Lathyrus (*Lathyrus cicera* cv.Chalus): a potential new ingredient in pig grower diets

B.P. Mullan, C.D. Hanbury, J.A. Hooper, R.R. Nicholls, C.R. Hagan and K.H.M Siddique

Agriculture Western Australia, Locked Bag No 4, Bentley Delivery Centre WA 6983

In low rainfall (<400 mm p.a.) regions of southern Australia field peas are one of the few well adapted pulse crops but, in recent years, problems with fungal diseases have caused a decline in the area sown to this crop. Recent research at the Centre for Legumes in Mediterranean Agriculture in WA suggests that some species of Lathyrus are adapted to low rainfall regions (250 – 500 mm p.a.), particularly on fine textured alkaline soils.

Compared to the chemical composition of lupin seed (*Lupinus angustofolius)*, *Lathyrus cicera* (cv. Chalus) is lower in crude protein (270 vs 320 g/kg) and fat (5 vs 58 g/kg) but has relatively more total lysine (16 vs 13 g/kg) (Hanbury, unpublished). The major concerns are the higher concentrations of trypsin inhibitor activity, chymotrypsin inhibitor activity, and the presence of a neurotoxin identified as β–N–oxalyl–L–α, β–diaminopropionic acid. Castell *et al*. (1994) reported a significant linear reduction in voluntary food intake (VFI) and average daily gain (ADG) when grower pigs were fed diets containing up to 400 g/kg *Lathyrus sativus*, which was attributed to the presence of these anti–nutritional factors (ANF). In the current experiment, seed from new breeding lines was fed to growing pigs as a replacement for soybean meal. Diets were formulated to be isonitrogenous and isoenergetic (14.0 MJ DE/kg, 0.70 g available lysine/MJ DE), and were fed *ad libitum* to a total of 24 female pigs housed in individual pens.

Results indicate that increasing the inclusion level of *Lathyrus cicera* up to 300 g/kg of the diet had no significant effect on either VFI, ADG or feed conversion ratio (FCR), neither for the initial phase of the experiment nor over the total time of the experiment. There was also no significant effect of inclusion level on carcass weight, dressing percentage or depth of subcutaneous fat. A lack of difference in either weight of liver or kidney, unlike results from other studies (Castell *et al*. 1994), indicates that the concentrations of ANF in current lines of *Lathyrus cicera* are sufficiently low not to cause a problem when the seed is fed to pigs of 16–110 kg.

Castell, A.G., Cliplef, R.L., Briggs, C.J., Campbell, C.G. and Bruni, J.E. (1994). Evaluation of lathyrus (*Lathyrus sativus* L.) as an ingredient in pig starter and grower diets. *Canadian Journal of Animal Science* **74,** 529–539.

Table 1 Performance of growing pigs fed diets with increasing concentrations of Lathyrus.

Lathyrus (g/kg)	0	100	200	300	P =	LSD
Liveweight (kg) – start	16.0	16.0	16.1	16.0	0.996	1.12
Liveweight (kg) – end	109.3	110.0	109.0	110.7	0.906	5.01
ADG (g)	899	896	895	912	0.956	69.7
VFI (kg/d)						
Day 0 to 40	1.46	1.38	1.38	1.48	0.346	0.148
Day 0 to 97	1.96	1.76	1.77	1.81	0.444	0.290
FCR						
Day 0 to 40	1.91	1.87	1.77	2.01	0.480	0.202
Day 0 to 97	2.18	1.97	2.05	1.99	0.405	0.279
Liver wt (g)	1794	1866	1779	1780	0.661	168.8
Kidney wt (g)	381	360	401	383	0.651	68.4