

BYPASS PROTEIN



Borregaard LignoTech is one of the world's leading suppliers of high performance additives and ingredients to the animal feed industry.

## High Class Bypass for ruminants



RaPass is a source of rumen bypass protein produced using rape seed expeller meal and a sustainable source of wood sugar, registered in the EU as a feed additive.

Borregaard LignoTech is a leader in bypass protein technology, supplying the European, Middle East and American markets for over 30 years. RaPass provides a cost effective alternative to soybean meal, offering comparable nutritional value especially in terms of digestible rumen bypass protein that is perfect to support today's higher milk and beef production.

Ratio of lysine and methionine in RaPass compared to milk protein, is superior to soya, helping to drive milk production while reducing the reliance on imported soya protein.

Rape seed expeller and extracted meal is a high value vegetable protein source for all livestock but during digestion a significant proportion of this vegetable protein is degraded in the rumen, far too early in the digestive system for the high yielding dairy cow and growing animals to exploit fully. RaPass increases the digestible bypass protein to 55% of the crude protein.

Bypass protein products overcome this problem by protecting the protein while in the rumen, but allowing it to be fully digested within the small intestine. Consequently, better utilization of the essential amino acids occurs, resulting in improved milk production and growth.



### **RaPass is a high rumen bypass protein feed.**

- Dairy trials have shown RaPass fed cows produce significantly more milk compared to heat treated rape extract alone or soya
- The amino acid profile of rape protein is closer to milk than soya bean meal protein.

These properties aid the nutritionist in formulating rations that improves milk production, growth rate and/or reduces cost.



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[www.lignotechfeed.com](http://www.lignotechfeed.com)

## RaPass nutritional values (per unit of dm unless otherwise stated)

| NRC 2001   |      |
|--|------|
| Digestible rumen undegradable protein, g/kg DM             | 192  |
| Digestible rumen undegradable protein, % of CP             | 55   |
| Digestibility of rumen undegradable protein, %             | 80   |
| Acid detergent fibre insoluble protein (ADIF), % of CP     | 75   |
| Neutral detergent fibre insoluble protein (NDFIP), % of CP | 19.4 |
| NEI, Mcal/kg   | 1.65 |
| NE <sub>m</sub> , Mcal/kg                                  | 1.78 |
| NE <sub>g</sub> , Mcal/kg                                  | 1.16 |

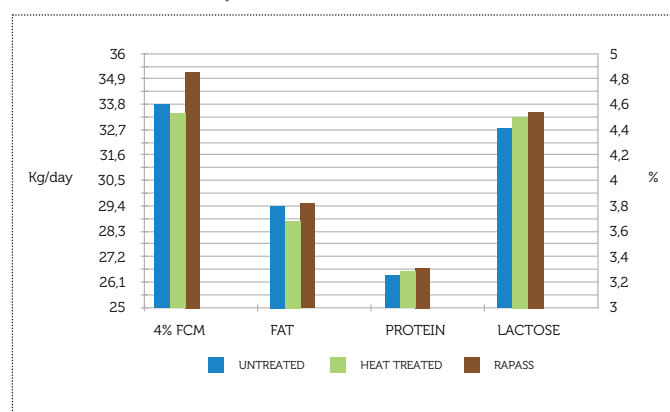
| French values                   |      |
|---------------------------------|------|
| PDIN, g/kg DM                   | 259  |
| PDIE, g/kg DM                   | 262  |
| PDIA, g/kg DM                   | 201  |
| Theoretical degradability, % CP | 35.6 |
| dsi                             | 80.0 |
| UFL <sub>DM</sub>               | 0.83 |

| German/Dutch values                |      |
|------------------------------------|------|
| UDP, %                             | 70   |
| UDP, g/kg DM                       | 216  |
| nXP, g/kg DM                       | 249  |
| RNB, g/kg DM                       | 2.6  |
| DVE, g/kg DM                       | 223  |
| OBE, g/kg DM                       | 13   |
| VEM, g/kg DM                       | 858  |
| FOS, g/kg DM                       | 377  |
| DVLYS, g/kg DM                     | 12.6 |
| DVMET, g/kg DM                     | 4.9  |
| Digestibility of bypass protein, % | 80   |

| British values                 |      |
|--------------------------------|------|
| DUP, g/kg DM                   | 195  |
| ERDP, g/kg DM                  | 101  |
| ADIN, g/kg DM                  | 3.8  |
| Metabolisable energy, MJ/kg DM | 11.8 |
| dsi                            | 80.0 |
| UFL <sub>DM</sub>              | 0.83 |

| RaPass typical analysis – g/kg product (fresh) |     |    |      |
|--|-----|----|------|
| Dry matter                                     | 890 | Ca | 7.2  |
| Crude Protein                                  | 310 | P  | 10.7 |
| Oil  | 31  | Na | 0.2  |
| Crude Fibre                                    | 114 | Mg | 5.6  |
| Ash  | 68  | K  | 10.8 |
| Starch   | 51  | Cl | 10.8 |
| Sugars   | 69  |    |      |

### Lactation Study Results - Milk Yield and Composition



J. Dairy Sci. 88:238–243. American Dairy Science Association, 2005.  
Comparison of treatments to canola meal, comprising 18 lactation Holstein cows in a 3 x 3 Latin square, replicated 6 times, with cows fed an isonitrogenous TMR diet containing 20% of a treatment.

| Feeding rates        |  |
|----------------------|--|
| Milking Cows         | Up to 3 (typically 2)kg                |
| Dry Cows             | Up to 1.5 kg                           |
| Replacement Heifers  | Up to 2 kg and up to 25% of the DMI    |
| Calves (to 12 weeks) | Up to 0.75 kg and up to 20% of the DMI |
| Growing Cattle       | Up to 2 kg and up to 25% of the DMI    |
| Finishing Cattle     | Up to 3 kg and up to 30% of the DMI    |
| Suckler Cows         | Up to 2 (typically 1)kg                |
| Ewes and Rams        | Up to 0.5 (typically 0.25)kg           |
| Hoggets and Lambs    | Up to 0.5kg and up to 25% of the DMI   |

DMI = dry matter intake

Legal disclaimer: Suggested feeding rates are produced as a guide only and many other factors may have an overriding effect on performance. Rations should be carefully balanced for energy and protein, contain sufficient forage to maintain rumen function and be fortified with an appropriate vitamin and mineral supplement. Animals must have constant access to clean water.

