



# GENETIC VARIABILITY FOR AGRONOMIC TRAITS AMONG SOME LATVIAN LANDRACES OF REED CANARYGRASS (*Phalaris arundinacea* L.)

**Biruta Jansone, Sarmite Rancane, Vija Stesele, Peteris Berzins**  
 LUA Research Institute of Agriculture  
 Zemkopibas instituts 7, Skriveri, Skriveru region, Latvia, LV-5125  
 e-mail: sarmite.rancane@inbox.lv



## Introduction

Forage grasses in Latvia are the most important plants in the fields, as well as widely spread in natural habitats. In recent years, perennial grasses are focusing not only as a forage crop, but also as the energy crop. One of them is reed canarygrass- a cold climate grass occurring widely all over the temperate climate areas of the world.

Scientific expeditions have been organized in all regions of Latvia with the aim to gather material and information about biodiversity of perennial grasses in the wild. Several natural populations of reed canarygrass have been collected in variegated soil and climate conditions in order to test and evaluate the wild material in the field experiments.

Versatile valuation of the growth intensity allows to select the best samples, which are characterized by a rapid re-growth in spring and after mowing. They are: 'Brigena', 'Pape' and 'Suse'. Longer and hence potentially most productive were accessions: 'Pape', 'Brigena' and 'Krust k' (Table 1). Data analysis shows that inflorescences emergence intensity have negative correlation with stem length (-0.75), but positive correlation is between regrowth intensity and leaf colour (0.78) and regrowth intensity and length of stem (0.77) as well. Reed canarygrass populations collected in the natural environment proved to be resistant to a number of grass-specific diseases, including leaf mottling (*Drechslera dictyoides*) and various rust (*Puccinia*) species.

Table 1. The evaluation of *Phalaris arundinacea* L. wild accessions (2005-2008)

Accession	Winter hardiness *	Regrowth at the spring	Heading date	Plant height at flowering, cm	Total culm number **	Diseases persistence ***
Lub K	2	3	18.06	135	4	2
Osupe	3	2	20.06	119	4	1
Zvid	2	3	18.06	148	5	1
Meir K	3	4	18.06	117	4	2
Krust K	3	5	10.06	158	3	1
Brigena	2	8	07.06	160	7	1
Varkava	4	3	18.06	120	3	3
Suse	5	7	08.06	131	5	3
Eglaine	3	6	10.06	152	5	3
Pape	4	8	07.06	167	6	2
<b>LSD<sub>0.05</sub></b>	<b>0.6</b>	<b>2.0</b>		<b>15.7</b>	<b>0.5</b>	<b>1.6</b>

\*1- without damages; 9- perished \*\* 1- few; 9- very much \*\*\* 1- neatly; 9- damaged

## Conclusions

A combined tests of variance among the accessions showed significant variations in winter hardiness, regrowth intensity, total culm number, inflorescences emergence intensity.

Wild populations 'Brigena' and 'Pape' are characterized by a number of valuable economic and biological properties.



Fig.1. The gathering of grasses seeds during scientific expedition

## Materials and methods

During year 2005- 2008 field trials were established to evaluate 10 wild accessions of reed canarygrass.

The trials for testing samples were arranged in the field with top soil 25-30 cm, organic content 1.9 %, pHKCl 5.6, K<sub>2</sub>O 78 mg kg<sup>-1</sup>, P<sub>2</sub>O<sub>5</sub> 168 mg kg<sup>-1</sup>. The experiment was comprised of randomized complete block design with 3 replications, size of plot was 1.2 m<sup>2</sup>. In the sowing year tendency to develop generative browse and diseases resistance before wintering was estimated. In the 1st year of use winter damages, regrowth intensity and various phenological observations were evaluated after 9-point scale.



Fig.2. Collected wild grasses in the field trials



Fig.3. Reed canarygrass 'Brigena'

## Results and discussion

During study years (2005 - 2008) the climatic conditions in Latvia were different in the vegetation period and in winter time as well. This allowed to multi-examine the wild samples and to choose the most suitable for future breeding work. Assessment results indicate that Latvian wild samples from different geographical locations are rather winter hardiness.

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