

Durum wheat in Wallonia, results and current project

RODRIGO MEZA

SCIENTIFIC ATTACHÉ

PRODUCTIONS IN AGRICULTURE (D2) – CROP PRODUCTION UNIT (U4)

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Presentation plan

- I. A few words about CRAW
- II. Some words about durum wheat
- III. Results of durum wheat in Wallonia
- IV. Durum wheat project in Wallonia

I. A few words about CRAW

II. Some words about durum wheat

III. Results of durum wheat in Wallonia

IV. Durum wheat project in Wallonia

Walloon Agricultural Research Centre

The CRA-W brings together **scientific research**, **service** and **support** functions in support of Walloon farmers, stockbreeders, horticulturists, forestry producers and operators in the agri-food sector.

Some **150** scientific research projects :

- 1** Curbing the use of synthetic inputs and mitigating the climate change impact of agriculture
- 2** Producing quality products in a more sustainable way by maintaining farmers' standards of living and promoting animal welfare and the protection of the environment and biodiversity
- 3** Boosting production profitability, thus ensuring a decent income for Walloon farmers
- 4** Helping to enhance the value of agricultural production in conventional or local sectors (organic or otherwise)

Walloon Agricultural Research Centre

Partnerships and Beneficiaries

- ✓ Society
- ✓ Farmers, horticulturalists and other players in these sectors
- ✓ Individuals
- ✓ Government departments and authorities
- ✓ Businesses
- ✓ Universities and other research institutions

Walloon Agricultural Research Centre

Key figures



440
including
120
scientists



300 ha
experimental
fields,
orchards,
greenhouses,
laboratories...



3 sites
Gembloux,
Libramont,
Mussy-la-
ville



150
research
projects at
regional,
national
and
european
level



29
automatic
agricultural
weather
stations
'PAMESEB
network'

Walloon Agricultural Research Centre

General Director

Georges SINNAEVE

Coordination and strategy

Gilberte THIRY

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Olivier PIGEON

Valorization of agricultural products, biomass and wood

Jérôme DELCARTE a.i.

Quality and authentication of agricultural products

Vincent BAETEN

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01/01/2022

Walloon Agricultural Research Centre

Crop production Unit (U4) - Objective

→ Developing a sustainable and resilient system of farming in order to provide quality plant products while taking into account environmental protection, climate change and resource shortages.

Walloon Agricultural Research Centre

Crop production Unit (U4) – How

- ✓ Providing references and expertise to professionals
- ✓ Decision support tools and systems
- ✓ Assessment and description of crop varieties
- ✓ Study of innovative cropping systems
- ✓ Economic and technical assessment of agricultural equipment. Focus on new technologies, precision farming

I. A few words about CRAW

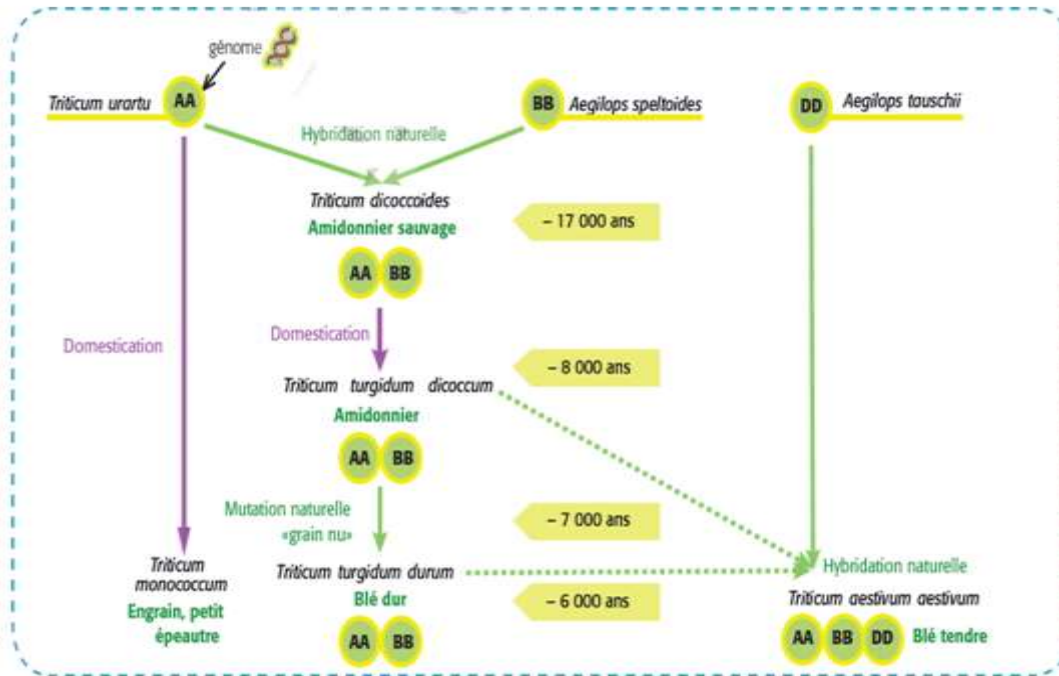
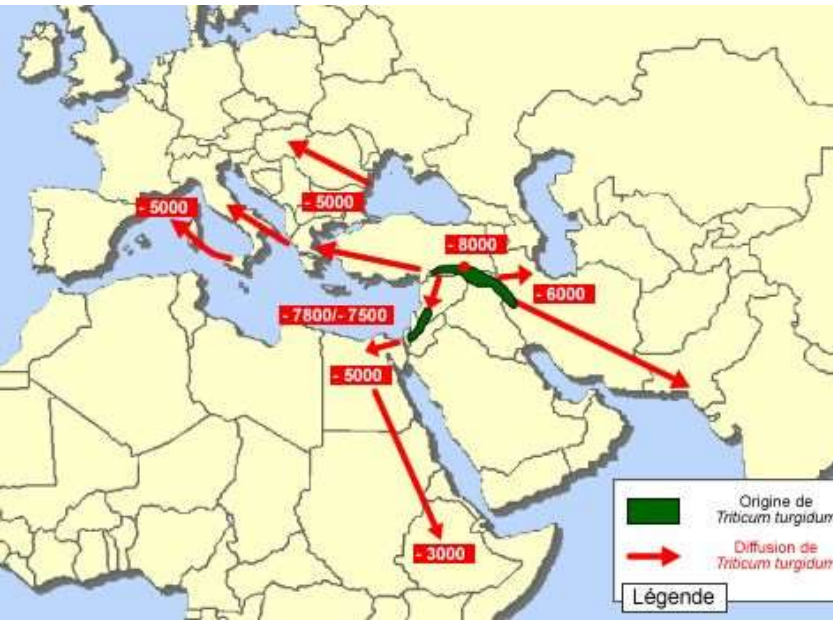
II. Some words about durum wheat

III. Results of durum wheat in Wallonia

IV. Durum wheat project in Wallonia

Some words about durum wheat

Origin :



➤ Origin at the level of the fertile crescent

➤ The D genome provided soft wheat with adaptation to regions with cold winters and humid summers

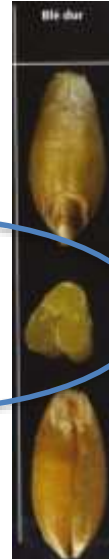
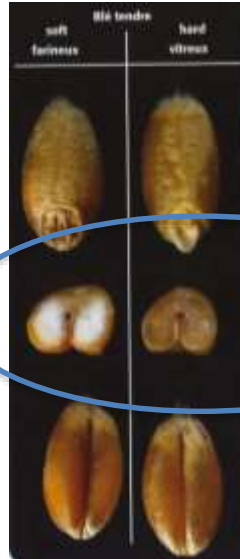
Some words about durum wheat

Differences :

Soft wheat >< Durum wheat



Triticum aestivum aestivum

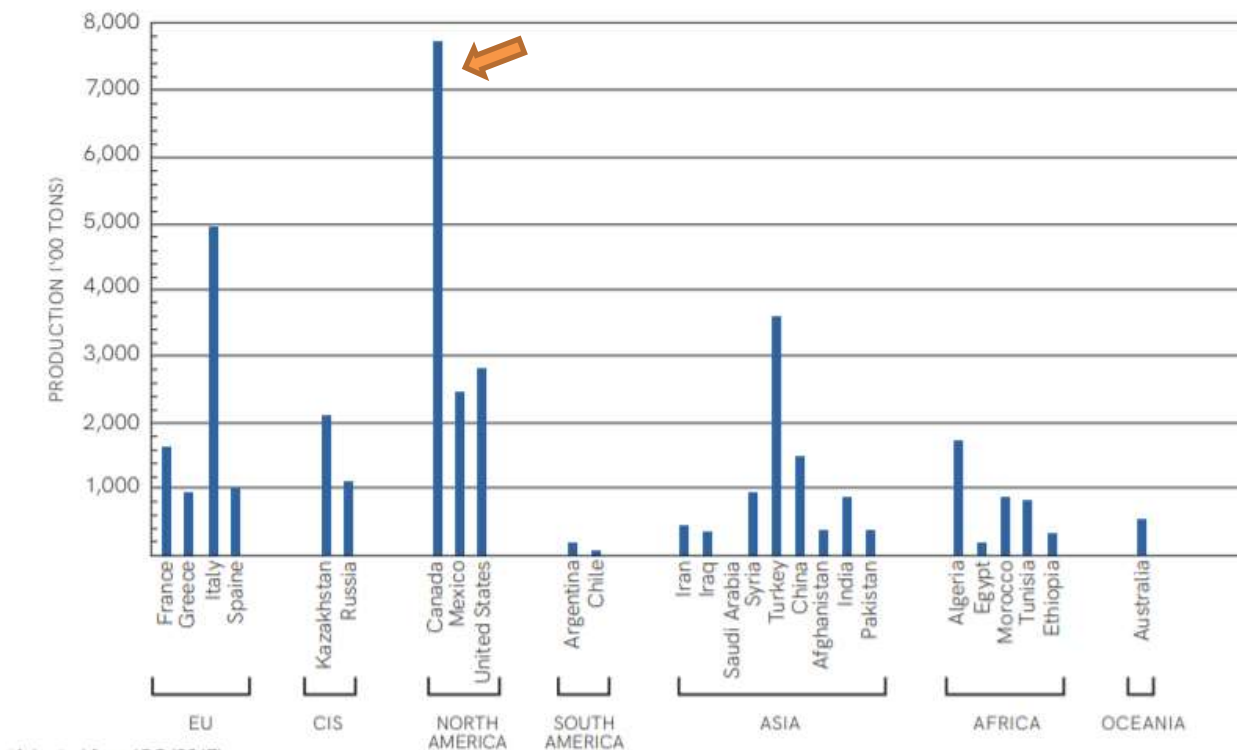


Triticum turgidum durum



Some words about durum wheat

Durum wheat productions :

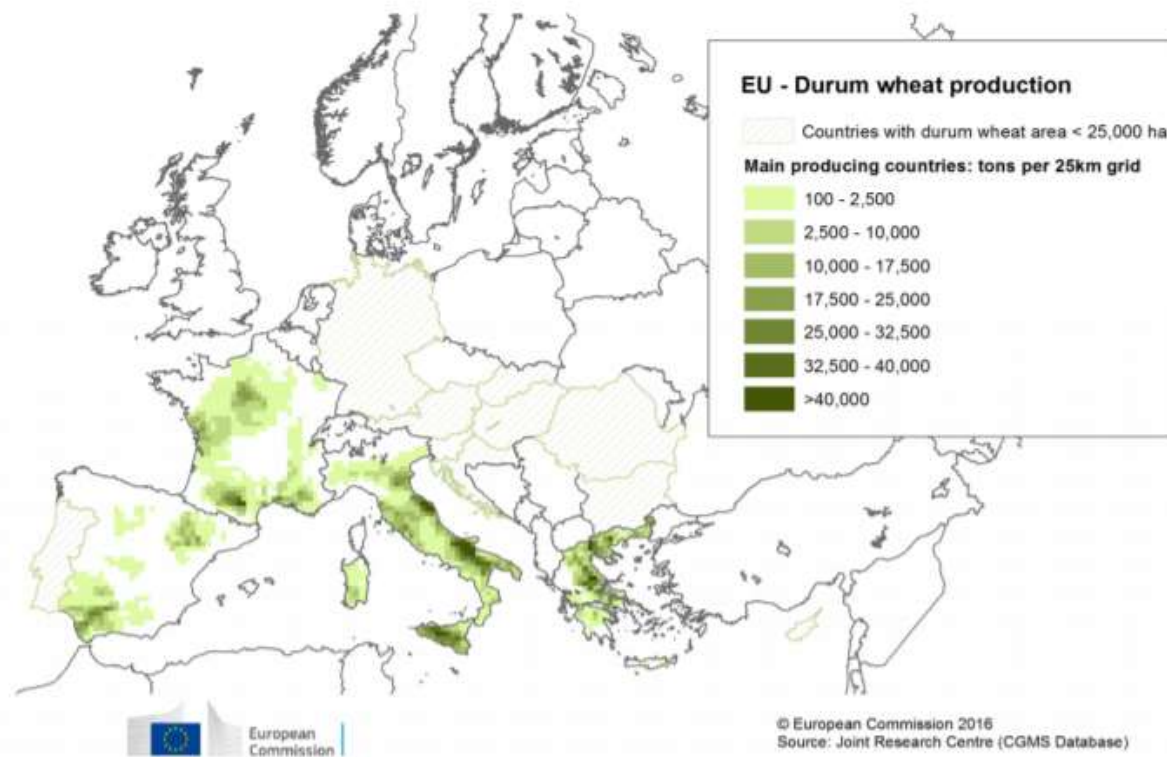


Adapted from IGC (2017)

- Canada : 7,8 millions of tons – 1st Mondial producer
- Italy : 4,9 millions of tons (1st European producer)
- Turkey: 3,6 millions de tonnes

Some words about durum wheat

Durum wheat productions :



- Italy : 4,9 million tons (1st European producer)
- France : 1,8 million tons (2nd European producer)

✓ Durum wheat suitable for regions with **mild winters** and **dry summers**

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Results of durum wheat in Wallonia

Trials of durum wheat

- Varieties evaluated
 - Since 2019 trial in Wallonia
 - Varietal trials sowing in spring and autumn
 - Varietal trials in conventional agriculture and organic farming
- Different European origins evaluated :
Austria (AT), Bulgaria (BG), Germany (DE), France (FR), Greece (GR), Croatia (HR), Hungary (HU), Italy (IT), Luxembourg (LU), Romania (RO)



Results of durum wheat in Wallonia

Trials of durum wheat

- Varieties evaluated for season 2023-2024

Varieties evaluated in 2024							
Denomination		Breeder's Name			Registration		Years in trials in Wallonia
					1st Year	Countries	
1	Anvergur	RAGT 2n	FR	2012	FR12	6	
2	Wintergold	Universität d'Hohenheim	DE	2011	AT11, DE11, LU14, RO11	6	
3	RGT Belalur	RAGT 2n	FR	2020	FR20	2	
4	RGT Kapsur	RAGT 2n	FR	2020	FR20	2	
5	RGT Soissur	RAGT 2n	FR	2020	FR20	2	
6	Rocaillou	Florimond Desprez Veuve et Fils	FR	2023	FR23	2	
7	Wintersonne	Südwestdeutsche Saatzucht GmbH & Co. KG	DE	2022	DE23, HR22	2	
8	Winterstern	Südwestdeutsche Saatzucht GmbH & Co. KG	DE	2022	DE22	2	
9	Amidur	Saatzucht Donau GmbH & Co. KG	AT	2023	AT21	1	
10	Berndur	Südwestdeutsche Saatzucht GmbH & Co. KG	DE	2023	HR23	1	
11	Dimokritos	Pavlos Agrafiotis S.A.	GR	2016	GR16	1	
12	Farah	CGS Sementi S.p.A.	IT	2016	IT16	2	
13	Spineto	Porfiri Marino	IT	2020	IT20	1	

Results of durum wheat in Wallonia

Agronomic assessment



Cold damage in 2021



Tillering number
winter wheat (left) - durum wheat (right)



Lodging

Results of durum wheat in Wallonia

Agronomic assessment

Varieties			Cold Resistance 1-9*	Tillering capacity Number	Lodging tolerance 1-9*	Height cm
1	Anvergur	FR	5,4	3,3	4,6	95
2	Canailou	FR	4,5	3,5	6,0	97
3	Casteldoux	FR	6,0	3,3	5,8	93
4	Karur	FR	5,8	3,9	6,3	94
5	RGT Belalur	FR	-	2,9	4,1	105
6	RGT Kapsur	FR	-	2,5	2,8	105
7	RGT Soissur	FR	-	2,7	7,8	95
8	Rocaillou	FR	-	3,2	2,9	106
9	SM Ceris	PL	-	3,6	5,9	114
10	SM Eris	PL	7,6	3,2	5,9	106
11	SM Metis	PL	8,5	2,6	4,3	115
12	SM Tetyda	PL	7,5	4,2	8,4	103
13	Toscadou	FR	5,9	3,4	5,8	98
14	Wintergold	DE	7,9	4,0	7,2	106
15	Wintersonne	DE	-	4,5	6,1	116
16	Winterstern	DE	-	2,9	3,4	119

- : without résultat

*9 most favorable value

Results of durum wheat in Wallonia

Agronomic assessment - Diseases

Varieties			Yellow rust 1-9*	Fusarium head blight 1-9*	Fusarium leaf blight 1-9*	Powdery 1-9*	Septoria 1-9*
1	Anvergur	FR	7,9	7,3	6,8	8,3	7,4
2	Canailou	FR	9,0	8,3	6,8	8,6	8,0
3	Casteldoux	FR	7,0	7,0	5,5	8,6	6,0
4	Karur	FR	5,9	7,7	7,5	8,1	7,1
5	RGT Belalur	FR	6,6	-	-	-	7,4
6	RGT Kapsur	FR	6,9	-	-	-	7,0
7	RGT Soissur	FR	7,1	-	-	-	7,7
8	Rocailou	FR	5,8	-	-	-	6,7
9	SM Ceris	PL	5,3	-	-	-	5,5
10	SM Eris	PL	7,7	8,0	7,5	-	7,1
11	SM Metis	PL	7,2	9,0	8,5	-	6,9
12	SM Tetyda	PL	6,3	-	-	-	7,0
13	Toscadou	FR	7,5	8,1	7,3	8,2	6,8
14	Wintergold	DE	6,4	9,0	6,8	8,7	6,3
15	Wintersonne	DE	6,5	-	-	-	6,7
16	Winterstern	DE	9,0	-	-	-	6,7

- : Without results

*9 most favorable value

Results of durum wheat in Wallonia

Yield (kg/ha)

Varieties			2023		2022		2021		2020	2019
			Acosse	Gembloux	Acosse	Gembloux	Acosse	Gembloux	Acosse	Acosse
1	Anvergur (T)	FR	10 702	11 000	10 129	8 034	9 808	7 558	9 941	9 477
2	Canailou	FR	10 370	10 134	11 291	8 258	10 304	7 254	-	-
3	Casteldoux	FR	9 983	9 996	10 065	8 184	10 117	7 389	10 328	9 348
4	Karur (T)	FR	9 904	10 117	10 490	8 050	8 570	6 332	9 867	9 642
5	RGT Belalur	FR	10 754	10 610	-	-	-	-	-	-
6	RGT Kapsur	FR	10 048	10 542	-	-	-	-	-	-
7	RGT Soissur	FR	11 058	10 941	-	-	-	-	-	-
8	Rocailou	FR	10 695	10 487	-	-	-	-	-	-
9	SM Ceris	PL	7 424	7 588	-	-	-	-	-	-
10	SM Eris	PL	9 386	8 300	-	-	-	4 458	-	-
11	SM Metis	PL	8 812	9 216	-	-	-	4 329	-	-
12	SM Tetyda	PL	8 682	9 584	-	-	-	-	-	-
13	Toscadou (T)	FR	10 369	10 098	10 816	7 403	9 539	7 178	9 540	9 757
14	Wintergold (T)	DE	9 365	8 517	9 224	7 073	8 199	5 328	9 863	9 862
15	Wintersonne	DE	10 196	9 322	-	-	-	-	-	-
16	Winterstern	DE	9 221	9 372	-	-	-	-	-	-
Average of control (T)			10 085	9 933	10 165	7 640	9 029	6 599	9 803	9 685
Average of trial			9 811	9 739	10 035	7 553	9 156	6 049	8 890	9 574
Number repetitions			4	3	4	3	4	3	4	4

- : without results

Results of durum wheat in Wallonia

Yield (kg/ha)

Varieties			2023		2022		2021		2020	2019	Average Acosse
			Acosse	Gembloux	Acosse	Gembloux	Acosse	Gembloux	Acosse	Acosse	
1	Anvergur (T)	FR	10 702	11 000	10 129	8 034	9 808	7 558	9 941	9 477	10 145
2	Canailou	FR	10 370	10 134	11 291	8 258	10 304	7 254	-	-	10 655
3	Casteldoux	FR	9 983	9 996	10 065	8 184	10 117	7 389	10 328	9 348	10 123
4	Karur (T)	FR	9 904	10 117	10 490	8 050	8 570	6 332	9 867	9 642	9 708
5	RGT Belalur	FR	10 754	10 610	-	-	-	-	-	-	-
6	RGT Kapsur	FR	10 048	10 542	-	-	-	-	-	-	-
7	RGT Soissur	FR	11 058	10 941	-	-	-	-	-	-	-
8	Rocailou	FR	10 695	10 487	-	-	-	-	-	-	-
9	SM Ceris	PL	7 424	7 588	-	-	-	-	-	-	-
10	SM Eris	PL	9 386	8 300	-	-	-	4 458	-	-	-
11	SM Metis	PL	8 812	9 216	-	-	-	4 329	-	-	-
12	SM Tetyda	PL	8 682	9 584	-	-	-	-	-	-	-
13	Toscadou (T)	FR	10 369	10 098	10 816	7 403	9 539	7 178	9 540	9 757	10 066
14	Wintergold (T)	DE	9 365	8 517	9 224	7 073	8 199	5 328	9 863	9 862	9 163
15	Wintersonne	DE	10 196	9 322	-	-	-	-	-	-	-
16	Winterstern	DE	9 221	9 372	-	-	-	-	-	-	-
Average of control (T)			10 085	9 933	10 165	7 640	9 029	6 666	9 540	9 757	9 163
Average of trial			9 811	9 739	10 035	7 553	9 156	6 666	9 863	9 862	9 163
Number repetitions			4	3	4	3	4	6	6	6	6

- : without results

Yield potential between
90 – 105 qx/ha

Results of durum wheat in Wallonia

Quality assessment

- Protein (%)
- Piebald grains (%)
- Falling number (s)
- Specific weight (kg/hl)



Grain vitreux

Grain mitadiné



Casteldoux



Farfalou

Piebald grains (%)

Results of durum wheat in Wallonia

Quality assessment

Variété	2023		2022			2021				2020	2019
	Gemblou x	Acosse	Merelbek e	Gemblou x	Acosse	Merelbeke *	Poperinge*	Gemblou x	Acosse	Acosse	Acosse
Protein content (%)	12,8	13,9	15,8	15,9	14,6	14,9	13,7	14,1	14,3	15,4	11,8
Piebald grains (%)	9,2	4,8	<5	<5	<5	72	79	32	25	8	34
Falling number (s)	325	312	387	361	384	150	66	112	141	251	405
Specific weight (kg/hl)	78,1	77,4	84,8	84,4	83,3	73,8	70,4	74,3	77,0	82,6	85,1

France	2017	2018	2019
PS (kg/hl)	78.3	76.5	80.2
Protéines %	14.8	14.5	13.9
Mitadinage %	14.6	17.1	7.9
Moucheture %	2.2	6.9	1.9

Average yield : 64 qx/ha

Canada	2017	2018	2019
PS (kg/hl)	81.9	82.3	79.7
Protéines %	16.0	16.5	16.2
Mitadinage %	22.8	11.9	25.9
Moucheture %	1.4	0.8	1.7

Average Yield: 30 qx/ha

Source : enquête collecteurs FAM-ARVALIS

- Specific weight 76-80 Kg/hl
- Moisture content 14,0 %
- Allowable impurities 2% maximum
- Protein 13% minimum

- Piebald grains 25-30% maximum
- Grains GMF 6% maximum (2+2+2)
- Broken grains 6% maximum
- Milling wheat content 1% maximum

Results of durum wheat in Wallonia

Nitrogen trials in conventional agriculture and organic farming



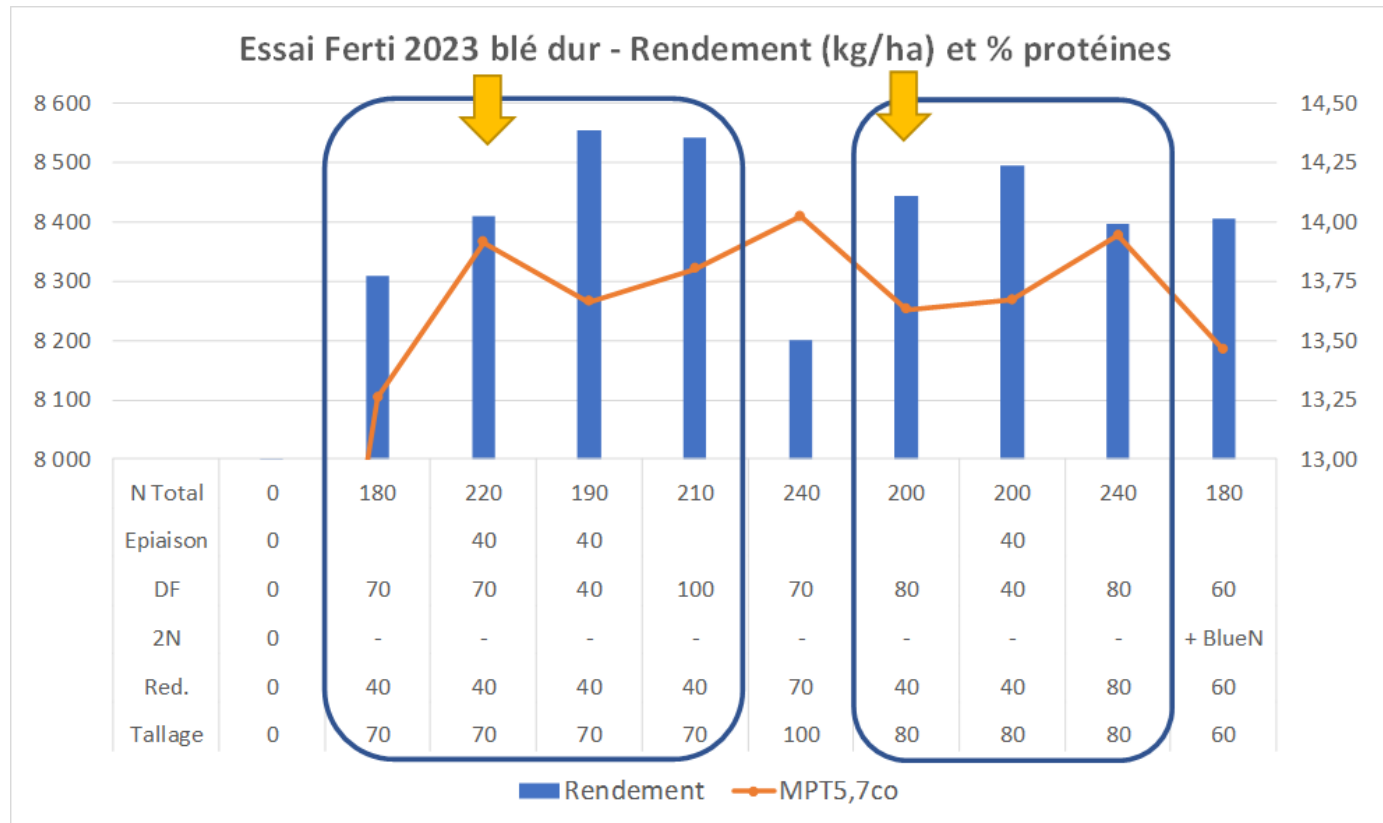
application:		8-03-24	3-04-24	11-04-24				
Stade	Sortie hiver tôt	Sortie hiver normale	T-Red	Red.	2Nœuds	DF	Epiaison	N Total
BBCH	27	29	29-30	30		39	51	
1	0	0		0		0	0	0
2	0	70		40		70		180
3		70		40		70	40	220
4	0	70		40		40	40	190
5		70		40		100		210
6	0	40	30	70		70		210
7		80		40		80		200
8	0	80		40		40	40	200
9		80		80		80		240
10	0	60		60	BlueN	60		180
11		60		60		60		180



Modalité	Plantule (hiver)	Tallage (sortie hiver)	Redressement	2 nœuds	Total (kg N/ha)
	25-01-23	20-03-23	06-04-23	05-05-23	
1	-	-	-	-	0
2	40	-	-	-	40
3	40	40	-	-	80
4	40	40	-	40	120
5	-	40	-	-	40
6	-	40	40	-	80
7	-	40	-	40	80
8	-	40	40	40	120
9	-	80	-	-	80
10	-	80	-	40	120

Results of durum wheat in Wallonia

Nitrogen trials in conventional agriculture



=> additional fraction to maintain protein levels

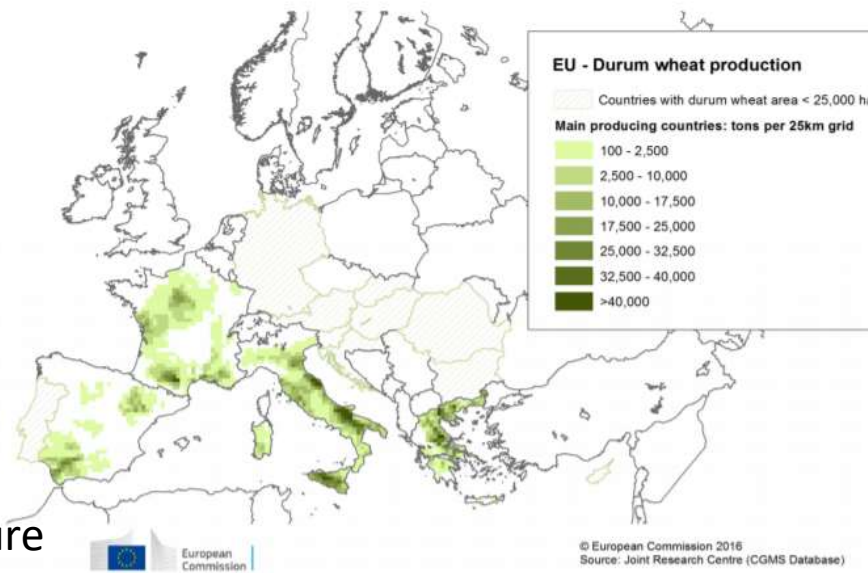
Results of durum wheat in Wallonia

Challenges

- Crop non cultivated in our regions
- Identify the best varieties
- work in crops science

Why?

- Climate change
- Less cold winter
- Summer drier
- development of culture and sector



Presentation plan

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Durum wheat project in Wallonia

Soutenir le développement d'une nouvelle filière basée sur la production agricole de blé dur

Support the development of a new sector based on the agricultural production of durum wheat

Avec le soutien de
la



Wallonie



**Financé par
l'Union européenne**
NextGenerationEU



Walloon Agricultural Research Centre

To address today's questions and to prepare tomorrow's challenges

www.cra.wallonie.be

Durum wheat project in Wallonia

Goals :

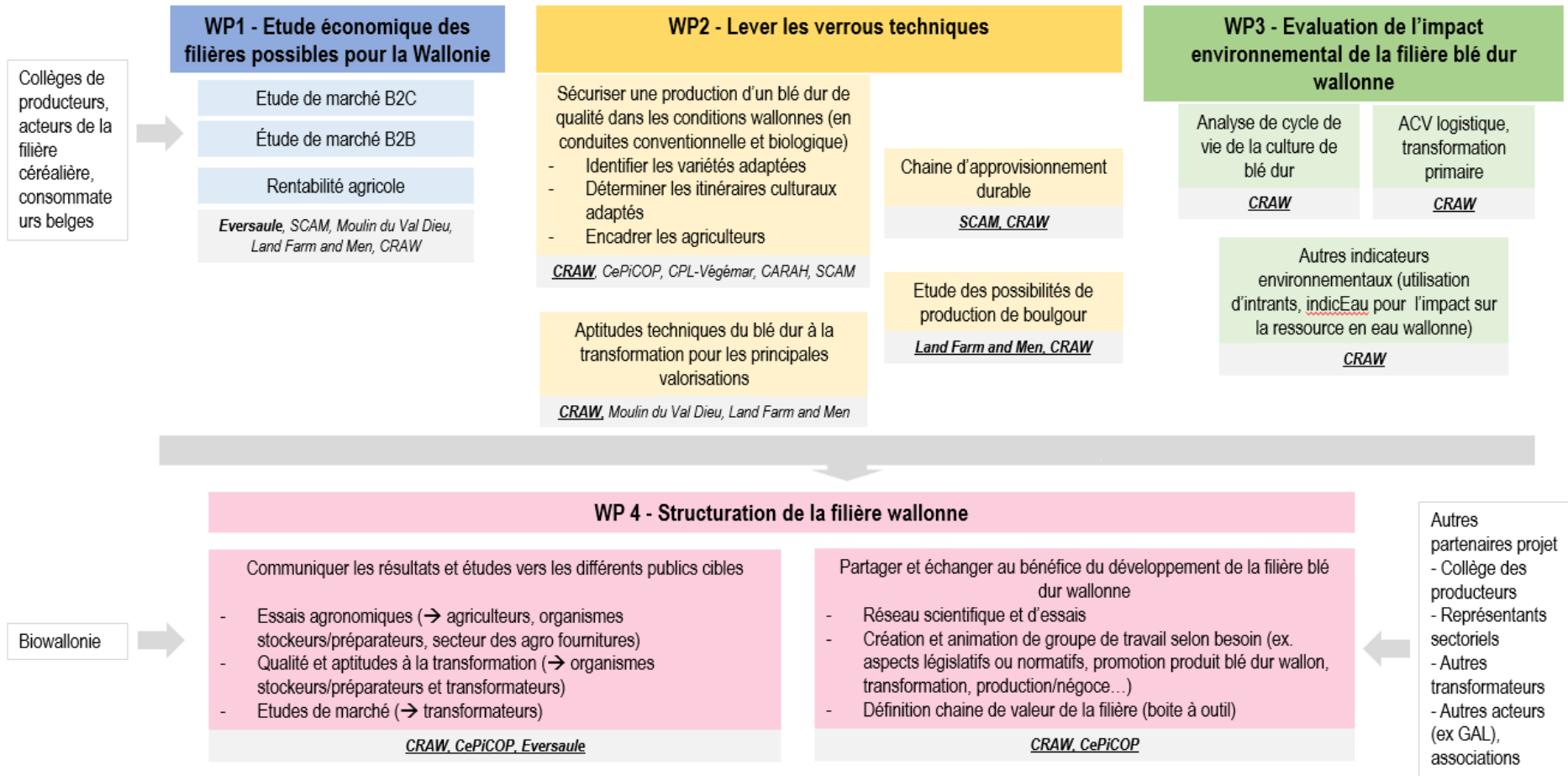
- Support the development of a new sector in Wallonia (local production)
- Enable the local supply of durum wheat to processors and produce 100% Walloon products
- Provide economic, technical and environmental information to the various links in the chain in order to remove the identified obstacles



Period : 3 years (2023 to 2025)

Durum wheat project in Wallonia

Soutenir le développement de filières blé dur en Wallonie - Projet 89



Durum wheat project in Wallonia

Project partners :

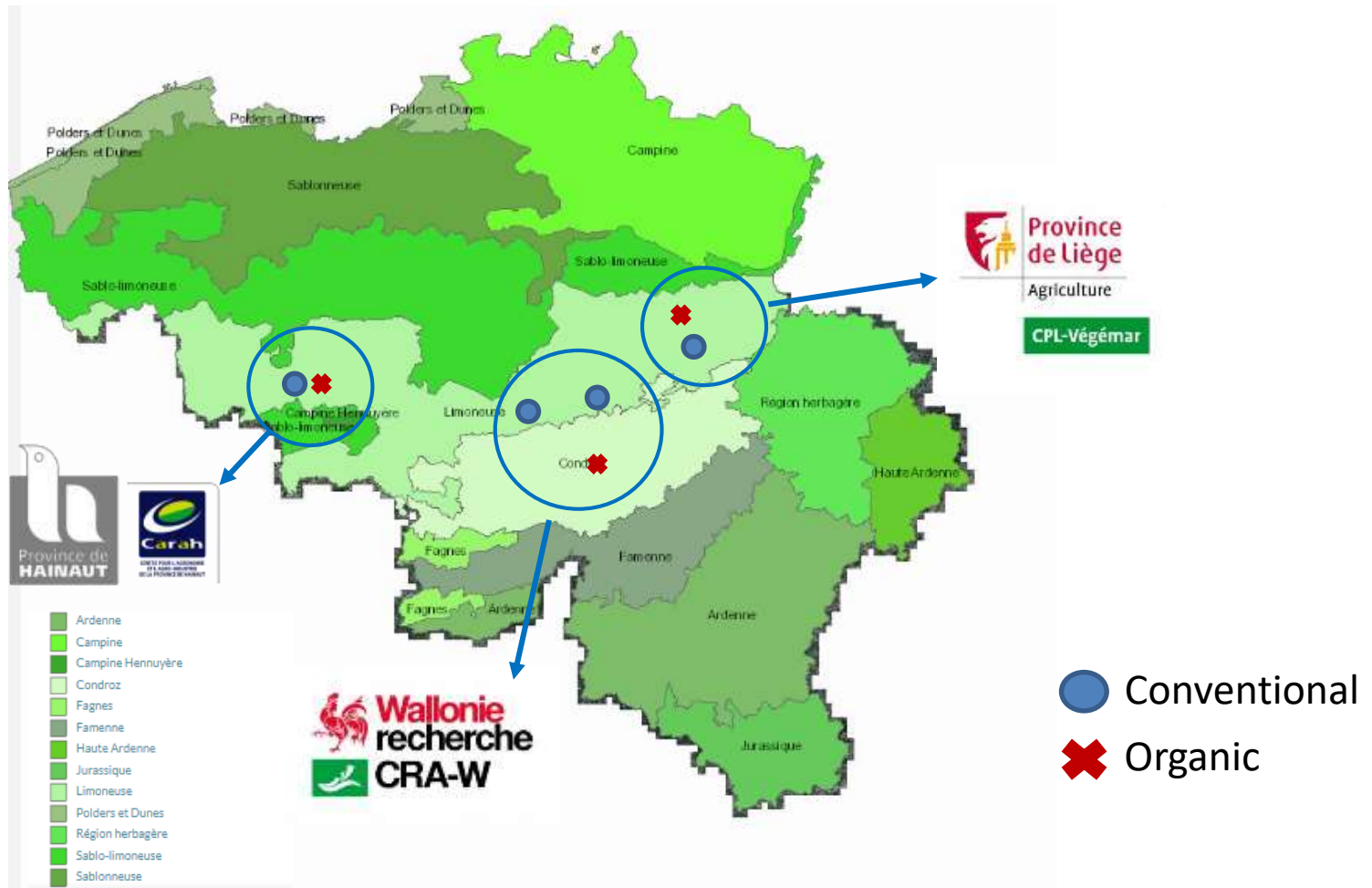


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Durum wheat project in Wallonia

Network trials :



Thank you for your attention



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