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Performance Calibration Module Aquafeed

Finished Feed for following Aqua Species:

Aqua Feed | Sea Water | Fresh Water

Measurable Parameters	
Parameter	**Range**
Moisture [%]	0 – 15
Crude Protein [%]	15 – 66
Fat (ether extract) [%]	0 – 40
Starch [%]	0 – 44
Fat (Acid Hydrolysis) [%]	0 – 43
Crude Fibre [%]	0 – 6
Ash [%]	3 – 18

All values are given on „as fed“ basis.

Sample preparation:

1. Take a representative sample of the feed you want to measure.
2. Grind it for a total of 30 seconds (3 x 10 seconds) with an electric grinder.
3. Finely ground samples are extremely important. The more homogenous the sample is, the less deviations you will have between measurements!

Sample presentation:

1. Place your ground sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.

Performance Calibration Module Ruminants

Finished Feed for following ruminants:

Ruminants | Beef | Sheep | Calf | Dairy | Dairy Blends | Lamb | Goat

Measurable Parameters	
Parameter	**Range**
Moisture [%]	3 – 17
Crude Protein [%]	5 – 50
Fat (ether extract) [%]	0 – 16
Starch [%]	1 – 51
Sugar [%]	0 – 12
Crude Fibre [%]	0 – 21
Fat (acid hydrolysis) [%]	1 – 16
NDF [%]	0 – 31
ADF [%]	0 – 16
Ash [%]	0 – 25
DE [MJ/kg]	14 – 20
ME [MJ/kg]	12 – 19
NEL for dairy [MJ/kg]	8 – 12

All values are given on „as fed“ basis. We use equations from the *National Research Council* to predict energies.

Sample preparation:

1. Take a representative sample of the feed you want to measure.
2. Grind it for a total of 30 seconds (3 x 10 seconds) with an electric grinder.
3. Finely ground samples are extremely important. The more homogenous the sample is, the less deviations you will have between measurements!

Sample presentation:

1. Place your ground sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.

Performance Calibration Module Swine

Finished Feed for following swine types:

Swine | Finisher Pig | Gestation Sow | Grower Pig | Piglet

Measurable Parameters	
Parameter	**Range**
Moisture [%]	3 – 18
Crude Protein [%]	7 – 48
Fat (ether extract) [%]	0 – 17
Starch [%]	6 – 53
Sugar [%]	2 – 8
Crude Fibre [%]	0 – 14
Fat (acid hydrolysis) [%]	1 – 17
NDF [%]	7 – 26
ADF [%]	2 – 14
Ash [%]	0 – 23
GE [MJ/kg]	15 – 22
DE [MJ/kg]	7 – 20
ME [MJ/kg]	7 – 19
NE [MJ/kg]	10 – 13

All values are given on „as fed“ basis. We use equations from the *National Research Council* to predict energies.

Sample preparation:

1. Take a representative sample of the feed you want to measure.
2. Grind it for a total of 30 seconds (3 x 10 seconds) with an electric grinder.
3. Finely ground samples are extremely important. The more homogenous the sample is, the less deviations you will have between measurements!

Sample presentation:

1. Place your ground sample in a container.
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Performance Calibration Module Poultry

Finished Feed for following poultry types:

Poultry | Broiler | Chick | Duck | Game | Goose | Layers | Ostrich | Turkey

Measurable Parameter	
Parameter	**Range**
Moisture [%]	5 – 17
Crude Protein [%]	7 – 46
Fat (ether extract) [%]	0 – 15
Starch [%]	2 – 64
Sugar [%]	0 – 8
Crude Fibre [%]	0 – 15
Fat (acid hydrolysis) [%]	1 – 16
NDF [%]	3 – 27
ADF [%]	2 – 12
Ash [%]	0 – 35
AMEn [MJ/kg]	11 – 15

All values are given on „as fed“ basis. We use equations from the *National Research Council* to predict energies.

Sample preparation:

1. Take a representative sample of the feed you want to measure.
2. Grind it for a total of 30 seconds (3 x 10 seconds) with an electric grinder.
3. Finely ground samples are extremely important. The more homogenous the sample is, the less deviations you will have between measurements!

Sample presentation:

1. Place your ground sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.

Performance Calibration Module Animal Protein

For following animal protein types:

Animal Protein | Bone Meal | Blood and Plasma[1] | Feather Meal[1] | Fish Meal[1] | Meat and Bone Meal[1] | Poultry bypro-duct

Measurable Parameters	
Parameter	**Range**
Moisture [%]	1 – 15
Crude Protein [%]	23 – 94
Amino Acids[1]	calculated
Fat (ether extract) [%]	1 – 32
Crude Fibre [%]	0 – 3
Fat (Acid Hydrolysis) [%]	2 – 33

1 | Amino Acids are only available for sample types marked with [1]

All values are given on „as fed“ basis. The calculation of the Amino Acids is based on the Nutritional Table of Wageningen, Sauvant et al, 2004.

Sample preparation:

1. Take a representative sample of the feed you want to measure.
2. Grind it for a total of 30 seconds (3 x 10 seconds) with an electric grinder.
3. Finely ground samples are extremely important. The more homogenous the sample is, the less deviations you will have between measurements!

Sample presentation:

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Performance Calibration Module Cereals

For following cereal types:

Cereals

Barley[1] | Corn[1] | Oats[1] | Triticale[1] | Wheat[1] | Sorghum[1] | Rye[1] | Rice[1]

Measurable Parameters	
Parameter	**Range**
Moisture [%]	5 – 21
Crude Protein [%]	4 – 22
Amino Acids[1]	calculated
Fat (ether extract) [%]	0 – 13
Starch [%]	26 – 82
Sugar [%]	0 – 9
Crude Fibre [%]	0 – 12
Fat (acid hydrolysis) [%]	1 – 14
NDF [%]	2 – 26
ADF [%]	1 – 12
Ash [%]	0 – 5
AMEn [MJ/kg]	12 – 17

1 | Amino Acids are only available for sample types marked with [1]

All values are given on „as fed“ basis. The calculation of the Amino Acids is based on the Nutritional Table of Wageningen, Sauvant et al, 2004.
We use equations from the *European Community* to predict energies.

Sample preparation:

1. Take a representative sample of the feed you want to measure.
2. Grind it for a total of 30 seconds (3 x 10 seconds) with an electric grinder.
3. Finely ground samples are extremely important. The more homogenous the sample is, the less deviations you will have between measurements!

Sample presentation:

1. Place your ground sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.

Performance Calibration Module Oilseeds & Expeller Meals

For following oilseed and expeller meal types:

Oilseeds & Expeller Meals | Canola (Whole Seed or Expelled)[1] | Canola Pulse Mix | Soya (Full Fat, Whole Bean[1] or Expelled[1]) | Sunflower Seeds[1] | Cotton Seed Expelled[1] | Linseed (Whole Seed or Expelled)[1] | Sesame Expelled[1]

Measurable Parameters	
Parameter	**Range**
Moisture [%]	2 – 18
Crude Protein [%]	6 – 51
Amino Acids[1]	calculated
Fat (ether extract) [%]	0 – 62
Starch [%]	0 – 30
Sugar [%]	0 – 18
Crude Fibre [%]	0 – 34
Fat (acid hydrolysis) [%]	4 – 63
NDF [%]	1 – 33
ADF [%]	3 – 24
Ash [%]	0 – 20

1 | Amino Acids are only available for sample types marked with [1]

All values are given on „as fed“ basis. The calculation of the Amino Acids is based on the Nutritional Table of Wageningen, Sauvant et al, 2004.

Sample preparation:

1. Take a representative sample of the feed you want to measure.
2. Grind it for a total of 30 seconds (3 x 10 seconds) with an electric grinder.
3. Finely ground samples are extremely important. The more homogenous the sample is, the less deviations you will have between measurements!

Sample presentation:

1. Place your ground sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.

Performance Calibration Module Extraction Meals

For following extraction meal types:

Extraction Meals | Canola Extracted | Corn Gluten 60%[1] | Cotton Extracted | Groundnut Extracted[1] | Linseed Extracted[1] | Malt Residue[1] | Soya Extracted | Sunflower Oilcake Extracted[1] | Sesame Extract | Distiller Grains (High Protein) [1]

Measurable Parameters	
Parameter	**Range**
Moisture [%]	3 – 17
Crude Protein [%]	16 – 73
Amino Acids[1]	calculated
Fat (ether extract) [%]	0 – 17
Starch [%]	0 – 30
Sugar [%]	0 – 29
Crude Fibre [%]	0 – 36
Fat (acid hydrolysis) [%]	0 – 19
NDF [%]	0 – 46
ADF [%]	0 – 28
Ash [%]	0 – 28

1 | Amino Acids are only available for sample types marked with [1]

All values are given on „as fed“ basis. The calculation of the Amino Acids is based on the Nutritional Table of Wageningen, Sauvant et al, 2004.

Sample preparation:

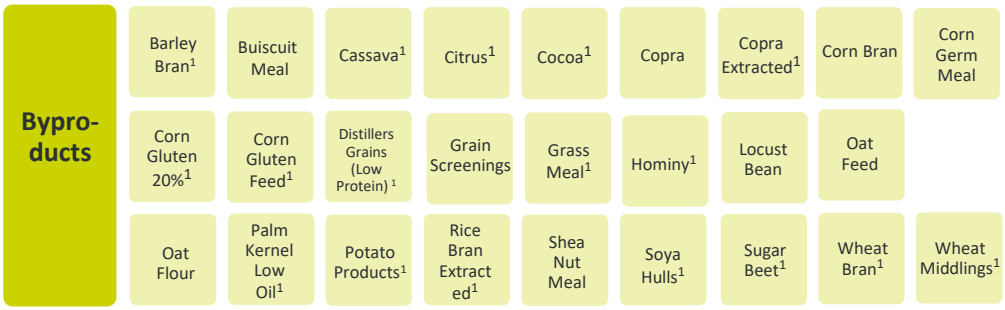
1. Take a representative sample of the feed you want to measure.
2. Grind it for a total of 30 seconds (3 x 10 seconds) with an electric grinder.
3. Finely ground samples are extremely important. The more homogenous the sample is, the less deviations you will have between measurements!

Sample presentation:

1. Place your ground sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.

Performance Calibration Module Byproducts

For following byproduct types:



Measurable Parameters	
Parameter	**Range**
Moisture [%]	2 – 18
Crude Protein [%]	0 – 38
Amino Acids[1]	calculated
Fat (Ether Extract) [%]	0 – 12
Starch [%]	0 – 85
Sugar [%]	0 – 18
Crude Fibre [%]	0 – 36
Fat (Acid Hydrolysis) [%]	0 – 16
NDF [%]	5 – 43
ADF [%]	1 – 16
Ash [%]	0 – 16

1 | Amino Acids are only available for sample types marked with [1]

All values are given on „as fed“ basis. The calculation of the Amino Acids is based on the Nutritional Table of Wageningen, Sauvant et al, 2004.

Sample preparation:

1. Take a representative sample of the feed you want to measure.
2. Grind it for a total of 30 seconds (3 x 10 seconds) with an electric grinder.
3. Finely ground samples are extremely important. The more homogenous the sample is, the less deviations you will have between measurements!

Sample presentation:

1. Place your ground sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.

Performance Calibration Module Grain Silage

For following grain silage types:

Grain Silage | Whole Crop Silage | Maize/Corn Silage

Measurable Parameters	
Parameter	**Range**
Dry Matter [%]	13 – 71
Crude Protein [%]	6 – 24
D-Value [%]	41 – 77
NDF [%]	34 – 74
ADF [%]	22 – 48
Fat (Ether extracted) [%]	3 – 5
Ash [%]	3 – 11
Starch	2 – 46
DE [MJ/kg]	Calculated
ME [MJ/kg]	Calculated
NEL for dairy [MJ/kg]	Calculated

All values are given on dry matter basis. We use equations from the *National Research Council* to predict energies.

Sample preparation:

1. No preparation is necessary! The samples must be measured as is, without drying and grinding.

Sample presentation:

1. Place the sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.

Performance Calibration Module Grass Silage

Silage / Fermented

Grass Silage

Measurable parameters	
Parameter	**Range**
Dry Matter [%]	11 – 77
Crude Protein [%]	6 – 32
D-Value [%]	47 – 80
NDF [%]	32 – 79
ADF [%]	22 – 48
Fat (Ether extracted)[%]	2 – 5
Ash [%]	4 – 11
WSC	1 – 20
DE [MJ/kg]	Calculated
ME [MJ/kg]	Calculated
NEL for dairy [MJ/kg]	Calculated

All values are given on dry matter basis. We use equations from the *National Research Council* to predict energies.

Sample preparation:

1. No preparation is necessary! The samples must be measured as is, without drying and grinding.

Sample presentation:

1. Place the sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.

Performance Calibration Module Hay

Fresh Forage / Non-Fermented

Hay

Measurable parameters	
Parameter	**Range**
Dry Matter [%]	55 – 98
Crude Protein [%]	1 – 26
WSC [%]	0 – 23
ADF	22 – 59
NDF	46 – 88
Fat (Ether Extract)	0 – 6
D-Value	40 – 80
Ash	1 – 20
DE [MJ/kg]	Calculated
ME [MJ/kg]	Calculated
NEL [MJ/kg]	Calculated

All values are given on dry matter basis. Calculated parameters according to GfE.

Sample preparation:

1. No preparation is necessary! The samples must be measured as is, without drying and grinding.

Sample presentation:

1. Place the sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.

Performance Calibration Module Fresh Grass

Fresh Forage / Non-Fermented

Fresh Grass

Measurable parameters	
Parameter	**Range**
Dry Matter [%]	14 – 68
Crude Protein [%]	8 – 23
Water Soluble Carbohydrates	0 – 8
ADF	22 – 37
NDF	40 – 63
Fat (Ether Extracted)	2 – 8
D-Value	53 – 82
Ash	4 – 12
DE [MJ/kg]	Calculated
ME [MJ/kg]	Calculated
NEL [MJ/kg]	Calculated

All values are given on dry matter basis. Calculated parameters according to GfE.

Sample preparation:

1. No preparation is necessary! The samples must be measured as is, without drying and grinding.

Sample presentation:

1. Place the sample in a container.
2. Scan the sample 5 times at different spots. Slowly move the spectrometer over the sample during each scan.