3 LCPUFAs that may reduce pressure on diminishing marine stocks as well as offering health benefits to humans.

OP112
INFLUENCE OF LUPINS AND CANOLA SUPPLEMENT ON SHORT LOIN FATTY ACID PROFILES WITHIN GENETICALLY DIVERGENT FIRST CROSS MERINO LAMBS

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Australian consumers are becoming increasingly aware of the health benefits of long-chain omega-3 polyunsaturated fatty acids [LC-PUFA] - eicosapentaenoic acid (EPA), 20:5(n-3) and docosahexaenoic acid (DHA), 22:6(n-3). The most common dietary source of long-chain omega-3 is through consumption of seafood and fish oil supplements. Common Australian commercial crops of canola and lupin both offer good sources of LC-PUFA precursers, including □-linolenic acid [ALA, 18:3(n-3)] and their potential as animal feeds to manipulate LC-PUFA concentrations within animal meat is of great interest to the livestock and human health sectors.
This study investigated the LC-PUFA profiles of 38 first cross Merino weaner lambs sired by five genetically divergent rams supplemented with canola meal or cracked lupins at 1% or 2% of body weight feeding levels for 60 days. Results demonstrated that all animals had 'source' content of omega-3 (EPA+DHA) in muscle samples taken from the short loin (loin chop) equal to or greater than 30mg per 100g serve. 18 animals were in excess of 'good source' content of 60mg per 100g serve with a whole flock mean of 67mg/100g EPA+DHA. When docosapentaenoic acid (DPA) is added to EPA+DHA, only two animals do not reach the 'good source' content of long-chain omega-3. Supplement type significantly ($P<0.05$) affected the level of ALA, with canola meal-supplemented sheep producing 91mg/100g compared to 66mg/100g in lupin-fed sheep. Total saturated fatty acid levels also showed a significant ($P<0.05$) interaction with sex and supplement indicating that males fed lupins had the lowest levels of SFA 3860mg/100g compared to males fed canola which had 5180mg/100g SFA.Overall the mean long-chain omega-3 content (mg) per 100g for each breed was: East Friesian 75 mg/100g, Dorset 73 mg/100g, Coopworth 68 mg/100g, Texel 59 mg/100g and White Suffolk 58 mg/100g.
In conclusion feed supplementation markedly enhanced long-chain omega-3 content of Australian lamb. Level of supplementation, breed and type of supplement had no significant relationship with short loin content of long-chain omega-3 FA. However, when supplementing wethers and ewes with canola meal or lupins, attention should be paid to the significant interactions that exist between sexes and supplement type.

OP113
INFLUENCE OF LUPINS AND CANOLA SUPPLEMENTS ON PLASMA AMINO ACIDS, WOOL FIBRE DIAMETER AND LIVEWEIGHT IN GENETICALLY DIVERGENT FIRST CROSS MERINO LAMBS

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This study hypothesised that there is a positive correlation between plasma amino acids and wool quality parameters of 40 first cross Merino weaner lambs sired by five genetically divergent rams supplemented with canola meal and cracked lupins at 1% or 2% of body weight feeding level for 60 days. Results demonstrated that supplement type significantly ($P<0.001$) influenced liveweight as canola-fed lambs were heavier (40kg) than their lupin-fed counterparts (37kg), but wool yield, daily wool growth, fibre diameter, and body condition score were unaffected by either supplement or level of supplementation. Supplement type significantly ($P<0.05$) influenced the levels of plasma histidine, tryptophan, glutamic acid, threonine, arginine and lysine. There were moderate but highly significant positive correlations ($P<0.01$) between plasma histidine with liveweight (0.43), and fibre diameter (0.35), while lysine was strongly correlated with wool growth (0.37). Sire breed differences were non-significant ($P>0.05$), but the interaction between sire breed and supplement type had a significant effect on body condition score of the lambs ($P<0.05$). Significant interactions between type and level of supplementation ($P<0.05$) led to a decrease in wool fibre diameter. Lamb gender was a significant source of variation for only plasma arginine ($P<0.05$). In conclusion, level of supplementation had no significant effect on wool and growth parameters, thus enabling farmers to decrease the cost of feeding by supplementing at only 1% instead of 2% of body weight. For fat lamb production, supplementing with canola is advisable for higher bodyweight gain, whereas for wool production, either canola or lupins (whichever is cheaper) can be used to minimise feed costs. Crossbred sheep producers supplementing lambs with canola will increase plasma histidine with subsequent increase in liveweight and body condition, but at the expense of finer wool because of its positive correlation with fibre diameter. However, wool growth is expected with an increase in the level of plasma lysine.

OP114
MILK COMPOSITION OF GRAZING DAIRY COWS SUPPLEMENTED WITH LICURY OIL

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Licury oil is extracted from one of the main native palm tree located at the northeast region of Brazil, the *Syagrus coronata* (Martius) Beccari. The oil has been used by cosmetic and soap industries; however, there is limited information regarding its use in animal nutrition. The milk composition of grazing dairy cows supplemented with 3 concentrations (0; 1.5; 3; and 4.5%) of licury oil was studied. The oil was added to the concentrate (on a dry matter basis) and fed 3 kg twice daily (at milking). Sixteen dairy cows, Holstein Friesian (*Bos taurus*) x Gir (*Bos indicus*), were used in a four 4x4 Latin Square design experiment, with 17 days for adaptation and 4 days for the collection period. The data were evaluated by a linear regression analyses. Orts were collected daily and weighed at each period, during four days, in order to determine concentrate intake. Milk composition was analyzed for protein, fat, and total solids. Milk protein decreased linearly ($Y=3852 - 0.0753x$ $R^2=0.95$) with oil addition. Milk fat and total solids showed a linear increased, $Y = 3,813 + 0032x$ ($R^2 = 0.98$), $Y = 11,708 + 0092x$ ($R2 = 0.91$), respectively, with the addition of licury oil to the concentrate. Licury oil addition to grazing dairy cows may be profitable for producers when milk price favors fat and total solids rather than milk protein.