

Opportunities for Oats in the Feed Industry



Rex Newkirk, PhD, P.Ag.

Associate Professor and Research Chair in Feed Processing Technology

Department of Animal and Poultry Science

Presentation Objectives

- Quantities of Canadian grains for feed
- Requirements of the feed industry
- Characteristics of Oats relative to other feed grains
- Opportunities for producers

Background

- PhD University of Saskatchewan 2002 – Canola processing
- Professional Research Associate – 1997-2003
 - Nutritional Biochemistry Lab
 - Enzyme applications, ingredient processing technology
- Cofounder of MCN Bioproducts
- International Marketing/Technical Marketing support
 - Canadian International Grains Institute – 2003-2015
 - Seminars, training and hands on technical support globally

Canadian Feed Industry

- Approximately 26 million tonnes/year of feed excluding forage (43 million T/yr)
 - 2/3 commercially produced feed
- Total production of all grains, oilseeds and pulses in Canada 79 million T
 - 32% used for feed
- Approximately \$4 billion in revenue annually

Feed Production



- Quebec – 36%
- Ontario – 30%
- Prairies – 22%
- Atlantic – 9%
- BC – 3%

CANADIAN FEED GRAINS

- Animals require nutrients not ingredients
 - Protein (amino acids)
 - Energy
 - Minerals
 - Fat
 - Fibre?
- Ingredients used to provide the required nutrients at minimum cost

OATS



- Once very popular, now used mainly in horse and starting feedlot cattle feeds
- High fibre limits energy use in hog and poultry diets but market opportunities opening up
- 1 million T of 3 million produced used for feed in 2014

Nutritional Composition of OATS

(Dry matter basis)

Nutrient (%)	Regular Barley	Oats	Corn
Starch	58.2	40.6 (28.6-51.6)	62.6
β -glucan	4.3		n/a
Acid Detergent Fibre	5.85	16.2 (12.8-20.8)	2.9
Neutral Detergent Fibre	18.49	35.5 (27.4-46.3)	9.1
Protein	12.4	11 (8-14.7)	8.2
Lipid	2.6	5.4 (3.4-7.5)	3.5

Amino Acid Content of Oats (% of protein)

Amino Acid	Barley	Oats	Corn
Arginine	4.4	6.7	3.8
Histidine	2.1	2.4	2.8
Isoleucine	3.6	3.7	3.7
Lysine	3.4	4.3	2.6
Methionine	2.6	1.8	1.8
Phenylalanine	5.2	5	5.1
Threonine	3.1	3.4	3.6
Valine	5.0	5.2	5.3

Note Barley contains 12.4% CP, Oats 11% Corn 8.2%

Energy content of Oats

	Barley	Oats	Corn
Ruminants			
TDN, %	88	77	90
Neg (Mcal/kg)	1.37	1.21	1.55
Swine			
DE (kcal/kg)	3,057	3035	3,392
ME (kcal/kg)	2,962	2916	3,320
NE (kcal/kg)	2,269	2175	2,651
Poultry AME (kcal/kg)	2900	2222- 2844	3350

Opportunities for Oats

- Most feed mills do not stock Oats
- Opportunities for more use in On Farm feed production
- Used in creep feeds, with promotion could grow this market
- Oats used in Sow rations (high fibre, create satiety)
- Groats used in Pig Starter rations

Oats as a promoter of health

- Due to pressure to eliminate anti-biotics in diets need natural promoters of health
 - Fibre now needed
 - Used in Broiler breeder diets
 - Fibre needed in Layers and Broiler, promote the gizzard
 - Some use of oat hulls and whole wheat, great opportunity to promote health on farm
 - Need a more consistent product to make this happen

Oats as a cost effective ingredient

- Most do not consider Oats in ration formulation, assume they do not cost in
- Use very large safety margins due to high variability make them uncompetitive
- Bushel weight not good enough
- Need a better way to classify oats so they can be incorporated into the diet

Research Opportunities

- Novel feed processing technologies
 - Steam explosion of Fibrous feed ingredients
 - On Farm Groating
- Finding value in off grade seed
 - Seed sorting technology – BoMill, Optical sorters
 - Development of calibrations specific to Canadian Needs
- Oats as a promoter of health!
 - Fibre has value and is now becoming a requirement

Contact information

- Rex Newkirk
 - Cell 306-281-6611
 - Email rex.newkirk@usask.ca
- Come see the Canadian Feed Research Centre in North Battleford