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**EFFECT OF CADMIUM ON THE ABSORPTION  
OF ESSENTIAL METALS IN SWEET SORGHUM  
(*Sorghum bicolor*L.) AT THE SEEDLING STAGE**

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**ABSTRACT**

*Sweet sorghum (*Sorghum bicolor* L.) is an important bioenergy crop with a high heavy metal resistance, great biomass and sugar enrichment in stem. Other studies concluded that sorghum plants were highly tolerant to metal pollution and capable of reaching high biomass values in the presence of metals. However, the influences of heavy metals on the uptake of essential elements metal into plant have received less attention. This study aimed to examine the effects of Cadmium (Cd) on the uptake of essential metals in twosweet sorghum cultivars, Keller (KE) and E-Tian (ET), at the seedling stage using five Cd levels of 0, 5, 10, 25 and 50 ppm in soils. The results showed that low concentration of Cd ( $\leq 10$  ppm) increased the uptake of calcium (Ca), magnesium (Mg) and iron (Fe) in all plant parts of both cultivars; however, high concentrations of Cd (25 and 50 ppm) significantly inhibited the uptake of these nutrients. The accumulation of zinc (Zn) and copper (Cu) in all plant parts significantly decreased when both cultivars exposed to high Cd concentration of 25 and 50 ppm. The findings suggested that Cd could be affected the uptake and transport of essential nutrients, and thus impacted on the growth and reproduction of sweet sorghum cultivars.*

**Keywords:** *Sweet sorghum, Cadmium, heavy metals, essential nutrients*

**USE OF XYLANASE (XYLAMAX)  
IN COLOR-FEATHERED BROILER DIETS**

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**ABSTRACT**

*Non-starch polysachcharides (NSPs) are antinutritive components in feed ingredients that reduce the digestibility of mono-gastric animals. The supplementation of xylanase enzyme to improve animal production by helping NSPs digestion has been studied extensively in industrial chickens, but not in Vietnamese local chickens. This study was conducted to evaluate the efficacy of using xylanase (Xylamax product) in diets of Vietnamese color-feathered broilers. Six hundred chickens were assigned into six treatments: T1- control group was fed standard diet, T2- group 2 was fed standard diet supplemented with Xylamax (500g/MT), T3 and T4 groups were fed standard diet with 5% reduction of energy and amino acids specification, and with and without Xylamax supplementation, respectively. T5 and T6 groups were fed standard diets with 7% reduction of energy and amino acids specification, with and without Xylamax supplementation, respectively. Supplementation of xylanase (Xylamax) significantly improved live weight of birds after the first 21 days of feeding, and FCR of 0-21 day phase ( $P < 0.05$ ). Furthermore, birds fed reduced energy and amino acids (5% and 7%) diets had much higher average feed intake (FI), and FCR than birds in control treatment ( $P < 0.05$ ). This study shows that reduced energy and amino acid diets had negative effects on growth performance of Vietnamese color-feathered or*

local chickens. The supplementation of xylanase helps to reverse these effects, especially in early feeding phase (0-21 days).

**Keywords:** xylanase, Vietnamese chicken, growth performance

## **OPTIMIZING THE PCR PROTOCOL TO DETECT BALANTIDIUM COLIINFECTED IN PIGS**

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### **ABSTRACT**

*This study aimed to establish and optimize the PCR protocol to detect Balantidium coli (B. coli) in pigs. PCR protocol for detection of B. coli was optimized in primer concentration and annealing temperature before finding out the minimal limited detection of B. coli copies. As a result, an optimized PCR protocol was established with primer concentrations of B. coli, B. coli-F and B. coli-R at 0.2  $\mu$ M and 0.2  $\mu$ M, respectively. The optimal annealing temperature of primer pairs which was identified in PCR is 58<sup>o</sup>C. Minimal limited detection of B. coli copies (cells) for obtaining PCR amplification was 70 trophozoites per 1 ml of culture broth (TPM). 25 tested field fecal samples tested by PCR showed 68% of positivity. The study was successful to optimize the PCR protocol to detect B. coli both from culture broth and field fecal samples.*

**Keywords:** pig, PCR, Balantidium coli

## **THE PREVALENCE OF VIRUSES CAUSED ACUTE DIARRHEA IN PIG FARMS LOCATED IN THE SOUTHERN PROVINCES**

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### **ABSTRACT**

*To date the infectivity of PEDV, TGEV, PRoA and PDCoV in Vietnamese pig herds, a survey on the prevalence of the PEDV, TGEV, PRoA and PDCoV in pig farms burdening acute diarrhea from the Southern provinces was conducted. Results of this study showed that the prevalence of PEDV, TGEV, PRoA and PDCoV in pig farms was 31.94 %, 0.0 %, 11.11 % and 0.0 %, respectively. The prevalence of PEDV and PRoA in pig farms was highest in the Southeast area with a ratio of 38.89% (14/36) and 8.33% (3/36), respectively. Meanwhile, PEDV had a positivity of 50.00 % (2/4) in the Central Highland. For positivity in age-groups of pigs, PEDV infection rate was the highest in 1-7 day-old pigs (50.00 %) and those of PRoA was the highest (19.05%) in pigs of 8 to 28 day-old. Moreover, a case of acute diarrhea in pigs co-infected PEDV and PRoA (2.13%) was identified. There was no positivity of TGEV and PDCoV from 104 collected pigs of surveyed 72 pig herds.*

**Keywords:** piglets, acute diarrhea, virus, prevalence

## DIAGNOSIS AND TREATMENT OF FOREIGN BODY IN DOGS' STOMACH

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### ABSTRACT

Foreign bodies occur when dogs swallow objects that will not pass through their gastrointestinal tract leading to obstruction and/or damage of the gastrointestinal system. These are common emergency conditions in veterinary practice. In this article, 10 foreign body cases were diagnosed and followed the treatment at AEC Pet Hospital. All cases were successfully removed the foreign bodies from the stomach. However; post operation care should be paid attention to support the wound healing. Foreign items need to put away from dog's playing area to prevent the problems.

**Keywords:** Foreign body, dog, stomach, gastrotomy

## EFFECTS OF C/N RATIOS ON WATER QUALITY AND GROWTH PERFORMANCE OF PACIFIC WHITE SHRIMP *Litopenaeus vannamei* IN NURSERY STAGE

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### ABSTRACT

The present study evaluated the effects of carbon/nitrogen ratios (C/N ratios) on water quality parameters, growth performance and survival rate in zero-exchange system for Pacific white shrimp (*Litopenaeus vannamei*) nursery culture. Proximate analysis of biofloc was also assessed. Molasses was used as carbohydrate source to manipulate three C/N ratios of 10:1 (CN10), 15:1 (CN15) and 20:1 (CN20). Each treatment consisted of two replicate fiberglass tanks (2m<sup>3</sup>), each stocked with 2,000 PL<sub>20</sub> (equivalent to 1,000 shrimp.m<sup>-3</sup>). Increasing the C/N ratio from 10 to 20 reduced the total ammonia-nitrogen, nitrite-nitrogen and nitrate-nitrogen in water. Significant effects of C/N ratios were found on biofloc development (floc volume and total suspended solid). The highest final weight, specific growth rate, weekly weight gain and survival rate and the lowest food conversion ratio were recorded in treatment CN20. At the end of the experiment, proximate analysis of the bioflocs collected from three treatments exhibited ash levels of 41.8 - 52.5%, protein levels of 20.8 - 27.5% and lipid levels of 3.66 - 4.72%. The results from this study demonstrate that molasses supplementation for C/N ratio manipulation resulted in a significant effect on water quality, biofloc composition and shrimp performance in zero-exchange biofloc-based culture systems.

**Keywords:** biofloc composition; C/N ratios; Pacific white shrimp (*Litopenaeus vannamei*); zero-exchange

## **ANALYSIS OF FACTORS AFFECTING THE SUCCESSFUL ADOPTION OF THE INTEGRATED COCOA-COCONUT SYSTEM IN VIETNAM**

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### **ABSTRACT**

*Over the last decade, significant supports from the government and international programs have been spent for expanding cocoa areas in Vietnam. The integrated cocoa-coconut system is considered an important way to reduce the economic risks of the mono-crop coconut farming and increase income for small farmers in the Mekong Delta. This study assessed the economic efficiency of the integrated cocoa-coconut system and explored factors that affect the successful adoption of this integrated farming model by the farmers in Ben Tre province. Using Logistic regression analysis, the study found that economic factors such as membership of the cocoa club, farm size, financial capability of the household, education, farming experience, and technical knowledge are important determinants of farmer's successful adoption of the integrated cocoa-coconut model. These factors need to be considered for effective expansion of cocoa-coconut system in the future.*

**Keywords:** *Cocoa-coconut system, adopted model, human capital, small farmers*

## **LAND USE/ LAND COVER CHANGE (LUCC) DETECTION UNDER CLIMATE CHANGE: A CASE STUDY IN BA TRI, BINH DAI AND THANH PHU DISTRICT IN BEN TRE PROVINCE**

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### **ABSTRACT**

*This study investigates land cover changes occurring between 2005 and 2015 in climate change affected region of Ben Tre province using a systematic sample of Landsat imagery and change detection technique. Supervise classification will be done using maximum likelihood technique to produce land cover change information for different land cover classes and different land cover date. Result of classification revealed that shrimp pond is largest land use type with 46,007ha (32% study area); water bodies, residential land are the second and third largest area with 39,965ha (28% study area) and 21,540ha (15% study area); coconut palm area plays a significant covered in study area known as a stable land cover type occupied 17,675ha (12% study area); remain land use/cover types are paddy field (rice land), forest land and barren land. The result of change detection revealed that residential land and coconut palm have highest increasing rate with 42% (8,252ha) and 40% (4,081ha), barren land and paddy field land decreased in area with 82% (2,087ha) and 66% (15,921ha). In particular, largest increasing area of land use/covers are residential land and shrimp pond. The increasing area almost comes from paddy field and barren land because of livelihood activities.*

**Keywords:** *Land use/land cover, Classification, Remote sensing, Change detection, Landsat image*

**SUGGESTED INDICATORS FOR LAND EVALUATION IN  
CATCHMENT SCALE: CASE STUDY IN VU GIA-THU BON  
WATERSHED, QUANG NAM PROVINCE**

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**ABSTRACT**

*Land evaluation indicators are very important for the management and development of catchment. Vu Gia – Thu Bon catchment now has many problems in managing and using land and water resources. This paper cites two most widely known systems related to land evaluation - the USDA Land Capability Classification (LCC) and FAO Agro-ecological Zone (AEZ). Until now, there are only a few applications of land evaluation on catchment such as SWAT model. Consequence, we suggest some indicators such as OECD indicators; the participation of stakeholders; conservation at the farm level and knowledge of farmers; surface and ground water data collection at sub-catchment; and yield and cost of selected land use systems.*

**Keywords:** *indicators, land evaluation, catchment, Vu Gia-Thu Bon*

***KETOSIS AND EFFECTS OF KETOSIS IN MILK PRODUCTION  
ON THE DAIRY DEMONSTRATION AND EXPERIMENTAL  
FARM IN HO CHI MINH CITY***

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**ABSTRACT**

*Ketosis is a common disease in dairy cattle. The purpose of this study is to diagnose ketosis and treat subclinical and clinical cases as well as evaluate the effect of ketosis on milk production. The survey was conducted on 33 cows and the results showed that ketosis is common disease on dairy cows at the Dairy Demonstration and Experimental Farm in Ho Chi Minh city with 27.3 % subclinical (BHBA level between 1.2-2.8 mmol/L) and 9.1 % clinical cases (BHBA level  $\geq$ 2.9 mmol/L). Propylene glycol works effectively on subclinical cases with 100% recovery rate. The combination of propylene glycol and glucose was good for clinical ketosis. Early treatment could bring back normal milk yield of ketosis cows. It is necessary to detect early ketosis and treat on time to prevent economy loss, and protect the health of cows*

**Keywords:** *Ketosis, BHBA concentration, Glucose level, Milk yield*

**EVALUATION OF YIELD AND NUTRITIONAL VALUES  
OF HYLOCEREUS UNDATUSEXTRACTS DRAWN OFF BY  
FREEZING-THAWING WITH ULTRASOUND METHOD AND  
ENZYME-ULTRASOUND METHOD**

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**ABSTRACT**

*This study was carried out to investigate the factors affecting the extraction yield and the nutritional values of dragon fruit juice by combining freezing – thawing with ultrasound method and the enzyme treatment and ultrasound method. In the combination of freezing - thawing and ultrasound method, the freezing time and the ultrasound time is 36 hours and 120 seconds, respectively. The extracted juice contained total sugar  $11.56 \pm 0.14194$  g/100g, total acid  $0.45 \pm 0.14412$  g/100g, ascorbic acid  $5.9 \pm 0.00197$  mg/100g and the extraction yield is  $70.37 \pm 1.56695$  %. In the enzyme-ultrasound method, the enzyme treatment time and the ultrasound time is 40 minutes and 120 seconds respectively. The extracted juice contained total sugar  $11.7 \pm 0.26532$  g/100g, total acid  $0.25 \pm 0.02484$  g/100g, ascorbic acid  $4.5 \pm 0.00007$  mg/100g and the extraction yield is  $81.95 \pm 1.94758$  %. The method of freezing - thawing combined with ultrasound kept higher nutritional values but brought lower extraction yield than that of enzyme-ultrasound.*

**Keywords:** Enzyme - ultrasound, dragon fruit juice, extraction yield, freezing – thawing, nutritional values

**COURSE TIMETABLING BASED ON GENETIC ALGORITHM  
AND GRID COMPUTING**

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**ABSTRACT**

*Course timetabling is one of the most important tasks in schools – especially in universities. That is an arrangement of a set of courses, classrooms, lecturers, students,... in which the satisfaction of given constraints must be maximum. Depending on particular characteristics of each university, many works related to course timetabling have been investigated. In this paper, Genetic Algorithm coordinated with Local Search Strategy and deployed on Grid Computing environment is a feasible approach. According to this approach, finding the solution of problem is implemented in two steps. Firstly, course timetabling is scheduled by considering hard constraints. Then, genetic algorithm is used to determine optimal timetable in which soft constraints are the least violating. After testing with real data at Nong Lam University HCM City Vietnam, the experimental results reveal that the solution of this approach satisfies almost all of the given constraints, balances resources, and reduces the execution time.*

**Keywords:** course timetabling, local search, genetic algorithm, grid computing