GCIRC

GCIRC Technical Meeting Cambridge UK – April 2025

Presentation
April 09 , 2025
Yves DEVISME

Photo = courtesy of Rainer Kahl

Project

OSR / CANOLA

Hybrids Development History

Photos = courtesy of Rainer Kahl

Scope of the project:

Collect and summarize all the information available on the development of Canola/OSR hybrids accross the world, with the aim to have a global summary finalized for the next IRC Congress in April 2027 in Paris – FR

…with the possibility in between (after agreement) to release finalized parts…

Current timing to do it looks good as many participants already retired or soon retired…

Contacts have been made last months…but still on going… network to enlarge to be sure that as much as participants to the hybrids development history have been contacted and proposed to be part of it

Almost 100% of persons contacted until now have found the project interesting,
ready to participate / collaborate / testimony depending parts and time available
and many would like to take the opportunity to re-connect with formers seed industry colleagues

Scope of the project

Key Parts / GLOBAL Worldwide:

✓ **RESEARCH on HETEROSIS / GENEPOOLS**

What was known at the starting point, and what is known so far…

✓ **RESEARCH on HYBRID SYSTEMS**

What have been the different systems technically developped and those who made it commercial

POLIMA, SI, MSL, OGU, SeedLink…

Scope of the project:

Key Parts / Main Regions = Australia, Canada/USA, China, Europe, India
For Europe = FR, DE, UK, PL, Scandinavia

BREEDING
Breeding institutes and companies landscape accross the years

REGISTRATION on National List
Different systems between regions (between countries in Europe)

POST-REGISTRATION / PRESCRIPTION
Different systems between regions (between countries in Europe)

PRODUCTION
What have been the challenges / issues and how they have been solved

PROMOTION / MARKETING
What have been the argumentation to convince farmers to switch to hybrids

SALES / Marketshares
Commercial Seed companies landscape accross the years / winners and loosers

To be adapted to each country / Region

The GCIRC Board has accepted :

- ✓ to support the project
- ✓ to help to enlarge the network (including a time slot at IRC Technical Meeting – Cambridge)
- ✓ to use the GIRC internet to download/store all the information collected

Some Jubilee…

1988 Hyola 30 & 40 in Australia

1989 Hyola 40 in Canada

1994 SYNERGY (VA) in France

1996 PRONTO & JOKER (MSL) in Germany

1996 3850 & 3880 1st LL in Canada

CHINA and INDIA to update…

GCIRC Technical Meeting Alnarp – May 2017

Development of Winter Oilseed Rape Hybrids in Europe: a Success Story

Authors : Martin Frauen (NPZ[1]), Yves Devisme (NPZ[1]), Jean-Pierre Despeghel (Monsanto[2]), Heinrich Busch (DSV[3])

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The story begins in the late 1960's with the discovery by Ogura H. of a Cytoplasmic male sterility (CMS) in a population of Japanese wild radish (1). From this discovery, many research teams have improved and developed the Ogura-system around the world. Regarding Winter Oilseed rape, the INRA Team in France has transferred the sterility and the restoration to Brassica napus (2), and has been granted the OGU-INRA patent in 1994 (applied in 1990). INRA decided to make its OGU-INRA hybrid seed technology available to different seed producers through non-exclusive patent licenses. The development of 1st OGU –INRA hybrids has been slow down due to the too high glucosinolates content of the first restorers.

In early 1990's, for overcoming the glucosinolates content issues linked with the restorer, a new concept has been developed based on a mechanical mixture of sterile hybrid with line(s) used as pollinators. This type of mixture has been named VA = Varietal Association (VA) or CHL(s) = Composite Hybrid-Line(s) or CHH(s) = Composite Hybrid-Hybrid(s). Due to the necessity to have favorable conditions at flowering time, their development has been restricted to few areas (mainly France) (3). Today those mixtures have been abandoned.

The 1st fully restored Winter OSR OGU Hybrids have been released in 1997/98.

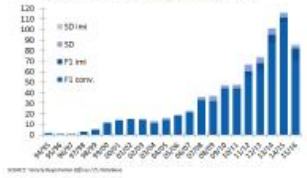
In the early 1980's, a new GMS (genetic male sterility) system has been developed by NPZ-Lembke from a number of sterile single plants selected in the nurseries (4). This system has been named MSL (Male Sterility Lembke). This system allowed to develop MSL-motherlines, both in winter and spring germplasm, to combine with conventional fertile lines used as restorer lines. The 1st MSL F1-hybrid of spring oilseed rape (Orakel) has been listed in Denmark in December 1995, a few days before the 1st MSL F1-hybrids of winter oilseed rape (Joker & Pronto in Germany, and Kasimir in Sweden). There were the 1st fully restored hybrids available on the market. This MSL system hasn't been patented.

Some other systems have been tried:
The self-incompatibility (SI) system has been also used. But due to the difficulty to maintain SI parental lines, this system delivered only few commercial winter OSR hybrids in the mid 90's.
The first restored spring OSR hybrid registered in Europe was using the Polima system (Hybridol in 1994), but due to the lack of stability and maintainers in winter type, the use of this system has been limited to few hybrids. But Polima system is still the most widely used in China.
The Seedlink system developed in Belgium by Plant Genetic Systems (now Bayer Crop Sciences) through biotechnology couldn't be developed in Europe due to GMO restrictions. This system has been very successful in Canada.

Thanks to the use of the OGU-INRA and MSL systems in winter oilseed rape, the breeding companies have been able to develop a strong pipeline of elite performing hybrids adapted to the different environments in Europe. Restored hybrids have proved over years and over different abiotic stresses to be more reliable than open pollinated lines in delivering high and consistent performance on farmer's fields.
The use of hybrids seeds has been a key factor in the development of Winter OSR in new countries as Romania, Bulgaria and Ukraine.

Today, the F1-hybrids are representing 90% of the total Winter OSR Certified Seeds market in EU28.

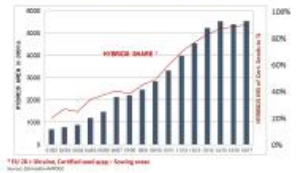
F1-Winter OSR Hybrid variety registrations in EU28



WINTER RAPESEED AREA in EU28

Harvested Areas in ,000 ha

WOSR EUROPE HYBRIDS AREA DEVELOPMENT



	Winter OSR / Canola: Milestones
1993	*1st VA OGU = SYNERGY (Inra/Serasem) - Derogation after 1st Year*
1994	1st **VA OGU**= **SYNERGY** (Inra/Serasem)in FR: 03.08.94
1995	1st **MSL** = **JOKER**, **PRONTO** in DE + **KASIMIR** in SE (NPZ)
1996	
1997	1st **OGU** = **ELITE** in IT (Euralis)
1997	1st **SI** = **BRUNO** in DK (DLF) in DK
1998	
1999	1st **Semi-Dwarf OGU** = **LUTIN** (Inra/Serasem) in FR
1999	1st **MSL Clubroot** = **MENDEL** in UK (NPZ)
2000	
2001	
2002	1st **OGU HEAR** = **ROSSINI** (EUR) in IT (high GLS)
2003	
2004	
2005	1st **MSL HEAR** = **MARCANT** (NPZ) in UK (low GLS)
2005	1st **OGU Rlm7** = **EXAGONE** (MTO) & **EXOCET** (DSV/MTO) in FR
2006	
2007	
2008	1st **Semi-Dwarf MSL** = **FACILE** (NPZ/Serasem) in FR
2009	
2010	1st **OGU IMI** + 1st **SD IMI** = **PT200CL** + **PX100CL** (PIO) in UK
2010	1st **OGU HOLL** = **V208OL** & **V296OL** (DSV/MTO) in DK
2011	1st **MSL IMI** = **CLIFTON, SUNSET** (NPZ) in UK
2012	
2013	1st **MSL HOLL** = **V292OL** (DSV/MTO) in DK
2014	
2015	1st **OGU TuYV** = **ALLISON** (LIM) in AT
2016	

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THANK YOU FOR YOUR ATTENTION...
...FOR YOUR SUPPORT & PARTICIPATION !
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