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## Abstract #W394

**Section:** [Ruminant Nutrition](#)

**Session:** [Ruminant Nutrition: General III](#)

**Format:** [Poster](#)

**Day/Time:** [Wednesday 7:30 AM–9:30 AM](#)

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# W394

**Effect of heat-treated field beans (*Vicia faba*) on lactation performance of dairy cows.**

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In Sweden, the availability of organic protein feeds is rather limited (e.g., lack of soybean) and it was therefore the objective of this study to evaluate if the feeding value of heat-treated field beans (FB) could be improved. Other objective was to compare different protein supplements that could be used in organic farming on the performance of lactating dairy cows fed grass silage based diet. Twenty-four lactating Swedish Red cows (95 DIM, milk yield 29.1 kg per day) were used in a cyclic change-over trial with 3 21-d experimental periods. The control diet consisted of grass silage and barley (60:40, DM basis). For experimental diets barley was replaced with rapeseed expeller (RSE; 104 g/kg diet DM), or isonitrogenous supplements of peas (232), untreated FB (UFB; 140), heat-treated FB (TFB; 140) or heat-treated FB that provided the same dietary MP concentrations of UFB (80; TFB-low). Methane (CH<sub>4</sub>) and carbon dioxide emissions were measured with the GreenFeed system. On average, protein supplementation had no significant effect on DMI (18.8 vs. 18.2 kg/d), milk yield (23.8 vs. 23.5 kg/d) or ECM

yield (25.6 vs. 24.8 kg/d). This was mainly because peas or FB supplemented diets did not increase milk or protein yield compared with the control diet. The RSE treatment increased milk (24.8 vs. 23.6 kg/d) and protein yield (913 vs. 863 g/d) compared with other protein supplements. Heat-treated FB had no effect on DMI, milk or protein yield compared with UFB. Milk nitrogen efficiency (Milk N / N intake) decreased and MUN increased with protein supplementation compared with the control diet (265 vs. 306 g/kg and 3.92 vs. 3.01 mmol/L, respectively). The RSE supplemented diet tended to decrease ( $P = 0.09$ ) CH<sub>4</sub> production compared with other protein supplements (383 vs. 399 g/d). Overall, this study suggests that in organic farming no improvement on the lactation performance of dairy cows were achieved by the inclusion of heat-treated FB or peas as compared with the control diet without any protein supplement, provided that RDP requirements are met. Only RSE supplementation resulted in significant improvements in animal performance compared with the control diet.

**Key Words:** heat treatment, methane production, organic feed

