UNIVERSITY OF GUYANA

TURKEYEN CAMPUS

FACULTY OF AGRICULTURE AND FORESTRY

DEPARTMENT OF AGRICULTURE

EARNED STUDY LEAVE RESEARCH REPORT

(June 01, 2013-August 2013)

TITLE: DRAFT BOOK OF ABSTRACTS OF ANNUAL STAFF AND STUDENT REVIEW CONFERENCE 2007-2011

RESEARCHER: Ms. KAYE W. A. Mc ALLISTER

October, 2013

FOREWORD

In recognition of the need to inform our stakeholders of the Faculty's research activities, I undertook to review and compile a draft book of abstracts on research work presented at our Annual Staff and Students' Review Conference. Despite severe constraints over the years, research work of acceptable standard has been continuously conducted in the Faculty. The compiled draft book of abstracts covers the period 2007-2011and showcases work done in both basic and applied research in the field of Agriculture.

I take this opportunity to acknowledge the encouragement of Dr. Patsy Francis and the assistance of Ms. Shermaine Critchlow from the Department of Agriculture in conducting this research. I would also like to thank my children Kayla-Skye and Josie for being very understanding of the long hours I spent reviewing, reconstructing, revising and retyping all the abstracts included in this document.

TABLE OF CONTENTS

ABSTRACTS **PAGE**

2007

TABLE OF CONTENTS

2008

TABLE OF CONTENTS

TABLE OF CONTENTS

2009

TABLE OF CONTENTS

2010

TABLE OF CONTENTS

2011

TABLE OF CONTENTS

ABSTRACT

An Investigation of Whitefly Diversity in Three Areas of Guyana

Sinnot Burnett

Although whiteflies are well studied in other countries information on their numbers and species present in Guyana are almost non-existent. This study sough to provide correct identification that is essential for the detection of exotic, invasive species of whiteflies present in Guyana.

The main objective of this study was to investigate the number of whitefly species present in three areas of Guyana. The three areas were Canals (West Demerara), Iwokrama and Yarrowkabra. The areas were sampled twice, and whitefly adults and puparia collected from plants and placed into vials containing 95% alcohol. Identification of whitefly species was done. Kruskal- Wallis and Mann-Whitney U-Test was used for statistical analysis. Thirty- five (35) species of whitefly were identified, ten (10) of which are new species to science, Twenty-two (22) species of the subfamily Aleurodicinae and nine (9) from the subfamily Aleyrodinae. For all three (3) areas of distribution of the whitefly population was the same with many varied species being found in small numbers, while there was an abundance of either 1 or 2 dominant species.

The results revealed that Forested areas have a greater species of whiteflies when compared to Agricultural areas and that a considerable proportion of similar species were collected from all sampled areas. The results also indicated that Iwokrama was significantly different for Aleurodicinae and Aleyrodinae when compared to the other two areas. Aleurodicuscocois, Aleurodicusmaritmus, Aleurodicuspalvinatus, Aleurothrixusfloccusus, Aleurothrixus sp. and Aleurotulusmundururu were some species found in all was three (3) areas. This study was important as it identified the species of whiteflies present in these areas that are of economic importance to Guyana it also provides information that is of value to extension officers.

KEY WORDS: Whitefly diversity, Aleyrodinae, Guyana, Aleurodicinae, Forested areas, Agricultural areas.

ABSTRACT

Vegetative Propagation of West Indian Cherry (*Malpighia glabra*) by Stem Cuttings;-

Response to Indole-3 butyric Acid Under Intermittent Misting

Edon A. Daniels

Vegetative propagation is an effective method commonly utilized for rapid production of plants from actively growing plant parts. However, conditions must be ideal or optimum for the method to be successful. Thus, the purpose of this research was to evaluate the effects of rooting media, cutting type, and varying concentrations of indol-3-butyric acid on the rooting of West Indian cherries cuttings (*Malpighia glabra* L.). Six varieties of West Indian cherries were used, West Indian #2, 4 and 5; Puerto Rico # 1 and 2; and table cherry. Cuttings were collected from seven-year-old recently pruned trees during the period January to April of 2007. Tip and basal cuttings three pairs of leaves, both about eight inches long, were treated with 1000, 2000, 3000 and 4000ppm of IBA, introducing 1cm of their basal end into the mixture containing IBA after which the cuttings were planted into three types of media-sand, gravel and promix.

The experiment was conducted in two phases; phase one was 2 x 3 factorial in a Completely Randomized Design with five replicates with four concentrations (1000, 2000, 3000 and 4000 ppm) of IBA. Phase two was a 4 x 6 factorial trial in a complete randomized design with four replicates. The cuttings were allowed to root for 28 and 56 days under two periods of intermittent misting: 1 minute every forty-five minutes and two minutes every forty minutes in phase one and two, respectively. After rooting period, the cuttings were evaluated for number and percentage of rooted cuttings, uprooted cuttings, unrooted with callus, and dead cuttings; roots per cutting and length of roots were done on rooted cutting.

Promix was the outstanding rooting media with 87.5% rooted cuttings. Varieties and cutting type had inconclusive results, while IBA concentrations had no difference in root growth. Overall, 58.33% cuttings survived of which 68% rooted and the remaining 32% were unrooted with callus. In general, there was a positive response of cuttings root growth due to IBA treatment.

KEY WORDS: Indole-3-butyric acid, tip, basal, rooting media, and West Indian cherry.

ABSTRACT

The use of Ethrel as a Flowering Inhibitor to Extend the Management of Commercial Varieties of Sugar Cane (Saccharum *officinarium L.*)

Patrick Davis

This project entailed two sets of experiments in the study to determine the use of ethrel as a flowering inhibitor in three commercial sugar cane varieties. This study was conducted over (6) six months period, where a randomized complete block statistical analysis was done consisting of four treatments and three replicates. Thus there (36) experimental units of which (9) nine units were used as control .Factors dealt with were Ethrel (400ml/acres) at three timings of application (18, 18 & 20 weeks) and three varieties (WI 79463, D15841 and D93409). Parameters measured included pre-application sampling and microscopic examinations of growing points, germination counts for setts, girth and internode lengths and fresh and dry matter weights.

Results on the effectiveness of Ethrel in the first phase of the project were inconclusive. However, the variety WI 7946 showed some indication of retardation of floral development. Further, analysis is required to be conducted on this project

KEY WORDS: Ethrel, Apical dome, Meristem, Coalesce

ABSTRACT

An Investigation of the Supply and demand Relationship in the Production

Of Selected Local fruits in Guyana –

Leon Frazer

Some of the most popular local fruits in Guyana are pineapple, banana, orange, mango, watermelon, However, they are some exotic fruits like rambutan and mangosteen that are high price on the local market and for sale in distinct markets targeting the Guyanese consumer. These arrangements entail the services of retailers, municipal vendors, and supermarket operators. Comparatively priced, lower than temperature imported fruit as imported fruit as importers in their quest to maximize their profits offer for the sale of fruit such as apples and grapes on an individual bases as opposed to as per weight. Mark-ups of over 54% profits appear to be common in the industry.

Seasonality of local fruit also influences demand as well as supply. More purchases are made during periods of holidays and festivities. Demand and consumption have also been classified as influenced by appeal and status of purchases and not for the intrinsic value of the products. However, local fruits on the market of Guyana satisfy 80-85% of the country's needs for fresh, extracted, and/or pickled form of the fruits as part of the diet. For the industry to remain viable, policies need to be in a place to support the small farmers and entrepreneurs. To do this, information is needed on the present position of the country and where it would like to be in the future as it relates to changes due to adaptation of modern technology.

This research took the form of a survey in regions 3, 4 and 6 with the use of a questionnaire as the instrument to obtain information from the farmers, during the period of September 2000-June 2007. However, most of the data for the success of this research were obtained in Georgetown and Demerara from the Ministry of Agriculture Extensive Unit, the New Guyana Marketing Corporation, and the National Agriculture Research Institute. The data was managed by Statistics, Micro Excel software and a simple regression analysis was done on selective variables influencing production.

The regression analysis showed that the volume of fruits produced had weak relationships with price, approximately 22%; hence several other factors were responsible for price determination. It was found that the male farmers outnumbered the female in farmers all the three (3) regions by a mere 65% average although most farmers were above thirty (30) years old. More so, three (3) were between the ages 15- 20, seven (7) between 21 – 25 years and eight (8) between 26 – 30 years old an average farming experience of farming 5 to 23. Most of the farmers, especially the full-time ones enter farming mainly because for livelihood, whereas the part time as for self-sufficient reasons. The result shows that the average acreage occupies by the farmers range from half ½ to acres with most farmers planted less than five acres.

DEPARTMENT OF AGRICULTURE FACULTY OF AGRICULTURE AND FORESTRY

ABSTRACTS-STAFF AND STUDENT RESEARCH 2007-2011

KEY WORDS: demand, price, product, supply, seasonality, local fruit

ABSTRACT

Effect of Source and Rate of Nitrogen on the Yield and Shelf-life of *Basella alba*

Miranda Henry

In Guyana, most vegetables are produced on the coastal plane. The principal areas of production are regions 2, 3,4,5,6 and 10/ this project aims to determine the effect of the source and rate of Nitrogen, on the shelf life and yield of Poi (*Basella alba*).

The project concentrated on using both organic and synthetic fertilizers at three different rates (sources of fertilizer; urea, broiler poultry manure and vermicompost) for the cultivation of *Basella Alba*. This research utilized a 3x3 factorial treatment arranged in a Randomize Complete Block Design with nine treatments and four (4) replicates; in addition, there were three control treatments with a total of twelve treatments per block. Parameters measured were leaf surface area, length of the entire plant above the ground, weight of the entire plant above the ground, weight of leaves collected from one plant in each treatment and shelf life under ambient and refrigeration conditions.

There were no significant differences in plant growth among the three different rates of nitrogen applied. Also, there were no significant differences in the yield and shelf life of Poi when Urea, Broiler poultry manure and Vermicompost were applied at three different rates. However, they were some number of differences in the weight of leaf and surface area within the twelve treatments. In terms of shelf life there were significant differences within treatments but there were some amounts of difference among the three conditions used, where those plants that were placed in the refrigerator showed visual signs of being fresher and had a small weight of difference.

KEY WORDS: synthetic fertilizers, leaf surface, shelf life, *Basella alba*

ABSTRACT

Effect of Varying Levels of Potassium on Yield of Rice

Kawal Mangal

Potassium is an important macronutrient, and it is essential for goo grain yields as well as disease resistance. Potassium helps in the uptake of nitrogen and phosphorous. Rice had been cultivated for over five decades in Guyana without any significant addition of potassic fertilizer. Soil test done revealed that the level of potassium was 0.21milli-equialent per 100g soil which is a critical level. It was against this premise that this study was conducted with the view of determining the effects of various rates of potassium application on the rice crop.

The study was conducted at the Rice Research Sub-station, Lesbeholden, Black Bush Polder on the Corentyne clay using a Randomized Complete Block Design (RCBD) with seven treatments and three replicates.

Potassium was applied at rates (0/kg, 25 kg, 50 kg, 100kg, 125kg, and 150kg K_2 O/ ha at 21, 42 and 56 days after sowing. Nitrogen (75kg Urea/h) and phosphorous (30kg P_2 O_5 /ha) was also applied at 21 days after sowing. Pre-germinated rice seeds were sown at 158.8 kg/ha and data on the parameters of plant height at maturity, panicles per m², panicle length, filled and un-filled grains/panicle, 1000 grain weight and grain yield/ha were collected.

Results showed that there were no significant differences between treatments with respect to all parameters evaluated. The response to potassium tended to be linear which suggest that higher rates of potash may be required for rice cultivation. Added potassium for rice showed positive responses although there were no statistical differences in yields among treatments.

KEY WORDS: **levels of potassium, macro nutrients, critical level, rice, plant height, panicle, grain yields**

ABSTRACT

Comparison of the Efficacy of Non-Selective Herbicides on Tanner Grass (*Brachiaria radicans* Napper) in Sugarcane (*Saccharum officinarum* L.) Fields

Naresh Narine

The cost of weed control and the overall cost of production have increased tremendously over the past six years (2001-2006) at Uitvulgt/Leonora estate. One of the main contributing factors is the high weed control cost due to the increase in tanner grass (*Brachiaria radicans* Napper) throughout the cultivation. Selective herbicides are much more expensive than non-selective herbicide.

The trial was conducted at Uitvulgt/Leonora estate to determine the efficacy of the herbicides used to control tanner grass in sugar cane fields and to compare the yields of sugar cane obtained after application of herbicides six (6) and eight (8) weeks post emergence. A tanner grass survey was done before and after application of herbicide. A factorial treatment arrangement in a Randomized Complete Block Design (RCBD) was used to establish the trial in a second ratoon field. The selective herbicides used were Asulam 80 WDG® 3.0kg/ha, Roundup ULTRA® 2.7 L/ha or 1.3 kg ai/ha, Velpar DF® 2.1 kg or 1.6 kg ai/ha and a combination of Roundup ULTRA® + Velpar DF® 1.35L + 1.05kg or 0.6kg + 0.8kg ai/ha, respectively. Treatments were applied when tanner grass was six (6) and eight (8) weeks old.

The results indicated that all herbicides applied to six (6) weeks old tanner grass was more effective thus treatment must be done at an early post emergent stage but not later than six (6) weeks. Asalum 80 WDG® resulted in 88% and 3.8% tanner grass reduction when treated at six (6) and eight (8) weeks post emergence with 51% and 44% tanner grass reduction, respectively. Velpar DF® was more effective at six weeks than at eight (8) weeks post emergence with 45% and 24% tanner grass reduction, respectively. The combination of Roundup ULTRA® + Velpar DF® was ineffective at both six (6) weeks and eight (8) weeks post emergence with an increase in tanner grass by 16% and 32% respectively. The control (no treatment) showed increases in tanner grass by 34% and 24% respectively. Yield of plots treated at six (6) weeks post emergence indicated a higher average yield than plots treated at eight (8) weeks post emergence. This indicates that age at treatment of tanner grass must be considered as yields can be severely affected. Also, the treatment of tanner grass at eight (8) weeks post emergence with non-selective herbicides resulted in 45% and 24% reduction compared to 51% and 44% reduction when treated at six (6) weeks is significant. A repeat application can then be done to further suppress tanner grass.

KEY WORDS: efficacy, effective, control, non-selective herbicides, post emergence, selective herbicides

ABSTRACT

A study of the Alleviation of Heat stress in Broiler Houses Using Cardboard and Coconut Coir as a Roof Insulator

Fenton Nickram

One of the greatest challenges to efficient production is the reduction in performance associated with warm and hot weather conditions. Various approaches have been taken in the past to enhance broiler performance under these conditions. Numerous management strategies have been employed to alleviate the adverse effects of heat distress with varying degrees of success.

A study was conducted to evaluate the efficiency of the coconut coir fibre board and the cardboard as a roof insulation material in broiler houses over a four-month period; this was done by recording temperature, relative humidity, wind speed, feed consumption, weight gain and determination of the feed conversion ratio. In each trial twenty, one week-old broiler birds of mix sex are assigned to each pen.

The results from a Statistical Analysis System (SAS) and Regression analysis show that environmental conditions are the same in broiler houses with or without cardboard and coconut coir fibre insulated roof ($P<0.05$) and indicates that there was no significant difference in growth parameters of broilers reared in broiler houses with or without cardboard and coconut coir fibre insulated roofs ($P<0.05$).

Future experiments of this nature should proceed with the application of laboratory processes within a laboratory environment so that the results can be improved upon since other existing variables can be controlled in the process.

KEY WORDS: heat stress, insulation, coconut coir fibre, cardboard, and broilers.

ABSTRACT

A Comparison of the Effects of Filter-press Mud (Fresh and Composted) and Liming on the Soil Physical Properties on the Growth of Sugarcane (*Saccharum officinarium L.*)

Ragesh Parbat

In Guyana, the use of cheap and available filter mud as a soil structural ameliorant is always a key management practice adopted by the Guyana Sugar Corporation (GUYSUCO). Filter mud is a good source of organic matter which when applied to soil enhances soil physical properties and improves soil nutrient levels, thus increasing yields.

The objective of this research was to compare the effects of filter mud (fresh and composted) and lime on soil physical properties and the growth of sugar cane (Saccharum officinarium L.). The experiment was done at Enmore estate on a Whittaker Series Mapping Unit #37 soil using a Randomized Complete Block Design (RCBD), with five treatments (Lime, Fresh filter mud, Composted filter mud @ two rates and no amendment) replicated four times. Preparation of compost was done using only fresh filter mud. Soil analyses were done initially and at three and six months on samples taken from 0-15cm and 15-39cm depths. These include measurements for moisture, bulk density, particle density/porosity, aggregate water-stability, and organic matter. Initial tests for moisture and C: N ratios were also done on the composted and fresh filter mud. The standard commercial variety DB7869 was planted on all plots and measurements were taken for growth (length and girth stalk), root density and cane yield.

Results showed that statistically, there were significant differences among treatment means for soil bulk density, porosity, aggregate water-stability, moisture content, root density, organic matter, and plant growth according to Fisher's Protected LSD at $P<0.05$. There was also good correlation between organic matter and moisture content for the six month's analyses. Soil ameliorant (CFM @63.36 tones/ hectare) was good for soil structural enhancement, thus resulting in allow bulk density and highest aggregate water-stability, moisture holding capacity, plant growth and yield.

KEY WORDS: soil ameliorant, organic matter, and soil physical properties.

ABSTRACT

Laboratory Evaluation of Guyana's Sugarcane *(Saccharum officinarium*) Varieties for Ethanol Production

Duresh Ramkishun

The sugarcane plant is the most efficient species in the plant kingdom in terms of biomass production and as such many view the crop as the plant of the future in terms of its potential as a source of bioenergy.

The Guyana Sugar Corporation (GUYSUCO) is considering having an ethanol plant with a capacity of 130 million litres per year. This is viewed as a means of diversifying the products sugarcane. This study sought to evaluate five sugarcane varieties presently cultivated by GUYSUCO for ethanol production. The juice of the five varieties DB7869, D89138, D15841, D7661 and DB66113) were evaluated in the laboratory and a Compeltey Randomized Design was utilized with four treatments and four replicates. The juices were fermented by inoculation with yeast (Saccharomyces *cereviseae*) and ethanol yielded by simple distillation. The Demerara Distilleries Limited's (DDL) laboratory was used to analyze the ethanol quality. The data was analyzed using Statistix 8.

Results showed that variety DB7869 had the highest yield of ethanol as well as the highest percentage of total alcohol volume. The alcohol produced from the said variety also contained a small proportion of higher alcohol and esters, an indication that the ethanol produced is purer compared with the other four varieties. It was noted that as the concentration of juice increased the ethanol yield also increased.

KEY WORDS: **sugarcane, varieties, ethanol production, bioenergy, *Saccharomyces cereviseae*, fermentation, percent alcohol**

ABSTRACT

An Evaluation of Flouroxypr (Strane) against Traditional Herbicides used for the Control of Leguminous Vines in Sugarcane Fields (Saccharum *officinarium*)

Narinedatt Seepersuad,
T.B Richmond, J. Lalithakumari, H.B. Davis, Richards-Haynes

The aim of the project was to evaluate the efficacy of a "new" herbicide Fluxypyr over standard herbicides; 2, 3-D plus Ally, for the control of leguminous weedy vines Phaseolus *schotti* and *Vigna* spp.

Laboratory, mini plot, and large plot experiments were conducted to evaluate the Herbicide Flouroxypr (Strane) against Traditional Herbicides. The specific objectives were to evaluate the efficacy of Flouroxypr over current treatments via; the effect of hot water treatment on seeds of *Phaseolus schotti* and Vigna spp.; the

effect of the Flouroxypr and conventional herbicides on seedling germination and seedling vigour.

phyotoxicity of Flouroxypr on sugar cane and efficacy in vine endemic fields.

Results showed that the mean germination percentages were not significantly different for *both P. schotti* and Vigna spp. seed treated with hot water. The germination results of seeds treated with different herbicides showed no significant differences the analysis of seedling vigour showed that. There were no significant differences in the biomass of seedlings when seeds were subjected to the different herbicide treatments

There were also no significant differences in terms of pytotoxicity among the various herbicide treatments on sugar cane plants. However, there were differences obtained in mean length of *P. schotti*.

Results showed that Flouroxypr exhibited greater efficacy on the viny weeds than the standard treatment, 2. 4 –D Amine +Metsulfuron methyl. Some levels of weed control was seen in all the herbicidal treatments, however, Flouroxypr demonstrated a faster control when used in sole treatments when used at the rate of 300g/ha. Flouroxypr exhibited no phyto-toxic effect on the sugarcane crop and effectively controlled the vine weeds late in the crop cycle in the vine endemic fields.

KEY WORDS: Flouroxypr, 2, 4-D Amine, leguminous vines, conventional herbicides, weed control, efficacy, seedling germination and vigour, phyto toxicity

ABSTRACT

The Response of West Indian Cherry (*Malpighia glabra*) to Broiler Manure As it Relates to Late Shoot Development and Fruit Yield

Michelle Washington

Malphigia glabra, West Indian Cherry is listed as one of the many fruits in Guyana that is of great economic importance.

Organic agriculture is fast gaining recognition due to the increase in environmental and health awareness. This form of agriculture seeks to produce crops without the use of synthetic chemicals

This project sought to determine the effect of broiler manure on late shoot development and fruit yield of West Indian cherry with particular focus on the plant height increase, plant girth/diameter increase, juice pH and Brix content and the weight/amount of cherry.

Four fertilizer treatments were used and replicated four times in the field using the Randomized Complete Block Design (RCDB). The treatments used were 2 ozs. Urea, - 2lb, 4lb and 8lb broiler pen manure per plant. There was a total of 192 plants used in the experiment. The two inner most plants were used to collect relevant data. Treatments were applied every 30 days for four months while data collection was done 30 days after each treatment application over a four-month period.

There was a significant difference in plant diameter, where the 4lb broiler manure treatment resulted in a greater diameter than other three treatments. However, for the other parameters, there were no significant differences between the broiler pen manure and the urea treatments. There were also no significant differences with the different rates of broiler pen manure used as it relates to late shoot development and fruit yield.

The 4lb broiler pen manure treatment, which contained 1.66 ozs. of Nitrogen, seemed to supply the optimum amount of nitrogen for 1-2 yearly or West Indian Cherry plants, since the 8lb broiler pen manure treatment with 3.32 ozs. did not produce such results as in the former case.

KEY WORDS: West Indian Cherry, Broil manure, Urea, Urea, Girth, height, Brix, pH, Fruit Yield, Weight

ABSTRACT

An Investigation into the Effectiveness of Floating Feeds vs. Sinking Feeds for Tilapia Production

Millisa Audrey Warren

A study to evaluate the growth response of Nile tilapia (*Orechromis niloticus* L) using two different feeding techniques (floating and sinking Feeds) was conducted at the Faculty of Agriculture and Forestry Research centre, University of Guyana Turkeyen campus.

The experiment utilized a Complete Randomized Design (CRD) which consisted of two treatments Sinking Fees (A) and Floating feeds (B) in four replicates (Aquariums).

A ration that was formulated to provide 32% crude protein was extruded and pelleted in equal amounts. Tilapia fingerlings and juveniles with initial weights ranging between 3-25g were selected and reared for 105 days in eight equal volume aquaria (20cm x 30cm x 20cm). The fish were fed once daily at a rate of 2.55 body weight. Feeding rate was calculated and adjusted every three weeks based on weight gain.

Data collected was subjected to ANOVA by invoking the PROC GLM procedure in SAS (1993). The response variables were weighted by the number of readings used to compute final measurement. The weighted values were used as a covariate in the GLM statistical mode. Means separation was done using Duncan's Multiple Range tests and the probability level of evaluating the significant between treatment means was tested at 5 % level. The data was also analyzed using Statistix 8.0 and significant differences obtained by applying the LSD test.

The statistical analyses proved that tilapias cultured using sinking feeds had a higher total mean weight than those tilapias fed with sinking feeds. No significant difference (P>0 05) was observed between treatments when weight gain and growth rate was subjected to statistical analysis. Feed conversion ratio was poor in both treatments A and B. As such, feed utilization was poor thus poor weight gain and weight loss resulted.

The results indicated that it is possible to produce tilapia in tanks providing that the right production parameters are consistent. Further, growing tilapia in the confinement tanks, need no specific feeding technique (floating or sinking) since fish can retrieve feed from the bottom of the tanks.

KEY WORDS: **tilapia, extruded feed, pelleted feed, feeding techniques, growth response**

ABSTRACT

Vegetative Propagation of West Indian Cherries (*Malpighia glabra*) by Stem Cuttings: Root Growth Response to Indolebutyric Acid Treatment Under Intermittent Misting

Andrea Ashby

The project sought to determine the root growth response of stem cuttings of West Indian cherries (*Malphigia glabra*) to Indolebutyric Acid (IBA) treatment under intermittent misting. The experiment utilized two types of cuttings (tip and basal) and three types of rooting media (promix, sand and gravel).

The research was conducted at the Research Centre of the Faculty of Agriculture and Forestry, University of Guyana Turkeyen Campus. The experiment was established in 2 X 3 treatments (stem cuttings X rooting media) utilizing a Randomized Complete Block Design (RCBD) with four replicates at five concentrations (0., 1500, 2500, 3500 and 4500 mg/L) of IBA. Cuttings were allowed to root for seventy- five days under intermittent misting of 1 min after every forty-five minutes of artificial lightening. Parameters measured included number and percentage of rooted stem cuttings, length of roots per stem cutting percentage of stem cuttings alive.

Results showed that basal cuttings produced more root, whereas tip cuttings had greater root length. Basal cuttings had higher percentage of death than tip cuttings. There were no significant differences among IBA concentrations for the parameters measured although the greatest number or roots and root length was produced at the concentration of 2500mg/L and 4500 mg/L. There were also no significant differences among rooting media. Using tip cuttings and promix rooting medium along with IBA concentration of 2500mg/L was the best combination for successfully propagating West Indian cherry under intermittent misting.

KEY WORDS: vegetative propagation, West Indian cherry (*Malpighia glabra*), stem cuttings, Indolebutyric Acid (IBA), root growth

ABSTRACT

Evaluation of the Effects of Replacing Commercial Duck Ration Feed to Local Peking, Kunshan and Muscovy Ducks with Azolla (Azolla Carolinian), Alligator eye (*Salvinia auriculata* Aubl) and Water Hyacinth (*Eichhornia crassipes)*

Kurt Austin

This study compared the production parameters of three breeds of ducks: the Pekin, Kinshan and Mosckovy (36 males and females for each breed) allocate to four feeding groups using a split lot design. Commercial feed (F) 100%, commercial feed and azolla (F+Az) 50%, commercial feed and Alligator eye (F+Ae) 50% and commercial feed and water Hyacinth (F+Wh) 505 were evaluated under local conditions. All the birds were fed starter diets(day 1-14 days)and grower/finisher diets (from 15 days of age), containing 21.0% and 16.05% of total protein and 2900Mkal and 2950 Mkal of metabolized energy, respectively. The birds were raised to eight weeks of age. In the first two weeks ducks in all four groups were fed similar amounts of feed. In subsequent weeks, the ration was restricted by 50% (in relation to the control group) of the different breeds, from week two until the end of the rearing period.

The best economic results were achieved when ducks were fed at restrictive feeding levels (F+Az) 50%, (F+Ae) 50%, (F+Az) 50% for Pekin, Kunshan and Muscovy breeds respectively at the eight weeks. Birds in these groups, compared to those of the control had similar body weights for all the breeds. , but there were no significant differences in feed consumptions per kilogram body weight gains. The feed conversion ratios did not vary significantly between the Pekin and Kunshan, however, the Muscovy ducks were more efficient in converting feed to live weight gain. There were no major differences among breeds or between sexes within breeds in terms of most of the carcass weights. There was an exception in the case of body fat which was lowest in the Muscovy. The general mortality rate among breeds was 4.4%.

The highest profit margin was obtained from the Muscovy duck recording G$ 1.37 vs. $1.32 and $1.27 for the Peking and Kunshan per unit gain respectively.

KEY WORDS; **carcass, duck, Kunshan, Muscovy, Pekin, Azolla, alligator eye, water hyacinth, live weight gain, feed consumption**

ABSTRACT

Laboratory Evaluation Production from *Jatropha crass* Compared to a Selected Sugarcane Variety (DB7869)

Zarefa Bacchus

In the battle to reduce the effects of combustible fossil fuels researchers around the world are seeking our biofuels as alternative sources of energy. Research has been conducted extensively on the use of Ethanol produced from sugar cane as it is a more efficient, cleaner, and cheaper source of energy. Research has also shown that (*Jatropha. curcas*) is viewed as a plant with potential for commercial production however it is a perennial crop with a higher efficiency of bio-fuel production than sugarcane and it requires limited attention and inputs in its cultivation.

This project was undertaken as a challenge to evaluate the production of ethanol from *J.curcas* as compared to a selected sugarcane variety (DB7869).The studies was conducted primarily in the John's Science Centre laboratory. Leaves and seed of *J. curcas* were collected from the Institute of Applied science and Technology as well as mature stalk of Sugarcane variety (DB7869) from the Guyana Sugar Corporation. The experiment comprised of five treatments with varying amount of yeast broth (1.0g, 1.5g,2.0g, 2.5g and 3.0g yeast broth) with four types of materials(leaves seed, leaves and seed of physic nut and sugarcane) and replicated three times in a Completely Randomized Design(CRD).

Juice was expressed/ extracted from the materials, inoculated with yeast (*Saccharomyces cerevisiae*), and fermented for one week. Ethanol produced from these materials was obtained in simple distillation. The quality and purity of the ethanol produced in each treatment was evaluated at the Demerara Distilleries limited (DDL) and Guyana Pharmaceutical Corporation (GPC) laboratories. The data recorded was analyzed with the aid of Statistix 8.0 computer software.

Results obtained revealed that *J. curcas* produced a higher percentage of ethanol than *S.officinarum* var DB 7869. The quality (percentage of alcohol) and purity (presence of other alcohol and esters) of the ethanol from the sugarcane variety DB 7869 was found to be purer than that of *J. curcas.*

The experiment was done on a small scale and useful information was generated with regards to the production of biofuel from *J. curcas* and sugarcane variety DB 7869. However, further research needs to be conducted on a larger scale to explore the benefit for commercial production.

KEY WORDS: **evaluation, alternative energy, *Jatropha curas,* sugarcane, yeast, percentage ethanol, quality, purity.**

ABSTRACT

The effects of Broiler Manure and Seasonal Soil Moisture Variations on Growth and Development of West Indian Cherries (*Malphigia glabra*)

Ewart Chester

The influence of seasonal soil moisture and broiler manure (B.M) on the growth and development of West Indian cherry (*Malphigia glabra*) was investigated at the University of Guyana, Faculty of Agriculture and Forestry research station during March-June 2008.

The objective of this project was to determine the effects of seasonal soil moisture variations and broiler litter 1.8 kg- (T_2), 3.6kg (T_3), 5.4 kg (T_4) and Urea 0.4kg (T_1) on height (cm), girth (cm0, soluble solids/brix and pH of West Indian cherry. A randomized Complete Block Design with four treatments and replicates (16 experimental units) was utilized in the study. Gravimetric moisture analyses were also done weekly along with height and girt readings. Brix, pH, and yield per plant were collected whenever the trees produced fruits during the 4-month study.

The results showed that there were statistically significant differences among the level and sources of nitrogen and urea treated plants. There was a decline in pH with time (more acidic) with plants treated with 5.4 kg B.M being most acidic and those treated with 1.8 kg of B.M least acidic. There were no statistically significant differences among the treatment for soil moisture percentage and no correlation between moisture percentage and yields or other growth and development parameters. There were statistically significant differences between BM. and urea on growth and development of West Indian cherry and seasonal moisture variations did not affect growth and development.

KEY WORDS: **Seasonal soil moisture, Broiler manure, West Indian cherry, growth and development, gravimetric soil moisture**

ABSTRACT

A Comparison of Three Different Feeding Regimes on Tilapia Growth (In weight)

Dietmar Chichester

Fishery represents a way of life for many of Guyana's people and has deep roots in the history of our country. It is the largest non-traditional agricultural sub-sector in Guyana and is an alternative source of food, income, and employment for households in marine, coastal and rural communities. It is estimated that about 15,600 jobs depend directly on fish harvesting, processing, and marketing activities (Guyana Bureau of Statistics 2007). The sector therefore makes a significant contribution to poverty reduction through the provision of opportunities for income generation and enhancement. Fish is a major source of animal protein it is estimated that the annual per capita consumption of fish in Guyana is nearly 46kg in 2007, which about three time the world average at 16.5 kg (Guyana Bureau of statistics, 2007) Realizing the importance of the fishing industry in the Guyana's economy and recognizing the need for potential expansion in the sector, this research sought compare three different feeding regimes on the growth of tilapia.

The research was conducted at the research Centre in the Faculty of Agriculture and Forestry, University of Guyana, Turkeyen Campus. The red tilapia (*Orechromis* hybrid) was utilized in three treatments (feeding regimes) with three replicates in a Randomized complete Block Design (RCBD). The treatments were Complete supplementation, zero supplementation and partial supplementation. Fingerlings were reared for 14 weeks utilizing cage culture in a pond setting. Initial and final weights, rate of weight gain and mortality rate of tilapia in each treatment was recorded. Digital photographs of the progress of the experimental were captured.

Data was analyzed using ANOVA and SAS, GLM system and Fisher LSD Mean Separation. Results showed that tilapia in treatment with complete supplementation had the best mean weekly weight gain overall weight gain at the end of the 14 weeks. All the treatments were significantly different statistically for weight gain. With respect to mortality at the end of the 14th week the rates were lower for the treatments of partial and zero supplementation at 33 and 24% respectively when compared to that of complete supplementation (50%). Overall, tilapia with complete supplementation had greater weight gain and total weight than partially and non-supplemented tilapia.

KEY WORDS: tilapia, feeding regimes, supplementation, weight gain, mortality

ABSTRACT

An Evaluation of the Efficacy of Four Sanitizing Methods on Hatchability and Quality of Ducklings

Shebekie Christian

Sanitation of hatching eggs is a key area of research due to the need for an effective, economical, and safe method of egg sanitation. Improved sanitation of hatching eggs is an integral part of the overall pathogen reduction programme in vertical poultry operations. This must be accomplished without disturbing the cuticle of the egg which can decrease hatchability.

The ability of four sanitizers to kill bacteria on hatching eggs was investigated in relation to their effectiveness on hatchability and duckling quality.

Hatching eggs were subjected to four treatments(formaldehyde fumigation 2.2mls:0.6g K Mn O_4 for 20 minutes, 5%Hydrogen peroxide (H_2 O_2), 6666ppm Na ClO solution and 1111ppm K MnO_4 solution for 3 minutes. The treatments were replicated four times using the randomized Complete Block Design (RCBD). Thirty (30) eggs were exposed to the treatments. Fifteen hatched 15-day-old ducklings from the treatments were selected random, wing-banded and monitored for three weeks.

The results of this study demonstrated that there were significant differences among treatments for coli form reduction with 5% hydrogen peroxide recording greater number. However, no significant differences were recorded among the treatments for effectiveness in E. coli reduction. The effects of the sanitizers on the cuticle and hatchability recorded no significant differences among treatments. With reference to duckling quality, duckling hatched from all treatments had no physical deformity with their eyes or legs. However, there were differences with other parameters measured over the three weeks period.

It can be concluded that all the sanitizers can effectively reduce microbial load on eggshell surface without affecting the cuticle, hatchability, or duckling quality.

KEY WORDS: sanitizers, sanitation, eggs, hatchability, duckling, bacteria, cuticle, ducking quality

ABSTRACT

Field Evaluation of four Rhizobium Strains on Nodulating Ability and dry Matter Yield On the Minica # 4 Variety of Cowpea (Vigna *unguiculata)*

Hewley Clarke

Four Rhizobium strains were field evaluated for modulating ability, total dry weight, and plant height. The experimental utilized a Randomized Complete Block Design (RCBD) comprising six treatments and three replicates. The six treatments included four strains of Rhizobium bacteria (SA 616, SA 515, SA 172, and TAL 173), urea fertilizer at recommended rate plus a no inoculant +no-fertilizer control.

It was found that treatment with Rhizobium strain SA 515 had the greatest plant height measurement at 2 weeks after transplanting. At 4-5 weeks after transplanting, the urea treatment contained the greatest plant height measurement. This same treatment 9urea0 also contained the greatest total dry weight at 4 weeks after planting. Rhizobium strain SA 172 had the greatest number of nodes on the plants as well as the greatest number of effective nodules at 4 weeks after transplanting. Additionally, treatment with Rhizobium strain SA 172 contained the yielded the greatest total wet weight at 4 weeks after transplanting at 5 weeks after transplanting treatment with Rhizobium strain SA 151 yielded the greatest number of nodules as well as effective nodules.

Overall, the treatment with Rhizobium strains SA 172and SA 151 performed well in terms of modulating ability of cowpea plants at week 4 and 5, respectively. The Rhizobium strain SA performed well in terms of the total wet weight of the cowpea plants.

KEY WORDS: cow pea, *Rhizobium* spp., modulating ability, total wet weight, total dry weight, transplanting

ABSTRACT

An Evaluation of Mono- ammonium Phosphate (MAP) and Di-ammonium Phosphate (DAP) as Alternative Phosphorous sources in Lowland Rice Cultivation

Shanna Crawford

In Guyana, there is an urgent need to find alternative phosphorous sources. As such a field experiment was conducted to evaluate the efficiency of different phosphorous fertilizers on rice (*Oryza sativa* L.). Phosphorous levels from three sources (0,30,60,90 P_2O_5 kg/ha of Triple Super phosphate (TSP), Monoammonium phosphate (MAP) and Diammonium phosphate (DAP) were studied at Burma Rice Research Station to determine their effects on paddy yields. The experiment was established as a Randomized Complete Block Design with and ten treatments and four replicates. Parameters measured were plant height, panicle length, grains/panicle, 1000 grain weight, tillers/m² and yield.
According to the results the plant height, number of reproductive tillers per square metre and yield had better performances when MAP and DAP were applied as compared to when TSP was applied. Investigation done in this study indicated that MAPO and DAP are suitable alternatives to TSP.

KEY WORDS: ***Oryza sativa,* fertilizers, efficiency, paddy yields, plant height, reproductive tillers Triple Super phosphate, Monoammonium phosphate, Diammonium phosphate**

ABSTRACT

A Comparative Analysis to Determine the Trend of *Diatraea spp.* Damage in Three Varieties of Sugarcane (*Saccharum officinarum L.)*

Haimchand Dasrat

In the Guyana Sugar Corporation (GUYSUCO), *Diatraea spp.* is considered one of the major pest problems. The insects usually cause considerable damages by boring/tunneling the stalk, due to the larva feeding habit. In young plants the damages usually result in death "dead heart" and in older canes there maybe side shoot or "dead tops."

The main objective of this research was to determine the trend of *Diatraea* spp. damage in three (3) varieties of sugar cane. Three locations with same soil type and areas not far apart that was already planted with two new varieties of sugar cane (D93222 and D93409) and the third area with the standard (DB 7869) was selected. Two observations were conducted every month where data were collected and analyzed using Statistix 8 and Microsoft Excel to plot graph. Then the percentage of joint bored, rotten top/dead heart and stalk infestation was calculated also number of different *Diatraea* species present and infestation trend in relation in relation to environment condition (rainfall) was shown using line graph.

It was found from the result obtained that the intensity of damage by *Diatraea* spp. on D93222 was 54.01% for stalk infestation, 44.34% dead heart and 5.38% joint bored, D93409 was 23.16% stalk infestation, 11.94% dead heart, and 3.41% joint bored and for DB7869 was 19.25% stalk infestation, 12.97% dead heart and 3.41% joint bored. It was also found that the damage trend for all three varieties were the same, that is *Diatraea centrella* bored all three varieties on the center between nodes and *D. saccaralis* tend to be circular around the outside edge of the pith; just above the node and some longitudinal tunneling occurs.

KEY WORDS: ***Diatraea* spp., variety, tonnes cane per hectare, sugar tonnes/ha, stalk infestation, damage**

ABSTRACT

A Comparison of Two New Tilapia feed with the Tilapia Mature Feed on the Jamaica Red Tilapia (*Oreochromis spp.*)

Rabani Gajnabi

Aquaculture is gaining momentum in all parts of Guyana. As technology evolves in the fish feed manufacturing sector, there is a chance to better improve the yields and growth of tilapias. This on the other hand, enhances the replacement of natural food with prepared diets.
As, such, two (2) feed conversion and growth of the tilapia fry and fingerling using a 40% crude protein fry feed and a 35% crude protein feed respectively as compared to a 31% crude protein diet.

The result showed an increase in fish growth and feed conversions. There were significant differences between the 40% crude protein fry feed and the 35% crude protein diet feeds respectively as compared to the 31% tilapia mature feed on the performance of tilapia fry.

From the results it is the view of the author, that the 40% and 35% crude protein diets can be used in a commercial operation. However, further work research needs to be conducted to ascertain the economics of using these feeds.

The study should be repeated to validate the results. The duration should be increases to assess the long-term effects of the treatments on growth and performance of fry and fingerlings.

KEY WORDS: **aquaculture, tilapia, feeds, feed conversion, crude protein, fry, fingerling**

ABSTRACT

An Investigation to Determine the Performance of Tilapia (*Orechromis niloticus*) Reared Under Different Environmental Conditions

Barbara Hochand

This research was conducted over a period of sixty days at the Faculty of Agriculture and Forestry, Turkeyen Campus from February to April 2008. The tilapias are one of the most important groups in aquaculture. The general objective of this study was to determine the performance (weight) of tilapia reared under different environmental conditions. The treatments were aquaria with feed supplementation (T1), pond culture with feed supplementation (T2) and pond culture without supplementation (T30. Each treatment was replicated three times. For (T1)the tilapias were cultured in three aquaria tanks(20cm x 30cm x 20cm) with twenty-five litres of water at room temperature and for T2 & T3, six mesh cages (20cm x 30cm x 20cm) were installed in the pond. Four male tilapias with weights ranging from 5-20g were used in the replicate in a Randomized Complete Block Design (RCBD). Analysis of Variance (ANOVA) and Statistical analysis Systems (SAS) was used to analyze the results.

Results obtained from the experiment proved that there were significant differences in the performance of tilapia reared under different environmental conditions. Pond cultured fish with feed supplementation obtained the highest average weight gain. Aquaria with feed supplementation obtained the second average weight gain. Pond culture without feed supplementation obtained the lowest average weight gain.

KEY WORDS: Tilapia, aquaculture, pond culture, aquaria, feed supplementation

ABSTRACT

A Comparison of the Performance of Four Sugarcane Varieties (*Saccharum officinarum* L.) On three Different Clays at East Berbice Estate (Albion)

Arvind Jagarnath

Yield decline ia an issue that requires much attention in the sugar industry especially with the recent price cuts by the European Union. The objective of this research was to evaluate the performance of commercial sugarcane varieties on different soil types in, East Berbice Estate (Albion). The experiment was done on soil type- Corentyne clay (11d) series, Whittaker clay (37) series and Tain clay (9) series using a randomized Complete Block design (RCBD). The treatments consisted of four sugar cane varieties (D93409, D89138, DB7869 and D9017) replicated four times. Plot sizes were seven row of length 9.14m and width of 7.42 m. soil analyses were done at 12 , 24 and 36 weeks on samples taken at 05cm, 5-10 cm 10-15cm and 15-20cm depths. Measurements were taken for soil moisture, bulk density, root density and N, P and K levels. All areas were plough and planted and the data on the following parameters were recorded from the treatments (varieties) including, germination count, growth station (stalk population/height measurement) root density, bulk density, whole cane sampling, foliar analysis, smut and *Diatraea* survey.

Results indicated that bud-eyes germination of all treatments were good on all the soils. Stalk population in all treatments decreased as plant height increased. Low plant growth was recorded between weeks 12-16 on all soil types. There were no significant differences among means for TC/H for each variety on Corentyne clay (11d, however, there were significant differences between D93409 and D9017 on the Tain clay and Whittaker clay.

KEY WORDS sugarcane, varieties, yields, soil types, soil analysis

ABSTRACT

The Screening and in-vitro Development of Fungicide Resistance to Sheath Blight (*Rhizoctonia solani*) of Rice

Chanda Kissoon

An experiment was conducted to determine the levels of resistance to Benlate of three rice varieties: Rustic, G98-135 and G98-30-3. The experiment was conducted in three parts- in vitro studies in the laboratory, pot, and field studies.

The laboratory study examined the morphological and physiological Characterization of the test pathogen and its sensitivity to Benlate using the 'poison plate 'with Benlate at four concentrations (, 25, 50, 75 and 100%). The pot and field studied assessed the level of infection of sheath blight disease after inoculation of 12-day old rice seedlings and application of Benlate. The experimental designs utilized were the Completely Randomized Design (CRD) for the pot study and Randomized Complete Block Design (RCDB) for the field study.

Results indicated that all three varieties showed a progressive decrease in number of fungal colonies as the level on fungicide concentration increased. The least number of colonies were counted at 100% Benlate concentration and the least amount at the 25 %. There were no significant differences among the three varieties in the experiment when evaluated at different concentrations of Benlate. The most colonies were counted at the 255 level of application of Benlate for all three studies conducted.

KEY WORDS: screening, fungicide resistance, in-vitro, rice, varieties, colonies, sheath blight

ABSTRACT

The Level of Awareness of Genetically Modified Rice in Region 3, 4, 5 & 6 of Guyana

Shiva Lall

This report represents the findings of a survey conducted to access the level of awareness of genetically modified rice. One hundred and twenty (120) questionnaires were distributed evenly among four administrative regions of Guyana to evaluate the level of awareness of genetically modified rice. Participants were chosen at random to get an even representation of the population. The questionnaire examined the awareness about specific issues such as advantages and disadvantages of genetically modified rice and farmers' interest in the technology.
Analysis of the response found that overall, 17 ± 7.70% of the interviewees indicated some level of awareness.

KEY WORDS; level of awareness, genetically modified rice, administrative regions, questionnaire, responses

ABSTRACT

The Effects of Calcium Chloride Post -Harvest Application on sapodilla (*Manilkara zapota*) at Ambient Temperature

Danata McGowan

Sapodillas are climacteric, highly perishable fruit characterized by short post-harvest life at ambient temperature. Pre and post harvest applications of calcium chloride on fruits have been successfully used to reduce loss of firmness and to slow down the ripening process.

The objective of the research work was to study the effect of post harvest calcium chloride ($CaCl_2$) application on the quality preservation of sapodilla (*Manilkara zapota*. cv. 'Alano' and cv. 'Nispero') during storage. After harvest, sapodillas were dipped in 0, 1, 2, 4 or 6% $CaCl_2$ solutions for 2 minutes. Fruits were left to dry for 1hour at ambient temperature and then stored in carton boxes at 15ºC and at ambient temperature, respectively. Fruits were analyzed at harvest and after 3, 6, 9, 21 days of storage. Measurements of weight(water loss), firmness, soluble solids content (SSC), titratable acidity, pH and shrivel test were performed.

Results showed that fruits treated with 6% $CaCl_2$ lost more weight than the other treatments at refrigerated conditions. The fruits stored at ambient temperature lost more weight/water than those at refrigerated conditions. Firmness decreased throughout storage of sapodillas at 31'C but refrigerated treated fruits with $CaCl_2$ lost less firmness than the other treatments. Fruits did not show differences in SSC among treatments. However, a pH average of 5.19 was maintained for fruits at ambient temperature and was higher at refrigerated conditions. There were no differences in titratable acidity among treatments for both storage conditions.

KEY WORDS: Calcium chloride ($CaCl_2$), Post harvest, sapodilla, ambient temperature, storage

ABSTRACT

The Effect of Pre-early –post-emergence Herbicides on Tanner Grass (*Brachiaria arrecta* Napper*)*

Andre Moore

Of all the weed species present at the Uitflugth/Leonora Sugar Estates, tanner grass (Brachiaria radicans) is the most invasive and highest contributor to yield decline in sugarcane cultivations.

The influence of weather, reduced drainage efficiencies, shortages of pre- and post-harvest application herbicides, labour attitude and the aggressive nature of the tanner grass is contributing to the weed status at Uitvlught/Leonora Estate.

The objective of this experiment was to determine the effects to four treatments; Merlin (60g/ac), Merlin (60g/ac + Diuron (1lb/ac), Dual (0.45 pts/ac)+Ingran (1.5pts/ac) and Fluminoxazin (10g/ac) + Merlin (60g/ac) on tanner grass and other weed species in the pre to early post stages of weed growth.

The experiment conducted in a second ratoon field cultivated with variety D 9017 using a 2 x 5 factorial arrangement with four blocks and four experimental units. The two experimental factors evaluated were the effects of the herbicides on the weed species when applied ay 7 and 14 days and the effects of the herbicides on the weed species within blocks. Data collection was done at 2, 4 and 6 weeks after application of the herbicides

Results indicated that Dual (0.45 pts/ac) + Ingran (1.5pts/ac) applied at day 14 had better effects on tanner grass in terms of length, colour, vigour and a better retardation in the population density of tanner grass. Merlin (60g/ac + Diuron (1lb/ac) + Diuron (1lb/ac), applied at day 14. Herbicides applied at day seven also had greater effects on the population density of nut grass.

The results also indicated that there were no significant differences in terms of number of internodes, circumference and height of cane stalk sampled. There were significant differences between treatments applied and the control where no herbicide was applied. The control reflected higher population density of weeds. Weed infestations within the trail reflected no difference in the effect on the purity, brix, and pol percentage of cane stalk sampled. It can be concluded that if weeds are not controlled in the pre-early post stages, the effects will be greater on cane height, circumference, and number of internodes of cane stalk.

KEY WORDS: weed infestations, maturity, sampling, herbicides, tanner grass (*Brachiaria arrecta* Napper) weed density

ABSTRACT

A Comparative Assessment of the Effects of Entrepreneurial & Agricultural Training On Farmers in Region 10

Aditya Persaud

Over several years, many farmers in region 10 (Linden) were encouraged to engage in agricultural production. Organizations and Farmers' groups were established to assist the farmers with the basic skills and knowledge to enhance their production and income generation. Information from studies conducted by LEAP showed that farmers within the region need Entrepreneurial and Extension training on crop husbandry and other practices in agricultural production.

With the intervention of modern technology, development in the agriculture sector is certain once is properly implemented and sustained. Currently, there is need for such interventions to improve the sector which will in turn eventually benefit the farmer/investor. The application of appropriate technology can therefore be beneficial to farmers in region 10.

This project focused on assess in the Effects of Entrepreneurial & Agricultural Training on Farmers in Region 10 (linden) to see whether Agricultural production can be better enhanced with the implementation of appropriate training. Training areas targeted includes Farm Management through Extension Training in target aspects of husbandry practices as well as Entrepreneurial knowledge and skills.

KEY WORDS: **Region 10, agricultural production, assessment, Entrepreneurial, farmers, Extension training husbandry**

ABSTRACT

The Effects of Seed Mass on Seedling Vigour and Plant Performance of poi (*Basella alba* L.)

Adele Pierre

There is little information available with regards to producing poi (*Basella alba* L.) even though it is a very popular leafy vegetable grown in Guyana. As such, an experiment was conducted at the Research Centre, University of Guyana Turkeyen Campus, to determine the effects of initial seeding mass on seedling vigour under laboratory conditions and the performance of the plants in the field.

Seeds of the green stemmed cultivar of *B. alba* were fractionated and weighed per hundred. Mean weights per 100 seeds were derived and assigned as treatments; $\mathbf{T_1}$ Light (2.95g ± 0.026), $\mathbf{T_2}$ Intermediate (4.44g ±0.215) and $\mathbf{T_3}$ Heavy (4.04g ± 0.037) and sown. Parameters evaluated were percentage germination, seedling height stem lengths, number of edible leaves, leaf weight, dry matter content and percentage mortality.

Results indicated that initial seed mass had significant effects on percentage germination, seedling vigour, seedling height, stem length, number of edible leaves and leaf weight, however, it had no effect on dry matter and mortality.

Overall, the heavy seeds performed best in most of the parameters evaluated. Hence, it is advisable that farmers give preference to the heavier seeds when sowing since seed size seems to be a good indicator of mass.

KEY WORDS: ***Basella alba* L., seed mass, heavy seeds, seedling vigour, germination, seedling height, stem length, leaf weight**

ABSTRACT

An Evaluation of the Pre-emergent Control of *Phaseolus schotti* in Sugarcane Fields Using Various Herbicide Combinations

Ravindra Punwa

Phaseolus schotti has become one of the most troublesome weeds in sugarcane cultivation of the Guyana Sugar Corporation (GUYSUCO). The weed is known to emerge late in the crop cycle thus, making its management challenging. Several methods were adapted for its control but with varying degrees of success. Various herbicides for treatment of dicotyledonous weeds were used for post-emergent control but resurgence of the weed occurred. Initially 2,4-D Amine was used for control of *P. schotti* for over 20 years, this gave way to 2,4-D Amine + Ally 70DF since the weed was developing tolerance to 2,4-D Amine. However, Flouroxypr (Strane) was introduced to replace the conventional 2, 4-D Amine but it became too costly for GUYSUCO. The pre-emergent herbicide combinations used extensively in GUYSUCO for the control of weeds are Merlin + Diuron and Dual + Ingran with the former being the combination of choice.

This project was aimed at evaluating the efficacy of three other pre-emergent herbicide combinations (Merlin + Dual Gold, Flumioxazin + Merlin and Flumioxazin + Merlin). The objectives were to obtain maximum control on germinating seeds of *P. schotti* using different herbicide combination and to reduce the compete ion of *P. schotti* and associated hindrances to sugarcane production.

The results indicated that there were no significant differences between the standard herbicide combination (Merlin + Diuron) and the tested combinations of Merlin + Dual Gold, Flumioxazin + Merlin and Flumioxazin + Merlin. However, there was considerable disparity in the germination of *P. schotti* between the standard Merlin + Diuron) and the Merlin + Dual Gold combination at a 75% reduction in application rate resulted in the highest germination percentage.

KEY WORDS: **pre-emergent herbicides, *Phaseolus schotti, sugar cane,* germination, 2,4-D Amine, Flouroxypr(Strane), Flumioxazin, Merlin, Dual Gold**

ABSTRACT

Evaluation of Different Bed Materials on Growth and Time to Maturity of *Volvariella volvaceae*

Coretta Samuels

Volvariella volvaceae, commonly known as chine mushroom or paddy straw mushroom is among the group of edible mushrooms that is of great economic importance. Organic agriculture is quickly gaining recognition due to increase environmental and health awareness. This form of agriculture seeks to produce crops without the use of synthetic chemicals. This project sought to evaluate different bed composition on the growth and time to maturity of *V. volvaceae.*

Five different bed materials were used singly or in combination and replicated three times using the Randomized Complete Block Design (RCBD). The treatments used were Paddy straw 100% (control), paddy straw + banana leaves, forage grass 100%, paddy straw + baggasse and filter press mud. Parameters for evaluation were, days to inoculation, time to maturity of fruiting bodies and weight of fruiting bodies per treatment.

Data collected was subjected to analysis of potential yield. The treatment of 100% paddy straw recorded the highest percentage in terms of colonization of *V. volvaceae.*

KEY WORDS: ***Volvariella volvaceae,* mushroom, organic agriculture, bed materials, maturity**

ABSTRACT

Evaluation of Calcium Chloride Dips on Sapodillas (Manilkara zapote L.P. Royden) Under Refrigerated Conditions

Alex Javier Singh

Several plant hormones may influence ripening, but ethylene plays the most powerful role; it is regarded as the trigger that sets off ripening. Sapodilla is a climacteric fruit and as such ripens quickly. This metabolic (ripening) process cannot be stopped, but it could be retarded by one or a combination of practices such as: reduction of temperature; packaging in sealed polythene bags, wax coating, and addition of absorbents.

Post-harvest calcium dips can increase calcium content compared to pre-harvest sprays, without causing fruit injury, depending on the salt type and calcium concentration. Post harvest calcium maintains cell turgor, membrane integrity, tissue firmness and delays membrane lipid catabolism, extending storage life of fresh fruits. It was proven that calcium dips were effective in decreasing surface damage and delaying both fungal decay and loss of firmness compared to untreated fruits.

Cold storage is frequently limited by chilling injuries and loss of quality. Cold storage alone may be harmful to fresh fruits and vegetables, but when combined with chemical post harvest applications such as calcium chloride, it is very efficient and effective.

The objective of the research was to evaluate the chemical post-harvest application of calcium chloride (Ca Cl_2) on the shelf life of sapodillas (*Manilkara zapote* L.P. Royen) in refrigerated conditions. After harvesting the fruits were immersed in 12 %, 9%, 6% and 0% Ca Cl_2 for 1 hour. The fruits were afterwards air dried, labeled, weighed, and packed in carton boxed then placed in refrigerator at 130C $\pm$ 1^{o}C. Data was collected at 3-day intervals for 21 days of storage for the following parameters: water loss %, firmness (PSI), pH, soluble solid concentrations (brix), and total titratable acid (%). This was repeated in a second trial.

Results from the analysis of the data showed no significant differences amongst the treatments for water loss percentage, firmness, and pH. However, significant differences were observed among the treatments for brix and total titratable acidity. These results were compared to that reported by Brito and Narain, 2002, which indicated that the calcium chloride treatments were not effective.

KEY WORDS: **calcium chloride, post harvest, refrigeration storage, sapodilla, shelf life, water loss %, firmness (PSI), pH, soluble solid concentrations (brix), total titratable acid (%).**

ABSTRACT

An Evaluation of the Fertility Status of Soils and the Quality of Irrigation Water from Numbers 52-74 Villages, Corentyne-Region 6

C. Thakoordeen

Fertilizer management has been a critical issue for farmers. It is an area where little emphasis was placed on. And the quality of irrigation water which is a significant component of crop farming. An evaluation of the soil fertility status and the quality of irrigation water should be done at least every 3 – 4 years period to keep an updated record of the nutrient status.

Two soil samples were taken from each village No. 52 – No. 74 respectively along with one water sample from the same location. Analyses of the samples were done in the laboratory at Johns' Science Centre, Berbice Campus, and the National Agricultural Research Institute (NARI) soils laboratory. The specific objectives included were to provide a basis for fertilizer application for farmers as well as to determine the effect of water quality on soil and crops

The results reveal that the nutrients statuses of the soil are within the acceptable range and such as a wide variety of crops can be planted. The results also indicated that the quality of irrigation water poses no serious hazard for crops in the study area.

KEY WORDS: **fertility status, water quality, irrigation water, soils, crops, Corentyne Villages, Fertilizer management.**

ABSTRACT

A Comparative Analysis of Two (2) Feeds on the Growth of the Jamaican Red tilapia Fingerling (*Oreochromis spp.*)

Anandranauth Allan

Tilapia is a tropical fish and has been raised throughout the Caribbean, Africa, and tropical Asia in rice fields, in ponds and in reservoirs. It is an important part of food of people on the coast as well as in the hinterland of Guyana. Apart from being cheap, it is a reliable source of protein (myosin) and vitamins. It also supplies fat, but no carbohydrates and it provides different mineral elements such as Calcium, Iron, Sodium, and Florine. Feeding of tilapia is necessary is necessary to enhance growth and early maturity. Over feeding of any feeds can result in pollution of the water then death of the fishes. Underfeeding can result in stunted or poor growth. Hence, it becomes necessary to evaluate the most economical and balance diet to feed tilapia.

In this experiment, two (2) feeds were evaluated: one (1) commercial tilapia feed produced by Maharaja Feed Mill at Cove and John (31% crude protein) and was compared to a 31% crude protein locally formulated feed which contains rice bran, rice hull (busi), shrimp meal and copra meal. The fishes were fed at the rate of 15% of their total body weight from week 1 - 4 and 25% from week 5 – 8. Eighty percent (80%) of the fingerlings were caught on a weekly basis to determine the growth rate and feed conversion rate. The Independent Sample was used to analyze data.

From the data, there was no marked statistical differences between the two (2) feeds. Economically, the formulated feed is far cheaper than the commercial feed. It can be concluded that further work needs to be done to determine the level at which locally formulated ingredients can successfully be used as formulated feeds.

KEY WORDS: **feed conversion rate, tilapia, formulated feed, crude protein, commercial feed**

ABSTRACT

Refinement of Tissue Culture Techniques and Modification of Culture media Formulations to Improve the Regeneration Efficiency of Tissue Culture-derived Clones of *Musa spp*.

Raulston Gillette

A study was conducted to refine the Tissue Culture techniques and to modify culture media formulations for the improvement in regeneration efficiency of tissue culture derived clones of Musa species. The main objectives of the study were directed at; i) the reduction of the several current options of tissue culture protocols to just a few that were best suited to the skills level and capacity of the present laboratory personnel; ii) the improvement of plantlet regeneration efficiency and iii) the identification of other critical species amenable to somaclonal regeneration.

The research was conducted in the Plant Tissue Culture laboratory at the National Agricultural Research Institute (NARI). Treatments included five media formulations namely, NARI standard media(control), 0.5 strength standard media, 1.5 times Control, MS media with thiamine only and Standard strength with 50 % reduced Benzyl-aminopurine) and six cultivars (apple banana, green plantain, black plantain, horse plantain, Canal # I strain 1 and Canal # I strain 2)of Musa spp.

A strip plot design was utilized with two replicates for apple banana and Canal # I strain 2 and one replicate for green plantain, black plantain, horse plantain and canal #1 strain 1.Data was collected on a weekly basis for meristem greening, contamination rates, level of vigour per subculture and multiplication rates. Statistix 8 and Stats graphics were used to analyze the data.

Results showed that refinement and modification of tissue culture media formulation influence regeneration efficiency of tissue culture derived clones of Musa.spp. There were significant differences between treatment combinations as it relates to contamination rates. Results for level of vigour indicated that the treatments with MS media with thiamine only and 50 % reduced Benzyl-aminopurine outperformed the other treatments. In terms of multiplication rates treatment +strain combinations of MS media with thiamine only x horse plantain and 50 % reduced Benzyl-aminopurine x horse plantain displayed the highest rates of 800 and 700% respectively after the first subculture. Subsequent subculture had reduced rates.

KEY WORDS: refinement, modification, techniques, culture media, Musa spp., clones, media formulations, contamination rates, vigour, multiplication rates

ABSTRACT

Necessities of Coded Data for Computerized Statistical Analysis and Implications of Insufficient Analysis of Variance (ANOVA) Models From Conventional Experimental Designs

Sigmund McKenzie

This research undertook the investigation onto two critical aspects of Biometrics and focused on 1) "Necessities of Coded data for Computerized Statistical Analysis" and 2) "Implications of an Insufficient Analysis of ANOVA Models form Conventional Experimental Designs" Several software packages (Microsoft Word, Microsoft Access, Microsoft Works Spreadsheet, Tab delimited text and Comma delimited Text) were used to analyze data within the Field of agriculture. Software such as Statistix 9, MINITAB, STATGRAPHICS and MATLAB were also examined

The objectives of the experiment were for the researcher to i) become conversant with the requirements of data coded for statistical analysis of models of conventional designs and ii) examine the frivolities of simplistic analyses, and some limitations and implications of inappropriate testing of simple statistical hypotheses.

In answering the questions posed in experiment i), results showed that all the different software formats could not be interchanged and that there are individual data format requirements for different software packages. The results also indicated the many loopholes as well as strengths of the software packages -, for example MINITAB had excellent manipulation of a diagram when drawn two dimensional, however, diagrams drawn in MATLAB ver. 7 three dimensional were very hard to edit.

KEY WORDS: **biometrics, software, data code, statistical analysis, testing, software formats, data format**

ABSTRACT

A Comparative Analysis of the Effects of Two Bio-Stimulants on the Growing of Cauliflower as Opposed to the Use of Poultry Manure in a Controlled Environment

Luann Aderita Nero

An experiment was conducted comparing biostimulants- Greenstims and Bountiful Harvest on the growth of Cauliflower (*Brassica oleraceae var. botrytis*) as opposed to the use of poultry manure only. The study was conducted in a polyhouse at Johns 'Science Centre University of Guyana Berbice Campus over a three-month period. The objectives were to determine i) whether biostimulant had any effect on growth and production of cauliflower heads and ii) which biostimulant is of greater benefit in cauliflower production
A Completely Randomized design was used to establish the experiment and included four treatments (poultry litter only, poultry litter and Greenstim, poultry litter and Bountiful harvest and a combination of the three). All treatments were replicated thrice. Poultry litter at rate of 25kg was added to boxes in all treatment. Greenstim (10ml/L) was applied at date of transplanting and at 7 days intervals whereas and Bountiful harvest (6ml/L) was applied seven days after transplanting and at 14 days interval for treatments which included these biostimulant. The data was analyzed using Statistix 9.0.

Results showed that there were no significant differences among treatments for average weight of curds (heads) of cauliflower there were any significant differences in growth and production. Cauliflower yield was not affected by the biostimulant.

KEY WORDS: **cauliflower, bio-stimulants, poultry litter, polyhouse, Greenstim, Bountiful Harvest, growth**,

ABSTRACT

Comparative Study of Biological Agents *Trichoderma harzanum* and *Trichoderma viride* for Controlling Brown Spot Disease in Rice

Sherena Ameia Persaud

Rice is a rich source of carbohydrate, is grown and consumed by people all over the world and is also one of Guyana's major products on the export market.

One of the major problems facing the rice industry is fungal causing infection. These diseases require control to maintain quality and abundance of this staple food supply. Different approaches may be used to prevent, mitigate, or control plant diseases. In addition to good agronomic practices, growers often apply chemical fertilizers and fungicides heavily.

In this experiment, comparative studies were done to determine which of the two biological control agents (*Trichoderma harzanium* and *Trichoderma viride*) was more effective in controlling brown spots disease caused by the pathogen (*Bipolaris oryzae*) in laboratory and pot experiments, six-week-old rice was infected with the pathogen by artificial inoculation and established using a Randomized Complete Block Design (RCBD). Two weeks after inoculation the control agents were sprayed onto selected plants in the pots. The number of infected leaves and size of spots (infection sites0 were measured and the data analyzed.

Results showed that there were significant differences between the two biological control agents, where T. *viride was superior to T. harzanium* for controlling the disease evaluated. However, since the project was based on laboratory and pot studies, further research should be done to better understand the effectiveness of the biological control agents especially at the field level.

KEY WORDS: rice, biological control, *Trichoderma harzanium*, *Trichoderma viride,* brown spot disease

ABSTRACT

Analysis of the Phyto-sanitary Compliant Non-Traditional Overseas Exports from Guyana- Compliance Effectiveness and Niche Market Opportunities

Tiffney F.E. Squires

Towards the establishment of a National Phyto-sanitary Control System it is important that the experiences of the prevailing system to be considered so that any improvements would be easily tailored to the current capability of the system and adaptive acceptance by users, Accordingly, in an effort to assess the effectiveness of the Certification system of the plant Quarantine Services, we extracted into a database as a means of making these permanent. These data were subsequently subjected to several analyses to find out of the system was encouraging to users and whether the phyto-sanitary requirements from importing countries were posing a challenge to entering potential niche markets for non-traditional crops from Guyana.

Our results estimate that phyto sanitary compliant export accounted for more than 85% of non- traditional agricultural exports, with the users of this system exclusively from regions 2, 3 and 4. From these 'Head Quarters' records, there was only instance of certified over-land export to Brazil and none to Venezuela; an indication that no systems were present for these countries. USA, Canada, Barbados and Trinidad and Tobago dominate export destinations and there was a marked increase in exports of medicinal herbs, coconut, ground provision, cucurbits, and low-grade rice exports to the countries. It is apparent that phyto-sanitary requirements of importing countries were more of a driver of users towards the local system rather than the lucrative prospects of markets. From this perspective the system can be considered effective to guarantee an expansion of exports. Quantification of exports and export trends are reported for a few potentially emerging commodities. We could not ascertain whether markets were in a state of saturation, but it is recommended that producers of non-traditional exports be sensitized of the phyto-sanitary export requirements as well as the potential for enhanced export earnings.

KEY WORDS: **Phyto-sanitary Certification, Non-traditional Agricultural Exports, Niche market, Export Unit.**

ABSTRACT

An Analysis of the Facilities Available and Systems Employed by Farmers/Exporters for the Production and Exportation of Fruits form Guyana

KevindraTularam

Guyana's agricultural sector continues to be one of the chief areas of contribution to the country's Gross domestic Product (GDP). Although traditional crops are subjugating the sector; sugar and rice, totaling 45% of total export, significant efforts have been made to focus more on non-traditional crops. Fruits as well as vegetables have increased their share in the export markets with a total of $721 million recorded for 2002 (Gina Bulletin 2002).
Agencies and Farmers' group have been designed to facilitate information transfer as it relates to production and market availability of these non-traditional crops. The New Guyana Marketing Corporation (NGMC), The Ministry of Agriculture and the Sophia Packing Facility are just a few such agencies. With the loss of preferential markets for the chief traditional crops there will be a decrease in foreign income earnings which in turn can affect overall economics in Guyana. It is therefore necessary to examine and preserve favourable macroeconomic environment while encouraging private investment in the non-traditional crops. Thus, fruit production is one important area of agriculture sector diversification to accolade the sugar and rice industries.

The project sought to analyze the facilities available, and systems employed by Exporters and Farmers to produce fruits Guyana. The study was conducted in two parts; i) a desk study of existing secondary data on the problems/constraints face by farmers to export fruits to preferential markets. The agencies targeted were NGMC), Ministry of Agriculture, fisheries, and Livestock and from Farmers, and ii) a questionnaire administered to fruit farmers and vendors in selected areas of fruit cultivation.
Statsgrafix and Microsoft Office software packages were used to analyze the information collected.

Results showed that there was no statistical difference in the use of machinery in all regions except regions 2. The use of the Sophia Packaging facility by farmers in regions 2 &3 was statistically significant. There were also significant differences in Farmers in and exporters in regions 2 & 5 knowledge of packing procedures. Regions 2 and 5 had the greater number of farmers with a smaller number of exporters than regions 3 & 4. Results conclude that there is a sizable portion of farmers who do fulltime cultivation of fruits in all regions studied with regions 2 and 5 leading. Region 9 had a higher portion of part-time farming. Results also indicated that there was significant need for both basic and technical information in all regions.

KEY WORDS: facilities, systems, farmers, exporters, problems, constraints, questionnaire,

ABSTRACT

Application of Beeswax and Cling Wrap to Extend the Post-harvest Life of Sapodilla (*Manilkara zapota*) Stored in Refrigerated Conditions

Osbert Ellis

Beeswax and Cling Wrap were applied to sapodilla (*Manilkara zapota*) to determine their effectiveness in extending the shelf life of fruits stored in refrigerated conditions. Fruits were evaluated at three-day intervals for, weight loss, fruit firmness, pH, brix, total titratable acidity, reducing sugars, non-reducing sugars, and organoleptic tests. Beeswax was the best among the three treatments applied it gave the least weight loss, highest firmness, good sugar content and had the best taste even at Day 27. Cling wrap was better than the control. Although the fruits had an acceptable appearance during the storage period, the taste was undesirable in the later days of storage.

KEY WORDS: shelf life, modified atmosphere packaging, post harvest storage, taste.

ABSTRACT

The Influence of Water Depth on Seedling Emergence and Vigour in Rice (*Oryza sativa*)

Tyrone English

This study was undertaken at the University of Guyana, Faculty of Agriculture and forestry Research station and investigates the influence of water depth on seedling emergence and vigour in two commercial rice varieties grown in Guyana. The experiment was conducted in a Randomized Complete Block Design with four replications. Observations taken include seedling emergence, plant height, girth, and the number of tillers.

Good to excellent emergence was observed for both entries studied at an around nine days after sowing for of water. Generally, plant height at 22.5cm water depth was significantly greater than height at the 0, 7.5 and 15cm water depths. Both girth and the number of tillers at the 15cm depth of water were significantly lower than girth and number of tillers at all the other water depths.

KEY WORDS: emergence, vigour, depth, rice varieties, plant height, water depth, tillers

ABSTRACT

The Use of Guava Bark to Treat Scouring in Piglets

Junior Hope

The purpose of the research was to compare the efficacy of guava bark with commercial scouring solution in the treating scouring in piglets. The author has seen the economic losses suffered by farmers due to the disease affect of the disease on piglets. The research was conducted at the Present's College Farm. The experiment consisted of three treatments: **T_1** -No treatment (control), **T_2** - Aqueous extract of Guava bark (P. guajava) and **T_3** - Commercial Scouring Solution. The guava bark treatment was administered orally (10ml daily) while the Scouring Solution was given at 1ml daily. Both treatments were given for three days, and observations and data were taken for five days after.

Results showed that there were no significant differences in the means for mortality, scouring and scouring retardation among the two treatments (**T_2 and T_3).** There were, however, significant differences in the means between guava bark treatment and the control. The principal conclusion is that there is no difference in the efficacy of guava bark and the commercial scouring solution in the treatment of scouring in piglets.

KEY WORDS: **guava bark, scouring solution, scouring, piglets, mortality,**

ABSTRACT

An Investigation into the Farmer Practice of Nitrogen Fertilizer Application to Bora (*Vigna unguiculata ssp. Sesquipedalis*)

Jhaman Kundun

The application of inorganic nitrogen fertilizer on bora [*Vigna unguiculata ssp. Sesquipedalis]* is a common farmer-practice in Guyana. A field experiment was conducted at the Field Research Station of the University of Guyana to evaluate the merit of this practice. The experimental design was a Randomized Complete Block Design (RCBD) consisting of eight treatments and three replicates. The parameters used to appraise response to nitrogen fertilizer application were (a) extent of root nodulation and (b) its effects on pod yield. Three nitrogen treatments were applied as Sulphate of Ammonia: 15g/plant, 30g/plant, and 45g/ plant. There was an evaluation of the effectiveness of a rhizobium strain, 'Tal 178" at the recommended rate of 14g inoculum to 1kg of seed (Bora).

Results showed that this strain of inoculum may not be best suited for Bora; nitrogen application and nodulation were found to be negatively correlated. However, nodulation was more positively correlated with Sulphate of Ammonia than Urea. It may be concluded that there was little or no need to apply nitrogen fertilizer to Bora under normal soil pH (5.8) conditions.

KEY WORDS: Bora (*Vigna unguiculata ssp. Sesquipedalis),* Nodulation, Nitrogen Fertilizers, and Inoculum.

ABSTRACT

An Investigation into the Growth Response of Acacia species (*Acacia mangium*) To Phosphorus Fertilizer, on Degraded (mined out) Sites.

Ryan Nedd

The investigations sought to identify the most appropriate method of establishing ground cover by reforestation. Using the tree species *Acacia mangium* on the degraded mined-out sites the objective was to determine the growth response of *A. mangium* with and without the application of a phosphorus fertilizer in region #8 (Potaro-Siparuni) at St. Elizabeth, Mahadia.

Soil tests conducted to verify the levels of phosphorus revealed that the soil in the St Elizabeth area had a phosphorus level of 1.62mg/kg of soil and consequently, phosphorus fertilizers were applied on the *A. mangium* plants. Data was recorded for growth progression (mean heights), root biomass and nodulation (type and effectiveness). The data was analyzed using the Statistix 9.0 programme (1999-2008),

Results showed that there were no significant differences between the fertilized and unfertilized treatments in terms of mean growth rate. Further, there were also no significant differences for root biomass between the two treatments. Root nodules were present on plants in both treatment and there were no significant differences for the effectiveness of the nodules between the two treatments. This project highlighted the need for future investigations into rehabilitation of mined-out sites, through the response of *A. mangium* to other levels of phosphorous.

KEY WORDS: ***Acacia mangium,*** **mined-out sites, reforestation, growth response, phosphorous fertilizers, root biomass, nodulation**

ABSTRACT

Application of Beeswax and Cling Wrap to Extend the Post-harvest Life of Sapodilla (*Manilkara zapota*) Stored Under Ambient Temperature Conditions

Earlla Nelson

Bee's wax and cling wrap (MAP) were applied to sapodilla (*Manilkara zapota*) to determine their effectiveness in extending the shelf life under ambient temperature conditions. Fruits were evaluated at three-day intervals for weight loss percentage, fruit firmness, pH, brix, total titratable acidity, non-reducing sugar content and the best taste even at Day 18. Cling wrap was better than the control however, although the sapodillas had an acceptable appearance during the 18 Day storage period, the taste was undesirable in the latter days of storage at the optimum temperature 31^0c.

KEY WORDS: bees wax, cling wrap, shelf life, ambient temperature, weight loss. pH, brix, total titratable, acid, sugar content

ABSTRACT

Determination of the Efficacy of Neem Leaf Extract (*Azadirachta indica*) as a Potential Replacement for Antibiotics/Growth Promotant for Broiler Chicken

Davindra Sagadaya

A study was conducted to investigate the efficacy of neem leaf extract (Azadirachta indica) as a potential replacement for antibiotics/ growth promotant for broiler chicks. Ethanol extract of A. indica leaves at different concentrations levels were evaluated for antibiotics/ growth promotant effect in broiler chickens. There were five (5) treatment groups with each replicated thrice; Treatment 1- unmedicated fee d(control), Treatment 2-medicated feed, treatment 3-unmedicated feed +1/4-gram neem leaf extract, Treatment 4-unmedicated feed +1/2-gram neem extract and treatment 5-unmedicated feed+ 1 gram neem leaf extract.

Body weight gain: In the study, three different levels of neem leaf extract had no significant effect on body weight gain (P>0.05). Likewise, no differences in body weight gain were found (P>0.05) for the medicated feed when compared to the three different concentration levels of neem leaf extract (Table &.). Cumulative body weight gain at 7 weeks for the three concentration levels was not different for the medicated feed and neem. However, unmedicated feed significantly reduce body weight compared to the medicated feed and neem leaf extract at the three concentration levels (P<0.05). A significant reduction in body weight gain was observed for the unmedicated feed at week 2 to week 7 (P<0.05), but not at week1 (p.0.05) compared to the medicated feed and the three concentration levels.

Feed Conversion Ratio: There was no significant difference in the cumulative feed efficiency of the three different concentration levels of neem leaf extract compared to the medicated feed. However, the medicated feed and the three concentration levels had improved feed conversion ratio compared to the un-medicated feed at (p< 0.05). There were no differences in feed conversion ratio at week 1-7 between Treatments groups 3, 4 and 5 compared to the medicated feed at (p> 0.05). However, there was significant difference in the feed conversion ratio between the unmedicated feed and Treatment groups 3, 4 and 5 compared to the unmedicated group (P>0.05).

Feed consumption: Cumulative feed consumption was not altered by the three concentration levels and medicated feed compared to the unmedicated feed at (P>0.05). Feed consumption of medicated feed and neem leaf extract at the different concentration levels was not affected when compared to the unmedicated group (p> 0.05). There were no differences in fed consumption between the medicated feed and the three concentration levels (P>0.05).

KEY WORDS: **neem leaf extracts, antibiotics, growth promotant potential, concentration levels, broiler**

ABSTRACT

An Analysis of two Methods of Identifying Ammonia Levels in Broiler Houses

Ayana Ademola

Over the years, broiler production has seen rapid growth, both in the scale off operations and the amount of income generated. Within the Caribbean region alone, approximately 750 metric tonnes of chicken are exported annually in the region. The contributions of the industry to our GDP are tremendous. Because of this rapid growth, the amount of waste generated from poultry farms is greater than that generated from any other agro-industry. The poultry industry is responsible for most of the ammonia (NH_3) emissions released into the atmosphere.

Ammonia emissions have a detrimental effect on poultry production. Research indicates that t 17 ppm; ammonia can be recognized as odour. At 50- 110 ppm, irritations of the eyes, nose and throat will occur, and farm workers health can be seriously compromised. The prolonged exposure of birds to these levels results in a condition known as keratoconjunctivitis (blindness). Bird growth is retarded at 5 ppm and airsacculitis and viral infection will occur.

The purpose of the research was to investigate the effectiveness of two methods (An Ammonia Test Kit and the Kjeldahl- Nessler method) for identifying ammonia levels in broiler houses. Ninety birds were randomly assigned to three experimental treatments with three replicates per treatment and ten birds per replicate. Treatment 1: Control-no litter treatment added; treatment 2, 60kg Ca CO_3/kg litter and treatment 3; 60g Al_2 SO_4/kg litter. Biological and chemical data were recorded bi-weekly while environmental data was recorded at 10:00 hrs every other day.

One of the objectives of the investigation was to determine whether significant differences existed between the two methods (Ammonia Test Kit and the Kjeldahl -Nessler) to detect ammonia levels of broiler litter.

Results of the analyzed data showed that statistically differences do exist at (P. 0.0000).The study also assessed the effectiveness of two litter treatments ($CaCO_3$) and (Al_2 SO_4). Results showed that the application of the latter treatment was highly effective in reducing ammonia levels and lowering the moisture content of the litter as reported by King *et al* 2004. The study is therefore highly relevant to our poultry industry.

KEY TERMS: **ammonia, emissions, litter, detrimental effects, test-kit, Kjeldahl –Nessler method, broiler house, investigations**

ABSTRACT

The Efficacy of Chemical Control of Fungal Disease on Tomatoes (*Lycopersicon esculentum*)

Bon-ni Adonis

Tomato is one of the most important vegetable crops cultivated in Guyana. It is mainly consumed as a fresh produce in salads and stews. Additionally, farmers earn a reasonably high income from the production of the crop. In recent years it has become one of the crops exported to regional markets. Figures from the Ministry of Agriculture website shows that tomato production increased from 425.3 Mt in the first quarter of 2010 to 824 Mt in the first quarter of 2011. There has also been an increase in price from $231 /kg in 2010 to $617/kg in 2011. However, one factor that poses serious constraint to the production of tomato is the prevalence of diseases such as late blight (*Phytophthora infestans*).

The objective of the research was to assess the efficacy of the broad-spectrum systemic fungicide Bellis (25.2%w/w boscalid and 12.8% w/w pyroclostrobin) with 0.38g ai/g of product on the incidence and severity of late blight and yield. The tomato variety Mongol was used in a Randomized Complete Block Design for the experiment which consisted of three treatments with Bellis at 1g/l, Bellis at 2g/L and No Chemical (Control) and three replicates. The treatments were applied at disease onset and three applications were made at seven-day intervals.

Analysis of Variance (ANOVA) was done to evaluate differences among means for yield of tomatoes as well as disease severity *(Phytophthora infestans)* on the plants across all treatments.

KEY WORDS: **tomato, late blight, disease incidence, disease severity, yield *Phytophthora infestans***

ABSTRACT

An Economic Analysis of the Inclusion of Cassava, Corn and Rice as Energy Sources in Broiler Rations

Garfield Baharally

The objective of this study was to investigate the economic feasibility into the use of cassava or rice as replacements for corn in broiler feed production. Broiler rations were formulated using three ingredients so as to determine the quantity of each required to sustain the broiler industry in Guyana, , Barbados (Bbd) and Trinidad and Tobago (T&T). Based on the quality and cost of each ingredient it was determined which was more feasible. A cost of production analysis for 1kg of fresh cassava showed that producing cassava chips on current yields of 11.2 MT/Hectare worked out at $69.92/kg and $82.20/kg respectively in Guyana. Exporting cassava at$77.44/kg to T&T at $81.31/kg to Bbd was more competitive than rice at $93.71/kg in T&T and $97.59 in Bbd but more costly than corn which costs $70.54/kg in T&T and $66.68/kg in Bbd.

Another cost of production study considering the actual potential of cassava varieties at 25 MT/Ha indicated that cassava chips costs $31.86/kg on the local market considering all mark-up prices, $39.38/kg when exported to T&T and $43.25/kg in Bbd. As such, if cassava production can be improved to meet the maximum potential cassava varieties the cost of cassava can be reduced by half the price in Guyana Trinidad and Tobago and Barbados. In conclusion, it can be noted that the cassava value chain in Guyana will have to improve drastically for potential cassava production to be met and to establish cassava chips as a feasible energy source in broiler feed formulations both in Guyana and the Caribbean

KEY WORDS: **economic feasibility, cassava, corn, rice, broiler feed production, cassava varieties, maximum potential, cassava value chain, energy source**

ABSTRACT

Comparing the Yield Components of Three Popular Hybrids of Tomato (*Lycopersicon esculentum*) - (Heat Master, Mongol, and Calypso- Grown on the Corentyne Coast with Two Newly Introduced Varieties (Rampart VFNF and EM 345F_1)

Warren A. Barlow

High yield is a major goal for tomato (Lycopercsicum esculentum Mill) growers. The objective of this study was to compare the yield components of some tomato accessions available of the Corentyne Coast of Guyana and to identify high yielding accessions for recommendation to Corentyne growers.

A field trial involving three cultivated tomato hybrids namely 'Heat MasterF1, 'Mongol F1', and 'Calypso' and two newly introduced hybrid varieties-' Rampart VFN and EM345 F1' was conducted at the University of Guyana, Johns Science Centre during the period January 2010 and May 2010. The experiment was laid out in a Completely Randomized Design with four replicates. Data was collected on yield and yield components of the tomato accessions. The means were subjected to Analysis of Variance (ANOVA) using Statistix 9.0 and MS Excel for tables and Graphs. Differences were declared significant at 5% and 1% level based on Least Significant Differences (LSD).

Results showed that significant differences existed for yield components of the three cultivated varieties ('Heat Master F1', 'Mongol F1', and 'Calypso); however, there were no significant differences in the yield components of the two introduced hybrid varieties-'Rampart VFN and EM345 F1'. Results also showed that the hybrid "Mongol F1' generally produced significantly ($p \leq 0.05$) substantial number of marketable fruits .Of the newly introduced cultivars, EM345 F1' performed better when compared to Rampart VFNF1. Based on the results of the experiment the Mongol hybrid was recommended to the Corentyne Tomato growers as the commercial cultivar with the highest yield potential

KEY WORDS: **hybrid tomato, Yield components, marketable fruits, yield potential,**

ABSTRACT

The Control of Bacterial Infections in Cabbage (*Brassica oleraceae* cultivar KK Cross)

Kendra Belgrave

A two phased study was conducted in the Parika District to compare the effectiveness of measure used by farmers to control fungal and bacterial infections with recommended practices. Phase one of the study was the administering of a questionnaire in which twenty-six farmers provided responses to the questionnaire. Phase two consisted of a field trial on the Linden/Soesdyke Highway to compare the effects of three treatment regimes on the control of fungal and bacterial infections in cabbage. A Randomized Complete Block Design was used to establish the field trial. The treatment administered was No treatment (Control), Farmer based treatment (Carbendazine) and recommended chemical rotation (Mankocide, Acrobat and Bellis) replicated three times.

Responses collected from the survey were analyzed and results revealed that bacterial and fungal infection were very prevalent on the cabbage crop. The survey indicated that famers mostly used chemical control as against an Integrated Pest management strategy that is being recommended by the Extension Officers from the Ministry of Agriculture. According to the farmers chemicals were preferred over other methods because of the fast-acting properties for large scale cultivations which require timely production. Carbendazine was the fungicide of choice by most farmers in the survey for the control of diseases of cabbage.

Results from the field study showed that there were no significant differences in yields among three treatments used to control bacterial and fungal diseases of KK-cross variety of cabbage.

KEY WORDS: cabbage (*Brassica oleraceae*), survey, Acrobat, Bellis, Mankocide, Carbendazine, chemical rotation, bacterial infections, fungal infections

ABSTRACT

Effect of Plastic Mulch Colour on Weed Suppression and early Maturity and yield of tomato *(Lycopersicon esculentum cv. Mongol)*

Samantha Brotherson

The Tiwiwid sand which dominates the landscape along the Soesdyke/Linden Highway is not considered suitable for vegetable production. The soil is coarse textured, structure less, low in fertility and low in pH. Despite high rainfall in the region crop production on this soil is extremely limited. The use of mulches in his environment can have positive effects on soil physical and chemical properties. Water- holding capacity, nutrient retention and availability are likely to increase the deployment of mulches. Consequently, the range of crops cultivated in this region may be increased.

This study was conducted at Haruararuni along the Soesdyke/ Linden Highway, to investigate the effect of plastic mulch colour on weed suppression and early maturity and yield of tomato (*Lycopersicon esculentum* cv. Mongol). The experiment consisted of the four experimental treatments: transparent plastic T1, black plastic T2, white on black plastic T3 and un-covered soil T4. Treatments most effective as a weed control were white on black plastic and black plastic respectively, with the white on black plastic mulch practically eliminating the weed population. Yield of tomato was low because of the type of growing environment (soil type). However, treatments white on black plastic (T3) and black plastic T2 had significantly better yields than treatments with transparent plastic and uncovered soil. Early maturity in the context of this study did not take into consideration the genetic potential of the cultivar, however, treatments white on black plastic and black plastic had significantly earlier maturity than treated transparent plastic and uncovered soil.

KEY WORDS: **tomato, plastic mulch colour, weeds suppression, early maturity, yield,**

ABSTRACT

Postharvest Treatment of Sapodilla *(Manilkara zapota) Covered* with Film-forming of Cassava Starch and Beeswax as Alternative to the Commercial Wax

Cosmo Browne

This research was conducted at the University of Guyana, Faculty of Agriculture and Forestry laboratory with main objective of investigating postharvest treatment of sapodilla (*Manilkara zapota*) covered with film-forming of cassava starch and beeswax as alternative to the commercial wax.

The experiment was conducted in a Randomized Complete block Design with four treatments. The treatments were: Carnauba wax and Beeswax emulsion (TI), Starch and Bees wax Emulsion (T2), Starch Emulsion (T3) and Control. Observations were taken every three days for fruit weight, texture, pH, brix, and acid titration. A total of five fruits from each treatment were replicate three times throughout the experiment.

Data collected was analyzed and results showed that carnauba wax and beeswax emulsion were the best treatments with fruits having lowest weight loss with firmer fruits and not much significant differences among pH levels. Starch and Beeswax emulsion were the next best treatments. Starch emulsion was not effective in extending shelf life of the fruits.

KEY WORDS: **postharvest treatments, sapodilla, weight loss pH, brix, texture, shelf life**

ABSTRACT

The Efficacy of Cutting Frequency on Mixed Swards as a Means of Weed Control

Abiola Bruce

The grasses/ swards in Guyana have been vastly spreading to areas not wanted. One of the species of grasses with the most detrimental effects is the antelope grass (*Echinochloa pyramidalis*) which can be found along the coastal plain and even in sugarcane fields of GUYSUCO. This weed affects our drainage and irrigation systems, poses problems to our recreational places, and affects the sugar industry by reducing yield and the quality of sugarcane produced, hence increasing the cost of production.

The aim of the study was to ascertain whether the most effective means of timely cutting these swards would give some amount of control. In this investigation four different time-intervals of cuttings were applied. The study was conducted at the Northern edge of the research Centre, Faculty of Agriculture and Forestry, University of Guyana, Turkeyen Campus. A Randomized Complete Block Design (RCBD) was used to establish the experiment. Four treatments of different time- intervals of cutting were applied. Data was collected on botanical composition of the swards, frequency of cutting (four cuttings-weekly, bi-weekly, tri-weekly, and monthly), rainfall and biomass.

Results showed that timely cuttings have a significant effect on the rate of re-growth of mixed swards as well as the botanical composition of these swards. With weekly cuttings regime caused substantial change in the composition of the sward to the extent that one of the grasses (*B. muitca*) was practically eliminated while *E. pyramidal it* was drastically reduced.

KEY WORDS: **efficacy, mixed swards, weeds control, botanical composition, cuttings, rainfall, and biomass**

ABSTRACT

The Influence of Organic Mulches on Soil Properties and the Growth and yield of Tomato (*Lycopersicon esculentum* cv. Mongol)

Monica Choy

The aim of the investigation was to compare the effects of the three organic mulches on tomato plant growth, soil properties and weed growth as against unmulched treatment. Mulching is an organic method of farming that helps improve soil structure and the overall environment by maintaining uniform soil temperatures, soil moisture and nutrient availability all of which enhances crop growth. The experiment was conducted on a farm located in Haruararuni during the late March-June 2011. The soil type on the location was a typic Quartzipsament. Treatments included hand weeding (Control) and rice hull, cut grass and wood shaving as mulching materials.

Results showed that mulched treatments did not significantly improve soil moisture. Plots mulched with wood shaving were associated with the highest mean soil moisture content (15.2%). Grass mulched plots had the lowest mean soil moisture content of 8.4%. None of the mulched treatments significantly suppressed weed growth. Significant differences in height were noted between the grass-mulched plots and the Hand weeded (Control).The treatments did not significantly increase plant growth.

KEY WORDS: organic mulch, soil structure, tomato, temperature, moisture, weeds suppression, plant height, rice hull, grass, wood shave.

ABSTRACT

An Investigation on the incidence of Bovine Tuberculosis in Slaughtered Animals in Guyana

Shellon David

Bovine tuberculosis (BTB) is a chronic disease of animals caused by the bacteria *Mycobacterium bovis,* which is closely related to the bacteria that cause human and avian tuberculosis. This disease can affect all mammals, causing a general state of illness, coughing and eventual death. This research was conducted to ascertain the incidence of Bovine tuberculosis in slaughtered animal in Guyana, with specific overview on the report from two (2) abattoirs.

Results from this investigation show that here were statistically no significant differences in the incidences of bovine tuberculosis among the two abattoirs and there is statistically significant difference in the incidence of bovine tuberculosis among the different regions investigated. There was an incidence of 1.1%, 0.2%, 0.8% and 0.5% of Bovine Tuberculosis in region 3, region 4, region 5 and region 6, respectively. An incidence of 0.4%, and o.5% existed at Georgetown abattoir and Mahaica abattoir, respectively.

From this research it can therefore be concluded that there is a 0.4% incidence of bovine tuberculosis exist among animals slaughtered at the two abattoirs investigated, which can be considered low.

KEY WORDS: Bovine Tuberculosis, *Mycobacterium bovis*, incidence, slaughtered animal, abattoirs.

ABSTRACT

Market share of Non-Traditional Crops-A Comparison Between Crops Produced in Blackbush Polder and Whim - Fyrish Areas

Tosho Forrester

The National Development Strategy (2006) of the Government of Guyana proposes to diversify the agricultural sector by promoting the production of nontraditional crops by farmers countrywide. The Government of Guyana through the Ministry of Agriculture implemented the "Grow More Food campaign" in which farmers received assistance of inputs such as seeds and fertilizers and technical support through extension services and seminars. Millions of dollars were allocated for the rehabilitation of the drainage and irrigation systems in Black Bush Polder.

The study was conducted to investigate the production scales and market share of the non-traditional crops of pumpkin, watermelon, cabbage, and hot pepper in two major vegetable production areas-Black Bush polder and Whim to Fyrish.

Results showed that the average quantity (300kg/week) of pumpkin produced in both locations were similar. The average quantity purchased (65 %/week) of cabbage for both locations were constant for both locations. Average quantity of hot pepper purchased from the Black Bush Polder was significantly higher than that purchased from Whim to Fyrish. Watermelon quantities purchased between Whim to Fyrish was significantly higher than that purchased from Black Bush Polder.

KEY WORDS: **non-traditional crops, production scales, market share, Black Bush Polder, Whim to Fyrish**

ABSTRACTS

An Investigation if Zinc, Cardboard and Plywood as Roof Insulators in Broiler Houses

Sherril Halley

Two trials were conducted to evaluate the effectiveness of cardboard and plywood as roof insulation materials in broiler houses. This was done by recording temperature, relative humidity, wind speed, feed consumption, weight gain and determination of the feed conversion ratio. In each trial three pens were used; one pen with zinc roof without insulation (Control), one pen insulated with cardboard, and a third pen insulated with plywood. In each trial thirty (30) one week-old broiler birds of mixed sex were assigned to each pen.

Results revealed that there were no significant differences in the weight gain among birds that were contained in the carboard, and plywood insulated roof pens as against the un-insulated (zinc) roof pen.

KEY WORDS: zinc, cardboard, plywood, insulators, broilers, heat stress, temperature, weight gain

ABSTRACT

Soil Salinity and its Influence on Tomato Cultivation- a Case Study of the Corentyne Coast (Palmyra to Adventure)

Carl Hooper

This study to investigate the pattern of salinity along the Corentyne Coast (Palmyra to Adventure) and to find out what influence soil salinity has on tomato cultivation at varying levels. Soil samples were collected and analyzed for salinity level at random sites within the study area. From these sampling sites soil was chosen to conduct a pot experiment with tomato plants (f1 Mongol). The sites chosen were all at salinity levels above 4.0mm hos/cm3, which is said to be the critical salinity level for most crops according to the National Agricultural Research Institute (Guyana) except for the control which was at 0.15mmhos/cm3.

The experiment was conducted using five treatments each replicated three times and the treatment design used was completely randomized. The parameters measured were plant height, date to 50% flowering, number of fruits per plant for a two-week period, and fruit weight. All data collected were subjected to Analysis of Variance (ANOVA) using Statistix 9.0 and MS Excel for tables and graphs. Differences were declared significant at 5% and 1% level based on the Least Significant Differences (LSD)

The Corentyne Highway did serve as a barrier for soil salinity, as was indicated by the result of the soil an analysis which showed that the soils north of the highway were more saline when compared to that South of the Highway. Soil salinity does have an influence on the cultivation of tomato plants. Plant growth and yield were significantly affected at levels above 6.3mmhos/cm3. As a result, it is advisable for farmers to conduct soil analysis prior to the cultivation of soils north of the Corentyne Highway.

KEY WORDS: soil salinity, tomato, Corentyne Coast, pot experiment, plant height, 50% flowering

ABSTRACT

Evaluation of Tomato (*Lycopericon esculentum*) Production Using Three Mulching Media Under Shade House Conditions

Aaron Leitch

This study was undertaken at the Research Centre, Faculty of Agriculture and Forestry at the University of Guyana Turkeyen Campus. The experiment evaluated the influence of mulching using three mulching materials on tomato (Lycopersicon *esculentum* L.) variety Mongol.

The experiment was conducted utilizing a Completely Randomized design with three treatments and ten replicates. The parameters measured included, plant height, number of fruits per plant, number of days to first 10 fruits and fruit weight.

The study was conducted under shade house and the treatments /mulch included Bermuda grass (*Condon dactylon*) cuttings at 0.1 kg/plant, carbonized chicken litter (Biochar) at 0.4 kg/plant and rotted chicken litter at 0.4 kg/plant.

Results indicated that the most productive mulching material was with Biochar while the least productive was with Bermuda grass.

KEY WORDS: Biochar, mulching, tomato, shade house, yield, growth

ABSTRACT

The Influence of Neem Seed and Neem Leaf on the Nitrogen Use Efficiency of Rice

Gavin Mahadeo

Nitrogen is a major nutrient for crop growth and is critical for intensive rice production. Under lowland condition most of the applied Nitrogen is lost, less than 50% is available for crop growth and the other half is dissipated in the wider environment causing several environmental and ecological side effects.

They are several ways to increase Nitrogen usage Efficiency among them are the use of nitrification inhibitors. In the attempt to enhance nitrogen, use efficiency several nitrification inhibitors have come into use. In recent years, neem seed products are widely use as nitrification inhibitors in other parts of the world, however no natural inhibitor was evaluated in Guyana. Hence the present study was conducted to determine the effect of neem seed and neem leaf on use efficiency of urea nitrogen applied to the soil.

Incubation studies were done to determine the effect of neem leaf and neem seed on the growth of soil nitrifying bacteria, four treatments were imposed with three replications. Bacterial growth was observed at 1, 5, 10 and 20 days after inoculation.

Pot culture experiments were conducted using soil collected from Black Bush Polder, Les-behoden, and Yakasari. Eleven treatments were imposed with three replications using the completely randomized design (CRD). Number of tillers, height of plant, root mass, total dry matter production and total N uptake were examined.

From the incubation studies it was observed that application of neem to soil did not have any immediate effect on the population of nitrifying bacteria but from the fifth day up to the twentieth day after incubation the population exhibited a declining trend. From pot experiments favorable results were obtained. Increases in plant height, root mass and number of tillers were obtained from the treated pots with neem.

More importantly Nitrogen uptake and Nitrogen recovery increased significantly when neem was used. The results suggest that neem seed and neem leaf could be potential nitrification inhibitors for increasing fertilizer Nitrogen use efficiency.

KEY WORDS; **neem, nitrogen uptake, rice, nitrifying bacteria, incubation studies, pot culture, nitrogen recovery**

ABSTRACT

Evaluation of the Efficacy of Neem leaf Meal (*Azadirachta indica*) as a Major Feed Ingredient for Broiler Chickens

Surrinarine P. Perumal

The following study, feeding neem leaf meal at various concentrations together with treated rice bran was done to assess neem leaf meal (Azadirachta indica) efficacy of potentially becoming a macro feed ingredient for broiler feeds which are currently being imported at a high price and represents over 80% of the total production inputs cost for locally produced broilers in Guyana. Five treatment groups were used and replicated three times each, where four treatments each represented a difference in protein concentration starting from 18% to 12 %, and one separate treatment used as the control.

Results showed that there were significant differences in body weight gain, palatability, water consumption, feed consumption and feed conversion ratio for all the neem leaf concentrations, when compared to the control treatment (the commercially produced feed currently being sold on the market). The treatment that had the highest amount of neem leaf meal (treatment 2) produced high mortality rates seen in all replicates of the said treatment. As the concentration of the neem leaf meal in the treatments 3, 4 and 5 were decreased, there were a gradual decrease in mortality rates and increases were seen in the body weight gain, water consumption and feed consumption. However, these treatments 3, 4 and 5 were still significantly different from that of the control. Treatment 1 (the control) had zero mortality percentage and a positive body weight gain over the seven weeks husbandry period.

KEY WORDS: efficacy, *Azadirachta indica,* neem leaf meal, feed ingredient, broilers, protein concentration, weight gain, palatability, feed conversion

ABSTRACT

The Use of *Trichoderma harzanum* as a Biological Control Agent for Duck Weed (*Sagittaria guyanensis*) Found in the Rice cultivation by *In-vitro* Method

Mahendra Prasad

An experiment was conducted with *Trichoderma harzanium* to evaluate whether was an effect on the growth of *Sagittaria guyanensis* commonly known as "rice field duckweed." The duckweed was collected from a rice field in Black Bush Polder , were then inoculated with *T. harzanium* at concentrations of 20ml, 30ml ,40ml and 50ml per 4l of water, respectively. A Completely randomized experimental design was used and each treatment was replicated three times. The duckweed plants were observed on a weekly basis and data was collected for leaf, stem, and root growth. The data was subjected to Analysis of Variance (ANOVA) and the means were evaluated by Least Significant Differences (LSD).

The results showed that *T. harzanium* had a biological effect on the growth of duckweed. There were differences between the treatments and untreated control for all the growth parameters after inoculation.

KEY WORDS: ***Trichoderma harzanium*, *Sagittaria guyanensis,* duckweed, inoculation, growth parameters**

ABSTRACT

To Compare the Yield gain of Pak-choi (Brassica chinensis) Using Foliar Fertilizers Against Traditional Soil Applied Fertilizers

Ameid Rafeek

The research was done at the Research Centre, Faculty of Agriculture and Forestry, University of Guyana,Turkeyen Campus to compare the yield of pak choi (*Brassica chinensis*) using foliar fertilizer (Miracle Grow) against traditional soil applied (granular) fertilizer (15:15:15 and urea).

The objectives of the study were to determine which fertilizer type produced the highest yields and which produced better quality crop. A Complete Randomized design was used to layout the experiment with three treatments; No fertilizer (control), Miracle Grow 1tsp/gal water and Urea(15:15:15) 2.5 g/plant which were applied to the plants in four weekly applications after transplanting. Data was collected for yield /head and total yield/treatment after harvest, leaf colour and size.

Results indicated that plants treated with granular fertilizer had more weight and greener broader leaves when compared to plants treated with the foliar fertilizer. The control treatment plants had the lowest yield per head and treatment.

KEY WORDS: ***Brassica chinensis*, foliar fertilizer, granular fertilizer, Miracle Grow, Urea, yield, leaf colour, size**

ABSTRACT

An Investigation into the Current production Status of Dairy Farmers in Regions 2 & 3 in Guyana

Navikar Ram

Historically, no base data exists of production levels of milk in administrative regions 2 and 3, in Guyana. Most of the large dairy operations were centered within regions 4, 5 and 6 areas with the establishment of farms such as Ebini and Moblissa.

This research sought to gather base data on farmers in region 2 and 3 areas for the purpose of identifying the strong and weak points. This was aimed to help livestock entities to review their policies in terms of dairying to increase the development of the sector and to provide a better product to all Guyanese. The data was collected using a structured questionnaire to guide the researcher during interviews. Data was collected on milk production levels, price range, cost of production, herd size, mastitis awareness, level of technology use and record keeping. Analysis of data was done using the Microsoft Excel sand Statistix 9 programmes.

The result indicated that farmers in region 2 had a mean herd size of twelve animals- cow herd of six and milking herd of seven, while farmers in region 3 had a mean herd size of fourteen animals-cow herds of seven animals and a milk herd of three. The average daily milk production per farmer in regions 2 and 3 was 19.83 and 27.5 pints, respectively. The cost per pint for milk ranged from $60-$100 in region 2and $80-$100 in region 3.The gross monthly income of farmers in Regions 2 and 3 was $73,362 and $46,245, respectively. The net monthly income generated per farmer was region 2-$14,970 and Region 3 $28,716. No farmer kept record of their farm practices neither could any of them identify at least three symptoms of clinical mastitis. The results of the survey also indicated that farmers were not using high levels of technology.

KEY WORDS: **gross/ net income, cost of production, mastitis, records, cow herd, farm practices,**

ABSTRACT

To Determine the Efficacy of the Growth Hormone"Cytokinins" on the Yield and Post Harvest Senescence of pak-choi (*Brassica chinensis*)

Seeraj Samsundar

Leafy vegetables such as Pak-choi (Brassica chinensis) are known to lose their turgidity and deteriorate at a more rapid rate than most other vegetables. A field study conducted at the Research Centre at the University of Guyana to investigate the effectiveness of the plant growth hormone Cytokinins on the yield and postharvest senescence of Pak choi (Brassica chinensis).

A Completely randomized design was utilized in the trail layout. Four treatments were evaluated namely, Treatment 1.- Control –no fertilizer no growth hormone, Treatment 2- Cytokinins (2.5ml/l water) Treatment 3.- Urea (Recommended rate and timing of application at end) and Treatment 4 Cytokinins and Urea (end of week 1 and 3). For the evaluation of postharvest senescence, the harvested crop was stores at ambient temperature.

Results showed that the highest yields were obtained from the use of Cytokinins and Urea(Treatment 4) whilst the treatment which delayed postharvest senesce the longest(5 days)was the one in which Cytokinins only was administered.

KEY WORDS: **Brassica chinensis, Cytokinins, Urea, yield, ambient temperature, postharvest senescence**

ABSTRACT

An Investigation to Determine the Effect of Spacing and Application of a Nitrogenous Fertilizer (Urea 46%) at Different Rates on the Yield of Romaine Lettuce (*Lactuca sativa* var. Noga)

Orison Sealy

This research was conducted at the research Centre, Faculty of Agriculture and Forestry, University of Guyana, Turkeyen Campus. The study done evaluated the influence of spacing and Urea (46% N) application on the yield of a recently introduce variety of romaine lettuce-Noga.

Field trials utilizing a combination of spacing and urea applications were conducted in a Completely Randomized Block Design with twelve treatments with three replicates each. The treatments where combinations were application rates of Urea (2g, 4g and 6g per plant) x plant spacing of 10cm, 15cm and 20 cm. A control with organic manure was included. Data/observation was collected/ made for pest and disease incidence, survivability, and yield.

Results obtained indicated that the treatment combination of manure only at 20 cm spacing had the highest mean yield while treatment of 4g urea per plant at 10 cm spacing had the lowest of yield. Treatment with manure only at 10cm spacing had the highest survival percentage while treatment with 4g urea/plant at 10 cm spacing had the lowest percentage. The general indication of the results was that the higher the fertilizer rate applied and the closer the plant spacing, the lower the yields obtained.

KEY WORDS: **Spacing, nitrogen, romaine lettuce, yield, manure, survival percentage**,

ABSTRACT

Response of two Hybrid Tomato (Lycopersicon esculentum. Mill)

Cultivars (Calypso & Mongol F1) to Organic Fertilizers

Seema Poonam Singh

The main aim of tomato (Lycopersicon esculentum Mill.) growers is to achieve high yield in their production. The objective of this study was to assess the yield and growth performance of two varieties of tomato using organic amendments on the Corentyne Coast of Guyana for recommendations to Corentyne growers.

A pot trial involving two cultivated tomato varieties namely 'Mongol F1" and Calypso, grown in soil compared incorporated with three sources of organic amendments (treatments) namely 'Cattle manure'. Poultry manure and 'vegetative compost' and a no-manure control was conducted at the Johns Science Centre, University of Guyana Berbice Campus.

The experiment was laid out in a Completely Randomized Design with three replications. Data was collected for –number of fruits per plant, fruit weight per plant, largest fruit per plant and weekly plant height. The data was subjected to Analysis of Variance (ANOVA) and Statistix 9.0 for graphs. Differences were declared significant at 5% level based on Least Significant differences (LSD).

Results showed that the variety Mongol F1 grown in soil incorporated with cattle and poultry manure, produced significantly ($p \leq 0.05$) the yielded the greatest number of fruit (weight).

KEY WORDS: organic amendments, fruit weight, cultivars, incorporated, manure, Mongo F1, Calypso

APPENDIX

FACULTY OF AGRICULTURE AND FORESTRY

DEPARTMENT OF AGRICULTURE

LIST OF STUDENTS' RESEARCH PROJECT (AGR 4101) TITLES

Appendix I.

No.	PROJECT TITLE	STUDENT NAME	REG. NUMBER	SUPERVISORS (S)	YEAR
1.	An Investigation of Whitefly Diversity in Three Area of Guyana	Sinnot Burnett	03/0101/0912	*Dr. T. M. Velloza Mr. Elroy Charles	**2007**
2.	Vegetative Propagation of West Indian Cherry (*Malpighia glabra*) by stem cuttings;- Response to indole-3 butyric acid Under Intermittent Misting	Edon A. Daniels	07/0101/0272	*Dr. T. M. Velloza	**2007**
3.	The use of Ethrel as a Flowering Inhibitor to Extend the Management of Commercial Varieties of Sugar Cane	Patrick Davis		*Ms. Donna Morrison **Mrs. Maxine Cummings **Mr. Anton Dey	**2007**
4.	An Investigation of the Supply and demand Relationship in the Production of Selected Local Fruits in Guyana	Leon Frazer	03/0101/1214	*Mr. Arnold De Mendonca	**2007**
5.	Effect of Source and Rate of Nitrogen on the Yield and Shelf-life of *Basella alba*	Miranda Henry	03/0101/0877	Dr. T.M. Velloza	**2007**
6.	Effect of Varying Levels of Potassium on Yield of Rice	Kawal Mangal	03/0101/6093	Dr. G. Silvakumari Mr. Lambert Chester	**2007**

7.	Comparison of the Efficacy of Non Selective Herbicides on Tanner Grass (*Brachiaria radicans* Napper) in Sugarcane (*Saccharum officinarumL.*)Fields	Naresh Narine	04/0101/0243	*Dr. T. M. Velloza * Mrs. C Haynes	**2007**
8.	A study of the Alleviation of Heat stress in Broiler Houses Using Card Board and Coconut Coir as a Roof Insulator	Fenton Nickram	03/0101/0020	*Dr. Patsy Francis **Mr. Selwyn Anthony	**2007**
9.	A Comparison of the Effects of Filter-press Mud (Fresh and Composted) and Liming on the Soil Physical Properties on the Growth of Sugarcane (*Saccharum officinarum*)	Ragesh Parbat	03/0101/1238	*Dr. T. M. Velloza **Mr. Anton Dey	**2007**
10.	Laboratory Evaluation of Guyana's sugarcane Varieties for Ethanol Production	Duresh Ramkishun	03/0101/6158	*Dr. S. Gomathinayagam ** Ms. Fabiola Wong	**2007**
11.	An Evaluation of Flouroxypr (Strane) against Traditional Herbicides Used for the Control of Leguminous Vines in Sugarcane Fields (*Saccharum officinarium*)	Narinedatt Seepersuad	03/0101/6264	*Prof. Lalithakumari Dr. Thomas Richmond ** Dr. Harold David Mrs. Claudette Richard-Haynes	**2007**
12.	The Response of West Indian Cherry *(Malpighia glabra*) to Broiler Manure as it Relates to Late Shoot Development and Fruit Yield	Michelle Washington	04/0101/0872	*Dr. T. M. Velloza	**2007**
13.	An Investigation into the Effectiveness of Floating feeds vs. Sinking Feeds for Tilapia Production	Millisa Audrey Warren	03/0101/1190	*Dr. P. A. Francis Mr. E. Luke	**2007**
14.	Vegetative Propagation of West Indian Cherries (*Malpighia glabra*) by Stem Cuttings: Root growth response to Indolebutyric Acid Treatment Under Intermittent Misting	Andrea Ashby	04/0101/1269	*Dr. T. M. Velloza	**2008**

15.	Evaluation of the Effects of Replacing Commercial Duck Ration Feed to Local Peking, Kunshan and Muscovy Ducks with Azolla (Azolla Carolinian), Alligator eye (*Salvinia auriculata* Aubl) and Water Hyacinth (*Eichhornia crassipes*)	Kurt Austin .	04/0101/2167	*Dr. Patsy Francis Dr. Robyn Austin	**2008**
16.	Laboratory Evaluation Production From *Jatropha curasas* Compared to a Selected Sugarcane Variety (DB7869)	Zarefa Bacchus	04/0101/6171	*Dr. S. Gomathinayagam *Mr. Arnold de Mendonca **Dr. Suresh Narine	**2008**
17.	The Effects of Broiler Manure and Seasonal Soil Moisture Variations on Growth and development of West Indian Cherries (*Malphigia glabra*)	Ewart Chester	05/0101/0358	*Dr T. M. Velloza	**2008**
18.	A Comparison of Three Different Feeding Regimes on Tilapia Growth (In weight)	Dietmar Chichester	00/0101/1623	Mr. A. De Mendonca	**2008**
19.	An E valuation of the Efficacy of Four Sanitizing Methods on Hatchability and Quality of Ducklings	Shebekie Christian	05/0101/0003	*Ms. Carmen Bacchus ** Dr. Robyn Austin	**2008**
20.	Field Evaluation of Four Rhizobium Strains on Nodulating Ability and Dry Matter Yield on the Minica # 4 Variety of Cowpea (*Vigna unguiculata)*	Hewley Clarke	03/0101/0527	*Ms. D. Morrison **Mr. Mortimer Livan	**2008**
21.	An evaluation of Mono- Ammonium Phosphate (MAP) and Di-ammonium Phosphate (DAP) as Alternative Phosphorous Sources in Lowland Rice Cultivation	Shanna Crawford	04/0101/0982	Mr. Lambert Chester	**2008**
22.	A Comparative Analysis to Determine the Trend of *Diatraea spp.* Damage in Three Varieties of Sugarcane (*Saccharum officinarum L.)*	Haimchand Dasrat	04/0101/2018	Dr. T. M. Velloza Ms. Claudette Richard-Haynes	**2008**

23.	A Comparison of Two New Tilapia feed with the Tilapia Mature Feed on the Jamaica Red Tilapia (*Oreochromis spp.*) 1. Fry Feed (with a 40% Crude Protein as to a 31% Mature Tilapia Feed. 2.Fingerling Feed- with a 35% Crude Protein as to a 31% Mature Tilapia Feed	Rabani Gajnabi		Dr. Thomas Richmond Mr. T. Geer	**2008**
24.	A Comparison of the Performance of Four Sugarcane Varieties (*Saccharum officinarum* L.) on three Different Clays at East Berbice Estate (Albion)	Arvind Jagarnath	04/0101/2662	Dr. T. M. Velloza Mr. A. Dey	**2008**
25.	The Screening and *In-vitro* Development of Fungicide Resistance to Sheath Blight (*Rhizoctonia solani*) of Rice	Chanda Kissoon	04/0101/6183	*Dr. S. Gomathinayagam ** Dr. Mahendra Persaud	**2008**
26.	The Level of Awareness of Genetically Modified Rice in region 3,4,5 & 6 of Guyana	Shiva Lall	03/0101/1526	Ms. Donna Morrison	**2008**
27.	The Effects of Calcium Chloride Post –Harvest Application on sapodilla (*Manilkara zapota*) at Ambient Temperature	Danata Mc Gowan	05/0101/2167	Ms. Donna Morrison	**2008**
28.	A Comparative Analysis of Cauliflower Produced in Greenhouse Environment Utilizing Grass Compost Media and Liquid Organic Manure with that of Traditional Field Conditions	Tequila Michael		Mr. A. De Mendonca	**2008** **Document NA**
29.	The Effect of Pre-early –post-emergence Herbicides on Tanner Grass (*Brachiaria arrecta* Napper)	Andre Moore	04/0101/1411	*Dr. T M. Velloza	**2008**
30.	A Comparative Assessment of the Effects of Entrepreneurial & Agricultural Training on Farmers in Region 10	Aditya Persaud	04/0101/1302	*Mr. A. De Mendonca ** Mr. Oswald Quamina	**2008**
31.	The Effects of Seed Mass on Seedling Vigour and Plant Performance of poi (*Basella alba* L.)	Adele Pierre	05/0101/0821	*Dr. T. M. Velloza	**2008** **.**
32.	An Evaluation of the Pre-emergent Control of *Phaseolus schotti* in Sugarcane Fields Using Various Herbicide Combinations	Ravindra Punwa	03/0101/6262	*Dr. S. Gomathinayagam **Mr. Ahnand Rajkumar	**2008**

33.	Implications for GUYSUCO in the Production of Bio-Fuels	Imran Sakoor		*Mr. A. De Mendonca *Dr. S. Gomathinayagam	**2008** **Document NA**
34.	Evaluation of Different Bed Materials on Growth and Time to Maturity of *Volvariella volvaceae*	Coretta Samuels		*Dr. Patsy Francis *Ms. Dillon Husbands	**2008**
35.	Evaluation of Calcium Chloride Dips on Sapodillas (*Manilkara zapote* L.P. Royden) at Refrigerated Conditions	Alex Javier Singh	05/0101/0247	*Ms Donna Morrison	**2008**
36.	An Evaluation of the Fertility Status of Soils and the Quality of Irrigation Water From Numbers 52-74 Villages, Corentyne, Berbice	C. Thakoordeen	04/0101/6022	*Dr. S. Gomathinayagam	**2008**
37.	A Comparative Analysis of Growing Purple Cabbage in Grow-box Conditions and Field Conditions	Alain Vincente		*Mr. A. De Mendonca	**2008** **Document NA**
38.	A Comparative Analysis of Two (2) Feeds on the Growth of the Jamaican Red tilapia Fingerling (*Oreochromis spp.*)	Anandranauth Allan	05/0101/6147	*Dr. Thomas Richmond **Dr. Mellisa Samuels	**2009**
39.	Refinement of Tissue Culture Techniques and Modification of Culture Media Formulations to Improve the Regeneration Efficiency of Tissue Culture-derived Clones of *Musa spp*.	Raulston Gillette	05/0101/0719	* Ms. D. Morrison **Mr. Cleveland **Mr. Evan Willabus	**2009**
40.	Necessities of Coded Data for Computerized Statistical Analysis and Implications of and Insufficient Analysis of Variance (ANOVA) Models from Conventional Experimental Designs	Sigmund McKenzie	05/0101/0363	*Dr. T. M. Velloza ** Mr. C.R. Paul	**2009**
41.	A Comparative Analysis of the Effects of Two Stimulants on the Growing of Cauliflower as Opposed to the Use of Poultry manure in controlled Environment	Luann Aderita Nero	05/0101/6001	*Mr. Arnold De Mendonca *Dr. Thomas Richmond	**2009**
42.	Comparative Study of Biological Agents *Trichoderma harzanum* and *Trichoderma viride* for Controlling Brown Spot Disease in Rice	Sherena Ameia Persaud	05/0101/6220	*Dr. S. Gomathinayagam **Dr. Mahendra Persaud	**2009**

43.	Analysis of The Phyto-sanitary Compliant Non-Traditional Overseas Exports from Guyana-Compliance Effectiveness and Niche Market Opportunities	Tiffney F.E. Squires	04/0101/2365	*Mr. Arnold De Mendonca ** Mr. C. R. Paul	**2009**
44.	An Analysis of the Facilities Available and Systems Employed by Farmers/Exporters for the Production and Exportation of Fruits form Guyana	KevindraTularam	05/0101/0374	*Mr. Arnold De Mendonca *Ms Donna Morrison	**2009**
45.	Application of Beeswax and Cling Wrap to Extend the Post-harvest Life of Sapodilla (*Manilkara zapota*) Stored in Refrigerated Conditions	Osbert Ellis	06/0101/1380	*Ms. Donna Morrison	**2010**
46.	The Influence of Water Depth on Seedling Emergence and Vigour in Rice (*Oryza sativa*)	Tyrone English	06/0101/1401	*Dr. T. M. Velloza	**2010**
47.	The use of Guava Bark to Treat Scouring in Piglets	Junior Hope	06/0101/3411	*Mr. E. Luke *Ms. C. Bacchus	**2010**
48.	An Investigation into the Farmer Practice of Nitrogen Fertilizer Application to Bora (*Vigna unguiculata ssp. Sesquipedalis*)	Jhaman Kundun	07/0101/2121	*Mr. C. Bullen	**2010**
49.	An Investigation into the Growth Response of Acacia Species (*Acacia mangium*) to Phosphorus Fertilizer on Degraded (mined-out) Sites.	Ryan Nedd	06/0101/3822	*Mr. Lawrence Lewis **Mr. Mortimer Livan	**2010**
50.	Application of Beeswax and cling wrap to extend the Post-harvest Life of Sapodilla (*Manilkara zapota*) Stored Under Ambient Temperature Conditions	Earlla Nelson	06/0101/1962	*Ms. Donna Morrison	**2010**
51.	The Use of Samanea saman as a Protein Supplement in Feed for the Swine Industry	Troy Patterson	02/0101/1149	*Mr. Errol. Luke *Ms. Carmen Bacchus	**2010** **Document NA**

52.	A Comparison of Crude and Refined Mamee Extracts on Aphids	Rameshwar Ragnauth	07/0101/1004	*Dr. Leslie Munroe	**2010 Document NA**
53.	Determination of the Efficacy of Neem Leaf Extract (*Azadirachta indica*) as a Potential Replacement for Antibiotics/Growth Promotant for Broiler Chicken	Davindra Sagadaya	07/10101/6030	*Dr. T. Richmond *Orison La Rose **Dr. Peter De Groot **Mr. Patrick De Groot	**2010**
54.	An Analysis of two Methods of Identifying ammonia Levels in Broiler Houses	Ayana Ademola	05/0101/0357	*Dr. Patsy Francis **Mr. Errol Luke Ms. Carmen Bacchus	**2011**
55.	The Efficacy of Chemical Control of fungal Disease on tomatoes (Lycopersicon esculentum)	Bon-ni Adonis	07/01010/0046	* Ms. Kaye Mc Allister *Mr. Courtney Bullen	**2011**
56.	An Economic Analysis of the Inclusion of Cassava, Corn and Rice as Energy Sources in Broiler Rations	Garfield Baharally	07/0101/1125	*Dr. Patsy Francis *Mr. De Mendonca	**2011**
57.	Comparing the Yield Components of Three Popular Hybrids of Tomato (*Lycopersicon esculentum*) – (Heat Master, Mongol and Calypso- Grown on the Corentyne Coast With two Newly Introduced Varieties (Rampart VFNF and EM 345F_1)	Warren A. Barlow	07/0101/6078	* Dr. S. Gomathinayagam * Mr. Courtney Bullen ** Mr. B. Chinatmanie	**2011**
58.	The Control of Bacterial Infections in Cabbage (*Brassica oleraceae* cultivar KK Cross)	Kendra Belgrave	07/0101/0886	*Mr. Courtney Bullen *Ms. Kaye Mc Allister	**2011**
59.	Effect of plastic Mulch Colour on Weed Suppression and Early maturity and Yield of Tomato *(Lycopersicon esculentum cv. Mongol)*	Samantha Brotherson	07/0101/0281	*Mr. Courtney Bullen *Ms. Kaye McAllister	**2011**

60.	Postharvest Treatment of sapodilla *(Manilkara zapota) covered* with Film-forming of cFssava starch and Beeswax as Alternative to the Commercial Wax.	Cosmo Browne	07/0101/0848	*Ms. D. Morrison	**2011**
61.	The Efficacy of Cutting Frequency on Mixed Swards as a Means of weed control	Abiola Bruce	07/0101/2146	*Mr. E Luke *Ms Carmen Bacchus *Mr. C Bullen	**2011**
62.	The Influence of Organic Mulches on Soil Properties and the Growth and Yield of tomato (*Lycopersicon esculentum* cv. Mongol)	Monica Choy	07/0101/1149	*Ms. Kaye Mc Allister *Mr. Courtney Bullen	**2011**
63.	An Investigation on the incidence of Bovine Tuberculosis in Slaughtered Animals in Guyana	Shellon David	07/0101/2145	*Mr. Errol Luke *Ms. Carmen Bacchus ** Dr. Dexter Lyken	**2011**
64.	Market Share of Non-Traditional Crops-A Comparison Between Crops Produced in Blackbush Polder and Whim – Fyrish Areas	Tosho Forrester	07/0101/6001	*Mr. Arnold De Mendonca *Dr. S. Gomathinayagam **Mr. Selwyn Anthony	**2011**
65.	An Investigation into the Use of Zinc, Cardboard and Plywood as Roof Insulators in Broiler Houses.	Sherril Halley	04/0101/1611	*Dr. P. Francis & * Ms. Carmen Bacchus *Mr. E Luke **Dr. R. Austin	**2011**
66.	Soil Salinity and its Influence on Tomato Cultivation- a Case Study of the Corentyne Coast (Palmyra to Adventure)	Carl Hooper	08/0101/6056	*Mr. Courtney Bullen ** Mr. B. Chintamanie	**2011**
67.	Evaluation of tomato(*Lycopericon esculentum*) Production Using Three Mulching Media Under Shade House Conditions	Aaron Leitch	08/0101/3077	*Mr. Arnold De Mendonca **Mr. Patrick Ketwaroo	**2011**
68.	The Influence of Neem Seed and Neem Leaf on the Nitrogen use Efficiency of Rice	Gavin Mahadeo	03/0101/6206	*Prof. G. Selvakumari ** Mr. L. Chester	**2011**
69.	Plantlet Regeneration *(in –vitro*) of Cassava (*Manihot esculenta* Crantz) accession for Germplasm transfer to the International Centre for Tropical Agriculture (CIAT)	Paul Mc Watt	07/0101/0712	* Mr. Donna Morrison **Mr. C.R. Paul	**2011** **Document NA**

No.	PROJECT TITLE	STUDENT NAME	REG. NUMBER	SUPERVISORS (S)	YEAR
70.	Evaluation of the efficacy of Neem Leaf Meal (*Azadirachta indica*) as a Major Feed Ingredient for Broiler Chickens	Surrinarine P. Perumal	08/0101/6088	*Dr. Gomathinayagam *Mr. CourtneyBullen **Dr. Grayson Halley	**2011**
71.	The Use of *Trichoderma harzanum* as a Biological Control Agent for *Sagittaria guyanensis*(duck weed) Found in the Rice Cultivation by *in-vitro* Method	Mahendra Prasad	08/0101/6330	*Dr. S. Gomathinayagam * Mr. Courtney Bullen ** Dr. Mahendra Persaud	**2011**
72.	To Compare the Yield gain of Pak-choi (Brassica chinensis) Using Foliar Fertilizers Against Taditional Soil Applied Fertilizers	Ameid Rafeek	06/0101/3687	*Ms Kaye Mc Allister *Mr. Courtney Bullen	**2011**
73.	An Investigation into the Current Production Status of Dairy Farmers in Regions 2 &3 in Guyana	Navikar Ram	07/0101/1534	*Mr. Arnold De Mendonca	**2011**
74.	To Determine the Efficacy of the Growth Hormone "Cytokinins" on the Yield and Post Harvest Senescence of Pak-choi (*Brassica chinensis*)	Seeraj, Samsundar	07/0101/0819	*Ms Kaye Mc Allister *Dr. Elroy Charles	**2011**
75.	An Investigation to Determine the effect of Spacing and Application of a Nitrogenous Fertilizer (Urea 46%) at Different Rates on the Yield of Romaine Lettuce (*Lactuca sativa* var. Noga)	Orison Sealy	07/0101/0715	*Mr. Courtney Bullen * Ms. Kaye Mc Allister	**2011**
76.	Response of Two Hybrid Tomato (Lycopersicun esculenrum.. Mill) Cultivar –Calypso % Mongol F1-To Organic Fertilizers	Seema Poonam Singh	07/0101/6198	*Mr. Courtney Bullen	**2011**
77.	Varietal tolerance of Vegetables to Salinity-A Comparison Between Three Varieties of Three Vegetable Crops	Reynard Warde	08/0101/6345	*Mr. Courtney Bullen	**2011 Document NA**

** Internal Supervisor(s) ** External Supervisor(s) **NA** Not Available

FACULTY OF AGRICULTURE AND FORESTRY

DEPARTMENT OF AGRICULTURE

Appendix II.

LIST OF STUDENTS' RESEARCH PROJECT (AGR 4101) TITLES BY AREA OF STUDY IN AGRICULTURE		
No.	**AGRONOMY RESEARCH**	**NAME OF STUDENT**
	FRUIT CROPS RESEARCH	
1.	Vegetative Propagation of **West Indian Cherry** (*Malpighia glabra*) by stem cuttings;- Response to indole-3 butyric acid Under Intermittent Misting	Edon A. Daniels
2.	An Investigation of the Supply and Demand Relationship in the Production of Selected **Local Fruits** in Guyana	Leon Frazer
3.	The Response of **West Indian Cherry** (Malpighia glabra) to Broiler Manure as it Relates to Late Shoot Development and Fruit Yield	Michelle Washington
4.	Vegetative Propagation of **West Indian Cherries** (*Malpighia glabra*) by Stem Cuttings: Root growth response to Indolebutyric Acid Treatment Under Intermittent Misting	Andrea Ashby
5.	The effects of Broiler Manure and Seasonal Soil Moisture Variations on Growth and Development of **West Indian Cherries** (*Malphigia glabra*)	Ewart Chester
6.	The Effects of Calcium Chloride Post -Harvest Application on **Sapodilla** (*Manilkara zapota*) at Ambient Temperature	Danata Mc Gowan
7.	Evaluation of Calcium Chloride Dips on **Sapodillas** (*Manilkara zapote* L.P. Royden) at Refrigerated Conditions	Alex Javier Singh
8.	An Analysis of the Facilities Available and Systems Employed by Farmers/Exporters for the Production and Exportation of **Fruits** form Guyana	KevindraTularam
9.	Application of Beeswax and Cling Wrap to Extend the Post-harvest Life of **Sapodilla** (*Manilkara zapota*) Stored in Refrigerated Conditions	Osbert Ellis
10.	Application of Beeswax and Cling Wrap to Extend the Post-harvest Life of **Sapodilla** (*Manilkara zapota*) Stored Under Ambient Temperature Conditions	Earlla Nelson
	FIELD CROPS RESEARCH	
1.	Effect of Varying Levels of Potassium on Yield of **Rice**	Kawal Mangal
2.	An evaluation of Mono- ammonium Phosphate (MAP) and Di-ammonium Phosphate (DAP) as Alternative Phosphorous sources in Lowland Rice Cultivation	Shanna Crawford

3.	The Screening and in-vitro Development of Fungicide Resistance to Sheath Blight (*Rhizoctonia solani*) of **Rice**	Chanda Kissoon
4.	The Level of Awareness of Genetically Modified **Rice** in region 3,4,5 & 6 of Guyana	Shiva Lall
5	Comparative Study of Biological Agents *Trichoderma harzanum* and *Trichoderma viride* for Controlling Brown Spot Disease in **Rice**	Sherena Ameia Persaud
6	The Influence of Water Depth on Seedling Emergence and Vigour in **Rice** (*Oryza sativa*)	Tyrone English
7	The Influence of Neem Seed and Neem Leaf on the Nitrogen use Efficiency of **Rice**	Gavin Mahadeo
8	The Use of *Trichoderma harzanum* as a Biological Control Agent for *Sagittaria guyanensis* (duck weed) Found in the **Rice** Cultivation by *in-vitro* Method	Mahendra Prasad
9	The use of Ethrel as a Flowering Inhibitor to Extend the Management of Commercial Varieties of **Sugarcane**	Patrick Davis
10	Comparison of the Efficacy of Non Selective Herbicides on Tanner Grass (*Brachiaria radicans* Napper) in **Sugarcane** (*Saccharum officinarum* L.) Fields	Naresh Narine
11.	A Comparison of the effects of Filter-press Mud (Fresh and Composted) and Liming on the Soil Physical Properties on the Growth of **Sugarcane** (*Saccharum officinarum*)	Ragesh Parbat
12.	Laboratory Evaluation of Guyana's **Sugarcane** Varieties for Ethanol Production	Duresh Ramkishun
13.	An Evaluation of Flouroxypr (Strane) against Traditional Herbicides used for the Control of Leguminous Vines in **Sugarcane** Fields (*Saccharum officinarium*)	Narinedatt Seepersuad
14.	Laboratory Evaluation Production From *Jatropha curasas* Compared to a Selected **Sugarcane** Variety (DB7869)	Zarefa Bacchus
15.	A Comparative Analysis to Determine the Trend of *Diatraea spp.* Damage in Three Varieties of **Sugarcane** (*Saccharum officinarum L.)*	Haimchand Dasrat
16.	A Comparison of the Performance of Four **Sugarcane** Varieties (*Saccharum officinarum* L.) on three Different Clays at East Berbice Estate (Albion)	Arvind Jagarnath
17.	Refinement of Tissue Culture Techniques and Modification of Culture Media Formulations to Improve the Regeneration Efficiency of Tissue Culture-derived Clones of ***Musa*** *spp*.	Raulston Gillette
18.	Plantlet Regeneration *(in –vitro*) of **Cassava** (*Manihot esculenta* Crantz) Accession for Germplasm Transfer to the International Centre for Tropical Agriculture (CIAT)	Paul McWatt (NA)
	VEGETABLE CROPS RESEARCH	
1.	Effect of Source and Rate of Nitrogen on the Yield and Shelf-life of **Poi** (*Basella alba)*	Miranda Henry
2.	Field Evaluation of four Rhizobium Strains on Nodulating Ability and dry Matter Yield on the Minica # 4 Variety of **Cowpea** (*Vigna unguiculata)*	Hewley Clarke
3.	A Comparative Analysis of **Cauliflower** Produced in Greenhouse environment Utilizing Grass Compost Media and Liquid Organic Manure with that of Traditional Field Conditions	Tequila Michael (NA)
4.	The Effects of Seed Mass on Seedling Vigour and Plant Performance of **Poi** (*Basella alba* L.)	Adele Pierre

5.	A Comparative Analysis of Growing Purple **Cabbage** in Grow-box Conditions and Field Conditions	Alain Vincente (NA)
6.	A Comparative Analysis of the Effects of Two Stimulants on the Growing of **Cauliflower** as Opposed to the Use of Poultry manure in controlled Environment	Luann Aderita Nero
7.	An Investigation into the Farmer Practice of Nitrogen Fertilizer Application to **Bora** (*Vigna unguiculata ssp*. *Sesquipedalis*)	Jhaman Kundun
8.	The Efficacy of Chemical Control of fungal Disease on **Tomato** (Lycopersicon esculentum)	Bon-ni Adonis
9.	Comparing the Yield Components of Three Popular Hybrids of **Tomato** (*Lycopersicon esculentum*) -(Heat Master, Mongol and Calypso- Grown on the Corentyne Coast With two Newly Introduced Varieties (Rampart VFNF and EM $345F_1$)	Warren A. Barlow
10.	The Control of Bacterial Infections in **Cabbage** (*Brassica oleraceae* cultivar KK Cross)	Kendra Belgrave
11.	Effect of Plastic mulch Colour on Weed Suppression and Early Maturity and Yield of **Tomato***(Lycopersicon esculentum cv. Mongol)*	Samantha Brotherson
12.	The Influence of Organic Mulches on Soil Properties and the Growth and Yield of **Tomato** (*Lycopersicon esculentum* cv. Mongol)	Monica Choy
13.	Soil Salinity and its Influence on **Tomato** Cultivation- a Case Study of the Corentyne Coast (Palmyra to Adventure)	Carl Hooper
14.	Evaluation of **Tomato**(*Lycopericon esculentum*) Production Using Three Mulching Media Under Shade House Conditions	Aaron Leitch
15.	To Compare the Yield gain of **Pak-choi** (Brassica chinensis) Using Foliar Fertilizers Against Taditional Soil Applied Fertilizers	Ameid Rafeek
16.	To Determine the Efficacy of the Growth Hormone "Cytokinins" on the Yield and Post Harvest Senescence of **Pak-choi** (*Brassica chinensis*)	Seeraj, Samsundar
17.	An Investigation to Determine the effect of Spacing and Application of a Nitrogenous Fertilizer (Urea 46%) at Different Rates on the Yield of Romaine **Lettuce** (*Lactuca sativa* var. Noga)	Orison Sealy
18.	Response of Two Hybrid **Tomato** (*Lycopersicun esculentum.* Mill) Cultivar – Calypso % Mongol F1-To Organic Fertilizers	Seema Poonam Singh
19.	Varietal Tolerance of **Vegetables** to Salinity-A Comparison Between Three Varieties of Three Vegetable Crops	Reynard Warde (NA)
	MUSHROOM RESEARCH	
1.	Evaluation of Different Bed Materials on Growth and Time to Maturity of ***Volvariella volvaceae***	Coretta Samuels
	ENTOMOLOGY RESEARCH	
1.	An Investigation of **whitefly** Diversity in Three Areas of Guyana	Sinnot Burnett
	A Comparative Analysis to determine the trend of ***Diatraea*** *spp.* Damage in Three Varieties of Sugarcane (*Saccharum officinarum L.)*	Haimchand Dasrat
2.	A Comparison of Crude and Refined Mamee Extracts on **Aphids**	Ramesgwar Ragnauth
	RESEARCH ON BIOLOGICAL AGENTS & PATHOGENS	
1.	Field Evaluation of Four **Rhizobium Strains** on Nodulating Ability and Dry Matter Yield on the Minica # 4 Variety of Cowpea (*Vigna unguiculata)*	Hewley Clarke
2.	The Screening and in-vitro Development of Fungicide Resistance to Sheath Blight (***Rhizoctonia solani*****)** of Rice	Chanda Kissoon

3.	Comparative Study of Biological Agents ***Trichoderma harzanum*** and ***Trichoderma viride*** for Controlling Brown Spot Disease in Rice	Sherena Ameia Persaud
4.	The Efficacy of Chemical Control of **Fungal Disease** on tomatoes (Lycopersicon esculentum)	Bon-ni Adonis
5.	The Control of **Bacterial Infections** in Cabbage (*Brassica oleraceae* cultivar KK Cross)	Kendra Belgrave
6.	The Use of ***Trichoderma harzanum*** as a Biological Control Agent for *Sagittaria guyanensis* (duck weed) Found in the Rice Cultivation by *in-vitro* Method	Mahendra Prasad
	BIOMETRICS	
1.	Necessities of Coded Data for Computerized Statistical Analysis and Implications of and Insufficient Analysis of Variance (ANOVA) Models from Conventional Experimental Designs	Sigmund McKenzie
	ECONOMICS	
1.	An Economic Analysis of the Inclusion of Cassava, Corn and Rice as Energy Sources in Broiler Rations	Garfield Baharally
2.	An Investigation of the Supply and demand Relationship in the Production of Selected Local Fruits in Guyana	Leon Frazer
3.	Market share of Non-Traditional Crops-A Comparison between Crops Produced in Blackbush polder and Whim - Fyrish Areas	Tosho Forrester
4.	An Investigation into the Current Production Status of Dairy Farmers in Regions 2 &3 in Guyana	Navikar Ram
	EXPORTATION SYSTEMS RESEARCH	
5.	Analysis of The Phyto-sanitary Compliant Non-Traditional Overseas **Exports** from Guyana-Compliance Effectiveness and Niche Market Opportunities	Tiffney F.E. Squires
6.	An Analysis of the Facilities Available and Systems Employed by Farmers/Exporters for the Production and **Exportation** of Fruits form Guyana	KevindraTularam
	SOIL FERTILITY & SOIL MANAGEMENT RESEARCH	
1.	An Evaluation of the **Fertility Status of Soils** and the Quality of Irrigation Water From Numbers 52-74 Villages, Corentyne, Berbice	C. Thakoordeen
2.	**Soil Salinity** and its Influence on Tomato Cultivation- a Case Study of the Corentyne Coast (Palmyra to Adventure)	Carl Hooper
3.	Varietal Tolerance of Vegetables to **Salinity**-A Comparison Between Three Varieties of Three Vegetable Crops	Reynard Warde (NA)
4.	A Comparison of the Effects of Filter-press Mud (Fresh and Composted) and Liming on the Soil **Physical Properties** on the Growth of Sugarcane (*Saccharum officinarum*)	Ragesh Parbat

	FERTILIZER RESEARCH	
1.	Effect of Source and **Rate of Nitrogen** on the Yield and Shelf-life of Poi (*Basella alba)*	Miranda Henry
2.	Effect of Varying **Levels of Potassium** on Yield of Rice	Kawal Mangal
3.	A Comparison of the Effects of Filter-press Mud (Fresh and Composted) and Liming on the Soil Physical Properties on the Growth of Sugarcane (*Saccharum officinarum*)	Ragesh Parbat
4.	The Effects of **Broiler Manure** and Seasonal Soil Moisture Variations on Growth and Development of West Indian Cherries (*Malphigia glabra*)	Ewart Chester
5.	An evaluation of Mono- Ammonium Phosphate (MAP) and Di-ammonium Phosphate (DAP) as **Alternative Phosphorous Sources** in Lowland Rice Cultivation	Shanna Crawford
6.	A Comparative Analysis of Cauliflower Produced in Greenhouse Environment Utilizing Grass Compost Media and **Liquid Organic Manure** with that of Traditional Field Conditions	Tequila Michael (NA)
7.	A Comparative Analysis of the Effects of Two Stimulants on the Growing of Cauliflower as Opposed to the Use of **Poultry manure** in controlled Environment	Luann Aderita Nero
8.	An Investigation into the Farmer Practice of **Nitrogen Fertilizer** Application to Bora (*Vigna unguiculata ssp. Sesquipedalis*)	Jhaman Kundun
9.	An Investigation into the Growth Response of Acacia Species (*Acacia mangium*) to **Phosphorus Fertilizer** on Degraded (mined-out) Sites.	Ryan Nedd
10.	The Influence of Neem Seed and Neem Leaf on the **Nitrogen use** Efficiency of Rice	Gavin Mahadeo
11.	To Compare the Yield gain of Pak-choi (Brassica chinensis) Using Foliar Fertilizers Against Traditional **Soil Applied Fertilizers**	Ameid Rafeek
12.	An Investigation to Determine the effect of Spacing and Application of a **Nitrogenous Fertilizer** (Urea 46%) at Different Rates on the Yield of Romaine Lettuce (*Lactuca sativa* var. Noga)	Orison Sealy
13.	Response of Two Hybrid Tomato (*Lycopersicon esculentum* Mill) Cultivar – Calypso % Mongol F1-To **Organic Fertilizers**	Seema Poonam Singh
	HERBICIDE / FUNGICIDE RESEARCH	
1.	Comparison of the Efficacy of Non **Selective Herbicides** on Tanner Grass (*Brachiaria radicans* Napper) in Sugarcane (*Saccharum officinarumL.*)Fields	Naresh Narine
2.	An Evaluation of Flouroxypr (Strane) against **Traditional Herbicides** Used for the Control of Leguminous Vines in Sugarcane Fields (*Saccharum officinarium*)	Narinedatt Seepersuad
3.	The Effect of Pre-early –Post-emergence **Herbicides** on Tanner Grass (*Brachiaria arrecta* Napper*)*	Andre Moore
4.	An Evaluation of the Pre-emergent Control of *Phaseolus schotti* in Sugarcane Fields Using Various **Herbicide Combinations**	Ravindra Punwa

5.	The Screening and *In-vitro* Development of **Fungicide Resistance** to Sheath Blight (*Rhizoctonia solani*) of Rice	Chanda Kissoon
6.	The Efficacy of **Chemical** Control of Fungal Disease on Tomatoes (Lycopersicon esculentum)	Bon-ni Adonis
7.	The **Control of Bacterial Infections** in Cabbage (*Brassica oleraceae* cultivar KK Cross)	Kendra Belgrave
	WEED MANAGEMENT RESEARCH	
1.	Comparison of the Efficacy of Non Selective Herbicides on **Tanner Grass** (*Brachiaria radicans* Napper) in Sugarcane (*Saccharum officinarumL.*)Fields	Naresh Narine
2.	An Evaluation of Flouroxypr (Strane) against Traditional Herbicides Used for the Control of **Leguminous Vines** in Sugarcane Fields (*Saccharum officinarium*)	Narinedatt Seepersuad
3.	The Effect of Pre-early –post-emergence Herbicides on **Tanner Grass** (*Brachiaria arrecta* Napper*)*	Andre Moore
4.	An Evaluation of the Pre-emergent Control of ***Phaseolus schotti*** in Sugarcane Fields Using Various Herbicide Combinations	Ravindra Punwa
5.	Effect of plastic Mulch Colour on **Weed Suppression** and Early maturity and Yield of Tomato*(Lycopersicon esculentum cv. Mongol)*	Samantha Brotherson
6.	The Efficacy of Cutting Frequency on Mixed Swards as a Means of **Weed Control**	Abiola
	POSTHARVEST RESEARCH	
1.	The Effects of Calcium Chloride **Post -Harvest** Application on sapodilla (*Manilkara zapota*) at Ambient Temperature	Danata Mc Gowan
2.	Evaluation of **Calcium Chloride Dips** on Sapodillas (*Manilkara zapote* L.P. Royden) at Refrigerated Conditions	Alex Javier Singh
3.	Application of Beeswax and Cling Wrap to Extend the **Postharvest** Life of Sapodilla (*Manilkara zapota*) Stored in Refrigerated Conditions	Osbert Ellis
4.	Application of Beeswax and Cling Wrap to Extend the **Postharvest** Life of Sapodilla (*Manilkara zapota*) Stored Under Ambient Temperature Conditions	Earlla Nelson
5.	**Postharvest Treatment** of Sapodilla *(Manilkara zapota) covered* with Film-forming of Cassava starch and Beeswax as Alternative to the Commercial Wax.	Cosmo Browne
	RESEARCH ON GROWTH HORMONES & BIOSTILULANTS	
1.	Vegetative Propagation of West Indian Cherry (*Malpighia glabra*) by stem cuttings;- Response to **Indole-3 butyric acid** Under Intermittent Misting	Edon A. Daniels
2.	The use of **Ethrel** as a Flowering Inhibitor to Extend the Management of Commercial Varieties of Sugar Cane	Patrick Davis

3.	Vegetative Propagation of West Indian Cherries (*Malpighia glabra*) by Stem Cuttings: Root growth response to **Indole -3 butyric Acid** Treatment Under Intermittent Misting	Andrea Ashby
4.	A Comparative Analysis of the Effects of Two **Stimulants** on the Growing of Cauliflower as Opposed to the Use of Poultry manure in controlled Environment	Luann Aderita Nero
5.	To Determine the Efficacy of the **Growth Hormone** "Cytokinins" on the Yield and Post Harvest Senescence of Pak-choi (*Brassica chinensis*)	Seeraj, Samsundar
	BIO FUEL RESEARCH	
1.	Laboratory Evaluation of Guyana's Sugarcane Varieties for Ethanol Production	Duresh Ramkishun
2.	Laboratory Evaluation Of Ethanol Production From *Jatropha curasas* Compared to a Selected Sugarcane Variety (DB7869)	Zarefa Bacchus
3.	Implications for GUYSUCO in the Production of Bio-Fuels	Imran Sakoor (NA)
	TISSUE-CULTURE RESEARCH	
1.	Refinement of **Tissue Culture** Techniques and Modification of Culture Media Formulations to Improve the Regeneration Efficiency of Tissue Culture-derived Clones of *Musa spp*.	Raulston Gillette
2.	Plantlet **Regeneration *(in –vitro*)** of Cassava (*Manihot esculenta* Crantz) Accession for Germplasm Transfer to the International Centre for Tropical Agriculture (CIAT)	Paul Mc Watt (NA)
No.	**ANIMAL SCIENCE RESEARCH**	**NAME OF STUDENT**
	NON RUMINANT LIVESTOCK RESEARCH	
1.	A study of the Alleviation of Heat stress in **Broiler** Houses Using Card Board and Coconut Coir as a Roof Insulator	Fenton Nickram
2.	Determination of the Efficacy of Neem Leaf Extract (*Azadirachta indica*) as a Potential Replacement for Antibiotics/Growth Promotant for **Broiler** Chicken	Davindra Sagadaya
3.	An Analysis of two Methods of Identifying Ammonia Levels in **Broiler** Houses	Ayana Ademola
4.	An Economic Analysis of the Inclusion of Cassava, Corn and Rice as Energy Sources in **Broile**r Rations	Garfield Baharally
5.	An Investigation into the Use of Zinc, Cardboard and Plywood as Roof Insulators in **Broiler** Houses.	Sherril Halley (NA)
6.	Evaluation of the Efficacy of Neem Leaf Meal (*Azadirachta indica*) as a Major Feed Ingredient for **Broiler** Chickens	Surrinarine P. Perumal

7.	Evaluation of the Effects of Replacing Commercial **Duck** Ration Feed to Local Peking, Kunshan and Muscovy Ducks with Azolla (Azolla Carolinian), Alligator eye (*Salvinia auriculata* Aubl) and Water Hyacinth (*Eichhornia crassipes*)	Kurt Austin
8.	An Evaluation of the Efficacy of Four Sanitizing Methods on Hatchability and Quality of **Ducklings**	Shebekie Christian
9.	The use of Guava Bark to Treat Scouring in **Piglets**	Junior Hope
10.	The Use of *Samanea saman* as a Protein Supplement in Feed for the **Swine** Industry	Troy Patterson
	RUMINANT LIVESTOCK RESEARCH	
1.	An Investigation on the Incidence of **Bovine** Tuberculosis in Slaughtered Animals in Guyana	Shellon David
2.	An Investigation into the Current Production Status of **Dairy** Farmers in Regions 2 & 3 in Guyana	Navikar Ram
	AQUACULTURE (TILIPIA) RESEARCH	
1.	An Investigation into the Effectiveness of Floating feeds vs. Sinking Feeds for **Tilapia** Production	Millisa Audrey Warren
2.	A Comparison of Three Different Feeding Regimes on **Tilapia** Growth (In weight)	Dietmar Chichester
3.	A Comparison of Two New Tilapia Feed with the Tilapia Mature Feed on the Jamaica Red **Tilapia** (*Oreochromis spp*.) 1. Fry Feed (with a 40% Crude Protein as to a 31% Mature Tilapia Feed. 2.Fingerling Feed- with a 35% Crude Protein as to a 31% Mature Tilapia Feed	Rabani Gajnabi
4.	A Comparative Analysis of Two (2) Feeds on the Growth of the Jamaican Red **Tilapia** Fingerling (*Oreochromis spp*.)	Anandranauth Allan
	FEEDS & FEEDING SYSTEMS RESEARCH	
1.	An Investigation into the Effectiveness of **Floating feeds vs. Sinking Feeds** for Tilapia Production	Millisa Audrey Warren
2.	A Comparison of Three Different **Feeding Regimes** on Tilapia Growth (In weight)	Dietmar Chichester
3.	A Comparison of Two New **Tilapia Feed with the Tilapia Mature Feed** on the Jamaica Red Tilapia (*Oreochromis spp*.) 1. Fry Feed (with a 40% Crude Protein as to a 31% Mature Tilapia Feed. 2.Fingerling Feed- with a 35% Crude Protein as to a 31% Mature Tilapia Feed	Rabani Gajnabi
4.	A Comparative Analysis of Two (2) **Feeds** on the Growth of the Jamaican Red tilapia Fingerling (*Oreochromis spp*.)	Anandranauth Allan
5.	Determination of the Efficacy of Neem Leaf Extract (*Azadirachta indica*) as a Potential Replacement for **Antibiotics/Growth Promotant** for Broiler Chicken	Davindra Sagadaya
6.	Evaluation of the Effects of Replacing Commercial Duck **Ration Feed** to Local Peking, Kunshan and Muscovy Ducks with Azolla (*Azolla Carolinian*), Alligator eye	Kurt Austin

	(*Salvinia auriculata* Aubl) and Water Hyacinth (*Eichhornia crassipes*)	
7.	The Use of *Samanea saman* as a Protein **Supplement in Feed** for the Swine Industry	Troy Patterson
8.	An Economic Analysis of the Inclusion of Cassava, Corn and Rice as Energy Sources in Broiler **Rations**	Garfield Baharally
9.	Evaluation of the Efficacy of Neem Leaf Meal (*Azadirachta indica*) as a Major **Feed Ingredient** for Broiler Chickens	Surrinarine P. Perumal
AGRO-FORESTRY RESEARCH		
1.	An Investigation into the Growth Response of Acacia Species (*Acacia mangium*) to Phosphorus Fertilizer on Degraded (mined-out) Sites.	Ryan Nedd

NUMBER OF STUDENTS' RESEARCH PROJECT (AGR 4101) ABSTRACTS REVIEWED BY YEARS-(2007-2011)

Table 3.

YEAR	NUMBER OF ABSTRACTS OF RESEARCH PROJECT PRESENTATIONS
2007	**13**
2008	**21**
2009	**07**
2010	**07**
2011	**21**
Sub-total	**69**
NA	**8**
TOTAL	**77**

DEPARTMENT OF AGRICULTURE FACULTY OF AGRICULTURE AND FORESTRY

ABSTRACTS-STAFF AND STUDENT RESEARCH 2007-2011