

COMPOSITION AND SEED CONTENT OF PEA STUBBLES IN SOUTH AUSTRALIA

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The grazing value of pea crop stubbles is due mainly to the presence of unharvested seed (Hynd and Allden 1986) which can vary depending on management and conditions at crop establishment and harvest (Russell 1993). This paper reports the results of a field survey that examined the composition of mature pea crops and the amount of seed remaining in stubbles following harvest. The survey examined commercial crops at 13 sites (1 farm/site) in the Lower North and Mid North-Upper Yorke Peninsular regions of South Australia in December 1993. Unharvested seed in the stubbles was estimated from 8 quadrats of 0.25 m x the harvester comb length (5.7 - 7.9 m). Pea seed was collected by hand and under vacuum and later counted, dried and weighed. In the survey, 6 whole plants were collected prior to harvest at 7 of the sites and analysed for morphological composition, *in vitro* dry matter digestibility (DMD) and crude protein (N x 6.25). DMD and crude protein content of the total vegetative material were calculated from the proportional contributions of the stem, leaf and pod.

The composition and nutritive value of the mature pea plants are given in Table 1. Stem material from 2 survey sites was separated into coarse and fine fractions. The fine stem (less than 4mm diameter and comprising about 40% of total stem) had a higher DMD than the coarse stem at one site (53.4 vs 42.8%) but not at the other (42.1 v 44.0%). In comparison with our values for total vegetative plant material, the DMD and crude protein content of a total of 16 pea straw samples, primarily baled straw, analysed by FEEDTEST, Agriculture Victoria, from 1987-95 were $45.6 \pm 6.27\%$ DMD and $7.2 \pm 1.47\%$ crude protein (P. Flinn, pers. comm.). These values are lower than ours and may be primarily due to a higher leaf and pod content of our samples and greater weathering of the primarily baled pea straw samples analysed by FEEDTEST.

Table 1. Composition, dry matter digestibility (%) and crude protein (% DM) of pea straw components (stem, leaf and pod) and component/seed ratio (g/g). SD in parentheses

	Stem	Leaf	Pod	Total
Proportion by weight (%)	58.5 (2.04)	25.8 (4.61)	15.8 (2.89)	100
Dry matter digestibility (%)	47.8 (4.74)	60.4 (2.71)	60.4 (2.99)	53.3 (2.27)
Crude protein (%)	5.7 (1.12)	17.4 (1.72)	8.3 (1.40)	9.2 (1.37)
Component/seed ratio	0.64 (0.222)	0.29 (0.148)	0.17 (0.041)	1.10 (0.393)

Seed content of the stubbles surveyed ranged from 25 - 207 kg/ha with a mean value (\pm SD) of 92 ± 48.4 kg/ha. Stubbles in the Lower North (5 sites) and Mid North-Upper Yorke Peninsular (8 sites) regions contained 59 ± 27.5 kg and 112 ± 44.6 kg unharvested seed/ha respectively (SEM = 24.1, P = 0.053). Although there are significant nutritional benefits of unharvested seed for sheep grazing pea stubbles, grazing can significantly increase the risk of soil erosion (Russell 1993). Although pea stubbles may not uncommonly contain more seed than we recorded (Adams and Young 1989), the development and adoption of better ways of managing and harvesting pea crops to reduce seed losses and greater awareness of the risk of soil erosion from grazing means that pea stubbles are likely to make a lesser contribution to sheep production in future years.

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