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Rainwater and throughfall chemical concentration pattern under oil palm and regenerated secondary tropical forest

GEOFFERY JAMES GERUSU1*, MOHD SALAHUDDIN ROSLAN1, MOHD AMIN ROSLEE1 and MUHAMAD MU’AZ MAHAMAD YUSUF1

The plant canopies play an important role in determining the ionic composition of the rainwater and throughfall under the canopies. Two types of canopy, namely: Regenerated Secondary Tropical Forest (RSTF) and Oil Palm (OP) were used to investigate the pattern of chemical concentration under these canopies. This study also examined the depositions rates and enrichment ratio of these ionic composition. Results revealed that the concentration exchange increase for Calcium (Ca2+), Potassium (K+) and Magnesium (Mg2+) under throughfall but less from open-field rainwater. The throughfall samples from both canopy types indicated higher chemical concentration compared to direct rainwater and it was suggested that the plant canopies could alter the rainwater that fall under the canopy. Other finding revealed that the increase in rainfall intensity significantly decrease the chemical concentration in throughfall and suggested that this may be due to dilution process. Enrichment ratio of these chemical concentration from RSTF was found to be higher than OP which suggested that forest canopies with more complex canopy morphology may contribute higher ion leaching rates. In general, this finding revealed that canopy cover and rainfall intensity may have direct influence on chemical concentration patterns and depositions rates of throughfall under both canopy types.

Keywords: ionic composition, depositions rates, enrichment ratio, ion leaching, particulate matter, canopy morphology, oil palm plantation, regenerated secondary tropical forest

1Department of Forestry Science, Faculty of Agriculture and Food Sciences, Universiti Putra Malaysia Bintulu Sarawak Campus, 97000 Bintulu, Sarawak, Malaysia.
*Corresponding author: e-mail – geoffery@upm.edu.my

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Diversity and biocontrol potential of dominant ants associated with the cacao mirid bug, *Helopeltis bakeri* Poppius (Hemiptera: Miridae) in a selected cacao farm in Sto. Tomas, Batangas, Philippines

**ANTHONY IAN G. PAG-ONG**¹, ²*, **ALBERTO T. BARRION**³, ⁴ and **DIVINA M. AMALIN**³

The ants associated with cacao (*Theobroma cacao* L.) suspected as predators of the cacao mirid bug, *Helopeltis bakeri* Poppius were surveyed using four collecting methods, namely: (1) beating the canopy; (2) handpicking; (3) pitfall trapping, and (4) ground surface food-baiting in regularly pruned trees and weeded farm (site 1) and irregularly pruned trees and weedy farm (site 2) in Santo Tomas, Batangas, Philippines during the month of January 2018. A total of 2,072 ant individuals (1,019 in site 1 and 1,053 in site 2) belonging to 13 species in 13 genera under four subfamilies were recorded. These are Myrmicinae with 1,182 individuals (57.04%) in five species represented by *Solenopis geminata* Fabricius 1804; *Tetramorium* sp.; *Carebara diversa* Jerdon 1851; *Pheidole* sp. and *Crematogaster* sp.; Formicinae with 793 individuals (38.27%) in four species - *Nylanderia* sp.; *Oecophylla smaragdina* Fabricius 1775; *Anoplolepis gracilipes* F. Smith 1857 and *Polyrhachis* sp.; Dolichoderinae with three individuals (0.15%) in *Tapinoma melanocephalum* Fabricius 1793, and Ponerinae with 94 individuals (4.54%) in three species - *Odontoponera denticulata* F. Smith 1858; *Odontomachus similimus* F. Smith 1858, and *Leptogenys* sp. Of all taxa, *C. diversa* and *O. smaragdina* were most preponderant, followed by *Crematogaster* and *Odontoponera* in the second group; whereas, *Anoplolepis*, *Pheidole*, *Nylanderia* and

¹PhD Student in Biology, Department of Biology, College of Science, De La Salle University, 2401 Taft Avenue, Malate, Manila 1004, Philippines
²Faculty, Biological Sciences Department, Institute of Arts and Sciences, Far Eastern University, Nicanor Reyes Street, Sampaloc, Manila, Philippines
³Biological Control Research Unit, Department of Biology, College of Science, De La Salle University, 2401 Taft Avenue, Malate, Manila, 1004, Philippines
⁴Adjunct Curator of Spiders, Parasitic Hymenoptera and Riceland Arthropods, Museum of Natural History, University of the Philippines Los Banos, College 4030, Laguna, Philippines
*Corresponding author: e-mail - anthony_pag-ong@dlsu.edu.ph

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Solenopsis were the least preponderant. Our findings showed that Shannon-Weaver function of diversity (H’) was slightly higher in weedy and irregularly pruned farm (H’=1.18) compared to the weeded and regularly pruned one (H’=1.08). On the other hand, alpha diversity (α) index showed diversity highest in soil (α =1.9) > trunk (α =1.7) > foliage area (0.6). Sorensen’s Coefficient index (CI) of similarity of ant species was high (0.86) denoting that at least nine taxa are common in the same orchard irrespective of farmers practice. A new scoring system was developed based on ant’s attraction to food baits. Of all taxa, only O. smaragdina and Solenopsis geminata preyed on the cacao mirid bug and demonstrated potential use as biological control agents in cacao farms.

Keywords: ants, biological control, Theobroma cacao, diversity, Formicidae, Helopeltis bakeri Poppius, Oecophylla smaragdina Fabricius, Solenopsis geminata Fabricius, scoring system
The changes in China’s rural environmental protection over the past 40 years

Lijun Wang1,2

The situation of China’s rural environmental problems has kept changing since 1973; hence, the related policies been changing constantly. In the past 40 years, the case is that no sufficient attention has been paid to the rural environmental protection, without proper administration and necessary strategies. Meanwhile, the management institutions of rural environmental protection have been weakened. Four points are proposed to protect the rural environment: firstly, the policy frameworks need to be completed; secondly, environmental protection should be stressed in the future policies for rural development in order to show the willingness from national level; thirdly, the organizations for administration should be strengthened and empowered, and fourthly, investment should be dramatically increased.

Keywords: agricultural non-point source pollution, environmental problems in rural areas, rural environmental protection, rural environmental policy, China

1School of Environment, Beijing Normal University, Beijing 100875, China
2School of Environment and Resources, Baoding University, Baoding 071000, China
e-mail: wljun1970@126.com
Experience of gerotranscendence among Korean elderly living alone: A qualitative study

EUNHEE HONG¹ and SOOKBIN IM²*

This qualitative, descriptive study dealt with how the daily stress received by the Korean elderly people living alone impacts their satisfaction of life. Data were collected using semi-structured interviews involving nine elderly persons over the age of 70 years living alone. Nine persons were deep interviewed four to five times. Data were analyzed through deductive content analysis based on the gerotranscendence of Tornstam (1989) where 14 generic categories were derived. Although there are individual differences, the gerotranscendence appeared to those who lived an independent life, maintaining social relations, and experienced stressful events. The gerotranscendence shown in this study was to accept life in the course of nature, to enjoy growing old and accept one’s true self, and to adapt to the present life. It is necessary to have time to be alone in order for gerotranscendence to occur. This study helps us to understand the theory of gerotranscendence by linking it with the experience of elderly living alone, as well as a positive view of the elderly who live alone. To improve gerotranscendence, it would be necessary to develop a community care program to maintain a sustainable social relationship.

Keywords: gerotranscendence, deductive content analysis, transcendence, quality of life, qualitative content analysis, Korean elderly

¹Seoul Women's College of Nursing, 38 Ganhodae-Ro, Seodaemun-Gu, Seoul 03617, Korea
²College of Nursing, Eulji University, 77 Gyoryong-ro, 771 Beon-gil, Jung-gu, Daejeon 34824, Korea
*Corresponding author: e-mail - imsb@eulji.ac.kr Telephone: 82-2-422-259-1711
Growth potential in small-stock, crop and poultry farming systems: Towards poverty alleviation, NDP Vision 2030: Battese-Coelli Analysis

Usapfa Luvhengo

This paper aimed at determining the growth potential using efficiency and productivity levels of three smallholder collective farming systems. Stochastic frontier production model was employed to analyse the primary data collected from three collective farming enterprises. Stratified random sampling technique was used to collect data and SPSS was employed for the analysis. Results showed that small-stock and poultry production has a growth potential as they were under-utilising their resources. Relative to other production systems, crop production showed less growth potential due to resource over-utilisation. The results also revealed that the mean efficiencies across all three enterprises can be improved by over 40%; hence, overall productivity. The study concluded that more resources which are significant in crop production should be acquired to improve growth potential. Furthermore, agricultural education can help improve efficiency in small-stock and poultry farming systems.

Keywords: productivity, efficiency, growth, NDP2030, cooperative

1Department of Agricultural Economics and Extension, North West University, Private Bag X 2046, Mmabatho 3725, South Africa  e-mail: luvhengousapfa@gmail.com
Short Communication

The causes of loss of endemic cyprinids in Lake Lanao, Mindanao, Philippines

RAFAEL D. GUERRERO III\textsuperscript{1,2}

The loss of 15 of the 18 endemic cyprinids (\textit{Barbodes} spp.) in Lake Lanao in Mindanao, Philippines is attributed to the accidental introductions of native fishes (\textit{Glossogobius giurus} and \textit{Giurus margaritacea}) from Lake Mainit, also in Mindanao. The heavy predation by \textit{G. margaritacea} of the cyprinids has reduced the populations of the economically-important fishes by 95\% from 1990-1991. \textit{G. margaritacea} has also markedly reduced the populations of other important fishes in the lake, \textit{Channa striata} and \textit{Cyprinus carpio}, and even \textit{G. giurus} but not of \textit{Oreochromis niloticus}. The predominance of \textit{G. margaritacea} in the lake may be due to the absence of major predatory fishes (\textit{e.g.}, \textit{Anguilla celebesensis}) that was present in the lake prior to the construction of a dam in the headwater of the Agus River, the only outlet of the lake to the sea, that has prevented the migration of the catadromous eel species that are highly predaceous.

\textbf{Keywords:} endemic cyprinids, \textit{Barbodes} spp., predatory fishes, \textit{Glossogobius giurus}, \textit{Giurus margaritacea}, \textit{Anguilla celebesensis}, accidental introductions, Lake Lanao, Mindano, Philippines

\textsuperscript{1}Aquatic Biosystems, Bay, Laguna 4033, Philippines e-mail: aquabios@yahoo.com
\textsuperscript{2}Academician, National Academy of Science and Technology, Department of Science and Technology, Gen. Santos Avenue, Bicutan, Taguig City, Metro Manila, Philippines
Risk and protective factors affecting suicide attempts among Korean elderly living alone in urban areas

Myoung Eun Lee¹, Mi Hui Jung², Soojin Kim³ and Boyoung Kim⁴*

Among the mental health problems suffered by the population aged 65 years or older, suicide has become a serious social problem. Thus, this study aimed to determine the factors affecting suicide ideation among the elderly living alone by dividing them into a low suicide risk group and a high suicide risk group according to their experiences of suicide attempts. The study analyzed both risk factors for and protective factors against suicide ideation through a survey of 217 elderly persons living alone in an urban area. The results of the analysis of the two subject groups depending on their experiences of suicide attempts showed that those who had attempted suicide had a high level of depression, suicide ideation and loneliness, while displaying a low level of social support and resilience. The factors influencing suicide ideation among the subjects who had attempted suicide were frequency of contact with their families, depression, social support and resilience. Therefore, to care for the elderly exposed to mental health risk factors, there is a need for an alternative approach to improve the mental health crisis management ability at the community level, beyond individually-targeted services or therapeutic approaches by experts.

Keywords: suicide attempts, elderly people, risk factors, protective factors, Korea

¹Intermediary Manager, Mental Health Welfare Center of Gwangsan-gu, South Korea  
e-mail: shinesilver@hanmail.net
²Team Manager, Mental Health Welfare Center of Gwangsan-gu, South Korea  
e-mail: gsgmc@daum.net
³Professor, College of Nursing, Chonnam National University, South Korea  
e-mail: pinehillkim@naver.com
⁴RN, PhD, PMHNP, Assistant Professor, College of Nursing and Institute of Health Sciences, Gyeongsang National University, 816-15 Jinju-daero, Jinju 52727, Gyeongnam, South Korea  
*Corresponding author: e-mail - bkimjhu@gmail.com Phone: +82-55-772-8248 Fax: +82-55-772-8222
Why *Vatica mangachapoi* shows stronger capability of natural regeneration in the coastal barren sandy soil-seed rain dynamic?

BIN YANG¹, BING LV¹, NA WANG¹, SHUJU LIU¹, YUPING ZHOU², JAMIE SCHULER³, QINGYU HAO¹,⁴*, and JINGXIN WANG³,⁴**

In order to explore why *Vatica mangachapoi* can establish and regenerate in sandy beach, the mechanism of seed rain dispersal was studied in both mature and secondary stands in the coastal *V. mangachapoi* forest of Shimei Bay, Hainan Island, China. In each stand, 72 seed traps (0.5×0.5 m each) were established in three replicate plots (12 traps/plot) to monitor seed rains weekly for two years, from 2011-2012. Seed rains showed an 8-fold difference between years (59.4 vs. 6.6 seeds/m²). The percentage of sound seeds was less than 21% regardless of year due to a serious insect pest. However, meteorological data suggested low temperatures can decrease insect damage to some extent. Annual seed rains all exhibited a tendency for a bimodal pattern, but the bimodal pattern was much more obvious in the good seed year. Seed rain dispersal occurred in the strong rainy period of the wet season, and ended in 1-2 months before the end of the wet season. Therefore, the bimodal dispersal pattern and best dispersal season of seed rains were one of successful succession strategies for *V. mangachapoi* population in the barren sandy soil coast.

**Keywords:** seed rain, seed dispersal, tropical rain forest, coastal *Vatica mangachapoi* forest, Hainan Island, China

¹Ministry of Education, Key Laboratory for Ecology of Tropical Islands, College of Life Sciences, China  
²School of Information Science and Technology, Hainan Normal University, Haikou 571158, China  
³Division of Forestry and Natural Resources, West Virginia University, P.O. Box 6215, Morgantown, WV 26506-6125, USA  
⁴Corresponding authors: e-mails - *hnhaqyq@126.com  **Jingxin.Wang@mail.wvu.edu

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Using the Fixed Effect Model (FEM) to determine the effects of the South African National Health Insurance (NHI) policy on public health expenditure

USAPFA LUVHENGO¹*, RANGARIRAI ROY SHOKO² and JOSEPH NEMBO LEKUNZE³

The South African health sector has undergone considerable transformation marked by constitutional and legislative policies which guarantee the right to access healthcare. However, South Africa remains plagued by inequities in access and utilization amongst socio-economic groups. A quantitative research design was adopted and panel data from 2001 to 2011 were analysed using the Fixed Effects Model. Variables used in the analysis included: public health expenditure as the dependent variable; GDP as a standard measurement of a country’s income; overall fiscal capacity as a share of GDP reflected in total government expenditure given a specific GDP level, and demographic structure. From the analysis, the null hypothesis which states that the model is not of good fit was rejected and the model was found to be of good fit at all levels of significance. The significant and positive effects of the GDP coefficient at 1, 5 and 10% levels denote increases in South Africa public health expenditure from 2001 to 2011. The population age structure was an important variable in explaining variations in government health expenditure in South Africa. The study had shown that there is a positive relationship between GDP and government health expenditure and concluded that GDP increases from 2001 to 2011 led to increased government health expenditure in South Africa; although GDP growth does not guarantee an increase in health expenditure among provinces. However, the study found that health expenditure increases among provinces are a result of demographic changes. Furthermore, income was not the sole variable that affected government healthcare expenditure because provinces like Gauteng have high GDPs and yet their share of government health expenditure as a percentage of GDP was low compared to provinces like Limpopo with a higher percentage of government health expenditure as a share of its GDP.

Keywords: Fixed Effect Model, National Health Insurance, Wu-Hausman test, public health expenditure, gross domestic product, GDP, population structure, South Africa

1Department of Agricultural Economics and Extension, North-West University, Mahikeng Campus, Private Bag X 2046, Mmabatho 2735, South Africa
2University of Limpopo, School of Agriculture & Environmental Sciences, Department of Animal Production and Agricultural Economics, Turfloop Campus, Private Bag XI, Sovenga 0727, South Africa
3School of Business and Governance, North-West University, Mahikeng Campus, Private Bag X 2046, Mmabatho 2735, South Africa e-mail: Joseph.Lekunze@nwu.ac.za

*Corresponding author: e-mail - luvhengousapfa@gmail.com

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Influence of mathematics engagement on the performance of secondary students in a classroom setting employing understanding by design framework

NELVIN R. NOOL1* and NIÑO B. CORPUZ1

This study aimed to examine the influence of mathematics engagement and performance of secondary students in classroom setting employing understanding by design framework. The three domains of mathematics engagement with their components were: cognitive engagement (surface strategy, deep strategy and reliance components), affective engagement (interest, achievement orientation, anxiety and frustration components), and behavioral engagement (attentiveness and diligence components). Data on the domains and components of mathematics engagement of second year high school students were gathered using a validated scale. Results revealed that mathematics performance is positively related to interest, attentiveness and diligence, but negatively related to anxiety. This implies that students who are interested, attentive and diligent tend to perform better, and those who are anxious tend to perform poorly in mathematics. Multiple regression analyses revealed that interest and anxiety significantly influenced students’ performance and that overall affective engagement and behavioral engagement significantly influenced their performance. Implications of the findings are further discussed.

Keywords: mathematics engagement, performance, understanding by design

1College of Education, Tarlac State University, Tarlac City 2300, Philippines
*Corresponding author: e-mail - nelvinrnool@gmail.com

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The Red River Delta, Vietnam: How does industrialization change the use of labor in agricultural production at farm households?

NGUYEN THI HAI NINH1*, PHILIPPE LEBAILLY1 and NGUYEN MAU DUNG2

In this paper, we analyzed the change in labor use for agricultural production at farm households in the Red River Delta, Vietnam under the context of industrialization. By using primary data collected from 130 farm households and 60 exchanged/hired laborers in Bac Ninh, Hai Duong and Thai Binh provinces, we find that family farm laborers popularly have age range from 45 to 54 years old and female laborers in agricultural production are accounted for higher proportion than male laborers. This is because of the fact that industrialization process makes men take advantage in terms of health and skill to seek for off-farm jobs. Also, industrialization in the Red River Delta creates the wave of migration to urban/abroad regions both for male and female labor. Consequently, the shortage of labor supply in farm households is substituted by exchanging and renting laborers, especially in peaking seasons. Based on the sample of 130 farm households, we estimate a multinomial logistic model to quantify the impact of industrialization represented by farmland area, number of migrant laborers, number of family laborers and household income on household’s choice in labor use for agriculture. With one more migrant laborer, a household tends to exchange labor with 2.3 times higher than using family labor only, and it likely hire labor with 2.9 times higher than using family labor only. Therefore, creating off-farm jobs in rural areas is an appropriate policy to absorb laborers and to prevent them from migrating far away their home.

Keywords: industrialization, agricultural production, use of labor, Red River Delta, Vietnam

1Department of Economics and Rural Development, University of Liege, Belgium
2Faculty of Economics and Rural Development, Vietnam National University of Agriculture, Hanoi, Vietnam
*Corresponding author: Nguyen Thi Hai Ninh, PhD Candidate, Passage Des Deporte 2, 5030 Gembloux, Belgium e-mail address: haininh.hua@gmail.com
Productivity and value chain analysis in small-scale poultry farming: Stochastic Frontier application

U. LUVHENGO1,5*, M.P. SENYOLE2, 3 and J.N. LEKUNZE4,5**

The purpose of this study was to investigate technical efficiency, determinants of broiler production and chain analysis in Sekhukhune Stochastic frontier production. Value Chain Analysis (VCA) models were used to analyse technical efficiency, productivity and map the small-scale broiler value chain. Cross-sectional data were collected from 61 individual farmers in Sekhukhune District, Limpopo Province. Results showed that the number of day old chicks (1%), feed quantity (1%), miscellaneous production costs (5%) and labor (10%) were significant factors associated with changes in broiler production. Analysis of socio-economic variables revealed that level of education, extension contact and years of farming experience were the most significant factors, accounting for variation in productivity among broiler farmers in the study area. The estimated variance parameter ($\sigma^2$) for farmers was 0.5538 (significant at 1% level). The estimated gamma ($\gamma$) parameter revealed variations in broiler output among small-scale farmers in the study area. These variations were due to differences in their technical efficiencies. The average technical efficiency of farmers was estimated at 97%, which is an indication of an appreciable use of inputs in productivity. Results of value chain mapping showed a simple chain from input supplies to selling at farm gate prices with little or no degree of processing.

Keywords: technical efficiency, Stochastic Frontier, farmers, productivity, value chain analysis, Sekhukhune District, Limpopo Province, South Africa

1Department of Agricultural Economics and Extension, North-West University, Mahikeng Campus, Mmabatho 2735, South Africa
2School of Agriculture and Environmental Sciences, Department of Agricultural Economics and Animal Production, University of Limpopo, Turfloop Campus, Private Bag X 1106, Sovenga 0727, South Africa
3Social Science Group, Wageningen University, Wageningen, The Netherlands
4School of Business and Governance, North-West University, Mahikeng Campus, Private Bag X 2046, Mmabatho 2735, South Africa
5Corresponding authors: e-mails - *luvhengousapfa@gmail.com **Joseph.Lekunze@nwu.ac.za

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Chemical composition and bioactivity of essential oil from the leaves of *Scorodocarpus borneensis* Becc. (Olacaceae) grown in Indonesia

HARLINDA KUSPRADINI¹*, SAAT EGRA¹, INDAH WULANDARI¹ and AGMI SINTA PUTRI¹

The essential oil of *Scorodocarpus borneensis* Becc. (Olacaceae) was obtained from its leaves by steam distillation. In this study, *S. borneensis* leaves yielded a clear yellowish essential oil. Its chemical composition was analyzed by GC-MS. Six chemical compounds were identified, and most components of the essential oil of *S. borneensis* leaves were sulfur-containing compounds, such as trisulfide, dimethyl, methyl (methylsulfinyl) methyl sulfide, 2,4,6-trithiaheptane-2,2-dioxide, and methane, (methylsulfinyl) (methylthio). The major compounds are 2,4,6-trithiaheptane-2,2-dioxide (43.35%), and methyl (methylsulfinyl) methyl sulfide (34.03%). Anti-microbial properties were determined using the agar diffusion method. Four different microorganisms were used in this study: *Streptococcus sobrinus*, *S. mutans*, *Staphylococcus aureus* and *Candida albicans*. The zone of inhibition and activity index were measured and compared against a known synthetic standard. The essential oil showed strong activity against all tested microorganisms. Anti-oxidant activity was assayed with 1,1-diphenyl-2-picrylhydrazyl (DPPH) with ascorbic acid as a positive control. The essential oil has potency to inhibit free radicals at concentrations of 25-1,000 µg/mL. The results indicated that *S. borneensis* leaves oil is a good, new natural anti-microbial agent for oral pathogens.

**Keywords:** *Scorodocarpus borneensis* Becc., Olacaceae, essential oil, distillation, agar diffusion, DPPH, GC/MS, sulfur-containing compounds, anti-oxidant activity, anti-microbial agent, oral pathogens, *Streptococcus sobrinus*, *S. mutans*, *Staphylococcus aureus*, *Candida albicans*

¹Faculty of Forestry, Mulawarman University, Jl. Ki Hajar Dewantara, Gunung Kelua, Samarinda, East Kalimantan, Indonesia

*Corresponding author: e-mail - hkuspradini@fahutan.unmul.ac.id

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Relationships of nursing profession awareness, work ethics and job performance in nursing students in Korea

KYEONG-DEOK JOHN¹ and SUN-JUNG PARK²*

This study aimed to investigate the relationship between nursing perception, occupational ethics and clinical performance of nursing students. The period of study was from March 1 to April 30, 2018, and involved 246 students enrolled in the nursing school. Data were analyzed using frequency and percentage, variance analysis, Pearson correlation coefficient and regression analysis. There was a statistically significant correlation between the clinical performance of college nursing students and the perception of nursing profession and job ethics. There was a correlation between job ethics and clinical performance and it was confirmed that there was a correlation with each other. The factors affecting the clinical performance of nursing students were identified by nursing profession recognition and professional ethics.

Keywords: nursing student, nursing perception, occupational ethics, clinical performance, Korea

¹Department of Nursing, Sahmyook Health University, Korea
²Department of Nursing, Yeoju Institute of Technology, 338 Sejong-ro, Yeoju-si, Gyeonggi-do 469-705, Korea
*Corresponding author: Sun-Jung Park, PhD e-mail - bun8973@naver.com
Analysis of knowledge and educational needs for pregnancy, delivery, puerperium and newborn care in first-time pregnant couples in Korea

KEUN-HEY KWAK¹ and SUN-JUNG PARK²*

The purpose of this study was to examine the knowledge of first-time pregnant couples on pregnancy, delivery, puerperium and newborn care and their educational needs in an effort to lay the foundation for the development of pregnancy, delivery, puerperium and newborn care education programs geared toward first-time pregnant couples. The subjects in this study were 200 selected first-time pregnant couples who resided in the metropolitan area. Data were gathered from June 1 to August 31, 2017, and the collected data were analyzed by SPSS Win 21.0. As for the needs of the subjects for education on pregnancy, delivery and puerperium, they asked a lot for education about 1st “basic prenatal tests during pregnancy (t=78.99, p<0.000)” and 2nd “breast care during pregnancy (t=61.75, p<0.000)”. Regarding needs for education on newborn care, they asked much for education on 1st “health checkups and vaccination necessary for newborn babies (t=71.48, p<0.000),” 2nd “how to give first aid (t=56.10, p<0.000)” and 3rd “the types and symptoms of possible diseases (t=72.48, p<0.000). As pregnancy, delivery, newborn care and parenting are fulfilled in succession during the whole process of parenting, married couples should be ready enough all the time. Therefore the development of educational programs about pregnancy and perinatal management is required to make pregnancy and delivery more accessible to first-time pregnant couples.

**Keywords**: pregnancy, delivery, puerperium, newborn care, Korea

¹Department of Nursing, Doowon Technical University, 51 Gwaneumdang-gil, Juksan-myeon, Anseong-si, Gyeonggi-do 17520, Korea
²Department of Nursing, Yeoju Institute of Technology, 338 Sejong-ro, Yeoju-si, Gyeonggi-do 12650, Korea
*Corresponding author: e-mail - bun8973@naver.com
**Frankliniella intonsa** (Trybom), a thrips species infesting strawberry in La Trinidad, Benguet Province, Philippines

CYNTHIA B. MINTU¹,²,⁴* and CECILIA P. REYES¹,³,⁴**

La Trinidad (Benguet Province, Philippines) is the most established commercial strawberry growing area in the Philippines. The study aimed to identify thrips associated with strawberry at the Balili Experimental Area of Benguet State University in La Trinidad, and to correlate population of thrips with temperature. This study also aimed to investigate the unconfirmed report that *Frankliniella occidentalis* (Pergande), a vector of strawberry necrotic shock virus in the USA, Israel and Australia, invaded the area. Strawberry var Sweet Charlie was planted in seven plots of approximately 200 m. sq. each, and field preparation, fertilizer application, planting method, mulching and buffering followed the prescribed procedure for planting strawberry in the experimental site. Sampling was done weekly for six weeks from March 10 to April 14, 2018 when the plants were in the flowering stage. Five leaves and flowers of strawberry were collected from each plot and taken as samples, and representative thrips specimens were sorted under Olympus CX33 stereomicroscope, preserved in ethanol, cleared, and mounted on slides using Canada balsam and examined under Nikon CiL research microscope. Findings showed that *Frankliniella intonsa* (Trybom) was the only species of thrips infesting strawberry in the study site. Females were more numerous than males and larvae, respectively. *F. intonsa* is an invasive, Eurasian flower thrips that are known as pest of strawberry in Indonesia, Italy and United Kingdom. The polyphagous insect pest is also known to transmit tomato spotted wilt virus, tomato chlorotic spot virus, groundnut ringspot virus, and *Impatiens* necrotic spot virus in other countries. Moreover, there was a significant linear relationship between thrips population on strawberry and temperature over the range of 23 to 25.6°C. Since Benguet Province grows ornamental plants, tomato and other high value crops, surveillance and monitoring of the build up of *F. intonsa* population on strawberry during the summer months is recommended.

**Keywords:** thrips, *Frankliniella intonsa*, thrips infestation, strawberry, La Trinidad, Benguet Province, Philippines

¹Department of Biology, De La Salle University, Malate 1004, Manila, Philippines
²Department of Biological Sciences, Far Eastern University, Sampaloc 1008, Manila, Philippines
³Department of Biology & Center for Research and Publication, Emilio Aguinaldo College, Paco 1007, Manila, Philippines
⁴Corresponding authors: e-mails - *cmintu@feu.edu.ph  **reyescecilia.p@gmail.com

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Analysis of nursing students’ educational needs for knowledge, attitude and practice of gerontological nursing in Korea

SU-JIN WON and EUN-YOUNG CHOI*

The purpose of this study was to identify the knowledge of elderly people, attitudes, and practice of nursing, targeting nursing students alongside identify education needs. The participants were 200 nursing students. The collected data were analyzed by descriptive statistics, paired t-test, Borich’s Needs Method, The Locus For Focus Model using the SPSS Win 21.0 program. The experience of living together with old person was larger in the case of having no experience, with 64.0%. The period of cohabitation with elderly person accounted for 39.0% in less than 1 year. And the contents of having the experience of living together with old person appeared to be a positive case with 63.4%. A case of having the practice experience on an elderly patient accounted for 84.2%. The practice experience on a senile patient was shown to be 65.6% in a positive case. The experience of education related to the elderly accounted for 38.6% in a case of having the experience. A case of having the educational experience was rated to be 93.2% in a positive case and 0% in a negative case. The knowledge level on the knowledge about the elderly was shown to be averagely 1.74±.67 points out of the 3-point perfect scoring. The knowledge level on the attitude toward gerontological nursing appeared to be 4.21±1.11 points out of the 7-point perfect scoring. The knowledge about the elderly showed a significant difference in knowledge level (p=0.027) and educational need (p=0.009) depending on the contents with the experience of practicing on an elderly patient. As for the attitude toward gerontological nursing, a significant difference was shown in knowledge level (p=0.007) and educational need(p=0.029) for gender, in knowledge level (p=0.010) and educational need (p=0.004) for age, and in knowledge level (p =0.020) and educational need (p =0.016) for the contents with the experience of living together with an old person. As for the practice of gerontological nursing, a significant difference was indicated in knowledge level (p =0.017) and educational need (p =0.014) for age and in knowledge level (p =0.012) and educational need (p =0.020) for the contents with the experience of living together with an old person. The results confirm that knowledge attitude practice for the aged can change positively. In conclusion, this study is expected to provide the basic data for the development, application, and evaluation of geriatric nursing education programs for nursing students.

Keywords: gerontological nursing, knowledge, attitude, practice experience, Korea

1Department of Nursing, Kyung dong University, 815 Gyeonhwillo Munmak-eup, Wonju-si, Kangwon-do 26495, Korea
*Corresponding author: Eun-Young Choi, PhD e-mail - bun8973@naver.com
Forecasting grape production in South Africa 1960-2024: Box and Jenkins (ARIMA) Approach

LEMOGANG MOOTE¹, USAPFA LUVHENGO¹,³* and JOSEPH N. LEKUNZE²,³**

Econometric forecasting of crop production is significant in supporting policy decisions regarding unemployment and economic growth. The present study examined the current status of grape production which is mostly used for wine production in South Africa. The Autoregressive Integrated Moving Average (ARIMA) model was developed for forecasting wine production. Box and Jenkins Linear Time Series Model, which involves ARIMA (p, d, q) was applied. The present study has shown that the best-fitted model for grape production series was ARIMA (2, 1, 3). The Poisson correlation results revealed a strong, positive and significant relationship between annual rainfall, grape production and wine production. The annual production series of grapes from 1970 to 2015 showed an increasing trend while forecasting of grape production between 2017 and 2024 showed a decreasing trend. The model revealed a good performance in terms of explaining and forecasting and variability capabilities. This study has also shown that grape production could decline due to structural policy reforms and this may increase unemployment in South Africa.

Keywords: grape production, wine production, forecasting, rainfall, temperature, climate, Box and Jenkins Approach, Autoregressive Integrated Moving Average (ARIMA), Linear Time Series Model, unemployment, structural policy reforms, South Africa

¹Department of Agricultural Economics and Extension, North-West University, Mmabatho 2735, South Africa
²North-West University Business School, Faculty of Economics and Management Sciences, Research Office, Private Bag 2046, Mmabatho 2735, South Africa
³Corresponding authors: e-mails - *luvhengerapfa@gmail.com **Joseph.Lekunze@nwu.ac.za
Nursing students’ experience of nursing process

YEON-JA KIM¹* and KYUNG-HWA JUNG²

This study was attempted to identify the nature of nursing student’s experience of the nursing process, and data investigation was conducted through in-depth interview of 15 nursing students (juniors and seniors) at university D in city D by using the method of convenient sampling. Data were analyzed with the methodology presented by Colaizzi (1978) among phenomenological research methods, and as a result of analysis, 11 theme clusters and 4 categories were drawn from 121 semantic constructs.

Keywords: nursing students, nursing process, phenomenological methods, semantic constructs

¹Assistant Professor, Department of Nursing Science, Dongseo University, South Korea
²Assistant Professor, Department of Nursing Science, Taegu Science University, South Korea
e-mail: verite-jung@hanmail.net
*Corresponding author: e-mail - Yakop1052@gdsu.dongseo.ac.kr
Micro-nutritive elements in gamma-irradiated Jatropha influenced by wastewater irrigation

Y.G.M. GALAL¹, S.M. SOLIMAN¹, H.H. ABBAS², I.M. FARID², E.A. KOTB¹* and S.H. MOSLHY¹

A field experiment was carried out at Experimental Farm of Soil and Water Research Department, Nuclear Research Centre, Atomic Energy Authority, Inshas, Egypt to follow up the effects of different doses of gamma ray on Jatropha (Jatropha curcas L.) grown on a sandy soil and irrigated with either fresh water or treated wastewater drained from El-Gabal El Asfar station. Irradiation resulted in higher values of both fresh and dry weight of Jatropha. Interaction of wastewater treatment and 50 Gy irradiation dose induced pronounced increase in dry matter yield. Gradual decrease in Jatropha growth was occurred when irradiation doses increased above 50 Gy. The Fe, Zn, Mn and Cu contents in Jatropha as affected by gamma irradiation could be arranged in the following descending order; 50 > 100 > 150 > 200 > 0 > 250 > 300 Gy. The Fe, Zn, Mn and Cu and oil contents in Jatropha plants irrigated with treated wastewater were higher than those in plants irrigated with fresh water. In conclusion, irrigation with treated wastewater as well as lower doses of gamma ray (50 & 100 Gy) had enhanced Jatropha growth, micro-nutrients uptake and oil production.

Keywords: Jatropha curcas, micro-nutritive elements, Fe, Zn, Mn, Cu, sandy soil, gamma irradiation, dry matter yield, Egypt

¹Soil and Water Research Department, Nuclear Research Center, Atomic Energy Authority, Abou-Zaabl 13759, Egypt
²Soils and Water Department, Faculty of Agriculture, Banha University, Moshtohor, Egypt
*Corresponding author: e-mail - ezzatkotb2000@yahoo.com
Marine officers’ fun leadership, self-efficacy and organizational commitment

JAE-HEE KIM¹, JUNG-HEE HAN¹ and YOUNGJI KIM²*

The purpose of this study was to examine the relationship between fun leadership, organizational commitment and self-efficacy in marine officers. The subjects in this study were 277 marine officers. For data analysis, frequency analysis, one-way ANOVA, t-test and Pearson correlation coefficient were used, and statistical data on mean and standard deviation were obtained. Fun leadership was significantly higher in low stress group (t=9.27, p=0.003) and good health state group (F=17.72, p<0.001), and self-efficacy was significantly higher in 30s group (F=4.18, p=.017) and good health state group (F=6.05, p=0.003). Organizational commitment was significantly higher among the groups with higher education (t=4.91, p=0.027), higher position (F=4.74, p=0.003), and better health status (F=5.29, p=0.006). Fun leadership was significantly related to self-efficacy (r=0.33, p<0.001) and organizational commitment (r=0.25, p<0.001). It is considered that intervention based on fun leadership is needed to increase organizational productivity. Fun leadership, self-efficacy and organizational commitment were higher in groups with good health status as compared to those with bad health status. It suggests that improving seafarers’ health is important in human resource management in a ship’s organization.

Keywords: marine officer, fun leadership, self-efficacy, organizational commitment

1 Department of Nursing, Hyejeon College, 25, Daehak-gil, Hongseong-eup, Hongseong-gun, Chungcheongnam-do, 32244, Republic of Korea
2 College of Nursing, Gachon University, 191 Hambakmoero, Yeonsu-gu, Incheon, 21936, Republic of Korea
* Corresponding author: e-mail - superdrl@hanmail.net Telephone: 82-32-820-4237

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Inflow of foreign investment to the Republic of Uzbekistan

SABOTBEK YULDASHEV¹ and TAIKOO CHANG²*

Overseas experience shows that during the transition period, investments is a major factor not only in the reconstruction and renewal, but also in the creation of new industries and businesses. Therefore, the use of foreign capital in the economy of Uzbekistan is typical of the investment process at the present stage. In this case, the attraction of foreign investment should be based on the principles of social and economic efficiency, environmental and economic security, and mutual benefit. Based on these principles, it is necessary to define the criteria for utilizing the best form of investment. These criteria include: the scope and type of product (knowledge-intensive, technically complex, etc.), the scope of the project (small, medium, large), the strategic goal of attracting imported equipment to use in production and management experience. A study concerning the strengths and weaknesses of the existing forms of foreign investment shows that direct investment is the optimal method due to the long-term interests of the investor in the economy of the host country as well as the superior benefits in comparison with foreign loans. In order to attract foreign portfolio investment in the privatization process, it is crucial to develop principles for currency conversion, allocate a special group of privatized enterprises for international trade, and develop primary and secondary securities markets, which will provide opportunities for the acquisition of property rights for foreign investors. The implementation of these measures will help attract foreign investment into the Republic of Uzbekistan. A model for estimating determinants of the inflow of foreign investment was defined and correlation and regression analysis were conducted.

Keywords: role of investment, economic development, share of industry, foreign trade, Uzbekistan

¹Graduate Scholar, Department of Economics and Graduate School, Daegu University, 201 Daegudaero, Kyungsans, Kyungbuk, 38453, Republic of Korea  e-mail: sabotbek@gmail.com
²Professor, Department of Economics, Daegu University, 201 Daegudaero, Kyungsans, Kyungbuk, 38453, Republic of Korea
*Corresponding author: e-mail - tkchang1@hanmail.net

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Beliefs of Korean language teachers about language learning and Korean language learning

SANGSOO KIM¹

This study quantitatively analyzed the differences in beliefs about language learning among Korean teachers of universities in Korea. Factors affecting second language or foreign language teaching/learning may vary. The belief in language learning that a teacher has may have a significant influence on the language learning of foreign language learners, and may have a direct relation to academic achievement or continuing education. Therefore, it is necessary to clarify the beliefs about language learning of the teachers so that the language teachers can have positive beliefs about language learning and acquisition. The purpose of this study was to examine the language learning beliefs of Korean teachers working in Korean language education institutions. This study used questionnaires based on Horwitz’ (1988) Beliefs about Language Learning Inventory (BALLI) as research methodology. The categories of beliefs as being devised by BALLI are divided into aptitude for foreign language learning, difficulty of foreign language learning, essence of foreign language learning, foreign language learning and communication strategies, and motivation and expectation for foreign language learning. 32 questionnaires were used to measure the internal consistency reliability between items by using Cronbach’s α coefficient. Cronbach’s α coefficient for all items was found to be reliable at 0.762. Descriptive analysis was also conducted to examine the Korean language teachers’ beliefs about language learning.

Keywords: Beliefs about Language Learning Inventory (BALLI), Korean teacher, language teacher, language education, language learning beliefs, foreign language learning

¹48520 School of Free Majors, Tongmyong University, SinSeonro 428, Nam-gu, Pusan, South Korea
e-mail address: kospora@naver.com

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Nurse clinicians’ experience of in-patients’ death based on a phenomenological methodology

YEON-JA KIM\textsuperscript{1*} and KYUNG-HWA JUNG\textsuperscript{2}

This study attempted to identify the nature of the nursing process and 15 nursing students (juniors and seniors) from the Department of Nursing Science at university D in city D were involved through convenient sampling. The data were obtained through in-depth interviews. Data were analyzed with the method presented by Colaizzi (1978) among the phenomenological research methodologies. As a result, 11 theme clusters and 4 categories were drawn from 121 semantic constructs.

\textbf{Keywords:} nurse clinician, in-patient’s death, phenomenological methods

\textsuperscript{1}Assistant Professor, Department of Nursing Science, Dongseo University, Korea
\textsuperscript{2}Assistant Professor, Department of Nursing Science, Taegu Science University, Korea
e-mail: verite-jung@hanmail.net
*Corresponding author: e-mail - yakop1052@gdsu.dongseo.ac.kr

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Electrospun Polylactic acid (PLA)-Nanosilica (nSiO$_2$)-Cellulose Acetate Nanofiber Composite: A potential biomaterial bone tissue scaffold

JOEL R. SALAZAR$^{1*}$ and JUVY J. MONSERATE$^2$

Polymer blending is a technique used to enhance properties of polymers for a specific application. Electrospinning is a straightforward, cost-effective, and versatile technique that has been applied in the fabrication of nanostructure materials used as alternative to conventional tissue scaffolds. This study was conducted to produce nanofiber blends of polylactic acid (PLA) and cellulose acetate (CA) with nanosilica for its potential application as scaffolding material. Constant amounts of CA and PLA (0.25 grams and 3 grams, respectively) dissolved in Methanol-Dichloromethane (DCM) mixture, mixed in varying amounts of nanosilica and electrospun at 30kV.

The electrospun nanofibers produced were subjected to cytotoxicity assay for 24 hours and Synthetic Body Fluid immersion (SBF) for 96 hours. The nanofibers were also characterized using FTIR, SEM and EDX. Cytotoxicity assay using Probit analysis revealed the materials to be non-toxic.

FTIR analyses showed the presence of carbonyl (C=O), (C-O-C) and C-H stretching peaks attributed to both PLA and CA and Si-O-Si stretching peak attributed to silica, confirming the matrix content of nanosilica and (PLA/CA) polymer. SEM analyses of treated nanofibers in the SBF solution showed no significant differences in Duncan Multiple Range Test (DMRT) at 5% significant level. The EDX analyses revealed significant differences between Ca to P ratios formed from SBF immersion. Pearson correlation test revealed no significant correlation between diameter size and Ca/P ratio of immersed nanofiber to SBF as shown also for both SEM-EDX analyses.

The findings suggested that T3 (0.75% silica = Ca/P=7.4) was found to be a potential bone tissue scaffolds as it produced (Ca/P>1.80) similar to carbonated bone hydroxyapatites value.

Keywords: bone tissue scaffolding, electrospinning, polylactic acid, nanosilica, cellulose acetate

$^1$Department of Chemistry, College of Arts and Sciences, Central Luzon State University, Science City of Muñoz 3120, Nueva Ecija, Philippines
$^2$Head, Nanotechnology R&D Facility, Central Luzon State University, Science City of Muñoz 3120, Nueva Ecija, Philippines e-mails: juvymonserate@clsu.edu.ph juvymonserate@yahoo.com Telephone number +639235591062
$^*Corresponding author: e-mail - joel_salazar@clsu.edu.ph
REVIEWERS - ASIA LIFE SCIENCES Volume 27, Number 2, 2018*

Dr. Alberto T. Barrion, PhD
Department of Biology
College of Science, De La Salle University
Taft Avenue, Manila and
Adjunct Curator of Spiders, Parasitic Hymenoptera
and Riceoland Arthropods
Museum of Natural History, University of the Philippines Los Banos
College 4031, Laguna
Philippines

Dr. Kadir Bilen, PhD
Matematik ve Fen Bilimleri Eğitimi Bölümü
Faculty of Education
Alanya Alaaddin Keykubat University
Kestel, Alanya, Antalya
Turkey

Dr. Yung-Cheol Byun, PhD
Full Professor
Department of Computer Engineering
Jeju National University
102 Jejudaehak-ro, Jeju-si
Jeju-do, 690-756
South Korea

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Dr. Leonila A. Corpuz-Raros, PhD
Professor Emeritus
Institute of Weed Science, Entomology & Plant Pathology
College of Agriculture and Food
University of the Philippines Los Baños
College 4031, Laguna
Philippines

Dr. Agustine I. Doronila, PhD
Senior Analyst – Chemistry |
TrACEES Platform Trace Analysis for Chemical,
   Earth and Environmental Sciences
Level 3, Rm 366, Chemistry Building, Bldg. #153
The University of Melbourne
Victoria 3010, Australia

Dr. Celeste Leiden G. Gruèzo, DVM, MA
7288 Santosha Avenue corner Astheya Street
Istana Lovina Bay Park
Puypuy, Bay 4033, Laguna
Philippines

Dr. William Sm. Gruèzo, PhD
Adjunct Professor
Institute of Biological Sciences, CAS
University of the Philippines Los Baños
College 4031, Laguna
Philippines

Dr. Wenquan Hu, PhD
Department of Pediatric Surgery
Medical College of Wisconsin
8701 Watertown Plank Road
CRI, C4288, Milwaukee, WI 53226
USA
Reviewers - *Asia Life Sciences* 27(2) 2018

**Dr. Renato L. Lapitan, PhD**
Professor
Institute of Renewable Natural Resources
College of Forestry and Natural Resources
University of the Philippines Los Baños
College 4031, Laguna, **Philippines**

**Engr. Marlon J. Llana, MChemEng, PhD (Candidate) Materials Science and Engineering**
Technical Operations Manager
NAST Corporation
Alabang, Muntinlupa City
**Philippines**

**Dr. Jinxia Ma**
615 N Wolfe St., Baltimore
Maryland 21205
**USA**

**Prof. Adj. Gustavo J. Nagy**
PhD Oceanografía
D:E.A (MSc) Oceanología y Sedimentología
Lic (BSc) Oceanografía Biológica
Grupo de Cambio Ambiental y Gestión Costero-Marina
Oceanografía y Ecología Marina
IECA (Instituto de Ecología y Ciencias Ambientales)
Facultad de Ciencias, UdelaR
Igua 4225 piso 10, Montevideo, **Uruguay**

**Dr. Olga Nuñeza, PhD**
Professor
Department of Biology
Iligan Institute of Technology
Mindanao State University
Iligan City, **Philippines**
Dr. Amor A. San Juan, PhD Biomolecular Science  
Associate Professor  
College of Arts and Sciences  
Central Luzon State University  
Science City of Muñoz, Nueva Ecija  
Philippines

Ms. Shujun Tang, MEng  
Biologist II  
Abbott Molecular Inc.  
Department V9N6, Building DP-1  
1300 E. Touhy Avenue  
Des Planes, Illinois 60018  
USA

Dr. Qinqin Xu, PhD  
13400 E. Shea Boulevard  
MCCRB 3-005, Scottsdale  
Arizona 85259,  
USA

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