



Genotype and environment interaction on field pea cultivars in organic cropping system



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Implications

Species diversity and the selection of appropriate cultivars are important factors for the stability of agricultural systems, especially in organic farming. When growing legumes as the field pea in mixture with cereals, choosing the appropriate pea genotype can enhance stable yields through environment changes.

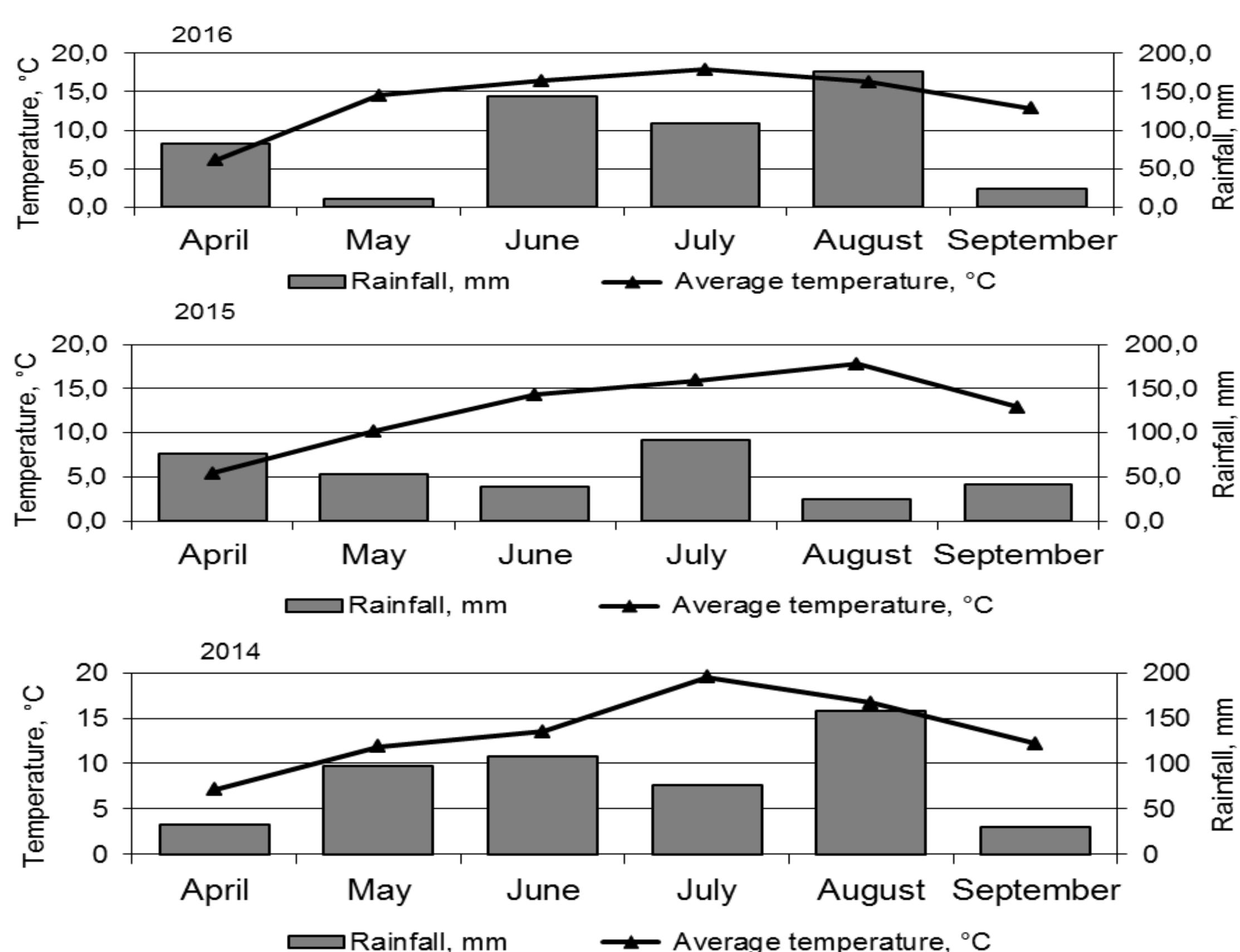
Background and objectives

This work was done in the frame of EU FP7 project EUROLEGUME (Enhancing of legumes growing in Europe through sustainable protein supply for food and feed). The objective of this study was to contribute to improvement of sustainability of field pea crops in terms of yield parameters through efficient cultivation systems. As sub-objective was to introduce the new genotypes in local cropping systems.

How work was carried out?

Cv 'Bruno' and cv 'Kirke' were sown alone and in mixtures with oat 'Laima', spring barley 'Rubiola' and spring wheat 'Uffo'. Pea crops were evaluated on plant morphology (beginning of emergence, flowering initiation, duration of growing period, plant height at biological maturity, pods per plant at biological maturity, and harvesting date), grain yield potential (seed yield, number and weight of pods and grains per m²), resistance to local diseases and pests.

Climate conditions



References:

1) Lauk, R., Lauk, E. (2007). Pea-oat intercrops are superior to pea-wheat and pea-barley intercrops. *Acta Agricultura Scandinavica*, Section B- Soil & Plant SCIENCE, V.58, 2008, Issue 2, 139-144.



cv 'Bruno'



cv 'Kirke'



cv 'Rubiola'



cv 'Uffo'

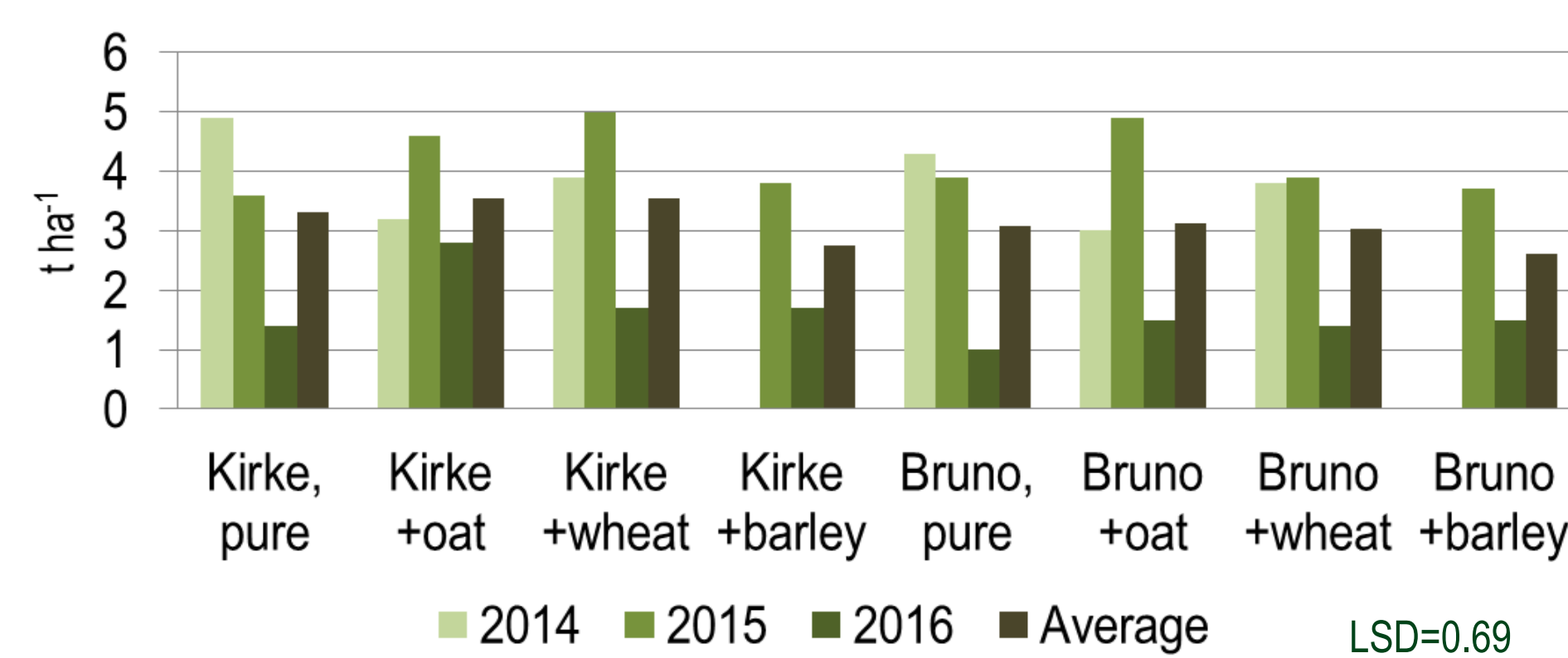


cv 'Laima'

Key results and discussion

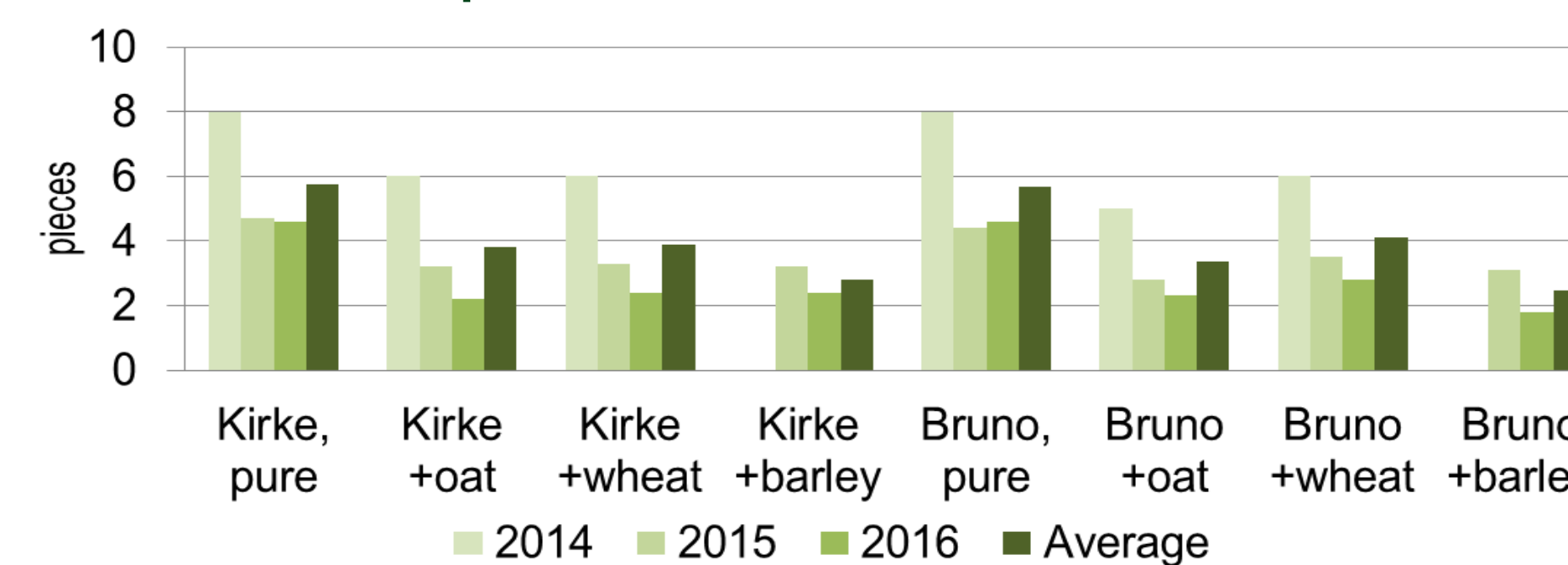
For both genotypes cv 'Kirke' and cv 'Bruno' mean yields were higher in pure sowings compared to the yield levels in mixtures with cereals oat, barley or wheat. However, among the mixtures highest yield was obtained when the field pea was sown with wheat. About pea-cereal mixtures advantage over cereal sole crop informing also other authors (1), however, regarding species compability results differs.

Yield, t ha⁻¹



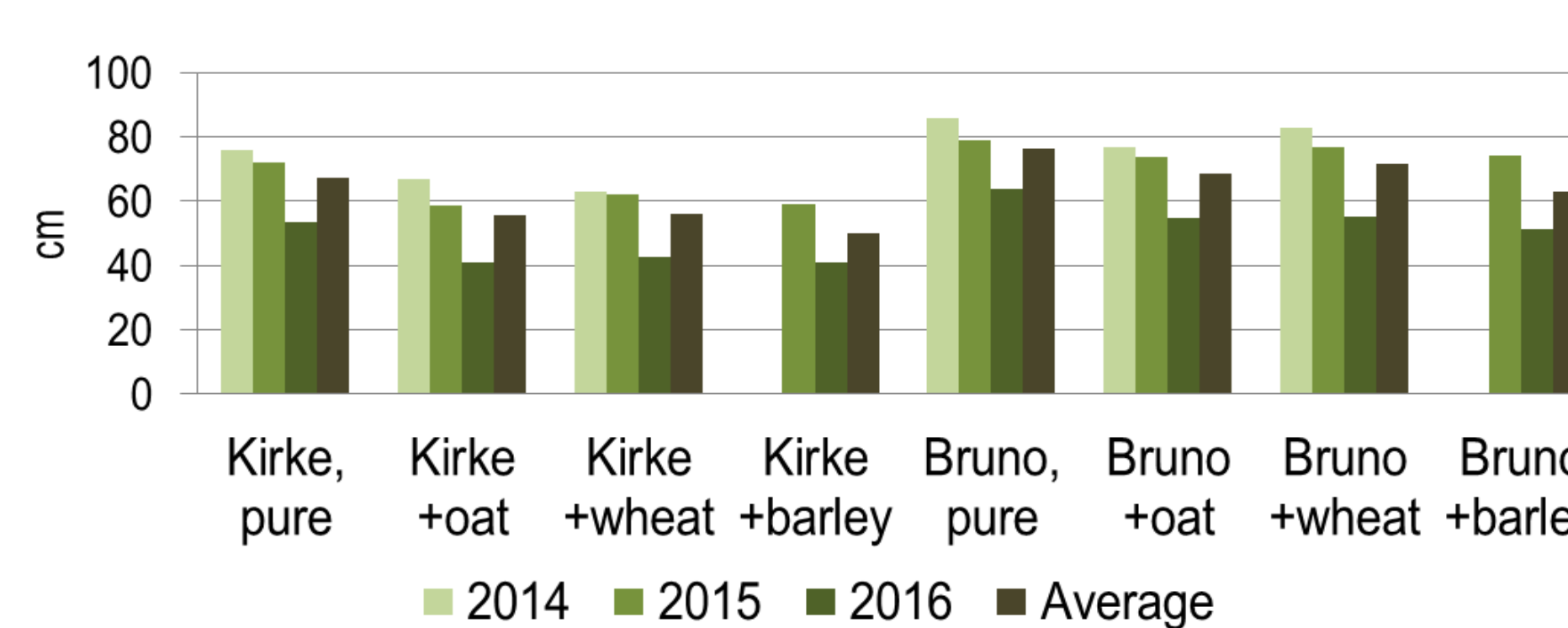
Pea-barley

Amount of pods



Pea-wheat

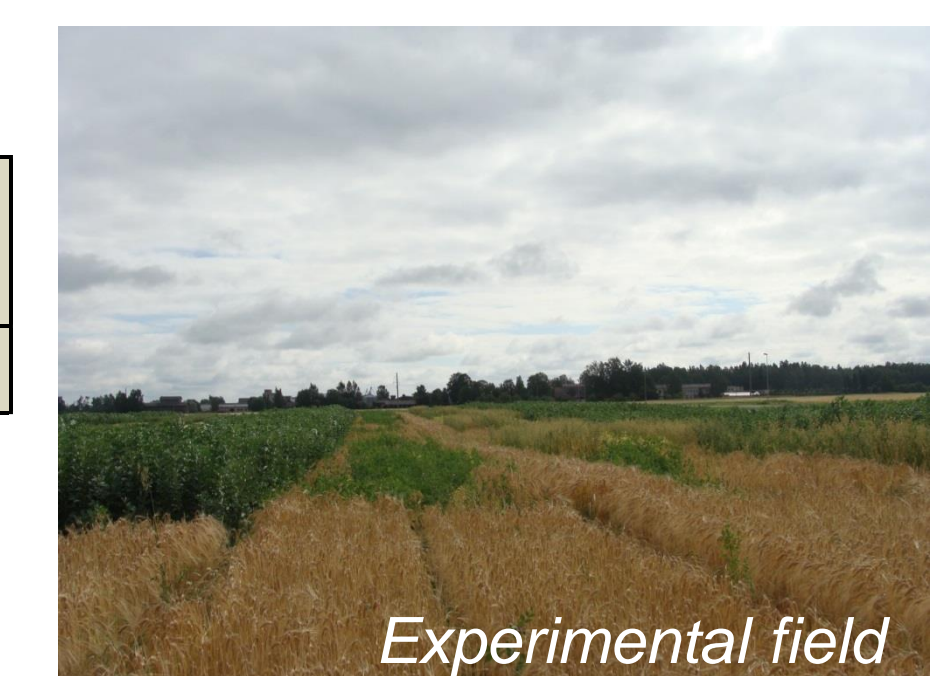
Plant high, in the beginning of maturity



Pea-oat

Pea and bean weevil (*Sitona lineatus*) 2016: 1- without damages, 9- hard damages

Genotype	Kirke pure	Kirke +oat	Kirke +wheat	Kirke +barley	Bruno pure	Bruno +oat	Bruno +wheat	Bruno +barley
Damage level	9	8	8	9	9	7	8	8



Experimental field

Conclusions

For both genotypes cv 'Kirke' and cv 'Bruno' higher mean yield provides pure sowings compared to the yield levels in mixtures with cereals oat, barley or wheat. However, among the mixtures highest yield was obtained when the field pea was sown with wheat.

Cv 'Kirke' indicating to be more adapted to changing climate conditions than cv 'Bruno'.