

# IBERS

Institute of Biological, Environmental and Rural Sciences

## Development of high oil winter and spring naked oats and release of cultivar Racoon

Alexander Cowan\*, Brian Middleton, Dilwyn Jones and John Valentine

IBERS, Gogerddan, Aberystwyth University, SY23 3EB, UK; \*corresponding author : email [syc@aber.ac.uk](mailto:syc@aber.ac.uk)

### 1 The Message

One of the objectives of the oat breeding programme at IBERS is to develop high oil naked oats. We have used various genetic sources as a starting point for high oil material, this included lines from the recurrent selection programme for high oil in Iowa. Our aim is to achieve a high-oil high-yielding naked oat in a UK adapted background.

### 2 Introduction

Breeding of naked oats for the UK began in the late 1970s. Since then we have released a number of spring and winter types eg Bullion, Neon, Pendragon, Rhiannon, Harpoon, Kynon, and Krypton. The winter naked oats Grafton, Expression and Hendon (dwarf) are on the CEL Recommended List. We also have spring oats Zuton, Lennon and winter oat Racoon on the National List (NL).

### 3 Methods

The variety Racoon ( first added NL in 2005) is a major achievement with a high oil content and reasonable agronomic characteristics. The initial cross was made in 1991 designed to incorporate the high oil trait into a high yielding naked oat background. In 1995, line 91-221 was crossed into a UK adapted naked winter oat and then 95-240 passed through the pedigree selection method when it was eventually named Racoon and added to UK NL. This variety still retains some traits such as very tall height from the original high oil source of N361-3. It is however stiff strawed, has characteristic long thin grains and an oil content of between 11 and 14%.



### 4 Results

High oil naked oats have considerable potential as animal feedstuff being one of the highest energy cereals available. In "Oatlink" assessments are being made to quantify the value of naked oats as poultry feed. Table 1 shows the agronomic characteristics of Racoon and Table 2 shows high TME from high oil naked oats.

**Table 1** Agronomic and quality data of oats from breeders trials.

Selection	Height (cm)			Yield (t/ha)			Oil content (%)		
	2003	2004	2005	2003	2004	2005	2003	2004	2005
Gerald (husked)	116	118	118	7.80	7.96	10.15	6.7	7.5	7.0
Hendon (naked)	87	85	83	6.27	6.28	6.40	7.5	7.9	7.5
Racoon (naked)	144	136	152	5.77	6.37	6.08	9.2	9.9	9.8

**Table 2** True Metabolisable energy values for cereals after feeding to poultry

Selection	TME <sub>n</sub> (MJ/kg as fed)
Alchemy wheat	13.51
Gerald Husked	11.77
Hendon Naked dwarf	15.37
Racoon Naked high oil	16.04
02-146Cn1 Naked high oil	16.29

### 5 Conclusions and future aims

- Racoon is on the NL and has a higher oil content than the conventional naked oats.
- Naked oats have the highest TME values for feeding to poultry, and oil content also affects TME with high oil giving greater TME values.
- We are developing higher yielding high oil oats.
- We intend to utilise NIR and marker assisted selection to enhance the production of shorter or dwarf naked oats with the desired high oil traits required by the livestock feed industry.

### Acknowledgements

The authors wish to acknowledge the funding of Oatlink- Sustainable arable link sponsored by DEFRA and RERAD, and also funding by BBSRC. IBERS varieties are marketed by Senova.