



Feed Ingredient Course

June 25 to 29, 2018

Organizers

Universidad Politécnica de Madrid, Madrid, Spain
University of Illinois, Urbana-Champaign, USA

Co-sponsors

USSEC (St. Louis)
Fedna (Madrid)

Program Directors

Professor Hans H. Stein, University of Illinois, USA
Professor Gonzalo G. Mateos, Universidad Politécnica de Madrid, Spain

Location

Auditorium Ramón y Cajal, Facultad de Medicina, UCM
Plaza Ramón y Cajal, s/n
Ciudad Universitaria
28040 Madrid

<https://goo.gl/maps/FDwPJFotRcC2>



Underground Station: Ciudad Universitaria (grey line #6)



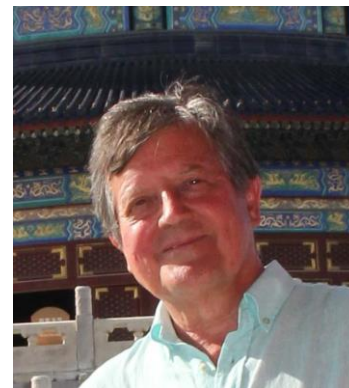
Speakers and Instructors



Juan Acedo-Rico
Acedo-Rico & Asociados sl
Madrid, Spain



Gloria A. Casas
Universidad Nacional de Colombia
Bogotá, Colombia



Gonzalo G. Mateos
Universidad Politécnica de Madrid
Spain



Francesc Molist
Schothorst Feed Research
The Netherlands



Charles Martin Nyachoti
University of Manitoba
Canada



Markus Rodehutschord
Hohenheim University
Germany



Hans H. Stein
University of Illinois
USA



Rommel C. Sulabo
University of the Philippines
Los Baños, The Philippines



Birger Svihus
Norwegian University of Life Sciences
Aas, Norway



Ester Vinyeta
Nutreco BV
Spain

Program

Day I. Monday June 25, 2018

9:00 Arrival of participants

Welcome, introduction, and overview.....Hans H. Stein and Gonzalo G. Mateos

Session I: Chemical composition of feed ingredients and procedures for evaluating nutritional value.

Instructors: G. G. Mateos, R. C. Sulabo, C. M. Nyachoti and H. H. Stein

9:15 Nutrient composition and nutritive value.Gonzalo G. Mateos
- Proximate analyses
- Amino acid profile and mineral content.

10:15 Fiber fractions in feed ingredients, definition and analysis.Hans H. Stein

11:15 Coffee break

11:45 Nutrient digestibility and procedures for evaluation.Rommel C. Sulabo

12:45 Lunch at your own

14:00 Energy systems for pigs and poultry and methods for evaluation.C. Martin Nyachoti

Session 2: Pulse crops. Overview over global production, types, nutritional composition, energy content, anti-nutritional factors, inclusion rates, and quality control.

Instructors: C. M. Nyachoti, H. H. Stein, G. G. Mateos

15:00 Global production of pulse crops.Hans H. Stein

15:05 Field peas, split peas, and pea protein concentrate.C. Martin Nyachoti

16:00 Coffee break

16:20 Faba beans.Gonzalo G. Mateos

16:45 Lupins, lentils, and other legumes.C. Martin Nyachoti

17:15 Adjourn

Day 2. Tuesday June 26, 2018

Session 3: Oilseeds and oilseed meal: Overview over global production, processing technology, nutrient content, antinutritional factors, inclusion rates, and quality control.

Instructors: C. M. Nyachoti, G. G. Mateos, R. C. Sulabo, and H. H. Stein

- 9:00** Global production of oilseeds and oilseed meal.Hans H. Stein
- 9:10** Soybeans and soybean derived products: full fat soybeans, soybean meal, soybean expellers.
.....Gonzalo G. Mateos
- 10:15** Added value soybean products: fermented and enzymatically processed soybean meal, soy protein concentrates, and soy protein isolate.Hans H. Stein
- 10:45** Quality control of soy products.Gonzalo G. Mateos
- 11:15** Coffee break
- 11:45** 00-Rapeseeds/canola seeds, 00-rapeseed/canola meal, 00-rapeseed/canola expellers. Conventional and high protein 00-rapeseed/canola.C. Martin Nyachoti
- 12:45** Lunch at your own
- 14:00** Cotton seeds and cotton seed meal, peanut meal, sesame meal.Rommel C. Sulabo
- 14:20** Sunflower seeds, sunflower meal, sunflower expellers, and sunflower protein concentrate.
.....C. Martin Nyachoti
- 14:40** Copra meal, copra expellers, palm kernel meal, palm kernel expellers.Rommel C. Sulabo
- 15:00** Coffee break

Session 4: Fats and oils.

Instructors: G. G. Mateos, C. M. Nyachoti

- 15:20** Animal fats (tallow, lard, poultry grease, fish oil), plant oils (maize oil, soybean oil, palm oil, copra oil), and technical fats.Gonzalo G. Mateos
- 15:45** Quality control of fats.Gonzalo G. Mateos
- 16:15** Energy assessment of fats and oils.C. Martin Nyachoti
- 16:45** Inclusion rates and influence of lipid sources on feed quality.Gonzalo G. Mateos
- 17:15** Adjourn

Day 3. Wednesday June 27, 2018

Session 5: Cereals and cereal co-products: Definition of products. Nutrient evaluation.

Instructors: R. C. Sulabo, M. Rodehutschord, G. A. Casas, C. M. Nyachoti, B. Svihus, and H. H. Stein

- 9:00** Global production of cereal grains and cereal grain co-products.Hans H. Stein
- 9:10** Nutritional composition of maize, wheat, barley, triticale, rye, and oats.Markus Rodehutschord
- 9:50** Sorghum and sorghum co-products, including sorghum DDGS.Rommel C. Sulabo
- 10:20** Digestibility of energy and nutrients in wheat, triticale, barley, and rye fed to growing pigs.
.....Markus Rodehutschord
- 10:50** Coffee break
- 11:20** Digestibility of nutrients and concentration of ME in corn, wheat, triticale, and rye fed to poultry.
.....Markus Rodehutschord
- 11:50** Rice and rice co-products: brown rice, broken rice, rice bran, and others.Gloria A. Casas
- 12:30** Bakery meal, cookie meal, confectionary products.Hans H. Stein
- 12:45** Lunch at your own
- 14:00** Maize and wheat co-products including DDGS, gluten feed, gluten meal, germ meal, middlings,
and others.Hans H. Stein
- 15:00** Oats and oat co-products.C. Martin Nyachoti
- 15:20** Coffee break
- 15:40** Use of cereal grain co-products in diets for poultry.Birger Svihus
- 16:40** Cassava meal, cassava co-products, and other tubers.Rommel C. Sulabo
- 17:15** Adjourn

Day 4. Thursday June 28, 2018

Session 6: Mineral sources and ingredients in pig and poultry diets. Digestibility and phytase application.

Instructors: H. H. Stein, M. Rodehutscord, C. M. Nyachoti

9:00 Calcium sources and utilization: Plant and mineral (limestone, calcium carbonate, dicalcium and monocalcium phosphate) origin.Hans H. Stein

9:30 Phosphorus sources and utilization: mineral, animal and vegetable sources. The role of phytic acid.Markus Rodehutscord

10:00 Phytase effects on P availability in pigs and poultry.C. Martin Nyachoti

10:30 Coffee break

11:00 Calcium and phosphorus digestibility by pigs.Hans H. Stein

12:00 Calcium and phosphorus digestibility by poultry.Markus Rodehutscord

13:00 Lunch at your own

Session 7: Animal proteins.

Instructors: R. C. Sulabo, F. Molist

14:15 Meat and bone meal, poultry meal, fish meal.Rommel C. Sulabo

15:00 Co-products from the dairy industry: skim milk powder, whey powder, whey permeate.Fransesc Molist

15:30 Coffee break

15:45 Blood meals, blood plasma, and blood cells.Rommel C. Sulabo

16:15 Intestinal co-products.Rommel C. Sulabo

16:30 New proteins: Insect protein, algae protein, single cell protein, lemna meal.Fransesc Molist

17:15 Adjourn

Day 5. Friday June 29, 2018

Session 8: Implementation of concepts and quality control in feed milling. Good manufacturing practices.

Instructors: J. Acedo-Rico, E. Vinyeta, H. H. Stein

9:00 Feed mill equipment, technologies, and quality of final products.Juan Acedo-Rico

9:45 Feed milling cost analysis. Influence of feed formulation.Juan Acedo-Rico

10:15 Coffee break

10:45 Use of feed technology to improve the nutritional value of feed for poultry.Ester Vinyeta

11:30 Use of feed technology to improve the nutritional value of feed for pigs.Hans H. Stein

12:15 Course evaluation and certificates.Gonzalo G. Mateos and Hans H. Stein

13:00 Adjourn