

GROWTH AND DEVELOPMENT OF WEANLING HORSES
FED VARYING ENERGY AND PROTEIN LEVELS

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In order to compete in today's horse industry, horsemen are placing increasing demands on young horses by attempting to grow larger foals at earlier ages, although little research has been done on the effects of maximum growth rates on bone development and the subsequent soundness of these horses. While protein requirements have been extensively studied, little work has been done with protein to energy relationships necessary for maximum, sound development of young horses.

A trial is underway comparing the performance of weanling horses fed two corn based diets and one oat based diet. The two corn diets are identical in energy content, but contain different levels of crude protein. The protein to calorie ratios (grams protein/million calories) are 52 and 42 respectively. While the oat diet is lower in energy, it still maintains a protein to calorie ratio of 52. In addition, high quality alfalfa hay is fed with each diet in a 75:25 ratio of concentrate to hay.

Fifteen Quarter Horse weanlings were grouped by foaling date and sex and assigned to a completely randomized block design experiment. Horses were weaned at 3 months of age and housed in individual stalls during a 6 month feeding period. The appropriate experimental diet is offered at 2.25% of body weight in two equal feedings daily and horses are measured weekly for weight gain and height at the withers, shoulder, knee, hip and hock. Additional ultrasonic measurements for fat thickness are taken in three anatomical sites at four, seven, and ten months of age and each horse is radiographed in four locations on the foreleg to estimate bone density, cortical thickness, and bone mineral content. Radiographs are also examined for signs of clinical epiphysitis. Results of this experiment should provide useful information on levels of crude protein and energy necessary for maximum, sound growth.

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