國立嘉義大學九十四學年度博士班入學考試

所別：農學研究所
組別：乙組（動物組）
科目：農學專業英文

1. **Please translate following paragraph into Chinese.（25%）**

Chronic administration of β-adrenergic agonists may markedly stimulate hypertrophy of skeletal muscle. The hypertrophic effect is not confined to normally growing skeletal muscles but is also evident in muscles whose growth is disturbed due to physiological alterations or pathological conditions. In conditions where substrate availability was limited by severe restriction of feed intake, cimaterol or clenbuterol induced hypertrophy of skeletal muscles or at least maintained the anabolic capacity of these compounds in lambs and rats. However, the hypertrophic β-adrenergic agonists are transient, with the effect diminishing during prolonged treatment.

2. **Please translate following paragraph into Chinese.（25%）**

Spray chilling, a system whereby chilled water is applied to carcasses during the early part of postmortem cooling, is used to control carcass shrinkage and to improvement chilling rate through evaporative cooling. Delayed chilling can be used to reduce or prevent the negative effects of cold shortening; however, production constraints in high-volume facilities and food safety concerns make this method less useful in commercial setting. Rapid or blasting chilling can be an effective method to reduce the incidence of pale, soft and exudative (PSE) in pork but extreme chilling system may cause quality problems because of the differential between the cold temperature on the outside of the carcass compared to the warm muscle temperature within the carcass.

3. Please read the article and answer the questions in English or Chinese. （25%）

KEEP IT SIMPLE

Successful breeding programs are usually simple. Simple does not mean primitive; these programs do not avoid using advanced breeding technology. They are simple in concept. They have well-established goals and remain unencumbered by elaborate rules for individual matings and other grand schemes for beating the Mendelian odds.

Breeders can simplify their programs by clearly defining the roles their animals best fit. Not all breeders should provide a specialty product, but neither should they try to make their animals all things to all people. They should limit the traits under selection to those that are truly important and (in food and fiber species, anyway) ignore those traits whose value is purely aesthetic.

Complex breeding programs are difficult to maintain. They require more time and energy than their perceived advantages justify. Simple programs, however, tend to remain in place. Simplicity breeds consistency.

Hints：

Encumber: To hinder or impede the action or performance of.

Elaborate: Planned or executed with painstaking attention to numerous parts or details.

Aesthetic: A guiding principle in matters of artistic beauty and taste; artistic sensibility.

Questions：

(1) Why is simplicity important to a breeding program?

(2) What can be done to foster simplicity?

4. Please read the article and answer the questions in English or Chinese. （30%）

ABSTRACT

Forty Swiss Large White piglets of 4 weeks of age were used to determine the effect of dietary Chinese rhubarb on growth performance, as well as on energy and nitrogen metabolism by means of indirect respiration calorimetry studies. A cereal-based diet, supplemented with four different dosages of Chinese rhubarb (0.0%, 0.25%, 0.5%, 1%), was offered as libitum to the piglets. Gaseous exchange was measured, and urine, faeces, and blood samples were taken. The addition of 0.25% dietary rhubarb increased feed intake (+32%) and daily weight gain (+67%) compared to the diet containing the greatest amount of rhubarb (1%). The piglets fed diet supplemented with 0.25% rhubarb digested and metabolised more energy and nitrogen relative to the animals of treatment 1%. As a consequence, the same group (0.25%) converted more energy and nitrogen into body protein than piglets receiving diet supplemented with 1% rhubarb. However, compared to the control group, the addition of 0.25% rhubarb to the diet resulted in not significantly altering growth performance, energy, and nitrogen metabolism of the animals.

Blood parameters were not affected by the rhubarb supplementation. The dose-responding effect of Chinese rhubarb was reflected by the dry matter content of faecal samples. According to the laxative effect of higher doses of rhubarb, the addition of 1% rhubarb to the diet reduced dry matter content of faeces. This effect was well visible in practice, although not relevant in statistical terms. The addition of 0.5% dietary rhubarb had no relevant effect on growth performance or on energy and nitrogen metabolism of treated animals.

Questions：

(1) What's the purpose of the study?

(2) What's the experimental design in the above study? What was the experimental unit used?

(3) Did higher dosages of Chinese rhubarb improve the growth performance and nitrogen metabolism of the piglets? Please explain. (Hint: Compare the 0.25% and 1% supplementation).