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### Cereal grain source, dietary level of lupins and broiler performance

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**Background** -Lupins (*Lupinus angustifolius*) are promoted as a source of dietary protein for broilers. When diets are formulated, it is assumed that the nutrients within each ingredient are additive. However, this assumption may not always be correct because of the possible presence and possible interaction between antinutritive factors in lupins and cereal grains.

**Objective** - To examine the relationship between cereal grain source and dietary level of lupins on the performance of broiler chickens.

**Design** -Day-old male, broiler chicks (Cobb) were allocated to pens with six chicks per pen. Experimental diets contained maize, sorghum or wheat as the sole cereal source and 0, 100 or 200 g/kg lupins. Each experimental diet was fed to six pens from day 1 to day 17 post hatch. Body weight gain and feed intake were recorded and feed efficiency calculated. Excreta were collected from days 14 to 17 and dried at 80°C for apparent metabolisable energy (AME) determination. Digesta viscosity was measured on day 17.

**Outcomes** - Cereal grain source did not affect feed conversion, but significantly ( $P<0.001$ ) influenced body weight gain, feed intake, AME, apparent DM digestibility and digesta viscosity. There were inverse relationships between the lupin content of the diet and both DM digestibility and AME. Digesta viscosity increased as dietary lupin level increased. There were no interactions between cereal grain source and dietary lupin level.

**Conclusion** - The response of the broiler chicks to dietary lupin level was independent of cereal grain source, which is an important observation for feed formulation.

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### The efficacy of phytase in corn soybean meal based broiler diets

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**Background** - To overcome the inability of poultry to utilise phosphorus bound to phytate in plant feed ingredients, phytase of microbial origin is added to poultry diets. This has the added advantage of reducing phosphorus build up in manure.

**Objective** - To examine the efficacy of two commercial phytase sources on the performance of broiler chickens fed corn soybean meal based diets.

**Design** - Day-old, male broiler chicks (Ross) were allocated to 30 pens in a completely randomised experimental design with each diet offered to 6 pens of 50 chicks per pen. The 6 experimental mash diets were formulated as: 1) standard Phosphorus (P), 2) low-P, 3) low-P + phytase A at 500 U/kg feed, and 4) low-P + phytase A at 1000 U/kg feed, 5) low-P + phytase B at 500 U and 6) low-P + phytase B at 1000 U/kg feed. A starter diet was fed from day old to day 22 and a finisher diet from day 23 to day 42. The standard-P starter and finisher diets contained 0.4% and 0.32% available phosphorus respectively compared to 0.28% and 0.20% in the low-P diets.

**Outcomes** - At the completion of the study body weight of the birds fed the standard-P diet were significantly ( $P<0.05$ ) heavier than those fed the unsupplemented low-P diets. There was no significant difference in body weight between the groups fed the standard-P diet and the phytase supplemented diets. Feed conversion ratio was not significantly affected by phytase supplementation.

**Conclusion** - The performance of broilers fed low phosphorus corn soybean meal based diets can be significantly improved by phytase supplementation. Both sources of phytase gave similar results, and can replace approximately 50% dicalcium phosphate in diets, without affecting broiler performance.