PERFORMANCE OF BLUE LUPIN (*Lupinus angustifolius* L.) CULTIVARS ON A PSEUDOGLEY SOIL IN SERBIA

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Introduction: importance

- Narrow-leafed lupin (*Lupinus angustifolius* L.)

- One of the economically most important grain legume species in many regions of the world

- Used as a forage crop and green manure in ancient times, while its cultivation as a grain legume is more recent

- The cultivars with low alkaloid content, called *sweet lupins*, became widely distributed in the countries such as Australia, South Africa, Chile and Poland

Introduction: breeding

- Similarly to other lupin species, narrow leafed lupin is regarded as not tolerant to alkaline soils with high pH values of more than 7.4 and with large amounts of calcium, mainly due to lack of the availability of micronutrients, especially iron

- One of the strategic goals of modern blue lupin breeding programmes is the improvement of tolerance to high pH values of diverse soil types and thus the increase of its growing area

- Blue lupin breeding programme in the Saatzucht Steinach GmbH in Bornhof, Germany, is aimed at both increasing grain yield and improving the tolerance to abiotic and biotic stress

Introduction: in Serbia

- So far, blue and other lupins were unknown in Serbia, with no official data on its growing area or production

- A recently established breeding programme on white and blue lupins in the Institute of Field and Vegetable Crops in Novi Sad obtained good preliminary results on the introduction of these two species in the country

- Progress was achieved in the testing white lupin on Serbian chernozem soils and the development of its first Serbian cultivars tolerant to high alkaline soil reaction

Introduction: aim

- To assess the possibility of growing narrow leafed lupin on acid soils in Serbia

- To determine the potential of advanced narrow leafed lupin cultivars for grain yield when cultivated in such conditions

Materials and methods: when, where and what with

- 2006 and 2007

- Experiment Field of the Dr. Đorđe Radić Secondary School of Agriculture in Kraljevo

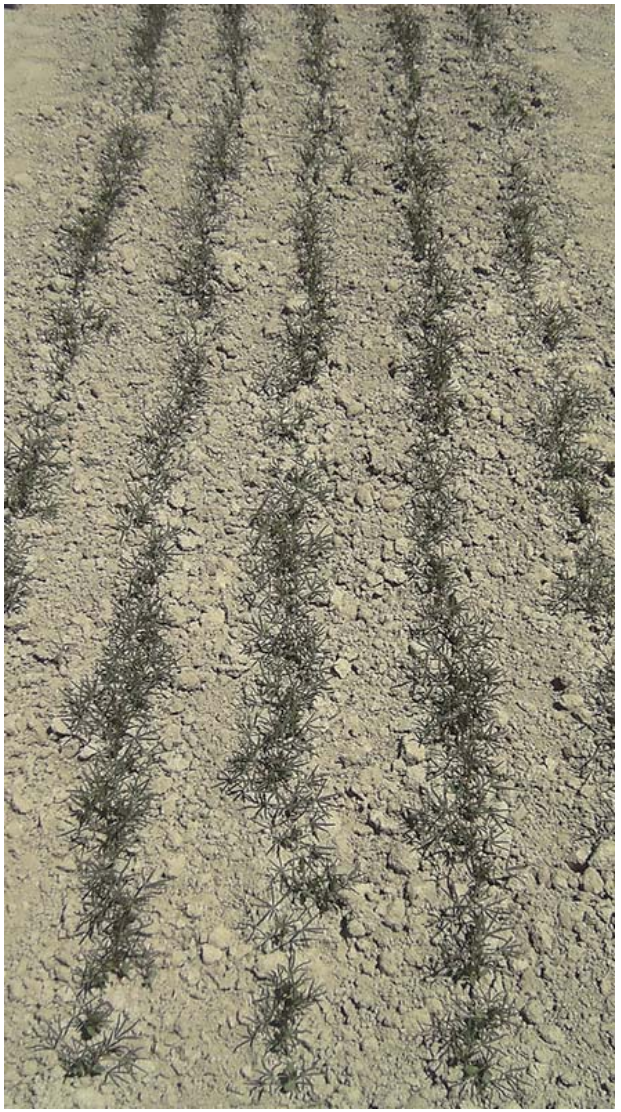
- Six blue lupin cultivars developed in the Saatzucht Steinach GmbH: Boruta, Boltensia, Boregine, Bora, Borlu and Bolivio

Materials and methods: how

- Sown by hand on April 21 in 2006 and on April 2 in 2007

- A plot size of 5 m^2 and a crop density of about 100 viable seeds m^{-2}

- Harvested in the stage of full maturity on July 26 in 2006 and on July 10 in 2007



Materials and methods: climate

Average monthly temperature (°C)						
Year	Month	April	May	June	July	Average
2006		13	16	20	22	18
2007		12	18	22	24	19
Monthly precipitation sum (mm)						
Year	Month	April	May	June	July	Sum
2006		81	33	132	24	270
2007		16	128	28	20	192

Materials and methods: soil

pH (H_2O)	N (%)	P_2O_5 (mg 100^{-1} g^{-1})	K_2O (mg 100^{-1} g^{-1})	$CaCO_3$ (%)	Humus (%)
4,79	0,13	7,20	11,00	0,00	2,56

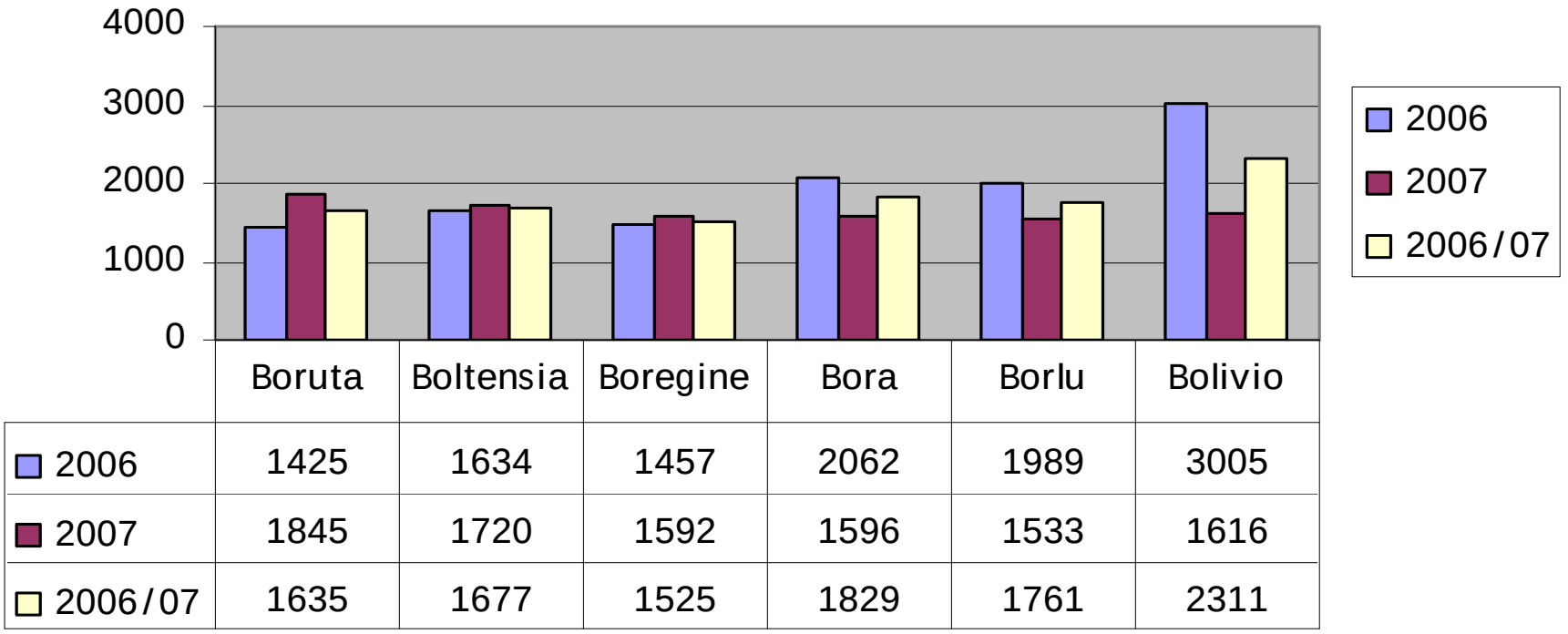
Materials and methods: what for

- plant height (cm),
- number of pods (plant^{-1})
- number of grains (plant^{-1})
- thousand grains mass (g)
- grain yield per are unit (kg ha^{-1})

Results and discussion: grain yield components

Cultivar	Plant height (cm)	Number of pods (plant^{-1})	Number of grains (plant^{-1})	Thousand grains mass (g)
Boruta	46	3.7	13.3	155
Boltensia	57	5.0	14.0	191
Boregine	49	4.8	11.5	139
Bora	49	4.5	13.3	154
Borlu	52	5.2	13.5	177
Bolivio	54	6.8	20.7	153
$LSD_{0.05}$	5	1.6	4.5	51
$LSD_{0.01}$	8	2.1	6.2	74

Results and discussion: grain yield values



	Boruta	Boltensia	Boregine	Bora	Borlu	Bolivio
2006	1425	1634	1457	2062	1989	3005
2007	1845	1720	1592	1596	1533	1616
2006/07	1635	1677	1525	1829	1761	2311

Conclusions

- Promising two-year results of grain production on acid soils, dominant in many of the central parts of Serbia

- For the future: a more detailed study of grain yield components, the improvement of its agronomy, the evaluation of its utilisation as forage or green manure crop and the testing of promising genotypes in diverse locations

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