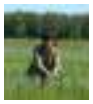
Mixtures of varieties of spring cereals for weed suppression in organic crop production



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Introduction

Crop species have different competitive abilities against weeds but also crop varieties vary in their suppression of weeds. The research-network PRODIVA* focuses on crop diversification as a measure to manage weeds in organic farming.

Materials and Methods

Sixteen barley and nine oat varieties, based on available knowledge of breeders and scientists, were selected and sown as a sole crop and in mixtures in Denmark, Latvia and Poland. The selection was mainly based on the height of varieties, earliness, prostrate habit of varieties, but also their popularity and suitability for cultivation in a given region of the country and the yield potential were taken into account.

The experimental genotypes were grown in four replications with a plot size of 9 x 1.2 m^2 in Latvia, 11 x 1.5 m^2 in Poland and 10 x 2.5 m^2 in Danmark

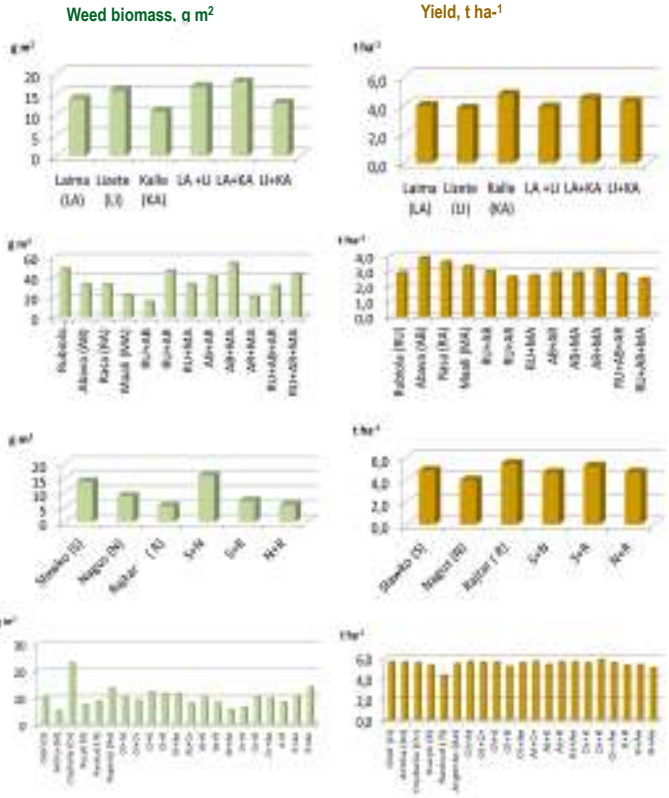
Varieties

Spring barley	Characteristics
Rubiola	Medium height
Abava	Medium height
Rasa	Medium height
Maali	Medium height
Olof	Medium height
Atrika	Medium height
Orphelia	Low height
Kucyk	Medium height
Raskud	Medium height
Argento	Low height
Evergreen	Medium height
Fairytale	Tall
KWS Irina	Tall
Quench	Medium height,
Dragoon	Low, height
Scholar	Low height

Oat	Characteristics
Laima	Medium height
Lizete	Tall
Kalle	Tall
Sławko	Tall
Nagus	Tall
Rajtar	Medium height
Poseidon	Medium height
Dominik	Low height
Symphony	Tall

Results and Discussion

Many studies have illustrated the variation in competitive ability between cultivars[1]. Variety mixtures can improve the competitive ability of both barley and oat as compared to the growing of a single variety[2].



Conclusions

Variety mixtures can improve the competitive ability of both barley and oat as compared to the growing of a single variety. Some of the tested varieties (barley 'Abava', 'Maali', 'Artika', oat- 'Kalle' and 'Rajtar') were particular suppressive when combined in blends.

References:

1) Andrew, I.K.S. , Storkey, J., Sparkes, D.L. (2015). A **review of potential for competitive cereal cultivars as a tool in integrated weed management** *Weed research, 55*, 239-248.
2) Piliksere D., Legzdiņa L., Zariņa L. Zute S. 2014. **Environmentally friendly weed management strategies: selection of competitive crop variety.** NJF Seminar 471"Recent advances in IWM of perennial and annual weeds, with a special emphasis on the role of crop-weed interactions", Uppsala, Sweden, 27-29 January 2014, NJF Report, Vol 10, No 1, Year 2014, 20-23.

Experimental field in Denmark

Experimental field in Poland

Experimental field in Latvia

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