

Agroscope Breeds New Varieties of Forage Crops

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Agroscope breeds forage crops for grassland-based animal production. Ecotypes from Swiss permanent meadows and pastures form the base material for new varieties. The use of native plant populations enables us to develop varieties that are very well adapted to soil, climate and management conditions in Switzerland. We also aim to breed highly competitive perennial forage plants that are resistant to major diseases and provide high-quality roughage. In this way, Swiss farmers obtain the most productive varieties of grasses and clovers for cultivation in temporary grass clover mixtures. Our breeding programme covers eleven different grass species and four clover species.

How We Create New Varieties

Base Material

The most important base material consists of ecotypes from Swiss permanent meadows, as well as crosses with more-advanced breeding material and recommended varieties.

Selecting the Best Plants

In the breeding nurseries, we select plants with the desired traits, placing particular emphasis on disease resistance, forage quality and persistence. Mutual pollination occurs among the selected plants under controlled conditions, either in pair crosses or in the field. This allows for the enrichment of positive traits in a plant population over several generations.

Variety Synthesis

If the performance level of a population is adequate, a new variety will be developed. The first generation (Syn-1) of the seed of a variety is produced via open pollination among selected elite plants, either directly in the breeding nurseries (red clover) or after cloning in a polycross (grasses). This seed is then sown and tested in separate rows for each mother plant. Here, we choose the most productive and compatible progenies, and allow these to open-pollinate in isolation. The harvested seed forms the basis for a new breeding line.



Red-clover plants: The best plants are selected in the plant-breeding nurseries.



Italian ryegrass: Row sowings yield the basic seed for new varieties



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Testing

The performance of the new breeding lines is tested in three-year plot trials on several sites. Among other traits, we measure yield and forage quality, and monitor disease resistance and persistence. Further specific traits of the breeding lines are tested on two sites (one of them a high-altitude site). In the official variety trials, our best breeding lines are then compared with existing varieties and foreign breeding lines.



Cultivating new variety candidates in plot trials with yield surveys.



The seed of new varieties is multiplied over four generations.

Seed Production

In several multiplication steps, a few grams is turned into dozens of tonnes of seed. This is the responsibility of the breeder and the company representing the variety. The Federal Office for Agriculture (FOAG) has concluded a contract for Agroscope with Delley Seeds and Plants Ltd. (DSP) for the exclusive worldwide representation of our varieties. With seed producers in Switzerland and abroad, there are cultivation contracts for the production of commercial seed, which can then be purchased by the farmers.

Varieties for Organic Farming

Sine 2004, Agroscope has conducted a special breeding programme for organic farming. The choice of the components of a new variety (row sowings) and the testing of the breeding lines take place on fields managed according to organic-farming guidelines. This ensures that only those plants and breeding lines that are ideally adapted to organic-farming conditions prevail. Organic farming needs varieties that are largely unsusceptible to disease, strongly competitive against weeds, and which generate high yields, even with low nitrogen inputs. Of course, seeds of the most suitable varieties are then also multiplied under organic conditions.

Our Varieties of Forage Plants

Ploidy	Early-ness	Active cultivars	First Listing	Ploidy	Early-ness	Active cultivars	First Listing	Ploidy	Early-ness	Active cultivars	First Listing	
Red Clover				Italian Ryegrass				Perennial Ryegrass				
2x	2	FORMICA	1993	2x	4	ORYX	2000	2x	<1	AROLUS	2007	
	2	MILVUS	1993		5	TIGRIS	2003		<1	ARARA	2007	
	4	CORVUS	1995		5	CARIBU	2004	1	1	MARAVA	2015	
	3	PAVO	2002		4	MUSTELA	2006	4x	2	LACERTA	1996	
	2	MERULA	2002		5	PORTAX	2009		<1	ARVICOLA	1996	
	2	DAFILA	2008		3	RABIOSA	2015		4	ALLIGATOR	2001	
	3	LESTRIS	2009		5	XANTHIA	2016		1	SALAMANDRA	2001	
	3	PASTOR	2010	4x	4	LIPURUS	1995		<1	ARTESIA	2006	
	3	MONACO	2012		4	ALCES	2000		5	SORAYA	2011	
	3	COLUMBA	2016		5	ZEBU	2000		<1	ALGIRA	2013	
	3	MILONIA	2016		5	TARANDUS	2000		5	ALLODIA	2013	
	3	SEMPERINA	2016		3	MORUNGA	2008		<1	ARCTURUS	2013	
4x	2	LARUS	1998		3	ZEBRA	2010		3	SALMO	2013	
	3	ASTUR	1998		4	MIDAS	2010		5	VIDALIA	2013	
	3	ELANUS	2005		5	NUMIDA	2016		<1	ARTONIS	2017	
	2	FREGATA	2008						5	SORONIA	2017	
	4	CARBO	2009	Hybrid Ryegrass				Meadow Fescue				
	3	PAVONA	2016	2x IR	5	LEMUR	2003	2x	4	PREVAL	1993	
	3	FORELIA	2016	2x ER	3	SABELLA	2009		6	PRADEL	1998	
White Clover				4x IR/ER	3	DORCAS	1995		5	PARDUS	2006	
	7	APIS	2000	IR/ER	2	ANTILOPE	1995		5	PARADISIA	2007	
	7	BOMBUS	2000	IR	3	IBEX	2000		4	PETRARCA	2008	
	7	FIONA	2007	IR/ER	2	RUSA	2000		3	PRAXILLA	2010	
	7	MUNIDA	2014	IR/ER	1	MARMOTA	2005		4	PRANIZA	2011	
Sainfoin				IR/ER	3	LEONIS	2005		4x	6	TETRAx	2013
	3	PERLY	1992	IR/ER	3	OCADIA	2009					
	5	PERDIX	2011	ER	2	PALMATA	2010		Tall Fescue			
				IR/ER	3	DABOYA	2010		6	BELFINE	2000	
				ER	1	SOREX	2010		7	MOLVA	2003	
				IR/ER	2	BOBAK	2016		7	DAUPHINE	2005	
				ER	1	PALIO	2016		4	OTARIA	2009	
				ER	1	PERENEIA	2017					

Further species in the programme

Kentucky Bluegrass (SEPIA, SELISTA)	Festulolium (FELOVIA)
Cocksfoot (REDA, PRATO, BELUGA, DICEROS, VORMELA)	Crested Dogstail (CRESTA)
Meadow Foxtail (VULPERA, ALOPEX)	Red Fescue
Westerwoolths (annual) Ryegrass (DAXUS)	Birdsfoot Trefoil

Masthead

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