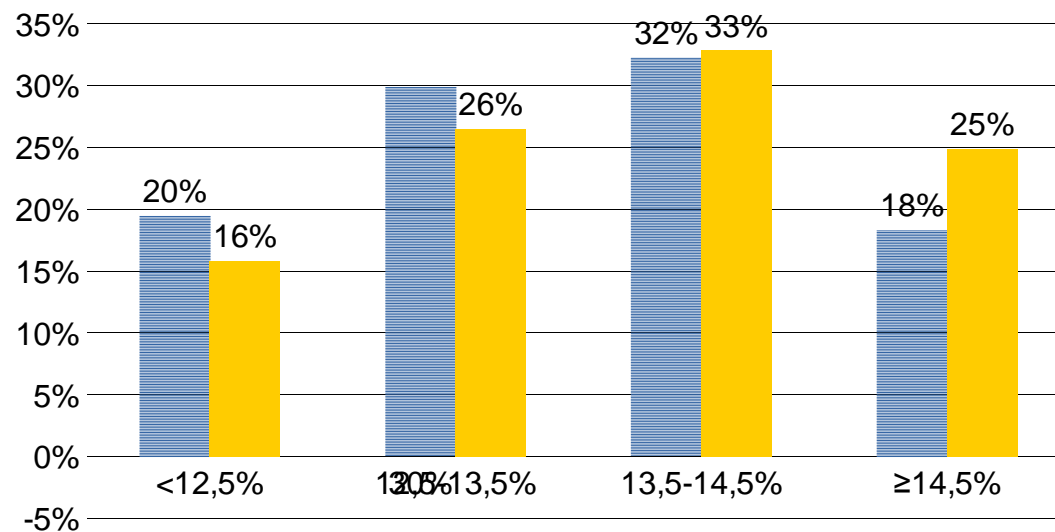
Source des données

METEO FRANCE

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	> 300
	250 - 300
	200 - 250
	150 - 200
	100 - 150
	80 - 100
	60 - 80
	40 - 60
	20 - 40
	0 - 20
	Zones > 800 m

As a percentage of collected volumes

	<12,5%	12,5-13,5%	13,5-14,5%	≥14,5%
Moyenne quinquennale 2011-2015	20%		32%	18%
2016	16%	26%	33%	25%

■ Moyenne quinquennale 2011-2015   ■ 2016

Source : FranceAgriMer / Enquête entrée collecteurs 2016

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Cumul de précipitations (mm)
du 1er au 31 juillet 2016

Source des données
METEO FRANCE
ARVALIS
Institut du végétal

> 300
250 - 300
200 - 250
150 - 200
100 - 150
80 - 100
60 - 80
40 - 60
20 - 40
0 - 20
Zones > 800 m

Hagberg Falling Numbers :

88% > 220s
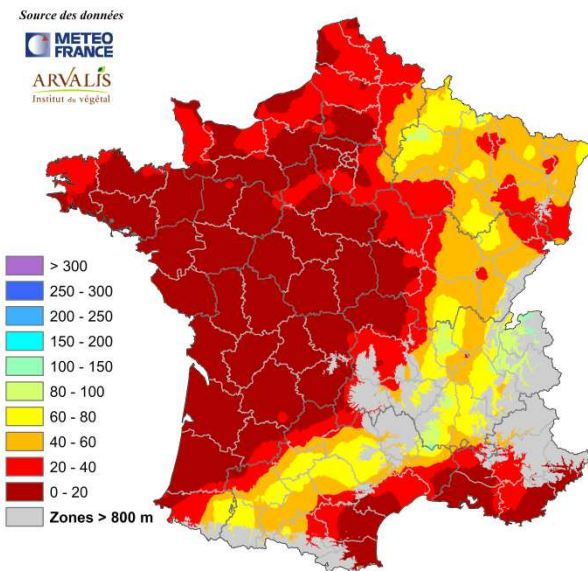
As a percentage of collected volumes

Source : FranceAgriMer / Enquête entrée collecteurs 2016

ARVALIS
Institut du végétal FranceAgriMer
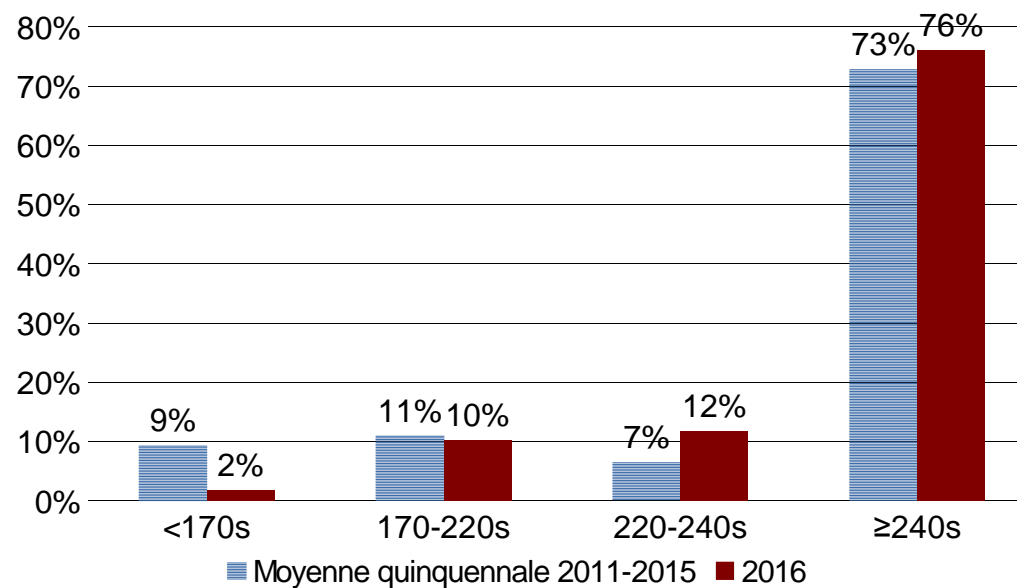
Hardness : French wheat is generally Medium Hard

50-75

As a percentage of collected volumes

< 25

25-50

> 75

	soft	medium soft	medium hard	hard
Moyenne triennale 2013-2015	0%	17%	65%	18%
2016	1%	2%	74%	23%

■ Moyenne triennale 2013-2015　■ 2016
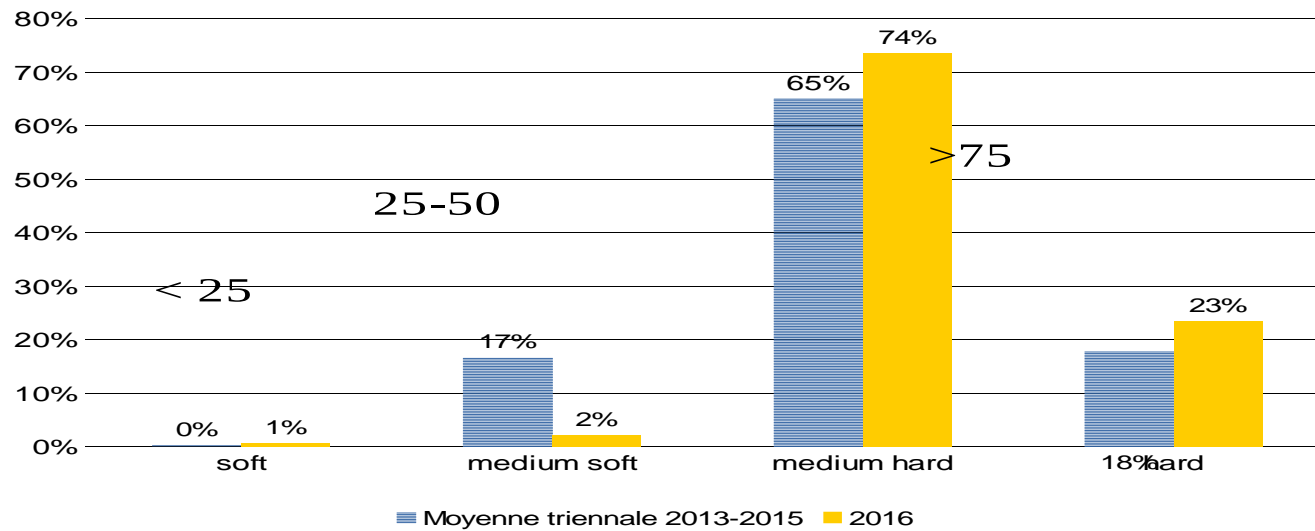
Sources : FranceAgriMer / Enquête qualité collecteurs 2016, *US Wheat Associates*

ARVALIS Institut du végétal FranceAgriMer

Baking strength

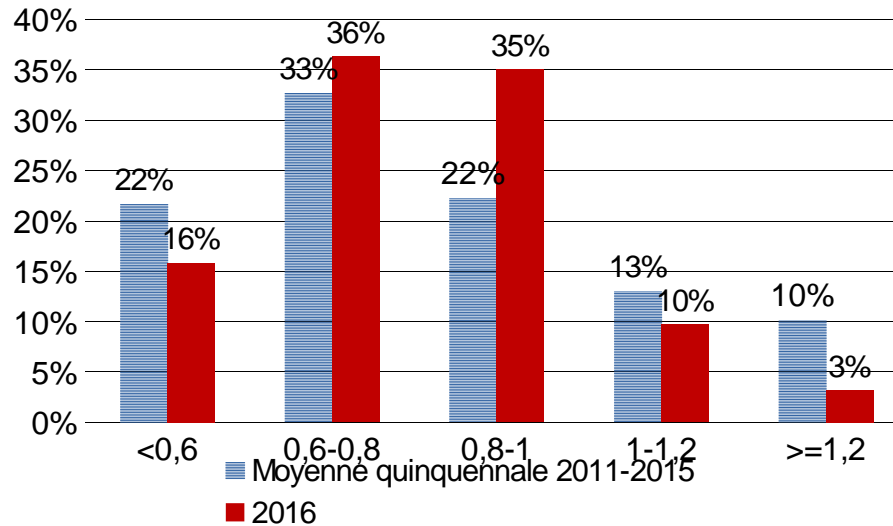W = **205** on average

P/L = **0.8** on average

As a percentage of collected volumes
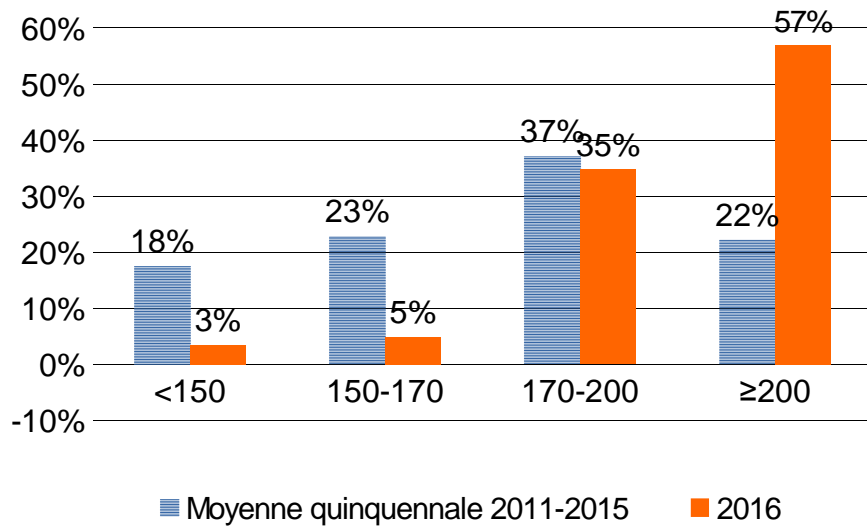
As a percentage of collected volumes

Left chart:
- <150: 18% / 3%
- 150-170: 23% / 5%
- 170-200: 37% / 35%
- ≥200: 22% / 57%

■ Moyenne quinquennale 2011-2015   ■ 2016

Right chart:
- <0,6: 22% / 16%
- 0,6-0,8: 33% / 36%
- 0,8-1: 22% / 35%
- 1-1,2: 13% / 10%
- >=1,2: 10% / 3%

■ Moyenne quinquennale 2011-2015   ■ 2016

Source : FranceAgriMer / Enquête entrée collecteurs 2016

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Breadmaking value(/300)

As a percentage of collected volumes

Chart data:
	<200	200-220	220-250	>=250
Moyenne triennale 2013-2015	2%	5%	15%	78%
2016	25%	18%	31%	26%

Legend: ▬ Moyenne triennale 2013-2015 ▮ 2016
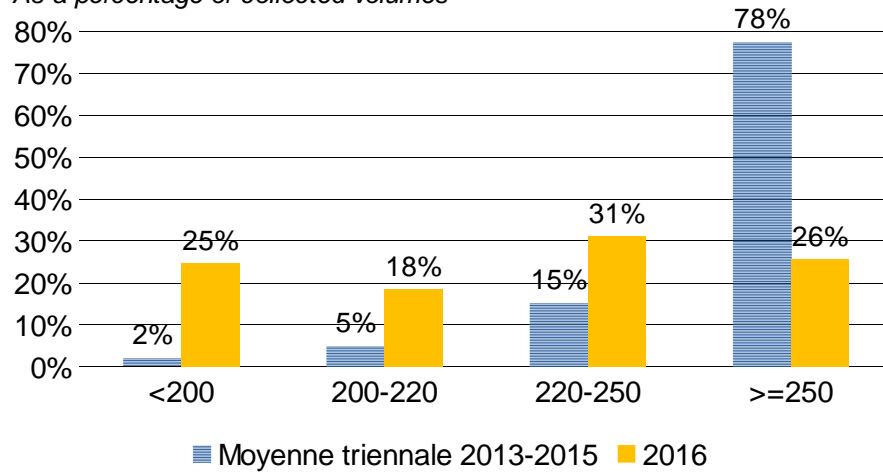
Volume (cm³)

As a percentage of collected volumes

Chart data:
	<1500cm2	1500-1600cm3	1600-1700cm3	>=1700cm3
Moyenne triennale 2013-2015	15%	43%	31%	11%
2016	9%	31%	35%	25%

Legend: ▬ Moyenne triennale 2013-2015 ▮ 2016
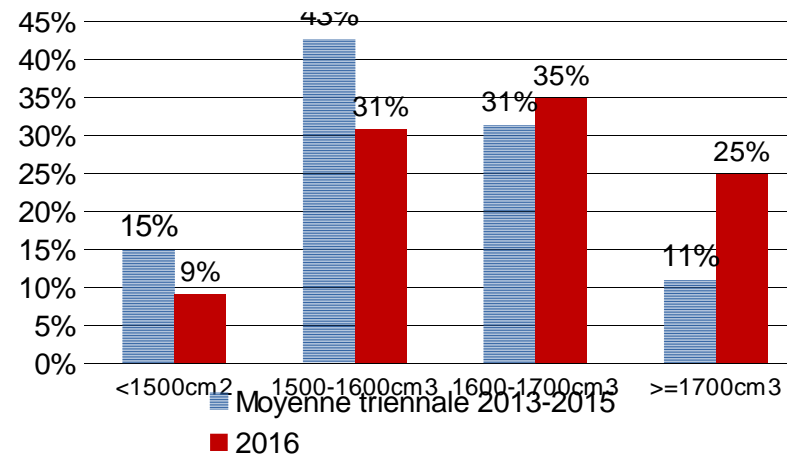
Source : FranceAgriMer / ARVALIS - Institut du végétal / Enquête qualité collecteurs 2016

Gluten Index shows more extensibility than usual

Gluten Index levels are lower than those typically known

75.3 on average
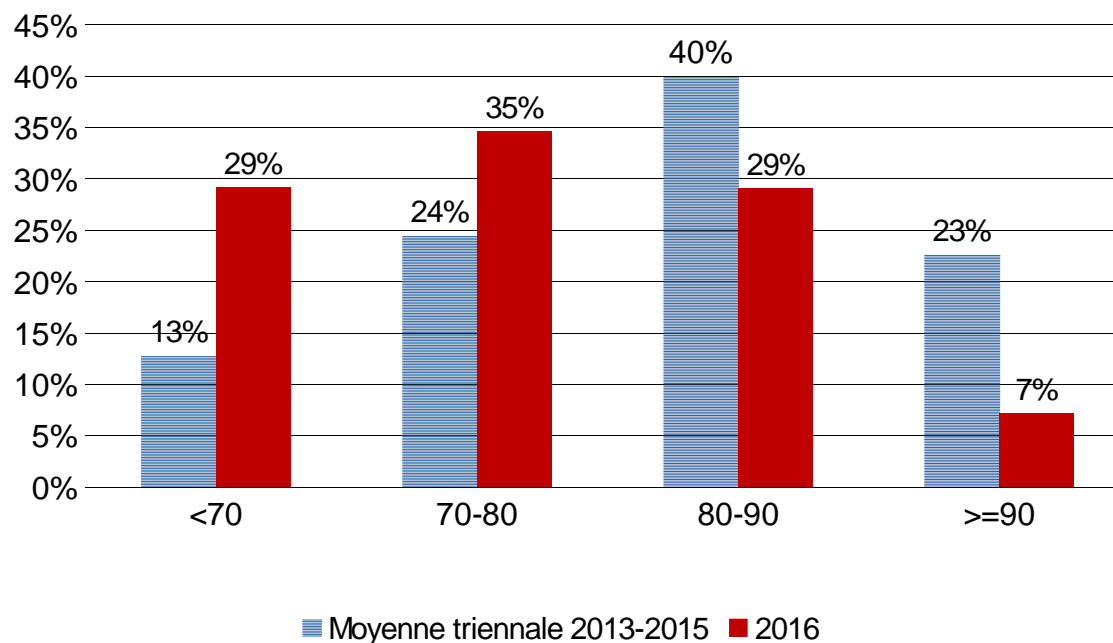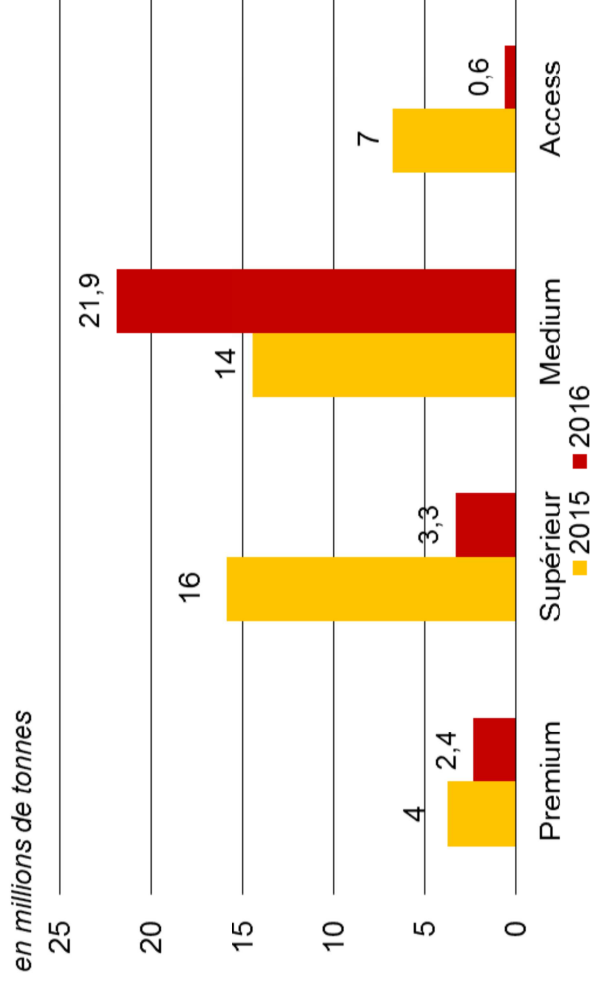
As a percentage of collected volumes

Source : FranceAgriMer / ARVALIS - Institut du végétal / Enquête qualité collecteurs 2016

The French wheat in 2016 is not a reflection of the typical offer

Classes	Protéines	W	Poids spécifique	Indice de chute de Hagberg	Répartition nationale 2016	Répartition nationale 2011-2015
Premium	≥ 11,5 %	≥ 170	≥ 77	≥ 240	8 %	15 %
Supérieur	≥ 11 %	non spécifié	≥ 76	≥ 220*	12 %	30 %
Médium	≥ 10,5 %	non spécifié	non spécifié	≥ 170*	78 %	37 %
Access	Spécifié au contrat	non spécifié	non spécifié	non spécifié	2%	18%

en millions de tonnes

Premium: 4 (2015), 2,4 (2016)
Supérieur: 16 (2015), 3,3 (2016)
Medium: 14 (2015), 21,9 (2016)
Access: 7 (2015), 0,6 (2016)

Legend: 2015, 2016

Source : FranceAgriMer / Enquête qualité collecteurs 2015 et 2016

Thank you for your attention