

Yearling horse growth and development: acceptability and replacement value of field peas for oats

D. G. Landblom, D. K. Olson, K. Ringwall, B. Knudsen, ¹North Dakota State University, Dickinson Research Extension Center, ²Dickinson State University

Forty-eight yearling growing horses (colts: n = 18; fillies: n = 30) averaging 349.9 kg were used in a two year study to evaluate acceptability and replacement value of field peas for oats in an 84d feeding study. Field peas replaced 0, 33.3 and 67.7% of the oats in a complete pelleted supplement that was divided into two feedings and fed twice daily at 8:00 a.m. and 2:00 p.m. Forage was a 15% CP hay pellet [60% alfalfa (*Medicago sativa*) and 40% bromegrass (*Bromus inermis*)]; DE value of 0.477 Mcal/kg. Oat grain (*Avena sativa*) was 13.3% CP with an energy value of 0.658 Mcal/kg. Field peas (*Pisum sativum*) contained 23.0% CP and had an energy value of 0.713 Mcal/kg. Experimental supplement DM, CP, LYS, NEg, ADF and NDF were 86.75%, 19.81%, 0.85%, 0.245 Mcal/kg, 13.74%, 27.18%; 87.55%, 20.8%, 0.84%, 0.256 Mcal/kg, 12.30%, 24.83% and 88.49%, 21.13%, 0.86%, 0.267 Mcal/kg, 10.86%, 22.59% for 0, 33 and 67.7% field pea, respectively. Average 84d hay cube consumption was 5.23, 5.44 and 5.09 kg/d and experimental supplement consumption was 3.26, 3.05 and 2.86 kg/d for 0, 33.3 and 67.7% field pea replacement, respectively. Horses readily consumed all experimental pea replacement supplements without noticeable signs of digestive disorder. Growth measurements included body weight change and physical measurements for body length, hip and wither height, heart girth, forearm, cannon bone and gaskin muscle circumferences. Treatment means did not differ for final weight (P=.395), ADG (P=.419), body length (P=.392), hip height (P=.536), wither height (P=.584) heart girth (P=.414), forearm circ. (P=.648), cannon bone circ. (P=.255) and gaskin muscle (P=.633). There was a significant linear growth effect for body length (P<.01), hip height (P<.01), forearm (P<.01), and gaskin muscle (P<.01). A quadratic effect was identified for wither height (P<.01) and girth (P<.01), and a treatment x time interaction was identified for cannon bone (P<.05). Results of this experiment suggest that the yearling growing horse will readily consume field peas and that field peas can replace up to 67.7% of the oats in yearling growing horse supplements without creating digestive upset or giving rise to abnormal hoof development. When compared to an all oat supplement, feeding a 67.7% field pea formulation yielded similar growth response with 12.4% less daily supplement per horse.

Key Words: Equine, Yearling Development, Field Peas

The full paper was published in the Midwest Section, American Society of Animal Science Vol. 83.