Effects of contrasting genotypes, legume intercrops and fertiliser input types on performance of oat in organic farming

Radek Vavera, Martin Káš, Martina Eiseltová and Dagmar Janovská

Oat is classed as minor cereal in Europe as its area of cultivation has declined substantially during the last sixty years, being currently cultivated on 1/10 of the area compared to common wheat. While conventional cereal production is dominated by common wheat and barley, both intensively bred for high yields and dependent on high inputs of fertilisers and pesticides, oats and other minor cereals (rye, spelt, etc.) are better suited for organic and sustainable agriculture. Furthermore, growing consumers’ demands for food products with high nutritional quality have raised demands amongst food manufacturers for raw materials with a high nutritional value including oats.

The aim of our research is to improve the performance of oats (both husked and naked) via legume intercropping and different fertiliser input types. In the field experiment in Prague-Ruzyně, Czech Republic we compared 4 intercrops - no intercrop, forage legume (vetch, clover) and a grain legume (pea) which were undersown (between the rows) into the cereal crop-oat - and 3 fertiliser input types (no input, composted manure and chicken pellets applied at levels equivalent to 100 kg N ha-1). The experiments were performed with two oat varieties Korok (husked) and Saul (naked). Preliminary results (vegetation season of 2016) have shown that the highest yield was obtained for the oat variety Korok (husked) with clover intercrop and 100 kg N/ha applied in the form of chicken pellets (the yield was higher by 19.5 % compared to no intercrop and no fertilizer input). Pea intercrop and no fertiliser input has shown 8 % increase in the Korok variety yield compared to both vetch and clover intercrop under no fertiliser input. No significant difference has been shown in the yields of the variety

Saul (naked oat) between the use of composted manure and no fertiliser input with intercropping legumes (vetch, clover, pea). The obtained data will be discussed in view of weather conditions (rainfall and temperature) of the season 2016. Furthermore, data on chemical composition (total amino acids, fractions of essential amino acids and fibre content) in contrasting oat varieties and different intercropping and fertiliser inputs will be presented.

Key words: intercropping, fertiliser input types, minor cereals, oat, organic farming

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