

**Effect of Field Peas Inclusion on In Situ Disappearance Rate of Grass Hay,
Soybean Hulls, and Field peas in Beef Steers Fed Medium Concentrate Diets.
ASAS Abstract**

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Four ruminally and duodenally cannulated steers (703.4 ± 41 dg initial BW) were used in a 4 x 4 Latin square to evaluate effects of field peas inclusion on in situ disappearance rate (%/h) of grass hay, soybean hulls, and field peas in beef steers fed 55% concentrate diets. Steers were fed ad libitum at 0700 and 1900 daily and were allowed free access to water. Diets consisted of 45% grass hay (6.8% CP) and 55% concentrate mixture. Treatments consisted of 1) control, no peas; 2) 15% peas; 3) 30% peas; and 4) 45% peas in the total diet, with peas replacing wheat middlings, soybean hulls, and barley malt sprouts in the concentrate mixture. Steers were adapted to diets for 9 d. Grass hay was incubated in situ, beginning on d 10, for 0, 2, 5, 9, 14, 24, 36, 72, and 98 h; and field peas and soybean hulls for 0, 2, 5, 9, 14, 24, 36, 48, and 72 h. Linear, quadratic, and cubic contrasts were used to compare increasing field pea levels. In situ DM and NDF disappearance rates of grass hay and soybean hulls decrease linearly ($P \# 0.05$) with increasing field peas. Rate of grass hay in situ ADF disappearance also decrease linearly ($P \# 0.05$) with increasing field peas. In situ DM disappearance rate of field peas demonstrated a quadratic effect ($P \# 0.01$; 5.9, 8.4, 5.5, and 4.9 ± 0.52 %/h, for 0, 15, 30, and 45% field peas in the diet, respectively) with increasing field peas level. Rate of in situ CP disappearance responded quadratically ($P \# 0.09$) for grass hay (4.2, 4.7, 2.7, and 2.2 ± 0.24 %/h), soybean hulls (7.0, 7.5, 7.6, and 5.7 ± 0.61 %/h), and field peas (6.7, 7.5, 7.5, and 5.8 ± 0.19 %/h for 0, 15, 30, and 45% of field peas inclusion, respectively). Inclusion of up to 45% field peas into medium concentrate diets consumed by beef steers reduces rates of in situ DM, NDF, and CP disappearance.

Field Pea, Digestion Rate, Cattle