



Sveriges lantbruksuniversitet
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Yield stability in varietal mixtures of faba bean, *Vicia faba*

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Research question

Can co-cultivation of different varieties improve yield stability under unpredictable cropping conditions without compromising product quality?

Hypoteses

- 1) Increased within-species diversity (varietal mixtures) leads to reduced variations in yield and nitrogen fixation.
- 2) Pathogens and pests are reduced in varietal mixtures.
- 3) Varietal mixtures have higher variations in product quality than pure single varieties.



Field experiments

- Three sites (★), two years (2011, 2012)

Alnarp, Skåne

Lanna, Västergötland

Klostergården, Östergötland

- Three faba bean varieties

- Alexia, Gloria, Julia

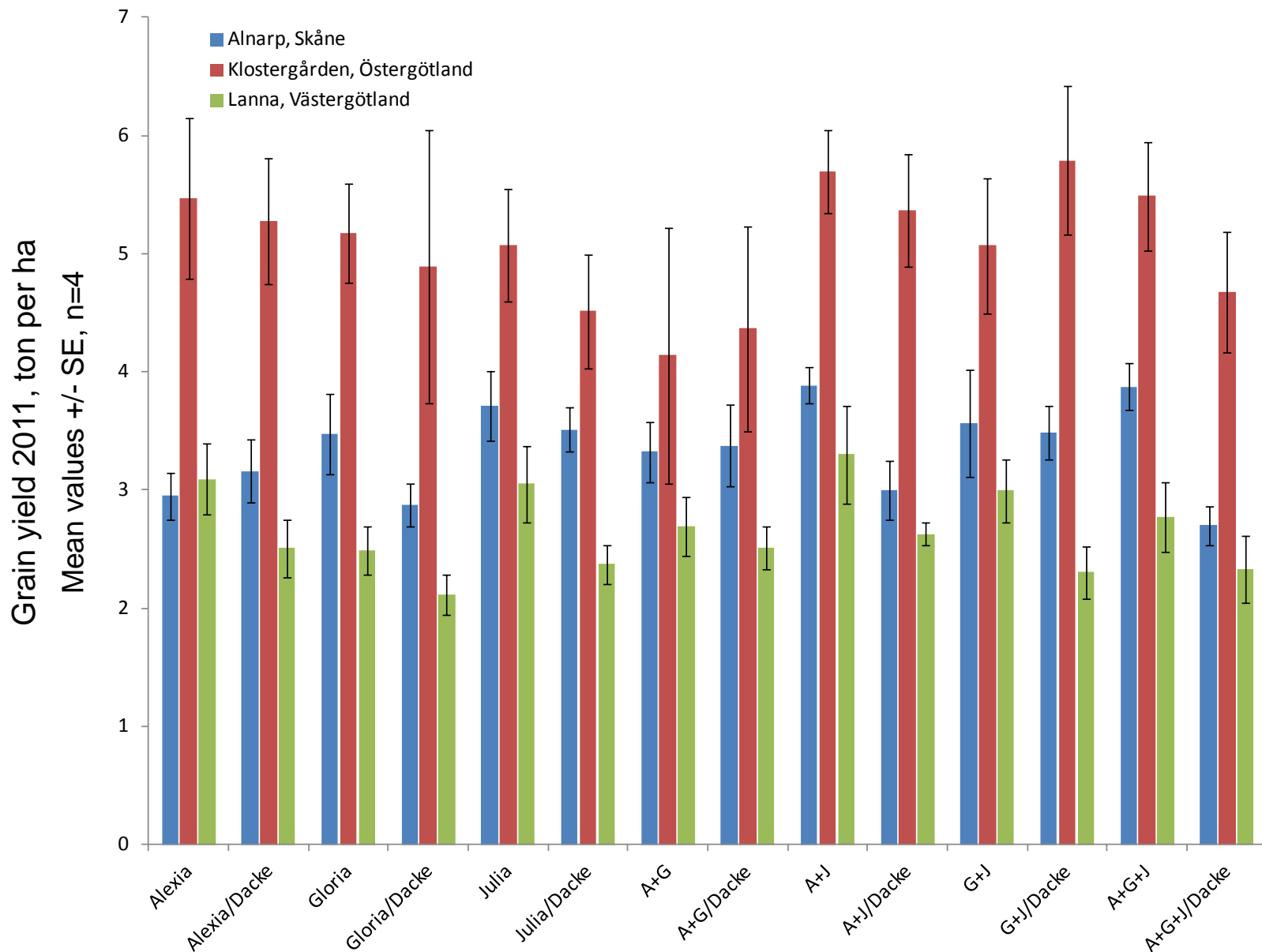
- With and without spring wheat intercropping - Dacke

- Yield and nitrogen fixation
- Grading of chocolate spot disease
- Product quality

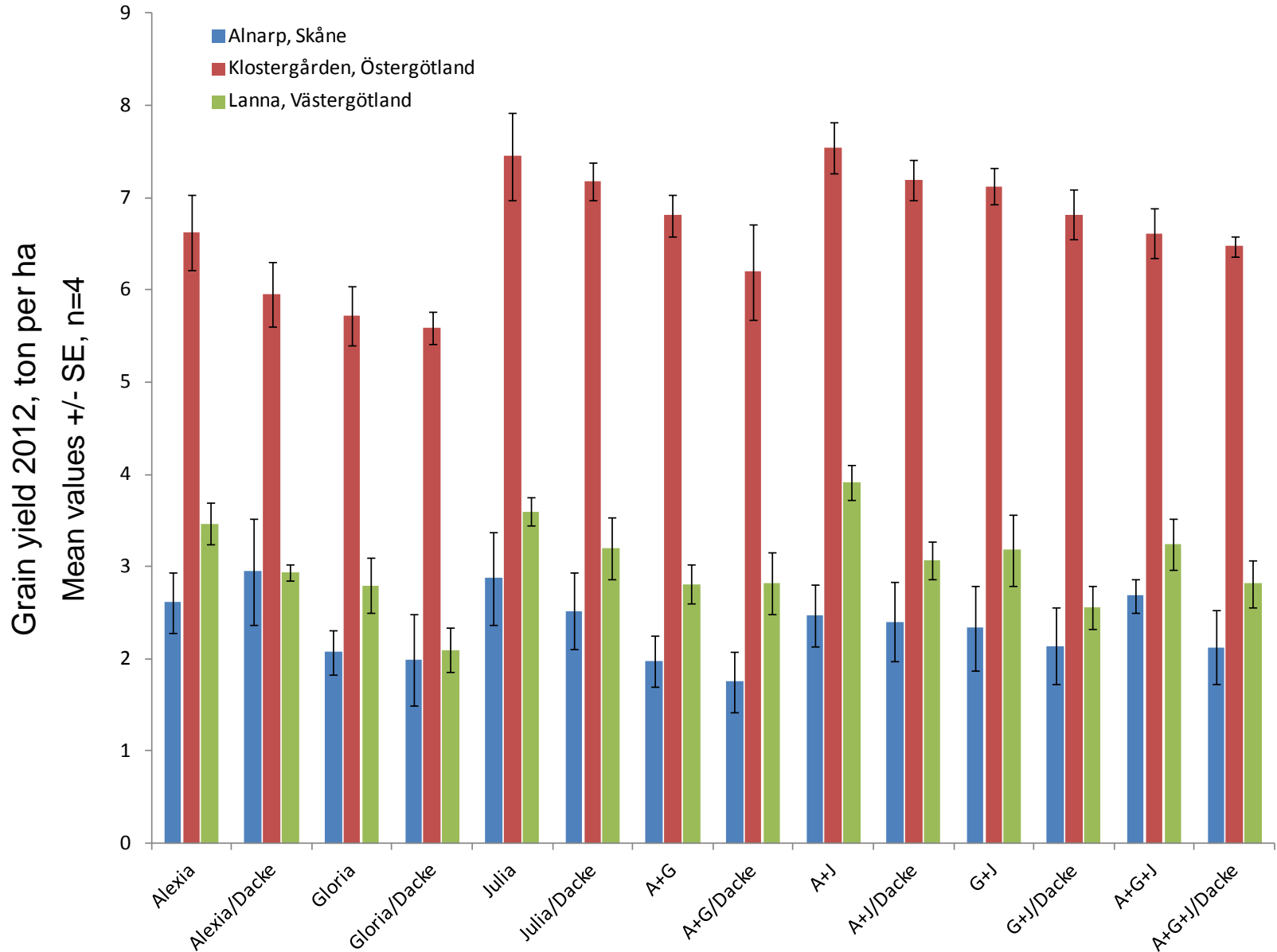
→ Potential benefits from increased within-species diversity



Yield 2011



Yield 2012



Chocolate spot disease 2011, visual grading

Varietal Composition	Alnarp					Klostergården					Lanna				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
A	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
A / D	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
G	↑	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	→	→
G / V	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
J	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
J / V	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
A+G	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
A+G / D	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
A+J	↓	↑	↑	↓	↓	↓	↑	↓	→	→	↓	→	↑	↓	↑
A+J / D	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	→
G+J	↓	↓	↓	↓	↓	→	↓	→	↓	↓	→	↓	↓	↓	↓
G+J / D	↑	↓	↓	↓	↓	↓	↓	↓	↓	→	↓	↓	↓	↓	↓
A+G+J	↓	↑	↓	↓	↓	→	→	→	→	↑	↓	↓	↓	↓	↓
A+G+J / D	↓	↓	↓	↓	↓	→	→	→	↑	↓	↑	↑	↓	↑	↑

Chocolate spot disease 2011, visual grading

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A / D	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
G	↑	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	→	→
G / V	↑	↑	↓	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
J	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
J / V	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
A+G	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
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G+J / D	↑	↓	↓	↓	↓	↓	↓	↓	↓	→	↓	↓	↓	↓	↓
A+G+J	↓	↑	↓	↓	↓	→	→	→	→	↑	↓	↓	↓	↓	↓
A+G+J / D	↓	↓	↓	↓	↓	→	→	→	↑	↓	↑	↑	↓	↑	↑

Chocolate spot disease 2011, visual grading

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A+G+J	↓	↑	↓	↓	↓	→	→	→	→	↑	↓	↓	↓	↓	↓
A+G+J/D	↓	↓	↓	↓	↓	→	→	→	↑	↓	↑	↑	↓	↑	↑

Chocolate spot disease 2011, visual grading

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J	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
J / V	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
A+G	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
A+G / D	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑
A+J	↓	↑	↑	↓	↓	↓	↑	↓	→	→	↓	→	↑	↓	↑
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G+J / D	↑	↓	↓	↓	↓	↓	↓	↓	↓	→	↓	↓	↓	↓	↓
A+G+J	↓	↑	↓	↓	↓	→	→	→	→	↑	↓	↓	↓	↓	↓
A+G+J / D	↓	↓	↓	↓	↓	→	→	→	↑	↓	↑	↑	↓	↑	↑

Conclusions

Yield levels in varietal mixtures as high as in pure single varieties.

Reduced occurrence of chocolate spot disease in varietal mixtures.



Thank you!

