

## ACHIEVEMENTS IN STUDYING PIG AND POULTRY NUTRITION

### Determination of chemical composition and nutritive value of feedstuffs

Accurate determining nutritive value of feedstuffs would be a basic principle for formulating proper feed formula, which assure providing a right amount of nutrients and voiding waste of feed resources. It is because input parameters on nutritive value of feedstuffs, nutrient requirements of the animal, price and limitation range of ingredients used are all necessary for feed formulation of both handed and computerized mixing. *In vitro* chemical analysis of feedstuffs has been done consecutively in recent years. More than 2000 samples of various kind of feedstuffs including green stems and leaves, fruits and roots, energy-rich, protein-rich and mineral-rich ingredients have been analyzed for proximate principles (moisture, crude protein, ether extracts, crude fiber, calcium, phosphorus, salt and fiber structure: ADF, NDF and Lignin), trace minerals including Fe, Zn, Cu, Co, Mn and I. In addition, nearly 1000 samples of various ingredients have been analyzed for amino acid concentration. The interrelationships between nutrient composition of feedstuffs and season, type of soil, type of feedstuff have been

investigated. Furthermore, regression equations predicting amino acid values basing on crude protein level of common ingredients such as fishmeal, soybean meal, corn, broken rice, rice bran wheat bran and cassava have also been developed. The use of these equations allows saving the cost for analysis. In practice, it only needs 50,000 VND to analyze crude protein and predict amino acid concentration basing on regression equations instead of spending 700,000-800,000 VND for more than 95% of accuracy. By this way, amino acid concentration is obtained quickly and really.



**Bo Lat fish to produce fish meal**

All feed mills, in practice, do not install apparatus for amino acid analysis, and in case of sending samples to professional laboratories for analysis, it usually take for long time, more than 10 days, which affecting to production process.



**Analyzing nutrients of feedstuff**

This database has been gathered and published in a book. It is diffused and used widely in the practice of feed production, research and teaching and are considered as an indispensable handbook for calculating and formulating diets in animal feeding.

### Studies on the digestibility

Since 2001, modern techniques for studying digestibility worldwide such as ileo-caecal

cannulation in pigs and caecectomy technique in chickens have been applied. The result of these studies are digestibility coefficients of energy, protein, amino acids of most common feed ingredients for pigs and poultry such as corn, broken rice, rice bran, wheat bran, cassava, various kinds of fishmeal, full fat soybean and various kinds of soybean meal, groundnut meal, sesame meal, meat meal and corn gluten. These are very valuable data being applied in the practice.

### **Determination of nutrient requirements for pigs and poultry**



**Nutrient requirement study**

Study on amino acid balance to reduce crude protein level in the diets has been carried out which is not only minimize the waste of protein sources (Vietnam have to import more than 1 million tones soybean meal, 200,000 tonnes fishmeal) but also minimize environmental pollution due to reducing nitrogen excretion. In average, the result of this study has brought about by 5-10% reduction in feed expense. Several studies on the requirement of energy, protein, calcium, phosphorus, Lysine, methionine, methionine + Cystine, Threonine and Tryptophan for broilers, commercial laying and breeder hens of both egg and meat type chickens have been carried out. The recommendation on optimal nutrient levels for various types of domestic animal has been

provided. Study on the electrolyte balance and interrelationship between electrolyte and amino acid balance in the diet for broiler chickens has been carried out and obtained valuable results. By conducting trials in thousands of pigs (funded by national program of breeding and feeding for pigs-KH0806 and national project on nutrition and feed for pigs and poultry) optimum nutrient levels for growing pigs, sow, gilt and boar have been concluded. Furthermore, study on the use of processed ingredients in the diets for pigs has also interested. Outcomes of nutrient requirement studies have been applied widely into feed and animal production, which have actively contributed to the steady growth of domestic feed mill development.

### **Studies on the development of feed formula to apply into feed industry production**

Basing on the results of chemical composition and nutritive value of feedstuffs in Vietnam, nutrient requirements of pigs and poultries and the use of raw materials, we have developed various feed formula for pigs and poultries by least cost formulation. Two important solutions of “Diversifying diets” and “Concentrated feed” became very popular at the moment, which are applied not only by domestic feed mills but also by foreign invested ones. Several foreign invested companies admitted that the approach of Vietnamese scientists is creative and suitable for Vietnamese conditions. Most of the feed mills in the South of Vietnam concentrated mainly in Ho Chi Minh city, Binh Duong, Dong Nai and Mekong delta such as: Lai Thieu, Vina, Thanh Loi, Dai Loi, Thai My, Dai Hung have applied research results. hundreds billion VND of extra profit from applying research results is estimated annually.



**Heo với canun van hồi manh tràng sẵn sàng cho thí nghiệm tiêu hoá**

**Cannulation for digestibility study**

