NSATRS – 2020

December 15th

Proceedings of the 1st National Symposium on Agro-Technology and Rural Sciences

A Way Forward in Green Agriculture Towards Rural Development

University of Colombo

Institute for Agro-Technology and Rural Sciences,

Weligatta New Town, Hambantota, Sri Lanka

Web:http://uciars.cmb.ac.lk

ISBN978-955-703-076-0

UNIVERSITY OF COLOMBO

INSTITUTE FOR AGRO-TECHNOLOGY AND RURAL SCIENCES

Proceedings of the National Symposium on Agro-Technology and Rural Sciences

A Way Forward in Green Agriculture Towards Rural Development

University of Colombo

Institute for Agro-Technology and Rural Sciences

Weligatta New Town, Hambantota

PROCEEDINGS OF THE NATIONAL SYMPOSIUM ON AGRO-TECHNOLOGY AND RURAL SCIENCES 2020

All abstracts in the proceedings are reviewed and accepted for publication.

Responsibility for the contents of the abstract's rests with the authors.

ISBN 978-905-703-076-0

First Publication: 2020

Cover Page Design	: Mr. P.B. Darshana
Published by	: University of Colombo, Institute for Agro-Technology and Rural Sciences, Weligatta New town, Hambantota, Sri Lanka.
Telephone	: +94 (0)47 2034225
Fax	: +94 (0)47 2034261
Website	: http://uciars.cmb.ac.lk

TABLE OF CONTENT

EDITORIAL BOARD

ORGANIZING COMMITTEE

Symposium Chairman	Prof. S. Sutharsan
Symposium Coordinator	Dr. (Ms.) S.S. Weerasinghe
Symposium Secretary	Mr. B.P. Siriwardena
Committee Members	Dr. (Ms.) N.P. Vidanapathirana
	Mr. H. Rohanadheera
	Ms. S.A.S. Priyadarshani
	Ms. A.D.P. De Zoysa
	Ms. S.L. Nawarathna
	Ms. S.A.P. Nelka
	Mr. T.G.B. Dhanushka
	Mr. H.K.R.S. Kumara
	Mr. H.R. Chamara
	Mr. S.A.R. Lakmal
	Mr. P.B. Darshana

PANEL OF REVIEWERS

Prof. S. Subasinghe	Faculty of Agriculture, University of Ruhuna, Sri Lanka
Prof. S. Sutharsan	University of Colombo Institute for Agro-Technology and Rural Sciences, Sri Lanka
Prof. K.A. Kumara	Faculty of Agriculture, University of Ruhuna, Sri Lanka
Prof. (Ms.) G.A.S. Ginigaddara	Faculty of Agriculture, Rajarata University of Sri Lanka
Prof. L.M. Abeywickrama	Faculty of Agriculture, University of Ruhuna, Sri Lanka
Prof. P.I. Yapa	Faculty of Agricultural Sciences, University of Sabaragamuwa, Sri Lanka
Prof. (Ms.) T. Mikunthan	Faculty of Agriculture, University of Jaffna, Sri Lanka
Dr. (Ms.) N.R. Fernando	Faculty of Agriculture, Eastern University of Sri Lanka
Dr. (Ms.) N.P. Vidanapathirana	University of Colombo Institute for Agro-Technology and Rural Sciences, Sri Lanka
Dr. K. Premakumar	Faculty of Agriculture, Eastern University, Sri Lanka
Dr. (Ms.) S.S. Weerasinghe	University of Colombo Institute for Agro-Technology and Rural Sciences, Sri Lanka
Dr. S. Mahendran	Faculty of Agriculture, Eastern University of Sri Lanka
Dr. K.H. Sarananda	Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka

Mr. H. Rohanadheera	University of Colombo Institute for Agro-Technology and Rural Sciences, Sri Lanka
Mr. T.G.B. Dhanushka	University of Colombo Institute for Agro-Technology and Rural Sciences, Sri Lanka
Mr. S. Srikrishnah	Faculty of Agriculture, Eastern University of Sri Lanka
Mr. B.P. Siriwardena	University of Colombo Institute for Agro-Technology and Rural Sciences, Sri Lanka
Mr. H.K.R.S. Kumara	University of Colombo Institute for Agro-Technology and Rural Sciences, Sri Lanka
Ms. S.A.P. Nelka	University of Colombo Institute for Agro-Technology and Rural Sciences, Sri Lanka
Ms. S.L. Nawarathna	University of Colombo Institute for Agro-Technology and Rural Sciences, Sri Lanka
Ms. T. Geretharan	Faculty of Agriculture, Eastern University of Sri Lanka

MESSAGE FROM THE VICE CHANCELLOR

I congratulate the organizers of the First National Symposium on Agrotechnology and Rural Sciences (NSATRS 2020) for their commitment to disseminate new knowledge and findings that will undoubtedly create greater awareness among scientists, researchers and entrepreneurs. This symposium is momentous, as it helps Sri Lanka showcase Agrotechnology as a paramount alternative for the sustainable development of agriculture.

The University of Colombo Institute for Agrotechnology and Rural Sciences (UCIARS) is rapidly achieving the status of excellence in the field of Agrotechnology, by producing scientists, researchers and entrepreneurs, who play a key role in the betterment of Sri Lanka's agricultural sector. The UCIARS is proud to conduct study programs for the award of undergraduate degree and higher diploma in Agrotechnology that match the requirements of our farming communities. The graduates of UCIARS are smart, concerted and entrepreneurial and do contribute immensely to the agriculture sector of Sri Lanka.

It is noteworthy that the contributions of academic and nonacademic staff and students contribute to the managerial and academic accomplishments of the institute. I am extremely proud to witness the growth in quality and relevance of the UCIARS that provides a conducive learning environment that is beautiful and charming. I extend my best wishes to the staff and students of UCIARS. I am certain that your academic career will be fruitful and fulfilling through the multiple benefits for the farming communities of Sri Lanka.

Your collective efforts to make the First National Symposium on Agro Technology and Rural Sciences 2020 a wonderful success is indeed highly appreciated.
Stay safe and well!
Yours truly,

Chandrika N Wijeyaratne
Vice Chancellor
University of Colombo
Sri Lanka

MESSAGE FROM THE DIRECTOR

It is an immense pleasure for me to deliver a message on the First National Symposium on Agro Technology and Rural Sciences 2020 (NSATRS 2020) on "**A Way Forward in Green Agriculture Towards Rural Development**" as the Director of the University of Colombo Institute for Agro Technology and Rural Sciences (UCIARS).

The UCIARS is a pioneering institute of Sri Lanka for awarding agriculture based **four years** Bachelor's degree as **Bachelor of Agro Technology**. A small group of dedicated academics in the institute are focused to create a place for knowledge seekers who missed the educational opportunities to brighten their lives.

This institute as a technological and innovation driven academic partner of the University of Colombo signifies the philosophy of modernity blends with tradition while nurturing talents of it's students. The UCIARS committed towards this philosophy and constantly balances blended learning with more exposure to practical training and offering facilities that shapeup the students with knowledge, talents, skills and personalities.

The NSATRS 2020 provides the students a platform for exchanging ideas, views and showcasing their creativity. This will continue every year to ensure that UCIARS is a new paradigm in the academic world. Hence, we at the UCIARS aim at enabling students to pursue their desires along with professionalism enhancing students competent to develop life skills for brighter carrier with agripreneurship.

I am delighted to see the proceedings of the NSATRS 2020 which is a testimony captures talents and research capabilities of students. It is a commendable effort that this brings quality standards to the institute by showcasing its research achievements and technologies.

I wish all the very best for their future endeavors! Keep the flag of the UCIARS flying high.

Sutharsan Somasundaram
Director
UCIARS

MESSAGE FROM THE COORDINATOR

I wish to share the pleasure of publishing the first proceedings of NSATRS - 2020 with everyone at UCIARS who passionately and dedicatedly contributed to make it a success. The objective of the symposium was to encourage especially the young scientists to present their research findings and introduce useful innovations for potential adoption by the farming community. The subjects covered in this proceeding are highly diverse indicating the vast responsibility vested upon UCIARS by the society to conduct agro technology research and introduce innovative and appropriate findings for entrepreneurial agriculture.

The UCIARS has always placed special emphasis on it's relationships with the national agriculture research system of Sri Lanka and act as a foundation stone for developing agro technologies. Hence the institute plays a key role in agriculture research and promoting the sound use of science and technology in agriculture.

As UCIARS is growing sturdily, it is our duty to uphold its heritage and traditions while maintaining the professionalism. The inaugural symposium of UCIARS is timely important and indeed a strong step taken to promote the enthusiasm towards the national agriculture development through "Entrepreneurial Agriculture and Sustainable Natural Resource Management "which is the stated vision of UCIARS.

Sujatha Weerasinghe
Coordinator - NSATRS 2020

MESSAGE FROM THE SECRETARY

It gives me utmost pleasure to welcome you all as scientists, academicians, engineering professionals and researchers to the 1st National Symposium on Agro-Technology and Rural Sciences is going to be held on University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta, Hambantota, Sri Lanka on 15th December 2020.

The Scientific programme is covering the wide spectrum of topics along with the guest speeches, keynote address and other valuable scientific information related to agriculture.

We the members of Organizing Committee of NSATRS 2020 are eagerly waiting for the results and bringing your expertise to this awesome gathering of the works you carried out in Agro-Technology sector and wish you a successful, enjoyable and memorable symposium.

B.P. Siriwardena

Secretary - NSATRS 2020

ABSTRACT INDEX

PRODUCTION TOWARDS ZERO HUNGER

GREEN AGRICULTURE FOR ECO SYSTEM SAFETY

ENSURING THE ADOPTION OF SUSTAINABLE INNOVATIONS

PRODUCTION TOWARDS ZERO HUNGER

FATTY ACID CONTENTS OF SOME POPULAR RICE VARIETIES (*Oryza sativa* L.) OF SRI LANKA

M. D. W. Samaranayake[1*], W. K. S. M. Abeysekera[2], I. G. N. Hewajulige[1], H. P. P. S. Somasiri[1] and K. R. R. Mahanama[3]

[1]*Industrial Technology Institute, Malabe and Colombo 07, Sri Lanka*
[2]*Department of Agricultural Technology, University of Colombo, Homagama, Sri Lanka*
[3]*Department of Chemistry, University of Colombo, Colombo 07, Sri Lanka*

Abstract

Rice is the dietary staple for Sri Lankans and reported to provide significant amount of nutrients including dietary fatty acids (FAs). The most popular and widely consumed rice varieties in the country are new improved rice varieties (NIRVs). Currently, some traditional rice varieties (TRVs) of Sri Lanka have also gained high consumer preference. To date extremely limited studies on FA contents of Sri Lankan rice varieties and this study evaluates FA contents of five NIRVs [Bg 300 & Bg 352 (White Nadu), At 362 (Red Nadu) and Bg 358 & Bg 360 (White Samba)] and three TRVs (Suwadel, Pachchaperumal & Kurulu thuda) of Sri Lanka. Fat was extracted from whole grain rice flour by soxtherm fat extraction, derivatized to methyl esters and analyzed by GC-FID. Results showed significant ($p < 0.05$) differences in FA contents among the tested rice varieties (RVs). Total monounsaturated FAs (MUFA), polyunsaturated FAs (PUFA) and saturated FAs (SFA) contents of studied RVs varied form 9.44 ± 0.06 – 12.12 ± 0.07, 7.23 ± 0.01 – 9.40 ± 0.09 and 4.85 ± 0.45 – 6.33 ± 0.16 mg g-1 on dry weight basis respectively. The SFAs in studied RVs were myristic, palmitic, stearic and arachidic acids while the major SFA was palmitic and highest in Bg 358 (5.62 mg g-1). It was lowest (4.35 mg g-1) in Kurulu thuda. The MUFAs in tested RVs were palmitoleic, oleic and ecosenoic acids while oleic was most predominant. Among the studied RVs, Suwadel (11.69 mg g-1) had the highest oleic content while Kurulu thuda (9.15 mg g-1) had the lowest. PUFAs in tested varieties were linoleic, gamma linoleic, homogamma linoleic and docosadienoic acids while linoleic was the most abundant. The highest (9.11 mg g-1) linoleic content was observed in Suwadel while lowest (6.97 mg/g) in Bg 352. All the tested varieties showed PUFA/SFA > 0.4 and it was highest (1.60) in Kurulu thuda. No significant differences ($p>0.05$) in total MUFAs, PUFAs, SFAs & PUFA/SFA ratios between studied TRVs and NIRVs. Generally, the studied TRVs & NIRVs can be considered as a nutritious and healthy diet and may use to develop functional food products.

Keywords: Fatty acids, New improved rice, Sri Lankan rice, Traditional rice

**Corresponding Author: madarasamaranayake@yahoo.com*

EFFICACY OF SEAWEED EXTRACT ON CHILLI LEAF CURL VIRUS

M.G.G. Sugandhika[1], K. Pakeerathan[1*], W.M.K. Fernando[2]

[1]Department of Agricultural Biology, Faculty of Agriculture, University of Jaffna, Sri Lanka
[2]Field Crops Research and Development Institute, Department of Agriculture, Mahailluppallama, Sri Lanka

Abstract

Chilli (*Capsicum annum* L) is one of the important cash crops grown in Sri Lanka. The annual chilli production in Sri Lanka is hampered by several biotic and abiotic causes and decline yield of chilli. Leaf Curl Virus Disease (LCVD) is considered as major biotic constraints and has direct impact on chilli yield. To manage Chilli LCVD several eco-friendly strategies are being practiced for several decades, but none of these practices were promised, except successful control of vectors of LCV using insecticides. Indiscriminate use of insecticides created unwanted human health hazards. The current trends in plant pathology is intending to boost the immunity of host to increase the resistance against pathogens. Therefore, this study was conducted to investigate the efficacy of Seaweed Extract to manage LCVD. The experiments were conducted at the FCRDI, Mahailuppallama during 2019/2020 Maha season. Vijaya variety was selected for this experiment with five treatments and a non-treated control. Treatments were arranged in Two Factor Factorial Design with three replicates. Data were collected and growth, yield, aphid severity, disease severity (scale of 0-4) were measured to check significant effect of the treatment to the disease severity, plant growth and yield at $P < 0.05$ through DMRT using SAS 9.1. Out of tested treatments first application of Sea Weed Extract at ten days after planting with subsequent application of seaweed extract at fifteen days interval plus application of insecticides at ten to fifteen days interval (T3) and first application of Seaweed Extract at fifteen days after planting with subsequent application of seaweed extract at fifteen days interval plus application of insecticides at ten to fifteen days interval (T4) were found less LCVD severity index and less Aphid severity index with high growth and yield. When considering treatment three and four, first application of seaweed extract at fifteen days after transplanting is better than first application of seaweed extract at ten days after planting due transplanting shock. Therefore, first application of seaweed extract at fifteen days after transplanting is best. And application of seaweed extract with recommended insecticides is better to increase the immunity of plants to effective management of LCVD.

Keywords: Aphid, Chili, Chilli Leaf Curl Virus, Natural Seaweed Extract, Insecticide

**Corresponding Author: pakeerathank@univ.jfn.ac.lk*

COMPARISON OF THE GROWTH RATE OF *Centella asiatica* UNDER CHEMICAL AND ORGANIC MANAGEMENT

U. L. T. S. J. Govinna[1*], S. L. Nawarathna[1] and P. I. Yapa[2]

[1]*Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta – New Town, Hambantota*
[2]*Department of Export agriculture Crops, Faculty of agriculture science, Sabaragamuwa University of Sri Lanka*

Abstract

Centella asiatica has been in use from time immemorial to treat wide range of indications. Many research studies have demonstrated its different functional properties like antioxidant, antibacterial, antifungal and antiviral, antiulcer, antidiabetic, anti-inflammatory, cytotoxic, cardio, neuro and skin protective, radioprotective, immunomodulatory, memory enhancing and wound healing effects. With a very low toxicity as attested by its long popular use as a natural product, *Centella* spp. can be a potential herbal plant in many healthcare applications. Today consumers are facing many problems with use of agricultural products due to application of chemical fertilizer and foliar applications. The aim of the present study was the reduction of use of chemical application and increases the use of organic fertilizers in *Centella* spp. cultivation. Three treatments were arranged according to Complete Randomized Design (RCBD) with three replicates. The data were collected by using vegetative parameters such as plant height, number of leaves, number of shoots and biomass and yield parameter. The analysis of data indicated that there was no significant difference among the treatments on growth parameters. Super- compost fertilizer or inorganic fertilizer didn't significantly difference on yield and vegetative parameters of *Centella asiatica*. According to the study it can be concluded that, the super compost can be used as a fertilizer for *Centella asiatica* than inorganic fertilizer for mass cultivation with less health risk. The use of this knowledge is necessary for sustainable production and involves minimum risks.

Keywords: *Centella asiatica*, Health risk, Organic fertilizer, Super compost

**Corresponding Author: govinnasakunthala@gmail.com*

SCREENING OF THE MOST APPROPRIATE CLADDING MATERIAL FOR PARACHUTE NURSERY OF RICE (*Oryza sativa*) IN THE DRY ZONE OF SRI LANKA

K. U. Kumara[1], S. S. Weerasinghe[1*], W. R. A. T. P. Wijesundara[2]

[1]*Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta – New Town, Hambantota*
[2]*Mahaweli Authority of Sri Lanka, System B, Welikanda*

Abstract

The productivity improvement is a critical criterion for the sustainability of agriculture in any of the crop. The parachute nursery is a key agronomic practice of productivity improvement in rice in Sri Lanka. However, there are some constraints in practicing of parachute nursery especially due to rainfall available in *Maha* season and higher temperature prevailed in the *Yala* season in the dry zone. Therefore, most of the farmers apply cladding materials to protect parachute nurseries and one of the commonly applying material is coconut Cadjans. However, it is worth to identify freely available cladding materials as substitutes for Cadjans. Accordingly, an investigation was carried out to identify locally available cladding materials which does not restrict the seedling growth. Accordingly, polythene, straw, coconut Cadjans and used newspapers were tested against no mulch treatment as control. Each treatment was replicated three times following Randomized Complete Block Design. The data were analyzed using Tukey's Studentized Range Test. There was no statistical difference in seed germination and any of the growth parameters of the seedlings among treatments. The results indicated that there is no effect on the type of material, but cladding is the important practice in establishment of the parachute nursery. Therefore, it could be concluded that application of any kind of cladding material will provide beneficial effects for the parachute nursery. So, it is better to cover the parachute nursery with newspapers, straw or Cadjans which are easily available biodegradable material and polythene might be better for rainy seasons.

Keywords: Cladding material, Coconut cadjans, Parachute nursery, Paper, Paddy straw

**Corresponding Author: sujawee@gmail.com*

OYSTER MUSHROOM PRODUCTION USING AGRO-BASED INDUSTRY'S BY-PRODUCTS

T. V. R. C. Perera, A. Nirosha and K. Pakeerathan*

Department of Agricultural Biology, Faculty of Agriculture, University of Jaffna, Sri Lanka

Abstract

Mushroom is a nutrition rich food source and is also called as "poor man's meat". The demand for mushroom around the globe and Sri Lanka has increased greatly. Success of commercial mushroom production is depended on continuous and abundant supply of low-cost substrate. This study was aimed to identify the best Agro-based Industry's By-products as substitute to produce oyster mushroom (*Pleurotus ostreatus*) ecofriendly. Four substrates such as paddy straw, wood saw dust, paddy husk and banana leaves were mixed with extracts of coffee (*Coffea Arabica*) powder, tea (*Camelia sinensis*) dust and Mahua (*Madhuca longifolia*) oil cake. This experimental setup was inoculated with 18days old mother spawns and arranged in complete randomized design with three replications. The data of mushroom mycelial run, pinhead formation and yield were measured on daily basis from the seven days of post inoculation. Collected data were subjected to ANOVA using SAS 9.1 statistical package. Significant among the treatments were analyzed through DMRT mean separation at P value of 0.05. This study has proved that substrates have significant effect on growth, reproduction and yield of mushroom. Spawn run was consistent and significant among the treatments when mix tea (20 days) and coffee (21 days), respectively, at $P < 0.05$. Treatment wise coffee treated spawn bags took average of 32.5 days whereas in tea treated substrates it was more than 36 days to form pin head. In all substrates, Mahua treated trials showed poor spawn run, longer days of pin head formation and lower yield. Paddy Straw + Coffee treatment produced significantly highest yield of 200.67g comparing to other all treatments. It is 14.58% increment in yield compared to non-treated substrates. When saw dust used as substrate, addition of tea showed significantly higher yield of 185.00g than coffee (145.00g). This study concluded that the coffee and tea extract have potential to increase the yield when incorporated with paddy straw and sawdust, respectively. After harvesting of mushroom, mushroom industry wastes can be directly used as organic fertilizer for crop production.

Keywords: Coffee, Eco friend, Paddy straw, Plant extract, *Pleurotus ostreatus*,Substrate

*Corresponding Author: pakeerathank@univ.jfn.ac.lk

IDENTIFICATION OF THE CAUSAL ORGANISM OF WILT DISEASE IN BLACK PEPPER (*Piper nigrum* L.) IN NURSERY STAGE AND ITS MANAGEMENT

G. H. S. N. De Silva[1], K. Pakeerathan[1*], W. M. R. W. B. Wijekoon[2]

[1]*Department of Agricultural Biology, Faculty of Agriculture, University of Jaffna, Sri Lanka*
[2]*Division of Plant Pathology, Central Research Station, Department of Export Agriculture, Matale, Sri Lanka*

Abstract

Black Pepper (*Piper nigrum* L.) is an economically important spice crop in Sri Lanka. The wilt disease in black pepper is one of a major problem and inflicting significant loss of immature plants at nursery stage, therefore, pepper industry of Sri Lanka is being lost its millions of rupees' export earnings annually. An investigation was planned to identify the causal organisms of the black pepper wilting disease and its management. The soil samples were collected from infected nurseries and baiting method was used to isolate possible causes. Koch's postulates and microscopic examinations were performed to confirmation and identification of the causes. To manage the causal agents, different concentrations of three commercially available fungicides namely, Topsin® 70% WP (350,420,490 ppm), Homai® 80% WP (640,800,960 ppm) and Ridoaxyl Metalaxyl® 72% WP (1440,1800,2160 ppm) were used for the In vitro fungicidal assay to identify the best fungicide with the concentration against each cause. Treatments were arranged in CRD Design with three replicates. Data were collected to calculate the mean mycelia growth of two fungal isolates. The collected data were subjected to ANOVA using SAS and mean separation was performed with LSD to know the best treatment at the P value of 0.05. According to the results, isolated fungus produced stellate, rosaceous, and radial colony and pear shape sporangia was confirmed as *Phytophthora capsici* and; branched, thin, white in coloured and non-septate colony with ovoid or spherical shape sporangia produced fungus confirmed as Pythium spp. Homai® 80% WP (640, 800, 960 ppm) and Ridoaxyl Metalaxyl® 72% WP (1440,1800,2160 ppm) all concentrations were showed inhibition of mycelia growth in *P. capsici* and Homai® 80% WP 960 ppm concentration and Ridoaxyl Metalaxyl® 72% WP (1440,1800,2160 ppm) all concentrations were showed significant inhibition of mycelia growth in *Pythium spp* at $P < 0.05$. According to the findings the study investigated that *P. capsici* and *Pythium* are the causes for the wilting disease in pepper nurseries in Intermediate zone of Sri Lanka. 960 ppm concentration of Homai® and 1440 ppm of Ridoxyl metalaxyl® can be recommended for the management of wilting disease of Black Pepper. Field studies are needed to recommend the concentrations.

Keywords: Black Pepper, Fungicides, *Phytophthora capsici*, *Pythium spp*., Wilt disease

**Corresponding Author: pakeerathank@univ.jfn.ac.lk*

IMPACT OF AN IMPROVED ORGANIC SOIL ADDITIVE (SUPER COMPOST) ON GROWTH AND QUALITY PARAMETERS OF GOTUKOLA (*Centella asiatica)*

S. Balasooriya[1*], S. L. Nawarathna[1], P. I. Yapa[2] and W. G. J. Manoj[3]

[1]Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta – New Town, Hambantota
[2]Department of Export Agriculture, Faculty of Agriculture Sciences, Sabaragamuwa University of Sri Lanka
[3]Department of Food Science and Technology, Faculty of Agriculture, University of Ruhuna, Sri Lanka

Abstract

In the modern world producers concern only the production of food and hence, nutritional quality of the food has become a serious issue. A field experiment was carried out to identify the impact of organic soil management on growth and vitamin C content of *Centella asiatica* at research field of Sabaragamua University in Sri Lanka, Belihuloya in 2019 consisting three treatments as without fertilizer (control/ T1), only super compost (T2), and only inorganic fertilizer (T3) with a randomized complete block design (RCBD) replicating three times. Super compost which was produced by adding feldspar, Eppawala Rock Phosphate and bio char as materials in addition in materials which used in compost preparation. Each separate sample was tested for vitamin C concentrations by High-performance liquid chromatography method. Data was analyzed using analysis of variance by Minitab 17 version. There was significantly increased the stem length and leaf Width in fertilizer added treatments (T3 and T2) (super compost and inorganic) in 3rd week and 6th week after planting compared with control (T1). The Vitamin C content was highest (62.3 mg/100g, p=0.0312) in treatment with only super compost (T2) and it was significantly different with other two treatments. Therefore, result revived that super compost alone can be used to produce high quality nutritious foods with high amount of vitamin C.

Keywords: Nutritional quality, Organic soil management, Super compost, Vitamin C

**Corresponding Author: threestarorganic17@gmail.com*

DEVELOPMENT OF LOW-COST FEED FOR TILAPIA (*Oreochromis niloticus*) FRY TO FINGERLING STAGE

G. G. L. Indika[1*], H. K. R. S. Kumara[1] and W. U. L. Lenarol[2]

[1]Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta - New Town, Hambantota
[2]Department of Fisheries and Aquaculture, Faculty of Fisheries and Marine Science & Technology, University of Ruhuna. Matara, Sri Lanka

Abstract

In fish culture it is important to feed fish with a nutritive and balanced meal to gain a better growth and development of fingerlings nevertheless the higher price in the market. There is an increasing demand for diverse alternatives to be used as substitutes for traditional fish meal in modern agriculture. Hence, the present investigation was performed to evaluate the growth performance of tilapia (*Oreochromis niloticus*) fingerlings fed with an alternative meal of blood meal. As treatments three different levels of blood meal: 5%, 10% and 15% and commercial Tilapia diet as the control treatment were used and fed for six weeks. The experimental design was Randomized Complete Block Design (RCBD) with 03 replications. The results showed that blood meal level had no significant effect on weight gain, specific growth rate (SGR), food conversion ratio (FCR), hepatosomatic index (HSI) and Viscerosomatic index (VSI) of fish. Protein efficiency ratio (PER) was not affected by different blood meal percentages in Tilapia feed. Further, the cost involvement was lower in blood meal (77Rs/kg) compared to the cost of commercial Tilapia diet which costs 179Rs/kg. Therefore, it could be concluded that alternative diet of blood meal easily could be used as a substitute for traditional fish meal without affecting the growth performances of Thilapia fingerlings. However, further investigations are required to identify the long-term effects of these alternative feed in performances of fish.

Keywords: Blood meal, Feed alteration, Feed utilization, Growth performance

**Corresponding Author: gamageggl@gmail.com*

PRODUCTION OF JACK FRUIT (*Artocarpus heterophyllus*) SEEDS PULP INCORPORATED MILK TOFFEES

M. G. Y. K. Abeyrathne, W. G. C. Madushani and S. S. Weerasinghe*

Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta - New Town, Hambantota

Abstract

A significantly higher post-harvest loss associated with Jackfruit due to surplus production during the seasons. Of the used amounts seeds are not properly used and the majority is wasted. Jack fruit seeds are highly nutritious and a good source of energy. The seeds are presently consumed in limited ways despite their value in food security. Therefore, it is important to persuade the public to consume Jack seeds in all possible ways. Considering all these factors the present study was conducted to find out the possibility to introduce value added product as a confectionary in the form of milk toffees using Jack fruit seeds. Different percentages of boiled and blended Jack seeds pulp were mixed with different percentages of milk powder as the treatments. The qualitative observations of the products were evaluated through a sensory evaluation comprising of 30 untrained members. Color, Appearance, Taste, Texture, Acceptability, and the keeping quality were observed. Data were analyzed using Kruskal- Wallis test. Results revealed that there was no significant difference in any of the observation among treatments. The shelf life was about 30 days under room temperature without affecting the quality. The product can easily be undertaken as a cottage level industry which would give an impressive additional income for people living in rural areas.

Keywords: Appearance, Color, Jack fruit, Taste

**Corresponding Author: sujawee@gmail.com*

EFFECTS OF "NEWLY MODIFIED PANCHAGAVYA" ON GROWTH, YIELD AND PEST INCIDENCE OF *Capsicum annuum* IN OPEN FIELD CULTIVATION

R. M. H. Viduranga[1], N. P. Vidanapathirana[1*], K. P. Somachandra[2] and K. G. Ketipearachchi[1]

[1]*Department of Agro-Technology, Institute for Agro-Technology and Rural Sciences, Weligatta - New Town, Hambantota*
[2]*Regional Agricultural Research and Development Center, Kahagolla, Bandarawela, Sri Lanka*

Abstract

Applications of chemical fertilizers and pesticides have become critical for growth and higher productivity in agriculture but at the same time have the impact on the environment and human health. 'Panchagavya' is a blend of five products obtain from cow which act 75% as a fertilizer and 25% as a pesticide. It has been revealed that 'Panchagavya' can reduce pest incidences while improving plant growth. In this experiment the ordinary used 'Panchagavya' mixture was slightly modified by adding dry yeast as a fermenting agent and nutrient source which accelerate the fermentation process. Hence, this study was designed to evaluate the effects of "Newly Modified Panchagavya" (NMP) on growth, yield and pest incidence on Capsicum annuum (variety – Muria 358 F1) in an open field cultivation. The study was carried out in open field in Bandarawela during the year 2019. The experimental design was Randomized Complete Block Design (RCBD) with three replicates with 25 plants per one replicate and water (Control), 3% NMP, 5% NMP, Neem Seed Kernel Extract were applied as the treatments. The measurements related to growth, yield and pest incidence were taken in weekly intervals. Results showed that, NMP comprises 2.76% N, 0.25% P, 2.41% K, 0.22% Mg, 270 ppm Fe and 301 ppm Cu. There is a significant ($P<0.05$) increment in average number leaves per plant treated with 5% NMP from three weeks to eight weeks after planting. Further, application of 5% NMP showed significant ($P<0.05$) increment in plant height from three weeks to eight weeks after planting and yield from three weeks to seven weeks after planting compared to the control. There was a significant difference in number of damage leaves per plant among treatments from 7 weeks after planting to 8 weeks after planting. Although the lowest number of damage leaves per plant was recorded from control, 5% NMP showed better results when comparing number of leaves at 8th weeks with the number of damage leaves. Therefore, result of the study revealed that application of 5% NMP results better yield while reducing pest incidence. Thus, it can be concluded that NMP is applicable as a cost effective, eco-friendly pesticide and fertilizer for Capsicum annuum.

Keywords: Bio pesticide, *Capsicum annuum*, Newly Modified Panchagavya, Neem Seed Kernel Extract

**Corresponding Author: nisansala@uciars.cmb.ac.lk*

EFFECT OF CLOROX AS A SEED TREATMENT IN NONFUNGICIDAL APPROACH ON GERMINATION OF CHILLI SEEDS

D. G. B. Malsha, K. Prasannath and N. Sivasubramaniam*

Department of Agricultural Biology, Faculty of Agriculture, Eastern University, Sri Lanka

Abstract

Generally seed treatment with a fungicide is a common practice adapted by farmers to control seed-borne pathogens for obtaining quality and healthy chilli seedlings. Efforts are underway for obtaining vigorous seedlings with high germination rate. Having this objective in mind, a laboratory experiment was conducted at the Microbiology Laboratory, Department of Agricultural Biology, Eastern University, Sri Lanka, to assess the effects of Clorox bleach, an antigerm liquid on germination performance of chilli cv. PC-1. The treatments were arranged in a Completely Randomized Design with three replicates. The Clorox at different concentrations (5%, 10%, 15% and 20%) with different soaking times (20, 30 and 40 minutes) were setup as different treatments and compared with a control treatment of soaking the seeds in sterile distilled water with different soaking times (20, 30 and 40 minutes). The seed germination performances were recorded after 14 days of seeding. Results revealed that 70% seed germination at 14 days after seeding was obtained in application of 5% Clorox solution with 40 minutes soaking time. Further, number of days taken to germinate 50% of seeds was approximately 10 days in the same treatment which was comparably lower than that of the controls. Therefore, it could be concluded that soaking of seeds in Clorox solution at 5% concentration for 40 minutes could be used to achieve better seed germination of chilli.

Keywords: Chilli, Clorox, Germination percentage, Seed-borne pathogens

*Corresponding Author: nishanthis@esn.ac.lk

SOME AGRONOMIC FACTORS AS INFLUENCED BY THE APPLICATION OF CATTLE AND POULTRY MANURES ALONG WITH FOLIAR APPLICATION OF VERMI WASH IN OKRA (*Abelmoschus esculentus (L.)* MOENCH) CV. P-11

D. S. M. M. S. M. Samiraja*, K. D. Harris and A. M. K. D. M. Attanayaka

Department of Crop Science, Faculty of Agriculture, Eastern University, Sri Lanka

Abstract

A pot experiment was conducted at the Crop Farm, Faculty of Agriculture, Eastern University of Sri Lanka from January to April 2019. The investigation was carried out to study some agronomic factors as influenced by the application of cattle and poultry manures along with the foliar application of vermiwash in okra (*Abelmoschus esculentus* (L.) Moench) cv. P-11. This experiment was laid out in a Completely Randomized Design (CRD) with eight replicates, and nine treatments. The treatments were viz., T1; recommended fertilizer (control), T2; poultry manure 10 t/ha with 25% vermiwash, T3; poultry manure 10 t/ha with 50% vermiwash, T4; poultry manure 10 t/ha with 75% vermiwash, T5; poultry manure 10 t/ha with 100% vermiwash, T6; cattle manure 10 t/ha with 25% vermiwash, T7; cattle manure 10 t/ha with 50% vermiwash, T8; cattle manure 10 t/ha with 75% vermi wash, T9; cattle manure 10 t/ha with 100% vermiwash. The data were collected on the number of branches per plant, length of tap root, leaf area index, days for 50% flowering, the number of flowers per plant, 100 seed weight and economic yield. The results showed that the foliar application of 100% vermiwash with 10 t/ha poultry manure increased the number of branches per plant (36%), length of tap root (32%), leaf area index (26%), the number of flowers per plant (50%), 100 seed weight (0.88%), reduced the days to flowering (55%) and economic yield (34%) than that of recommended fertilizer. Plants treated with poultry manure 10 t/ha + vermiwash @ 100% showed significant increase in the above parameters than the other treatments. Therefore, it is suggested that replacing inorganic manures with such as poultry and vermiwash are beneficial. Poultry manure and vermiwash are cheap, eco-friendly and readily available and organic manures that improve soil for continuous cropping and sustainable agriculture.

Keywords: Growth, Okra, Poultry manure, Vermiwash, Yield

**Corresponding Author: shiromi.s.1993@gmail.com*

GERMINATION OF *Catharanthus roseus* SEEDS AS AFFECTED BY DIFFERENT SEED TREATMENTS AND GROWING MEDIA

L. T. Gayashan, S. A. P. Nelka* and N. P. Vidanapathirana

Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta – New Town, Hambantota

Abstract

The experiment was undertaken with an objective to investigate the effect of various seed treatments, i.e., Gibberellic acid (4000 ppm), hot water 350C, normal water, and control without treatment and growing media such as sand, coir dust, sand : compost (1:1, v/v) and sand : coir dust (1:1, v/v)on seed germination of *Catharanthus roseus*. Seeds were soaked in 12 hours in normal water and 30 minutes in other treatments. Complete Randomized Design was applied with four replicates and well matured ten seeds per replicate were tested under shade house condition. Significant variation was found in different potting media and seed treatment was not significant after analysis of variance (ANOVA) of each mean value. Seed treatments were not significantly influenced on seed germination of C. roseus ($P>0.05$). It was noted that seed germination percentage at second week was significantly increased ($P<0.05$) by all growing media except sand and the highest germination percentage was recorded as 79% in sand compost media. Therefore, sand compost 1:1 (v/v) was selected as the best growing media for seed germination of *Catharanthus roseus* through this study by considering its highest germination percentage when compared to sand alone media. Sand media perform lower germination percentage (41%) and all other media are better for seed germination when compared to sand media.

Keywords: *Catharanthus roseus*, Germination percentage, Growing media, Seed treatment, Seed germination

**Corresponding Author: nelka@uciars.cmb.ac.lk*

USE OF BANANA FLOUR AS AN ALTERNATIVE THICKENING AGENT TO CORN FLOUR

R. M. A. K. Menike, W. G. C. Madushani and S. S. Weerasinghe*

Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta – New Town, Hambantota

Abstract

Banana is the major fruit crop grown in Sri Lanka which covers the largest extent of the land represent fruit crops. The production is mainly consumed as a fresh fruit. However, poor postharvest handling practices results in 40% postharvest loss. One way of overcoming this loss is use of the fruit in green form. Accordingly, this investigation was carried out with the objectives of producing a thickening agent for soups to replace corn flour presently used. Green fruits were peeled and sliced and then oven dried. The dried slices were converted to flour by grinding. Vegetable soup was prepared and used this banana flour as a thickening agent which was compared with the control treatment of the same amount of corn flour. The heating duration taken for thickening was evaluated treatments were compared based on optimum conditions. The quality of the soup prepared by adding two different flour as thickening agents was evaluated using from a taste panel comprised of 30 untrained members. The qualitative data obtained were analyzed using Kruskal Wallis H test. The results revealed that there was no significant in taste, flavor, color, and overall acceptance. Further the cost of the production of Banana flour was comparatively less, 45 Rs/100g than that of 80 Rs /100 g in Corn flour. Thus, based on sensory properties and cost involve in thickening banana flour can successfully be used to replace corn flour. Banana flour can easily be produced as a cottage level industry in major banana growing area to increase the income.

Keywords: Banana, Flour, Thickening Agent

**Corresponding Author: sujawee@gmail.com*

ASSESSMENT OF THE EFFECTS OF DIFFERENT ORGANIC FERTILIZERS ON GROWTH AND PRODUCTION OF *Aloe barbadensis*

A. Viyasan*, S. Sutharsan and S. Srikrishnah

Department of Crop Science, Faculty of Agriculture, Eastern University, Sri Lanka

Abstract

Aloe vera considered to be a most popular plant belongs to family Liliaceae. Organic manures are more effective in Aloe vera growth and yield which is comparable to inorganic fertilizers. This study investigated the effects of different organic fertilizers on growth and yield of *Aloe barbadensis*. This experiment was carried out in the Crop Farm, Eastern University of Sri Lanka as a polybag experiment during November 2019 to August 2020. The experiment was laid out in a Randomized Complete Block Design with five treatments and four replicates. The treatments are T1 (Control), T2 (Compost), T3 (Cow dung), T4 (Commercially available organic liquid fertilizer), T5 (Jeewamirta) and their performance was tested on growth and production. Significantly highest performance in all the growth and yield parameters were observed in compost (T2) and cow dung (T3) treatments in comparison with other treatments. There was no significant difference in total gel weight between compost (T2) and cow dung (T3) treatments. This might be due to the ability of both compost and cow dung increase soil fertility, increase the cell division and elongation without hampering the nutrient uptake process. Therefore, considering performances in growth, yield and especially economic important parameter (gel weight), the compost and cow dung could be recommended for the cultivation of *Aloe barbadensis* in order to enhance the growth and yield which is environmentally friendly for Sustainable Agriculture.

Keywords: *Aloe barbadensis*, Compost, Cowdung, Fertilizers, Jeewamirta

*Corresponding Author: viyasan1995@gmail.com

EFFECTS OF DIFFERENT SEED TREATMENTS ON GERMINATION OF OKRA (*Abelmoschus esculentus* L)

I. J. A. Ruhunuge[1*], M. K. I. Malhara[1], M. A. R. N. Mallawa arachchi[1], A. W. Wijeratne[2], G. E. M. Wimalasiri[3] and T. H. M. C. B. Senavirathna[1]

1 Faculty of Agriculture, Aquinas College of Higher Studies Colombo, Sri Lanka
2 Department of Agribusiness Management, Sabaragamuwa, University of Sri Lanka
3 Faculty of Science and Engineering, The University of Nottingham Malaysia, Malaysia

Abstract

Okra (*Abelmoschus esculentus* L) is one of the most important vegetable crops in Sri Lanka which is propagated by seeds and it has hard seed coat result uneven seed germination. Therefore, this experiment aimed to evaluate the effect of seed treatments on seed germination and plant vigour of MI-7 variety at the seedling stage and to determine the best pre-sowing method to facilitate uniform germination. The study consisted of two individual experiments where they were carried out in plates and the plug trays. The experimental units were arranged in a completely randomized design (CRD) with three replicates and each contained 10 sub-samples. The five treatments that were used in the experiment were no treatment (control-T0), Soaking 48h (T1), Physical Scarification (T2), 80% Sulphuric acid (0.01M) 3 minutes (T3), Hot water 80°C in 10 minutes (T4) and (Scarification + soaking 5h) (T5).The highest final germination percentage (96 ± 2.5%) was in (T3), whereas highest germination index (896.3 ± 96.9) in (T5), and seedling vigour index (9.8± 0.1 cm) were recorded in (T5). The lowest FGP (4 ± 1.53%), SVI (0.03 ± 0.015 cm) were recorded in (T1) and lowest GI (295 ± 186.7).There is a significant (P >.05) difference in final germination between (Scarification + soaking 5h) (T5) and (T3) ($\tau 1$-$\tau 2$ = 19 > LSD = 8.51).The results indicate that 5h soaking after scarification (T5) is the best pre-sowing treatment to reduce uneven germination in okra applicable to farmer level, where department of agriculture recommends MI-5 and Haritha verities with 94% and 93% initial germination respectively.

Keywords: Hard seed coat, Okra, Pre-sowing, Seed-treatment, Uniform-germination

**Corresponding Author: isuriruhunuge999@gmail.com*

GREEN AGRICULTURE FOR ECO SYSTEM SAFETY

STUDY ON CHEMICAL EXTRACTION OF FIBER FROM BANANA PSEUDOSTEM

T. S. Hapuarachchi, W. G. C. Madushani and S. S. Weerasinghe*

Department of Agro Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta – New Town, Hambantota

Abstract

Banana is one of the most important fruit crops cultivated in the tropical zone of the world and it is a major natural fiber source which can be used as a raw material for many industries. The banana fiber can be extracted in many ways, but quality fiber is produced by chemical extraction. In Sri Lanka, there is a large banana production, but pseudostem is wasted and only a few are used for compost production. This study aimed to identify the easy and low-cost chemical extraction method for banana fiber extraction which can be introduced as a cottage level industry for banana growers. For that purpose, an investigation was conducted, and Embul Banana was selected which is the most abundant variety. In this investigation there were two experiments. The first investigation was carried out to select the most suitable extractant among distilled water, NaOH and $KMnO_4$.This investigation revealed that NaOH was the best extractant to obtain quality fiber. Therefore, NaOH was selected as the suitable extractant and further investigation was conducted to select the most suitable concentration of the NaOH. From that study it was indicated that it can be diluted further to obtain the quality fiber. Of the concentrations tested 1% concentration of NAOH was the best concentration for banana fiber extraction. This concentration of NaOH can be used for extraction of better-quality banana fiber hence commercial application is possible.

Keywords: Extraction, Fiber, $KMnO_4$, NaOH, Pseudostem

**Corresponding Author: sujawee@gmail.com*

Salvinia molesta - AN INVASIVE AQUATIC PLANT WITH POTENTIAL MULTI USES

R. H. G. B. Prabhashini[1*], K. G. Ketipearachchi[2], S. S. Weerasinghe[2]

[1]*Department of Crop Science, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya, Sri Lanka*
[2]*Department of Agro-Technology, University of Colombo Institute for Agrotechnology and Rural Science, Weligatta - New town, Hambantota*

Abstract

Salvinia molesta, an aquatic plant native to Brazil and ranked second place in the list of most problematic aquatic weeds in the world. It is recognized as strongly allelopathic and hardy due to its high concentration of polyphenols and poses unusually ligneous leaves makes it an invasive plant species. The rapid growth rate allows quick spreading and causes environmental, economic, and sociological issues in most tropical and sub-tropical countries. Salvinia has accidentally introduced to Sri Lanka as an aquarium plant and interferes with irrigation and drainage of rice paddies. Farmers and farming communities rely on a multitude of reservoirs for water because the country knows prolonged dry periods. However, Salvinia has spread to a number of these reservoirs and the associated distribution and drainage systems creating an urgent solution to control the weed. Although, this species has resulted in undesirable impacts, it can be used as a potential aquatic plant with multi-uses as they constitute an important element of sustainable agricultural systems. This review provides an account of *S.molesta* as an invasive aquatic plant with potential multi uses. The plant can be used to feed pigs as it contains high value of crude protein, macro, and micro minerals. The ability of survival and growth in the water unsuitable for other aquatic plants has resulted in the potential source for usage in wastewater treatment. This species is a potential substrate for biogas production which is a highly abundant source of biomass. The presence of higher Indole acetic acid concentration in the plant made the possibility to use as an organic fertilizer which can influence the growth of the crops. It can be applied as a green manure or mulch for leafy vegetables such as *Centella aciatica*. *S. molesta* has been directly and rapidly converted to vermi-compost based on the concept of high-rate vermicomposting and it is faster than the conventional vermicomposting. It has a potential to use as a bio indicator and it can be used in the biomonitoring of aquatic ecosystems contaminated by heavy metals. The huge biomass makes potent to use as a material for paper making and packing. It is a timely requirement to identify further potential uses of *S. molesta* and utilize the plant in a way of economically and ecologically useful.

Keywords: Aquatic weed, Invasive species, Potential uses, *Salvinia molesta*

**Corresponding Author: bhagyaprabhashini91@gmail.com*

INTRODUCTION OF A USER-FRIENDLY BIO FOOD WRAPPER USING *Heliconia bihai* LEAVES

I. C. Dodampe, L. M. Rifnas*, W. G. C. Madushani, S. Weerasinghe

Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta - New Town, Hambantota

Abstract

Emerging of new technologies and trends, peoples are adapted with various types of food wrappers. Within that most of them are harmful to human health and environment. Since ancient time banana leaves are used as a food wrapper. Hence, there are possibilities to develop food wrappers from a variety of biodegradable materials. Considering this, an experiment was conducted at the University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta, Hambantota with the objectives of developing food wrappers with Heliconia leaves in adequate size by attaching narrow leaves together and introducing food wrapper along with the outer packing paper as a user friendly smart bio food wrapper. Sago solution, gelatin, wheat flour and rice starch solutions were tested as sticking agents. There were twenty replicates and data were collected using a taste panel of members comprising twenty numbers. "Kruskal Wallis H Test" was used to analyze the data as non-parametric test ($p>0.05$). There was significant difference between the treatments on smell, adherence and overall acceptability up to ten days. Texture and colour change showed significant up to four and six days respectively. Up to four days of time all the sticking agents gave good results in all the tested parameters. Sago and gelatin solution showed good in all qualities up to six days. Those can successfully be used as sticking materials to produce food wrappers from Heliconia leaves in adequate size. Furthermore, it can be stored up to six days of time without affecting the qualities. It could be therefore concluded that, user friendly food wrappers can be produced as two in one (wrapping and packing) by sticking together *Heliconia bihai* leaves in fairly good size.

Keywords: Bio food wrapper, *Heliconia bihai*, Sticking agent, User friendly

**Corresponding Author: rifnaslm@yahoo.com*

ALLELOPATHIC ACTIVITY OF THE RESIDUES OF COMMON HERBACEOUS WEED SPECIES IN ORCHARDS

A. J. M. C. M. Siriwardana, H. K. M. S. Kumarasinghe and D. L. Wathugala*

Department of Crop Science, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya, Sri Lanka

Abstract

Allelopathy refers to any process involving secondary metabolites produced by plants, microorganisms, viruses, and fungi that influence the growth and development of other plants, microbes and the same species which is called autotoxicity. *Cleome viscose* (Wal aba), *Andrographis paniculata* (Kiratha), *Ocimum sanctum* L (Maduruthala). and *Celosia argentea* L (Kiratha) with allelopathic properties. Hence, this study was mainly focused to examine the allelopathic effect of *C. viscosa*, *A. paniculata*, *O. sanctum* and *C. argentea* on field crops of radish, paddy, finger millet, mungbean, black gram, and cowpea and their autotoxicity effects. First greenhouse bioassay experiments were conducted to evaluate allelopathic activity on radish an indicator plant and autotoxicity effect of 4 weed species. Accordingly, four concentrations of residue mixtures (1%, 2.5%, 5% and 10%) were prepared by incorporating ground residues of selected species with sand. Decomposing residues of weed species exhibited marked differences in seed germination and seedling growth of radish and same species. Most of the tested residue concentrations significantly inhibited seed germination, and seedling growth, and development of radish and same species whilst few rates stimulated. The highest residue concentration (10%) in all species exhibited the highest inhibition of seed germination. Among all weed species, *C. argentea* residues showed the highest inhibition of radish seed germination. Therefore, further, experiments were conducted to evaluate the effect of *C. argentea* residues on the growth of some other field crops too. For that three concentrations of residue mixtures (5%, 10% and 15%) of *C. argentea* were tested. *C. argentea* also exhibit a strong correlation between residue concentration and seed germination of field crops of paddy, finger millet, mungbean, black gram, and cowpea. The residue concentrations of 5% and 10% in all tested species showed 100% autotoxicity for seed germination and lower residue rates were also reduced the seed germination in a considerable percentage (more than 40%). However, a lush stimulus growth was observed in seedlings of germinated seeds in low residue concentrations. In addition, higher residue concentrations of *C. argentea* exhibits 100% inhibition of seed germination of all other field crops excluding paddy. Hence, it can be concluded four herbaceous weed species used in this experiment would be able to inhibit seed germination and seedling growth of radish and same species itself. Further, the allelopathic activity of *C. argentea* possibly be harmed for succeeding field crops.

Keywords: Allelopathy, *Andrographis paniculata*, *Celosia argentea* L., *Cleome viscose*, *Ocimum sanctum* L.

*Corresponding Author: wgdlakmini@crop.ruh.ac.lk

EFFECTS OF SEAWEED (*Padina sp.*) LIQUID EXTRACT APPLICATION ON FLOWERING OF ROSES

M. A. M. N. Kularathne, S. Srikrishnah* and S. Sutharsan

Department of Crop Science, Faculty of Agriculture, Eastern University, Sri Lanka

Abstract

A pot experiment was conducted at the Crop Farm, Eastern University, Sri Lanka to assess the effects of seaweed (*Padina* spp.) extract on flowering of roses (*Rosa* spp.) from June to August 2020. Four treatments were defined in this experiment viz. 10% (T1), 20% (T2) and 30% (T3) concentrations of seaweed liquid extracts with control treatment (T4- distilled water). Treatments were applied at once a week. Experiment was arranged in a completely randomized design with ten replications. Other management practices were uniformly followed. Data were collected once a month and analyzed statistically. Results revealed that there were significant differences between treatments in flower production. Highest number of flowers per plant was recorded at T2. It showed that once in a week application of 20% seaweed liquid extract increased growth and flower production in roses. Several studies revealed that seaweed liquid extracts contain nutrients and the growth hormones which promote growth and flowering in plants. It could be the reason for highest flower production observed in T2 and plants would have received optimum concentration of seaweed extract at T2. From this experiment, it could be concluded that once a week application of 20% seaweed (*Padina* sp.) liquid extract is suitable to promote flowering in roses.

Keywords: Number of flowers, *Padina* sp., *Rosa* sp., Seaweed

*Corresponding Author: srikrishnahs@esn.ac.lk

POTENTIAL NEGLECTED ORNAMENTAL SPECIES FOR POSSIBLE DEVELOPMENTS IN SRI LANKA

H. I. G. K. Anuruddi[1] and D. L. C. K. Fonseka[2*]

[1]Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta - New Town, Hambantota
[2]Department of Crop Science, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya, Sri Lanka

Abstract

Improving rare and underutilized floriculture species will widen the product assortment of Sri Lankan floriculture industry. In the present review, modes of reproduction and possible ornamental value addition of several underutilized ornamental species are discussed. *Memecylon umbellatum Burm* (Kora kaha), *Clitoria ternatea* (Nil katarolu), *Osbeckia aspera* (Maha bovitiya), *Rhynchostilis retusa* (Foxtail orchid), *Gloriosa superba* (Niyangala), *Exacum trinervium macranthum* (Binara), *Anoectochilus reinwarddtii Blume* (Wanaraja), *Ipsea speciosa* (Daffodil Orchid) are selected. Kora kaha and Maha bovitiya are ornamental flowering shrubs with blue to purple flowers. Both plants are mass propagated by internodes. These two species are potential potted ornamental plants when developed to a dwarf nature with large flowers. Niyagala bears yellow and red colored solitary flowers. Propagation is done by seeds and tubers. Ornamental value can be enhanced by changing flower color and shape through cross and self-pollination. Foxtail orchid is an epiphyte bearing pendant like inflorescence. Propagation is mainly by divisions. Increasing the size of the peduncle with different colors is possible with mass propagation of roots and leaves. Binara bears flowers with blue petals and brilliant yellow anthers. The plant could possibly be converted to a dwarf potted plant with big flowers through molecular strategies. Katarolu vine bears deep blue color flowers which is propagated through seeds and stem cuttings. It can be improved to a potted plant of medium height with deep violet, light pink and velvety blue flowers and less leaves. Mass propagation of Wanaraja is done by shoot tips and nodal explants which is superior to seeds. This can be developed as an ornamental foliage plant due to red and silvery vein pattern on leaves. Daffodil orchid bears large bright yellow flowers. Artificial seed propagation and mass propagation by rhizome tips is possible. The plant can be developed to a potted flowering plant. Thus, exploring new underutilized species with floricultural values and their development through breeding programs will open new market opportunities, increase the income of the growers while conserving these rare species for the future generation.

Keywords: Floriculture, Ornamental plants, Underutilized, Value addition

**Corresponding Author: kumarifonseka23@gmail.com*

PRESENT STATUS AND FUTURE SCOPE OF FLORICULTURE INDUSTRY IN SOUTHERN PROVINCE, SRI LANKA

K. G. Ketipearachchi[1*] and D. L. C. K. Fonseka[2]

[1]*Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta - New Town, Hambantota*
[2]*Department of Crop Science, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya, Sri Lanka*

Abstract

Sri Lanka is well-known to be one of the centers for top quality floriculture products across the world. Southern province is identified as a potential region to expand the floriculture industry to produce products aiming for the export market. Therefore, this study was conducted to identify the present status, capabilities and constraints of the industry in the Southern Province, Sri Lanka. Data were collected from purposively selected 70 floriculture growers in the Galle, Matara and Hambantota districts using a pre-tested questionnaire. Survey was conducted during August – November 2019 by visiting the exhibitions and monthly meetings of flower growers' societies. Data were statistically analyzed using Minitab statistical software at 5% significant level. According to the study, the industry is mainly (99%) engaged by women, educated up to O/Ls (54%) and they are able to earn (54%) more than Rs.10, 000 per month. Planting materials are mainly collected from local farms (90%) while 4% and 6% growers collected from only exporters and both local farms and exporters respectively. Family members are mainly (95%) involved as laborers while rarely used hired laborers. Both flowering and foliage plants are cultivated and sold as the pot plants to consumers. For marketing, the combination of direct marketing in the nurseries or in the exhibition was used for 49% of products. All growers (100%, $p \leq 0.05$) had stated that there is a sufficient demand for the floriculture industry in Southern Sri Lanka. All growers (100%, $p \leq 0.05$) had expressed their willingness to expand the cultivation, to join in workshops, to improve the product quality, to take financial and other subsidiaries. Furthermore, 84% of growers had mentioned the inadequate involvement and support of the government sector while 81% mentioned poor involvement of the private sector. Major limitations of the industry are financial problems (74%), climatic conditions (11%) and lack of infrastructure (10%) facilities. Therefore, this study revealed that there is a possibility to expand the floriculture industry in southern province and further studies are needed to identify the awareness level of the industry in the region.

Keywords: Floriculture, Growers, Present, Southern, Sri Lanka

**Corresponding Author: kasunigk93@gmail.com*

USE OF ECO-FRIENDLY TECHNOLOGIES TO REDUCE CHEMICAL FERTILIZER USAGE IN PADDY FARMING IN SRI LANKA: A STUDY ON ECONOMIC PERSPECTIVES OF DRY ZONE PADDY FARMERS

A. P. Silva[1*], U. K. Jayasinghe-Mudalige[1], R. S. Dharmakeerthi[2], W. S. Dandeniya[2] and B. L. W. K. Balasooriya[3]

[1] Department of Agribusiness Management, [3]Department of Biotechnology, Faculty of Agriculture & Plantation Management, Wayamba University of Sri Lanka
[2]Department of Soil Science, Faculty of Agriculture, University of Peradeniya, Sri Lanka

Abstract

The paper presents the results of a socio-economic analysis designed under a multi-year multi-disciplinary research study to identify the factors that motivate adoption of eco-friendly technologies (EFTs) in paddy farming, including biochar and biofertilizer, over the use of chemical fertilizers. The outcome of analysis, which uses the primary data gathered from 100 registered paddy farmers from Anuradhapura and Kurunegala districts by way of an in-depth semi-structured questionnaire-based interview and analysed using quantitative data analysis techniques, emphasizes the importance of weighing 'Price' related factors as the most important to use EFTs against chemical fertilizers followed by those specified as 'Materials' and 'Services'.

Keywords: Chemical fertilizers, Eco-friendly technologies, Economic incentives, Paddy farming

**Corresponding Author: prabha.silva87@gmail.com*

ENSURING THE ADOPTION OF SUSTAINABLE INNOVATIONS

A PRELIMINARY STUDY ON MICROBIOLOGICAL QUALITY OF PROCESSED SPICES IN RETAIL PACKS MANUFACTURED BY SELECTED SMALL AND MEDIUM ENTREPRENEURS (SME'S)

T. M. D. A Jayawardana* and D. M. W. D Divisekera

Food Technology Section, Industrial Technology Section, Malabe, Sri Lanka

Abstract

Spices have been used since ancient time as ingredients and additives in Sri Lankan cuisines to enhance the flavor and aroma of food to make it more palatable. There is an increasing demand for Sri Lankan spices in global market as well. In Sri Lanka, large number of Small and Middle Scale Entrepreneurs (SMEs) are involving in spice cultivation and processing industries. Currently, various types of spice products processed by SMEs are available in the local market. Thus, microbiological quality evaluation is important for production processes and end products to ensure the safeguard of consumers. In this preliminary study, 10 SMEs were considered and commercial samples of curry powder, chili powder, pepper and turmeric powders were randomly purchased from the local market. Sri Lanka Standards (SLS) SLS134:2009, SLS1563:2017, SLS 1372:2009 and SLS 613:2017 were followed for curry powder, chili, pepper and turmeric respectively in order to determine microbiological parameters of Total Plate Count (TPC), Yeasts and Moulds (YM), *Escherichia coli* (E.coli) and *Salmonella* spp. according to the SLS 516 part 1,2,12 in 2013 and SLS 516 part 5:2017. Results were expressed following SLS 1463:2013 in terms of Colony Forming Units per gram in log 10 (log 10 CFU/g) for TPC and YM, presence or absence for *Salmonella* spp. and Most Probable Number per gram (MPN/g) or absence for *E. coli*. Aflatoxins were determined for chili as specified in SLS 1563:2017 using solid phase micro extraction followed by liquid chromatography-tandem mass spectrometry (LC-MS/MS). According to results, 02 curry powder, 02 meat curry powder, 04 chili powder, 01 chili pieces, pepper and 03 turmeric powder were exceeded the recommended microbiological limits. One chili powder and a chili pieces were detected with Aflatoxins due to excessive mould growth. Therefore, most of the tested samples were not complied with SLS requirements. Hence, SMEs should pay attention on choosing clean raw materials, complying with Good Manufacturing Practices (GMP) during processing, selection of suitable packaging and to use validated shelf life for final products.

Keywords: Aflatoxin, Microbiological quality, Quality Standards, Spices

*Corresponding Author: dilinij.jayawardana@gmail.com

LEAF MORPHOLOGY VARIATION OF *Murraya paniculata*

W. G. C. Madushani*, L. M. Rifnas, S. S. Weerasinghe

Department of Agro Technology, University of Colombo Institute for Agro- Technology and Rural Sciences, Weligatta – New Town, Hambantota

Abstract

Murraya paniculata is cultivated mainly as an ornamental plant due to attractiveness and fragrance of its flowers. Apart from that this species is used for oil extraction and in traditional medicine. However, there is a morphological variation of this species in different geographic locations and a knowledge gap is present on the morphological diversity of *Murraya paniculata* species. Therefore, this study was carried out to fill the gap of knowledge on diversity of Sri Lankan *Murraya paniculata* through morphological characterization. An eco-geographic survey was carried out using snowball Sampling. Data were obtained from 11 districts and 149 accessions were used for this study. Vegetative propagation of the total collection for ex-situ conservation were carried out. The collection was established at University of Colombo, Institute for Agro-Technology and Rural Science, Hambantota. The collection was characterized by 9 qualitative characteristics and 8 quantitative characteristics of leaf and a wide variation was observed for leaf qualitative characters namely leaf arrangement, leaflet shape, leaflet apex shape, leaflet base. Leaf Arrangement was varied from alternate to Sub-opposite. Different shapes such as Ovate, Elliptical, Oval, broadly oval, Lanceolate, Rambold and Obcordate were identified in leaflets. Moreover, leaf bases also showed variation with Acute, Rounded, Oblique and Cunate leaf bases. When considering the leaflet characteristics leaflet width was positively correlated with leaflet length (+0.745). Petiole length also showed a positive correlation with leaflet length (+0.536). A higher morphological variation was observed in the studied accessions. There is a high potential in utilizing this variation for the plant breeders for the selection and breeding purposes.

Keywords: Accessions, Diversity, Germplasm, Morphological characters, *Murraya paniculata*

**Corresponding Author: Chathurikagamagesusl@gmail.com*

EFFECT OF IRRIGATION WATER MANAGEMENT PRACTICES ON THE PERFORMANCES OF BLACK GRAM (*Vigna mungo* – L)

V. Jalini[1*], T. Sellathurai[1], S. Sritharan[2], T. Mikunthan[1]

[1]*Department of Agricultural Engineering, Faculty of Agriculture, University of Jaffna, Sri Lanka*
[2]*Deans office, Faculty of Agriculture, University of Jaffna, Sri Lanka*

Abstract

Water is precious for life on earth. There is an ever-increasing demand for the supply of water to the various sectors. It has been identified as one of the limited scarce input, which can severely restrict agricultural production and productivity even though it is carefully conserved and managed. Improving water use efficiency is one vital strategy for addressing future water scarcity, which is driven mainly by increasing human population. Enhancing agricultural water productivity is a critical response as it is by far the main consumer of global fresh water. It is a wide-ranging practice using every drop of water for crop production through suitable irrigation practices. Hence, a field experiment was conducted at Kilinochchi area (Northern Sri Lanka) during the *Maha* season of 2019/2020 using different water management practices to evaluate the effect of deficit irrigation practices on growth, yield and water use efficiency (WUE) of black gram cultivation. Four treatments of different irrigation water management practices were practiced and those were ridge and furrow, flat basin, raised bed and residual moisture. The experiment was done with randomized complete block design with three replicates. Ridge and furrow gave significantly higher black gram yield (1206.4kg/ha), as compared to flat basin and raised bed treatment while at residual moisture (control) given low yield (702.2kg/ha) , also yield from ridge and furrow and flat basin was not significantly different yield which are (1206kg/ha) and (1199.9kg/ha) respectively. The black gram irrigated at ridge and furrow method also recorded 41.8% of increase in yield over residual moisture treatment. Nevertheless, irrigation water use efficiency (IWUE) was significantly highest in ridge and furrow irrigation and significantly lowest in raised bed irrigation compared to the residual moisture method (control). When considering economic efficiency with ridge and furrow was best method when compared to raised bed and residual moisture. Hence, the study suggests farmers in the northern region having limited amount of water for irrigation that ridge and furrow treatment recommended for profitable black gram cultivation.

Keywords: Black gram, Deficit irrigation, Economic efficiency

**Corresponding Author: Jalinivicknesh95@gmail.com*

EFFECT OF ALTERNATE WETTING AND DRYING TECHNIQUE (AWD) ON WATER PRODUCTIVITY OF PADDY IN MAJOR IRRIGATION SCHEMES – A CASE STUDY IN MAHAWELI SYSTEM B

D. D. Atigala[1*], T. G. B. Dhanushka[1], W. R. A. T. P. Wijesundara[2], N. P. Vidanapathirana[1] and B. P. Siriwardana[1]

[1]Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta – Newtown, Hambantota
[2]Mahaweli Authority of Sri Lanka - System B

Abstract

Mahaweli system B area in Polonnaruwa, Sri Lanka comes under low country dry zone and the area in general has been subjected to paddy cultivation under supplementary water form Maduru Oya reservoir. With the deviation of the raining catchment area does not receive enough rainfall for cultivation. Usually, the farmers use a water duty around 1.7 m of water for their paddy cultivation. Therefore, it is necessary to identify the different water management techniques which can reduce the water duty while maintaining the yield stagnated or improving. At present, the irrigation schedule is decided without considering the plant water requirement and it may cause even for yield loss. Alternate Wetting and drying technique (AWD) are one of the best water management practices since it is providing the water at adequate level with the plant water requirement. The main objective of this study was evaluation of effectiveness of AWD system for paddy farming in dry zone in Sri Lanka. Ten paddy fields which having uniform for all remarkable parameters were selected paddy fields were split into two halves to accommodate AWD system conventional irrigation. Five field tubes were established AWD paddy fields and the yield, water consumption, water productivity was estimated. At the end of the season, it could be observed that by practicing AWD technique the irrigation interval was significantly differed ($p<0.05$) from conventional irrigation and also irrigation water requirement was significantly reduced in AWD system. Yield and water productivity were significantly ($p<0.05$) increased in AWD system. By practicing AWD technology for the field and by using it, the irrigation water requirement can be reduced; the yield and water productivity also can increase by practicing AWD technology.

Keywords: Alternate Wetting and Drying technique (AWD), Irrigation interval, Water productivity

**Corresponding Author: wra.tharaka@gmail.com*

EFFECTS OF NON-WOVEN FABRIC MATERIAL: A CROP SHIELD ON LEAF CURL COMPLEX, GROWTH AND YIELD PERFORMANCES OF CHILI (*Capsicum annum*)

K. N. M. Kumara*, T. G. B. Dhanushka, N. P. Vidanapathirana and B. P. Siriwardana

Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta - New Town, Hambantota

Abstract

Chilli (*Capsicum annum*) is the widely grown cash crop in Sri Lanka. Both fresh and dry pods of Chilli are consumed mostly in Asian countries to achieve the taste and palatability of food. Currently, Chilli crop is highly susceptible for leaf curl complex which is a vector transmitted viral disease. This disease not only reduces the yields but also increases the production cost. There are numerous methods have been introduced to control this disease and its insect vectors however, most of them are environmentally hazardous. Therefore, it is important to introduce environmentally sustainable and economically viable agricultural practices to control the situation. Accordingly, the present investigation was carried out with the objective of identifying the effect of a crop cover made up of non-woven fabric material on insect vector control and mitigation of the yield loss. As treatments "Crop Shield" a commercial product of non-woven fabric material available in the market was used as a protecting cover for Chili hybrid "MICH HY1". It was compared against a conventional pesticide applied to control vectors. Experiment was conducted in CRBD with 40 replications at two locations. Results revealed that application of crop shield provided 100% protection from disease by restricting the entering of insect pests. However, there were several plants infected with the disease in plants of the control treatment. The plant height and girth were significantly ($p<0.05$) increased by crop shield compared to the insecticide treated plants. The total number of leaves per plant and cumulative no of leaves per plant were not significantly influenced by crop shield. Pod weight, pod length and yield per plant were significantly increased by crop shield. Whereas, the internodal length and plant height were significantly increased due to the less light intensity prevailed in the inside of the crop shield. The temperature and humidity inside crop shield were higher than that of the outside, with these observations it could be concluded that the crop cover with non-woven fabric material is effective in controlling insect vectors and reduction of the disease incidence without reducing the crop yield in Chilli.

Keywords: Conventional pest control, Crop shield, Leaf curl complex, MICH HY F1 Chilli

**Corresponding Author: mangala8079@yahoo.com*

HARNESSING AGRICULTURE RESEARCH FOR RURAL COMMUNITY

IDENTIFICATION OF AGRICULTURAL STUDENT'S PERCEPTION, KNOWLEDGE AND CONSTRAINTS TO ORGANIC FARMING AND CONSUMPTION

M. G. P. Sankalani*, P. W. P. I. Sarathchandra, and M.K.D.K. Piyaratne

Computer Unit, Faculty of Agriculture, University of Ruhuna, Matara, Sri Lanka

Abstract

The conventional farming is become unsustainable as evidenced by the declining crop productivity, damaging the environment and increasing toxic contaminations. Organic farming can be recognized as one of the best alternatives to develop an eco-friendly farming system while sustaining the crop productivity and reducing toxic loads. According to the data available, organic food consumption in the world is continuing to grow with a consolidated trend in most of the countries. However, some constraints and challenges have been identified in organic consumption among countries. The main objective of the current study was to identify the constraints of organic farming and consumption of organic foods. Identification of the students' knowledge and perception was a specific objective of this study. The survey was conducted as a case study with students of Faculty of Agriculture, University of Ruhuna. Mainly the questionnaire survey and interviews were used to examine the objectives and data were analyzed by using SPSS statistical software. Findings reveal that "high price" is the main constraint of organic consumption for students. Less availability of outlets, unavailability of organic farming of respective areas, consumers trustworthy of organics were identified as other constraints. Further, the study highlights the students' willingness to consume organic foods, preference of engaging organic farming and students' knowledge about organics. The study suggests that there is a huge potential to popularize organic concept in Sri Lanka. However, we should identify such constraints and challenges and take measures to overcome them.

Keywords: Constraints, Organic farming, Organic foods, Perception, Knowledge

**Corresponding Author: pamoo.sankalani@gmail.com*

A STUDY ON FACTORS SHAPING NET PROFIT OF GROUNDNUT FARMERS IN AMPARA DISTRICT, SRI LANKA

T. Geretharan[1*] and V. Raveenthira[2]

[1]*Department of Agricultural Economics, Faculty of Agriculture, Eastern University, Sri Lanka*
[2]*Department of Biosystems Technology, Faculty of Technology, University of Jaffna, Sri Lanka*

Abstract

Ampara district is in Eastern Sri Lanka and groundnut is one of the main subsidiary crops cultivated in the district. The present study was conducted in Ampara district to find out the factors shaping net profit of groundnut farmers in *Yala* season. Data for the study were collected from randomly selected seventy-five groundnut growers in seven Grama Niladhari divisions under the Thirukkovil Divisional Secretariat division of Ampara district. In addition, secondary data gathered from relevant published sources. The collected data were analyzed using SPSS software. Descriptive analysis was used to identify the frequency distribution of the variables. Correlation analysis was employed to find out the factors affecting net profit of the groundnut farmers in *Yala* season. The results revealed that groundnut growers in the study area cultivate groundnut in *Yala* and *Maha* seasons. Majority (60%) of the groundnut growers in the district sourcing groundnut seeds from peer farmers followed by Department of Agriculture (32%). A few percentages (10%) of farmers using their own seeds for cultivation. The results further revealed that the average net profit is high in *Yala* season compared to *Maha* season. Further, the net profit in *Yala* season is significantly affected by age of the farmers ($P<0.05$) and monthly income of farmers ($P<0.01$). It can be concluded that these two factors are good predictors of net profit of groundnut farmers in *Yala* season in the district. Accordingly, both factors need to be considered by relevant policy makers and extension officials when designing policy schemes and planning extension programmes, respectively for groundnut farmers in terms of profit enhancement.

Keywords: Groundnut production, Net profit, Socio-economic characteristics, Yield

**Corresponding Author: thivaharyg@esn.ac.lk*

MAJOR CONSTRAINTS RELATED TO TEA LEAVES PRODUCTION IN SMALL HOLDERS - A CASE STUDY IN KOTAPOLA DS DIVISION, SRI LANKA

A. M. Vitharana*, B. P. Siriwardena, N. P. Vidanapathirana and T. G. B. Dhanushka

Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta - New Town, Hambantota

Abstract

Sri Lanka is having a good reputation for exporting tea all over the world and has good demand for tea as beverages. Tea is the major plantation crop in Sri Lanka other than Rubber, Coconut, Oil palm, and Sugar cane. Currently, tea small holding sector is facing several constraints, and identification of these constraints is very important in order to increase the tea production. The selected location was the Kotapola DS division in the Matara District of Sri Lanka. A simple random sampling technique was practiced and all respondents in the sample (50) were interviewed using a pre-tested structured questionnaire. The questionnaire consists of demographic information of the respondents of the sample and issues related to tea production. Most of the farmers are males (87.75%). Education level of most of the farmers are in between grade 8 and O/L. Most of the farmers are cultivating tea for a long time (more than 20 years) which is around 68.96% of the total sample. The land area of the most respondents (55.17%) are less than two acres. They are facing several problems such as extreme climatic conditions, Labour shortage, inefficient fertilization, incorrect pruning, post-harvest losses which are significantly affect the tea production in small holding sector.

Keywords: Climate, Constraints, Production, Tea small holders

**Corresponding Author: amshanka5@gmail.com*

AWARENESS OF THE ENTREPRENEURS REGARDING THE APPLICATION OF THE CHEMICAL FERTILIZER AND THE PESTICIDES ON BANANA CULTIVATION IN AMBALANTOTA AND SOORIYAWEWA DS DIVISIONS

S. R. Chaminda, B. P. Siriwardena*, N. P. Vidanapathirana and T. G. B. Dhanushka

Department of Agro-Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta - New Town, Hambantota

Abstract

Banana (*Musa* spp.) is mainly cultivated in tropical countries. Southern Sri Lanka is very much famous for banana cultivation. Awareness of the farmers regarding chemical usage has not been properly highlighted. Identification of these knowledge is very much beneficial for the farmers as well as for the consumers. Therefore, the objective of this study is to identify the knowledge levels of farmers regarding chemical usage in banana cultivation. The study area is the Ambalantota DS division and Sooriyawewa DS division in the Southern province of Sri Lanka. The sample size is 50, Simple random sampling technique was practiced and all respondents in the sample were subjected to data collection through a pre-tested structured questionnaire. All most all farmers are male (99%), the majority is having education level up O/L (60%) and the land extent is 2.5 acres to 5 acres (66%). The knowing the types of chemicals, the application of chemicals, the function of the chemicals, ingredients of the chemicals, awareness of the information of the chemicals, benefits of these chemicals (pesticides, fungicide, fertilizers) are significantly higher and the application of chemicals on recommended levels and distinguish the side effect of the application of chemicals are poor according to the findings.

Keywords: Application, Awareness, Benefits, Banana (*Musa spp*.), Chemicals

**Corresponding Author: buddhika@uciars.cmb.ac.lk*

CONSUMER ATTITUDE AND AWARENESS ON ORGANIC FOODS: A STUDY ON URBAN AREAS IN SRI LANKA

W. M. A. A. M. Bandara, P. V. S. Harshana* and G. C. Samaraweera

Department of Agricultural Economics, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya, Sri Lanka.

Abstract

In the recent years a domestic market for organic products has developed as consumers are more and more concerned about the risks resulting from poisonous synthetic deposits in nourishments. Growing consumer concern for safe and healthy food as well as increased environmental awareness, especially in larger cities has shifted the demand towards alternative health products such as organic foods. Hence this study focuses on investigating the consumers' attitudes and awareness of organic foods and to suggest means to enhance organic food consumption in Sri Lanka. Primary data were collected from a sample consisted of one hundred consumers in Colombo district using a purposive sampling technique. Pre-tested questionnaire survey and informal discussion were conducted. The majority (48%) of the sample belonged to 35-40 age category and 52% of them were female. Further sample comprised of 44% consumers earning more than Rs.40000 income per month and having more than four members in their family. Results of the study revealed that in Colombo region almost all the consumers preferred to buy organic foods as they believed organic foods are safe, nutritious and healthier than conventional foods. According to consumers' perception, expensiveness and unavailability of enough organic foods in the market are the major constraints. However, consumers point out their skepticism on organic foods as 61% do not trust organic food while 67% do not trust organic food producers. Majority of consumers aware of organic foods and television and newspapers considered as the main information source. Further consumers suggested that introduce a reasonable price for an organic product, increase the availability of organic products and availability of wide varieties of organic foods in the local market are crucial to increase the organic food consumption. This study provides important insights for organic food producers, marketers, policymakers and researches.

Keywords: Consumer perception, Information, Organic certification, Organic foods

**Corresponding Author: ayomimenaka6@gmail*

CONSUMER PREFERENCE FOR SELECTED ECO-PACKAGE ON PRODUCT PURCHASING BEHAVIOUR: A STUDY IN KAHATHUDUWA NORTH GN DIVISION

D. G. J. S. Wijethunge[1], P. V. S. Harshana[1*], B. P. Siriwardena[2]

[1]Department of Agricultural Economics, Faculty of Agriculture, University of Ruhuna, Mapalana, Kamburupitiya, Sri Lanka
[2]Department of Agro Technology, University of Colombo Institute for Agro-Technology and Rural Sciences, Weligatta - New Town, Hambantota

Abstract

Eco-Packaging concepts have co-evolved with increasing the principles of sustainable development at various levels within organizational and industrial platforms. Green marketing activities play a major role in shifting consumer into purchasing green products. The objective of this study is to explore the preference and barriers of consumer to select Eco-package on purchasing. The pre-tested questionnaire survey was conducted in Kahathuduwa North GN division, Piliyandala, Sri Lanka with a sample of randomly selected 100 respondents. The collected data were analysed by using descriptive statistics. Most respondents (38 %) reported up to G.C.E Ordinary level education, 19% reported up to degree level, 21% of respondents up to G.C.E Advanced level and 8% possessed above degree level, 14% of respondents are belongs to below G.C.E Ordinary level education. When considering the demographic data, it has indicated that most of the respondents are belonged to below advanced level education. Most of the respondents were males (61%) and 39 % were female. When analyzing the consumer preferences, majority (62%) of respondents mentioned that they are not considering the package type while they are purchasing a product. Further 78% of respondents mentioned that they are not caring on Eco-package. Some of the respondents (49%) said that they cannot bear the cost of Eco-package and 22% of respondents mentioned that they are not having enough knowledge about Eco-package. In addition to that some respondents (17 %) mentioned that the reason is lack of availability of Eco-packaged products. Only very few (7%), (5%) of respondents mentioned that the reason is lack of information and difficult to handle respectively. Based on the results it is recommending for product making companies, environmentalists, researches, policy makers, marketing people and academics to find newly developed and low-cost Eco-package which can clearly identify and make aware among consumers and increase the available information about Eco-package.

Keywords: Consumer, Eco package, Purchasing behaviour

**Corresponding Author: jayanikaswijethunge@gmail.com*

PROSPECTIVE APPROACHES FOR A SUSTAINABLE AGRIBUSINESS SECTOR IN SRI LANKA - A REVIEW

T. A. H. P. Thilakarathne*

Department of Agricultural Economics and Extension, Faculty of Agriculture, University of Ruhuna, Matara, Sri Lanka

Abstract

Sri Lanka is a country with a massive potential of resources especially in the field of natural agricultural production. However, within a long period of time the contribution of agricultural production to GDP has been severely declined transforming the economy to a service-based country. Though it is a normal situation with comparing to the other countries in the world with the technological advancement and globalization, it is obvious that Sri Lanka's resource utilization and management processes in agricultural sector is far behind the line with other countries. This review was done to identify the available limitations in agribusiness sector in Sri Lanka and to develop the prospective strategic approaches related to agribusiness. Ultimate gaining of this study is to achieve a sustainable and strong agribusiness sector in Sri Lanka.

Keywords: Agribusiness in Sri Lanka, Agricultural innovation System, Agricultural information diffusion, IT in Agriculture

**Corresponding Author: hansikathilakarathne493@gmil.com*

NSATRS - 2020

University of Colombo

Institute for Agro-Technology and Rural Sciences,
Weligatta New Town, Hambantota,
Sri Lanka.