

## BREEDING AND COMMERCIALISATION OF A NAKED GRAIN OAT

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Conventional oats consist of approximately 70% groats (=kernel) and 30% husk. This husk is high in fibre and low in nutritive value and, whilst whole oats are suitable for ruminant diets, the husk causes major problems with non-ruminant animals. In contrast, oat groats are an excellent feed for non-ruminant livestock. They are high in metabolizable energy, high in unsaturated fats and have good protein quality. Oat groats can be obtained in two ways i.e., by dehulling conventional oats or by genetically removing the husk ('naked' oats). The former produces a high quality feedstuff but the cost of milling and handling means that the stockfeed industry can only afford to use the product when the raw material (i.e., whole oats) is cheap.

The South Australian Oat Breeding programme initiated work with naked oats in 1977, using the Canadian variety Terra. Terra, along with most other naked varieties bred in the northern hemisphere, is poorly adapted to southern Australia. The first cycle of crosses with Australian varieties produced lines with poor straw strength, high shattering and low yield. Following cycles of crossing involved semi-dwarf and high oil genotypes. Selections from these crosses have combined excellent lodging resistance, low head shattering and semi-dwarf plant type. Since 1986, the genetic material under test has been sufficiently promising to warrant closer examination of its agronomic and nutritional qualities.

A cooperative project between the S.A., W.A. and N.S.W. Departments of Agriculture, funded by Poultry and Chicken Meat Research Councils evaluated a range of naked oat lines from 1987-1990 for yield, quality, disease resistance and plant type. At the same time, seed was produced to allow The University of New England to evaluate the best selections for their suitability for poultry and for the S.A. Department of Agriculture to undertake pig feeding experiments. The results of the poultry feeding experiments are reported elsewhere in this conference (Farrell et. al. 1991).

One particular line, designated "Terra 11/1" was chosen on the basis of its field and feeding performance as a line to be multiplied and evaluated in detail. A comprehensive performance profile was constructed from over 80 field experiments which includes data on yield, protein, oil, fatty acids, amino acids, metabolisable energy, rancidity, storability, plant type, and disease resistance. On average, the yield is close to 70% to Echidna, the protein is 14.3% (dry basis) which includes the amino acids lysine 6.0 g/kg, threonine 4.9 g/kg and methionine 2.6 g/kg and fat is 9.9% (dry basis) with linoleic acid comprising 35% of total fatty acids. Feeding trials estimate the AME to be 14.62 MJ/kg dry (basis) in young chickens and 15.8 MJ/kg dry basis for adult cockerels while one estimate of DE is 18.3 MJ/kg dry basis for 30kg pigs. Economic analyses using gross margin analysis for cereal farmers and least cost ration formulae for feed compounders show that, for the yield and nutritional value of Terra 11/1, naked oats will be a viable cropping option with a market in broiler and layer rations. Naked oats also appear to be viable for weaner and grower pig diets but not for finisher rations. Other possible markets are, dry dog food, race horses at peak load and stud stock.

Terra 11/1 is now poised for commercialisation. Informal discussions have been held with a wide range of parties involved in the marketing and utilisation of feed grains. Formal expressions of interest in the commercialisation of this naked oat line will be sought in the very near future by public advertisement. Appointment of a licensee(s) will follow.

FARRELL, D.J., TAKHAR, P., BARR, A.R. and PELL, A.S. In Recent Advances in Animal Nutrition in Australia 1991, p. 312 editor D.J. Farrell (University of New England, Armidale)