IMPROVING LIVES THROUGH AGRICULTURAL RESEARCH
HQ004/14

R & D in AGRICULTURE

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A Bulletin on Information Resources

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Improving Lives Through Agricultural Research

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R&D in Agriculture: a bulletin on information resources

AIMS AND SCOPE

The **R&D in Agriculture: a bulletin on information resources** aims to guide CARDI staff and other agricultural stakeholders in the Caribbean Community (CARICOM) and abroad to articles, journals, books, audio-visual materials, institutions and events on the following:

Commodities

- Roots & tubers (cassava, sweet potatoes)
- Cereals & grain legumes
- Hot peppers
- Fruits & vegetables
- Small ruminants

Thematic Areas

- Protected agriculture
- Emerging issues (agro-energy, herbals, organics)
- Soil & water management
- Risk management (climate change, invasive species)
- Germplasm
- Biotechnology
- Feeds and feeding systems

These are the priority commodities and thematic areas in the Medium-Term Plan (2011/2013) of the Caribbean Agricultural Research and Development Institute (CARDI). They were identified after consultation with our CARICOM member states and contribute to the implementation of the Jagdeo Initiative and the Regional Transformation Programme (RTP) for Agriculture.

Short bibliographic references to publications, brief descriptions of the research and services of relevant institutions, as well as lists of events are presented in this publication. Where possible a web address (URL) is provided so that readers may visit the webpage / website and access the full abstract, summary, document, or details for the acquisition of the resource.

Issues of this publication are available on our website, www.cardi.org, under the Publications section.

Frequency: 3 times a year - April, August, December

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COMMODITIES: ROOTS & TUBERS

CARDI/CFC/EU project - Increased Production of Roots and Tuber Crops in the Caribbean through the Introduction of Improved Marketing and Production Technologies

Caribbean Agricultural Research and Development Institute / Common Fund for Commodities / European Union (CARDI/CFC/EU) project reports:

Analysis of production and trade of selected root and tuber crops within the CARICOM Region, USA, Canada and the United Kingdom
Aziz Mohammed
2013. St Augustine, Trinidad and Tobago: Caribbean Agricultural Research and Development Institute (Technical report. PSC# HQ/021/13)
Available on CARDI Website http://www.cardi.org/cfc-rt/files/downloads/2013/11/Publ-24-Market-Analysis-RT-CARICOM-World-Aziz-M.pdf

Market profiles for selected root and tuber crops in Trinidad and Tobago
Aziz Mohammed
2013. St Augustine, Trinidad and Tobago: Caribbean Agricultural Research and Development Institute (Technical report. PSC# HQ/034/13/)
Available on CARDI Website http://www.cardi.org/cfc-rt/files/downloads/2013/11/Publ-25-Market-Profile-RT-crops-TT-Aziz-M.pdf

These CARDI/CFC/EU) project reports also available at
Caribbean Agricultural Research and Development Institute, P.O. Bag 212, Frederick Hardy Building, University of the West Indies, St. Augustine Campus, St Augustine, Trinidad and Tobago, W.I.
Tel: 1-868- 645-1205-7. **Fax:** 1-868-645-1208. **Email:** infocentre@cardi.org

CASSAVA:

Biodegradable active packaging based on cassava bagasse, polyvinyl alcohol and essential oils
Flávia Debiagi, Renata K.T. Kobayashi, Gerson Nakazato, Luciano A. Panagio, Suzana Mali
2014. Industrial Crops and Products 52: 664-670
Abstract
The objectives of this work were to develop biodegradable trays from cassava bagasse and polyvinyl alcohol (PVA) incorporated with clove (CEO) or oregano (OEO) essential oils, to study their antimicrobial activity and to investigate the effects of incorporating these essential oils on the mechanical properties, water absorption capacity (WAC) and sorption isotherms of the tray with the best antimicrobial activity. The trays were produced by baking 97.5% (w/w) cassava bagasse with 2.5% (w/w) PVA. CEO or OEO was added to the trays using two methods: direct incorporation (6.5 to 10.0%) and surface coating (2.5 to 7.5%). Trays with OEO prepared by surface coating showed the highest antimicrobial activity, as they were effective against molds, yeasts, and Gram-positive and Gram-

negative bacteria. The addition of OEO to the cassava bagasse-PVA matrix resulted in less resistant and more flexible trays, with a decrease in the water absorption and adsorption capacities. Keywords: Oregano essential oil; Clove essential oil; Trays; Baking
http://www.sciencedirect.com/science/article/pii/S0926669013006584

Strengthening the food basket of the Caribbean region: CARDI's contribution to the development of the cassava industry over the past three decade
P Titus, J Lawrence and N Reid
2013. St Augustine, Trinidad and Tobago: Caribbean Agricultural Research and Development Institute. rev edn.
http://www.cardi.org/wp-content/uploads/downloads/2014/03/CARDI-contribution-to-development-Cassava-industry-over-past-3-decades.pdf

COMMODITIES: CEREALS AND GRAIN LEGUMES

Aflatoxins - finding solutions for improved food safety
Laurian Unnevehr, Delia Grace (eds.)
2013. International Food Policy Research Institute (IFPRI)
http://www.ifpri.org/publication/aflatoxins-finding-solutions-improved-food-safety
http://www.ifpri.org/sites/default/files/publications/focus20.pdf

COMMODITIES: HOT PEPPERS

Whole-genome sequencing of cultivated and wild peppers provides insights into Capsicum domestication and specialization

Cheng Qin, et al.

2014. Proceedings of the National Academy of Sciences [PNAS] 111: 5135-5140

Abstract

As an economic crop, pepper satisfies people's spicy taste and has medicinal uses worldwide. To gain a better understanding of *Capsicum* evolution, domestication, and specialization, we present here the genome sequence of the cultivated pepper *Zunla-1* (*C. annuum* L.) and its wild progenitor *Chiltepin* (*C. annuum* var. *glabriusculum*). We estimate that the pepper genome expanded ~0.3 Mya (with respect to the genome of other Solanaceae) by a rapid amplification of retrotransposons elements, resulting in a genome comprised of ~81% repetitive sequences. Approximately 79% of 3.48-Gb scaffolds containing 34,476 protein-coding genes were anchored to chromosomes by a high-density genetic map. Comparison of cultivated and wild pepper genomes with 20 resequencing accessions revealed molecular footprints of artificial selection, providing us with a list of candidate domestication genes. We also found that dosage compensation effect of tandem duplication genes probably contributed to the pungent diversification in pepper. The *Capsicum* reference genome provides crucial information for the study of not only the evolution of the pepper genome but also, the Solanaceae family, and it will facilitate the establishment of more effective pepper breeding programs.

Keywords: de novo genome sequence; genome expansion; Solanaceae evolution

http://www.pnas.org/content/111/14/5135.full

http://www.pnas.org/content/111/14/5135.full.pdf+html

COMMODITIES: FRUITS & VEGETABLES

Cost:benefit analysis of botanical insecticide use in cabbage: Implications for smallholder farmers in developing countries Original Research Article

Blankson W. Amoabeng, Geoff M. Gurr, Catherine W. Gitau, Philip C. Stevenson

Crop Protection 57:71-76

Abstract

Botanical insecticides based on plant extracts are not widely used as crop protectants even though they can be produced simply from locally available plants. Many studies have examined efficacy but there is a paucity of information on the cost:benefit ratio of their use compared with conventional insecticides. In the present study, crude extracts of *Ageratum conyzoides* (Asterales: Asteraceae), *Chromolaena odorata* (Asterales: Asteraceae), *Synedrella nodiflora* (Asterales: Asteraceae), *Nicotiana tabacum* (Solanales: Solanaceae), and *Ricinus communis* (Malpighiales: Euphorbiaceae) were compared with the synthetic insecticide, emamectin benzoate (Attack®) against insect pests of cabbage in randomised, replicated field experiments during the major and minor rainy seasons of 2012 in Ghana. The cost of each treatment including material and labour was calculated and the revenue of each derived using the value of the marketable yield of cabbage. The cost:benefit ratios of sprayed treatments were derived by comparing the cost of each plant protection regime against the additional market value of the treatment yield above that obtained in the control treatment. With the exception of plots sprayed with *N. tabacum*, the cost of plant protection using Attack® was higher than any of the botanicals in both seasons. The highest cost:benefit ratio of 1: 29 was observed for plots sprayed with *C. odorata* and was followed closely by *N. tabacum* treatment with 1: 25 and Attack® with 1: 18. In the minor season, plots sprayed with Attack® had the highest cost:benefit ratio of 1: 15

and was followed closely by *N. tabacum* with 1: 14. Botanical insecticides differed markedly in levels of pest control and cost:benefit but some were comparable to that from conventional insecticide use whilst being produced easily from locally available plant materials and are likely to be safer to use for smallholder farmers and consumers in developing countries.
Keywords: Biopesticide; Yield; Economics; Ghana; Africa; *Plutella xylostella*
http://www.sciencedirect.com/science/article/pii/S0261219413002974

Molecular breeding to improve guava (Psidium guajava L.): Current status and future prospective

S. Nimisha, D. Kherwar, K.M. Ajay, B. Singh, K. Usha
2013. Scientia Horticulturae 164:578-588
Abstract
Guava (*Psidium guajava* L.) is often referred to as the apple of the tropics. It is a native of tropical America and has been naturalized in India. Being very hardy, it gives an assured crop even with very little care. The main objectives of guava breeding are aimed at improving both plant and fruit characteristics such as to develop high yielding, high quality dwarf varieties with fruits of uniform shape, good size, attractive skin and pulp colour, fewer seeds and or soft seeds, resistant to wilt, long storage life, suitable for table and processing purposes and to evolve wilt resistant and dwarfing rootstocks. Conventional breeding has helped to a limited extent and it is high time that biotechnological tools are explored and exploited either alone or in combination with conventional breeding to improve the crop productivity and to address challenge of improving fruit quality, and tolerance to a biotic and biotic stresses. Success of molecular breeding however, depends largely on available genomic resources which could be exploited for marker aided selection (MAS) and for genetic transformation of non food traits. Guava genomic resources are however scarce and inhibit researchers from exploiting biotechnology tools for the development of improved guava varieties. An effort has been made in this paper to collate and critically analyse the status of genomic advances in guava and their potential application for improving quality and productivity of this important fruit crop.
Keywords: Guava; *Psidium guajava*; Molecular marker; Breeding; Genomics
http://www.sciencedirect.com/science/article/pii/S0304423813005438

COMMODITIES: CROPS – CROP PROTECTION

Obstacles to integrated pest management adoption in developing countries

Soroush Parsa, et al.
2014. Proceedings of the National Academy of Sciences of the United States of America 111:3889-3894
Abstract

Despite its theoretical prominence and sound principles, integrated pest management (IPM) continues to suffer from anemic adoption rates in developing countries. To shed light on the reasons, we surveyed the opinions of a large and diverse pool of IPM professionals and practitioners from 96 countries by using structured concept mapping. The first phase of this method elicited 413 open-ended responses on perceived obstacles to IPM. Analysis of responses revealed 51 unique statements on obstacles, the most frequent of which was "insufficient training and technical support to farmers." Cluster analyses, based on participant opinions, grouped these unique statements into six themes: research weaknesses, outreach weaknesses, IPM weaknesses, farmer weaknesses, pesticide industry interference, and weak adoption incentives. Subsequently, 163 participants rated the obstacles expressed in the 51 unique statements according to importance and remediation difficulty. Respondents from developing countries and high-income countries rated the obstacles differently. As a group, developing-country respondents rated "IPM requires collective action within a farming community" as their top obstacle to IPM adoption. Respondents from high-income countries prioritized instead the "shortage of well-qualified IPM experts and extensionists." Differential prioritization was also evident among developing-country regions, and when obstacle statements were grouped into themes. Results highlighted the need to improve the participation of stakeholders from developing

countries in the IPM adoption debate, and also to situate the debate within specific regional contexts. http://www.pnas.org/content/111/10/3889.full

Systems approaches to innovation in crop protection. A systematic literature review

Marc Schut, Jonne Rodenburg, Laurens Klerkx, Aad van Ast, Lammert Bastiaans
2014. Crop Protection 56:98–108

Abstract
The objective of this paper is to explore the extent to which systems approaches to innovation are reflected in the crop protection literature and how such approaches are used. A systematic literature review is conducted to study the relation between crop protection and systems approaches to innovation in 107 publications. The analysis of the crop protection literature demonstrates that only a small fraction is systems-oriented as compared to the bulk of publications with a technology-oriented approach. The analysis of agricultural innovations systems literature shows that, although crop protection is addressed, the potential of this systems approach remains largely unexplored for crop protection innovation. A large share of the publications included in this review focus on cropping or farming 'systems' while 'innovation' often equals the development, transfer, adoption and diffusion of crop protection technologies at farm level. There is relatively little attention for the institutional and political dimensions of crop protection and the interactions between farm, regional and national levels in crop protection systems. The traditional division of roles and responsibilities of researchers as innovators, extension personnel as disseminators, and farmers as end-users, is challenged only to a limited extent. The majority of publications discusses ways to optimise existing features of crop protection systems, without exploring more structural transformations that may be required to enhance the resilience of crop protection systems.
Keywords: Development, transfer, adoption and dissemination or diffusion of technology; Farming systems research (FSR); Agricultural knowledge and information systems (AKIS); Agricultural innovation systems (AIS)
http://www.sciencedirect.com/science/article/pii/S0261219413002950

COMMODITIES: LIVESTOCK

A monitoring and evaluation framework to assess the performance of innovation platforms in the context of livestock value chains

K Swaans, R Puskur, H Taye and A G Haile
2013. Nairobi, Kenya: International Livestock Research Institute (ILRI)
ILRI Discussion Paper 24

Abstract
Growing local and informal markets in Asia and Africa provide both challenges and opportunities for small holders. In developing countries, market failures often lead to suboptimal performance of the value chains and limited and inequitable participation of the poor. In recent years, innovation platforms have been promoted as mechanisms to stimulate and support multistakeholder collaboration in the context of research for development. They are recognized as having the potential to link value chain actors, and enhance communication and collaboration to overcome market failures. Despite the increased use of innovation platforms in research for development projects and programs, a monitoring and evaluation framework that encompasses the dynamic nature of innovation systems and value chains is not available. In this paper, the authors aim to develop a monitoring and evaluation framework for understanding and assessing the performance of innovation platforms in the context of pro-poor value chains, based on a discussion of various approaches.
https://cgspace.cgiar.org/bitstream/handle/10568/35054/DiscussionPaper24.pdf?sequence=6

CARDI/ Common Fund for Commodities / Caribbean Development Bank / Governments of Trinidad and Tobago and Jamaica "Diversification of the Caribbean Livestock Sector through the Production of Small Ruminants" project

The Small Ruminant Industry in CARICOM countries with particular reference to Jamaica and Trinidad & Tobago

Ansari Hosein, Compton Paul, Cheryl Roach-Benn, John Borely, Marcia Blair Thomas and Albert Fearon 2013. St Augustine, Trinidad and Tobago: Caribbean Agricultural Research and Development Institute. (Project report. PSC # TT/001/14)

Available on CARDI Website http://www.cardi.org/wp-content/uploads/downloads/2014/02/The-SR-Industry-in-CARICOM-with-particular-reference-to-Trinidad-and-Tobago.pdf

CARDI/CFC/EU) project reports also available at

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SMALL RUMINANTS:

Effect of feeding differently processed sweet sorghum (*Sorghum bicolor* L. Moench) bagasse based complete diet on nutrient utilization and microbial N supply in growing ram lambs.

N N Kumari., Y R Reddy, M Blummel, D Nagalakshmi, T Monika, B V S Reddy, A A Kumar
2014. Small Ruminant Research 117:52-57

Abstract

This study was carried out to identify appropriate processing method for efficient utilization of sweet sorghum bagasse (SSB), an agro-industrial by product of ethanol industry after blending with concentrate. SSB based complete diet with roughage to concentrate ratio of 50:50 was processed into mash (SSBM), expander extruded pellet (SSBP), chop form (SSBC) and evaluated in comparison to sorghum stover based complete diet in mash form (SSM). Twenty four Nellore X Deccani ram lambs (9 month age; 21.1 ± 0.57 kg body weight) were randomly divided into four groups of six animals each and the experimental complete diets were allotted at random to each group and evaluated for their intake, nutrient utilization and microbial N supply. Among all the groups, the average dry matter (DM) intake (g/kg w0.75), digested DM, organic matter and crude protein were higher ($P < 0.01$) in lambs fed SSBP diet. The cellulose digestibility was higher ($P < 0.05$) in lambs fed SSBP diet than those fed SSM and SSBC diets. Intake of digestible crude protein (DCP, g/d) and metabolizable energy (MJ/d) were higher ($P < 0.01$) in lambs fed SSBP diet. The SSBP diet had higher ($P < 0.01$) DCP and N ($P < 0.05$) balance compared to other three diets. Increased ($P < 0.01$) purine derivatives and microbial N supply was observed in processed diets. Expander extrusion of SSB based complete diet resulted in improved ($P < 0.01$) efficiency of microbial protein synthesis. It is concluded that, when SSB was processed into complete diets, in terms of nutrient utilization and microbial N supply, the expander extruded pellet diet was better utilized than chopped or mash form by the growing ram lambs.

Keywords: Sweet sorghum bagasse, Complete diet, Nutrient utilization, Microbial N supply, Lambs

http://www.smallruminantresearch.com/article/S0921-4488%2813%2900394-5/abstract

Goat production and commercialization: Paravet manual
Costa Pereira, G., Boogaard, B., Cosijn, M., Hendrickx, S., Maheme, A. and Maute, F.
2013. Nairobi, Kenya: ILRI and Maputo, Mozambique: CARE.
This manual was developed to help community animal health workers or paravets to transmit important information on goat production and commercialization to goat keepers.
Topics: How to recognize disease; Causes of disease; Parasites; The goat shelter; Feeding; Pasture management; Reproductive management; Commercialization
https://cgspace.cgiar.org/bitstream/handle/10568/35202/GoatProductionManual.pdf?sequence=1

GERMPLASM

Using crop diversity to adapt to climate change: highlighting the importance of the Plant Treaty policy support.
M Halewood; P Mathur; C Fadda; G Otieno
2013. Rome, Italy: Bioversity International
Policy papers
"This brief highlights efforts in East Africa and in Asia, Pacific and Oceania, supported by two internationally funded projects, to develop user-friendly tools and methods to identify germplasm of populations/varieties/species that are adapted to the changing climates of areas where farmers' cropping systems are already under stress. The brief also highlights the importance of the Plant Treaty's policy support for these activities."
http://www.bioversityinternational.org/e-library/publications/detail/using-crop-diversity-to-adapt-to-climate-change-highlighting-the-importance-of-br-the-plant-trea/
PDF of policy paper:
http://www.bioversityinternational.org/uploads/tx_news/Using_crop_diversity_to_adapt_to_climate_change_highlighting_the_importance_of_the_plant_treaty_s_poilicy_support_1647_01.pdf

THEMATIC AREAS: PROTECTED AGRICULTURE

GENERAL:

Development of a drip fertigation system for protected horticulture on sloping land
Hiroki Kawashima
2013. JARQ: Japan Agricultural Research Quarterly 47:171-174
Abstract
A drip fertigation system was developed to improve vegetable production in sloping greenhouses. The system comprised a control unit, fertilizer injection unit, feed tank, feed pump, feed valves, and nutrient reservoir, which are also used in flatland drip fertigation systems. These components were placed in the upper part of a sloping greenhouse, and dripper lines with diaphragms were installed on longitudinal ridges. However, it resulted in unbalanced irrigation along the slope because when the irrigation was complete, the nutrient solution and water remaining in the dripper lines flowed out of drippers in the lower part of the dripper lines due to gravity. This problem was solved using a newly developed system, featuring a drainpipe and drain valve installed at the lower end of the dripper lines. On completing fertigation, the drain valve, which had been closed during the irrigation, was opened. The nutrient solution and remaining water in the dripper lines then immediately flowed into the drainage reservoir via gravity and not onto the field.
Keywords: drain valve, dripper line, nutrient solution, unbalanced irrigation
https://www.jircas.affrc.go.jp/english/publication/jarq/47-2/47-02-05.pdf

CARDI/CFC/EU project - Increased Production of Vegetables and Herbs through the Use of Protected Agriculture (PA) in the Caribbean

Caribbean Agricultural Research and Development Institute / Common Fund for Commodities / European Union (CARDI/CFC/EU) project reports:

CFC Protected Agriculture project documents http://www.cardi.org/cfc-pa/documents-for-download/?category=125

Tropical Greenhouse growers manual for the Caribbean
Anthony DeGannes, Kamau Ra Heru, Aziz Mohammed, Compton Paul, Jervis Rowe, Lennox Sealy and Govind Seepersad
2014. St Augustine, Trinidad and Tobago: Caribbean Agricultural Research and Development Institute (Manual. PSC# JA/005/12)
Available on CARDI Website
http://www.cardi.org/cfc-pa/files/downloads/2014/01/TROPICAL-GREENHOUSE-GROWERS-MANUAL.pdf

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THEMATIC AREAS: SOIL AND WATER MANAGEMENT

Conservation agriculture and ecosystem services: An overview
Cheryl Palm, Humberto Blanco-Canqui, Fabrice DeClerck, Lydiah Gatere, Peter Grace.
2013. Agriculture, Ecosystems & Environment. Available online 16 November 2013. In Press, Corrected Proof [**Corrected proofs** are Articles in Press that contain the authors' corrections. Final citation details, e.g., volume/issue number, publication year and page numbers, still need to be added and the text might change before final publication.]
Abstract
Conservation agriculture (CA) changes soil properties and processes compared to conventional agriculture. These changes can, in turn, affect the delivery of ecosystem services, including climate regulation through carbon sequestration and greenhouse gas emissions, and regulation and provision of water through soil physical, chemical and biological properties. Conservation agriculture can also affect the underlying biodiversity that supports many ecosystem services. In this overview, we summarize the current status of the science, the gaps in understanding, and highlight some research priorities for ecosystem services in conservational agriculture. The review is based on global literature but also addresses the potential and limitations of conservation agriculture for low productivity, smallholder farming systems, particularly in Sub Saharan Africa and South Asia. There is clear evidence that topsoil organic matter increases with conservation agriculture and with it other soil properties and processes that reduce erosion and runoff and increase water quality. The impacts on other ecosystem services are less clear. Only about half the 100+ studies comparing soil carbon sequestration with no-till and conventional tillage indicated increased sequestration with no till; this is despite continued claims that conservation agriculture sequesters soil carbon. The same can be said for other ecosystem services. Some studies report higher greenhouse gas emissions (nitrous oxide

and methane) with conservation agriculture compared to conventional, while others find lower emissions. Soil moisture retention can be higher with conservation agriculture, resulting in higher and more stable yields during dry seasons but the amounts of residues and soil organic matter levels required to attain higher soil moisture content is not known. Biodiversity is higher in CA compared to conventional practices. In general, this higher diversity can be related to increased ecosystem services such as pest control or pollination but strong evidence of cause and effect or good estimates of magnitude of impact are few and these effects are not consistent. The delivery of ecosystem services with conservation agriculture will vary with the climate, soils and crop rotations but there is insufficient information to support a predictive understanding of where conservation agriculture results in better delivery of ecosystem services compared to conventional practices. Establishing a set of strategically located experimental sites that compare CA with conventional agriculture on a range of soil-climate types would facilitate establishing a predictive understanding of the relative controls of different factors (soil, climate, and management) on ES outcomes, and ultimately in assessing the feasibility of CA or CA practices in different sites and socioeconomic situations.

The feasibility of conservation agriculture for recuperating degraded soils and increasing crop yields on low productivity, smallholder farming systems in the tropics and subtropics is discussed. It is clear that the biggest obstacle to improving soils and other ES through conservation agriculture in these situations is the lack of residues produced and the competition for alternate, higher value use of residues. This limitation, as well as others, point to a phased approach to promoting conservation agriculture in these regions and careful consideration of the feasibility of conservation agriculture based on evidence in different agroecological and socioeconomic conditions.

Keywords: Carbon sequestration; Greenhouse gas emissions; Soil quality; Soil biodiversity; Tillage; Residue management

http://www.sciencedirect.com/science/article/pii/S0167880913003502

THEMATIC AREAS: NATURAL RESOURCE MANAGEMENT

Innovation platforms to support natural resource management

M Misiko, P Mundy and P Ericksen

2013. Nairobi, Kenya: International Livestock Research Institute (ILRI)

Innovation Platforms Practice Brief 11

http://cgspace.cgiar.org/bitstream/handle/10568/34165/Brief11.pdf?sequence=1

CLIMATE CHANGE:

Climate-resilient horticulture: adaptation and mitigation strategies

Harish Chandra Prasad Singh, Nadipynayakanahally Krishnamurthy Sriniv Rao, Kodthalu Seetharamaiah Shivashankar (eds.)

2013. New Delhi, India: Springer. 302p.

Chapters

1.Adaptation and Mitigation Strategies for Climate Resilient Horticulture.- 2.Impacts of climate change on horticulture across India.- 3.Modeling climate change impacts, adaptation strategies and mitigation potential in horticultural crops.- 4.Impact of abiotic stresses on horticulture and strategies for mitigation in North Eastern India.- **5.Impact, adaptation and mitigation strategies for climate resilient banana production**.- **6.Harmonious phenological data: A basic need for understanding the impact of climate change on mango.**- 7.Effect of Climate Change on Grape and its Value Added Products.- 8.Climate resilient adaptation strategies for litchi production.- 9.Impact of Climate Change on Mountain Horticulture.- 10.Development of Vegetable Hybrids for Climate Change Scenarios.- 11.Genetic enhancement of Tomato crop for abiotic stress tolerance.- 12.Impact of climate change on potato.- 13.Adaptation options for sustainable production of cucurbitaceous vegetable under climate change situation.- 14.Phenotyping horticultural crops for abiotic stress tolerance.- 15.Significance of Grafting in Improving Tolerance to Abiotic Stresses in Vegetable Crops Under Climate Change Scenario.- 16.

Plantation crops response to climate change: coconut perspective.- 17.Impact of climate change on cashew and adaptation strategies.- 18.Adaptation and mitigation strategies for climate resilient oil palm.- 19.Floriculture a viable option of diversification in the light of climate change.- 20.Strategies for soil carbon sequestration through horticultural crops.- 21.Effect of climate change on fruit and vegetable quality.- 22.Urban Landscapes and Carbon sequestration in climate changing scenario.- 23.Impact of Climate change on insect vectors and vector borne plant viruses and phytoplasma.- 24.Pest Dynamics and Potential Emergence of New Biotypes under Climate Change Scenario in Horticultural Crops.- 25.Use of degree-days and plant phenology – A reliable tool for predicting insect pest activity under climate change conditions.- 26.Plant-pollinator interactions: A highly evolved synchrony at risk due to climate change.
http://www.springer.com/life+sciences/agriculture/book/978-81-322-0973-7?cm_mmc=Google-_-Book+Search-_-Springer-_-0&otherVersion=978-81-322-0974-4
Read on SpringerLink http://link.springer.com/book/10.1007%2F978-81-322-0974-4

Monitoring adaptation to enhance food security: A survey of approaches and best practice

S Chesterman, P Ericksen

2013. Copenhagen, Denmark: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). CCAFS Working Paper no. 51

Abstract

As adaptation to climate change is a major theme for CCAFS, the programme needs a method for monitoring and evaluating interventions intended to foster adaptation and enhance adaptive capacity across food systems. This report explored current approaches to monitoring and evaluation of climate change adaptation projects and specifically how food security outcomes are being addressed. It emerged that monitoring and evaluation of adaptation projects is fairly new, and most documents outline frameworks rather than report on specific experiences. This was particularly true for food security per se, which was not an explicit focus of many of the adaptation projects that were assessed. This made it difficult to summarize best practice and to describe the most reliable indicators for assessing impacts of adaptation interventions on food security outcomes. Consequently, in line with recent discussions within CCAFS about the goals of using monitoring and evaluation to foster adaptive management and social learning the approach was shifted toward an outcome-oriented focus. This promotes active learning from monitoring and evaluation as the programme activities are implemented. The six key recommendations reflect these new discussions:

- Agree on a common framework or outcome pathway with clear and agreed outcomes. A common framework keeps all stakeholders focused on the desired outcomes, as well as the best approach to evaluating successful adaptation.
- Use scenarios to handle the necessary planning under uncertainty, combined with ex-ante assessments of adaptation investments and interventions to identify robust strategies.
- Engage in on-going monitoring using a clear "logic" model to track progress of the "robust strategies" on the ground. Ensure that the logic model is explicit about what constitutes successful adaptation for the outcome pathway.
- Take a learning approach to monitoring and evaluation with "stakeholders" at multiple institutional levels.
- Encourage data sharing across projects doing monitoring and evaluation of adaptation – there is a growing consensus around priority interventions and we have evidence about the success and impact of agriculture and food security interventions on key outcomes.
- Develop and use a tool for managing or evaluating impact given inevitable tradeoffs among food system outcomes.

Keywords: Adaptation; food security indicators

http://cgspace.cgiar.org/bitstream/handle/10568/33720/WorkingPaper51.pdf?sequence=1
http://ccafs.cgiar.org/publications/monitoring-adaptation-enhance-food-security-survey-approaches-and-best-practice

OTHER AGRICULTURAL ASPECTS

EDUCATION:

FAO's e-learning courses on food security:
http://www.foodsec.org/dl/elcpages/food-security-courses.asp?pgLanguage=en&leftItemSelected=food-security-courses

- Resilience in Food Security Analysis
- Climate Change and Food Security
- Introduction to Social Safety Nets
- Integrated Food Security Phase Classification (version 1.1)
- Communicating for Food Security
- Markets Assessment and Analysis
- Targeting
- Vulnerability Assessment and Analysis
- Food Security Policies - Formulation and Implementation
- Food Security Concepts and Frameworks
- Livelihoods Assessment and Analysis
- Collaboration and Advocacy Techniques
- Baseline Food Security Assessments
- Availability Assessment and Analysis
- Nutritional Status Assessment and Analysis
- Food Security Information Systems and Networks

FARM MANAGEMENT:

Are Profit and Profitability the Same Thing?
Edward Evans
2014. Food and Resource Economics Department, UF/IFAS Extension
EDIS document FE939
Introduction
The terms "profit" and "profitability" are used quite frequently in everyday talk to mean the same thing. We often hear someone say "my business made a profit last year" or "my business was profitable." But are the two statements equivalent? Does making a profit automatically mean that the business is profitable? The simple answer is no; the two statements are not necessarily equivalent. True, the definition of "profitable" means yielding a "profit," but the two words are quite different. For example, let us consider my conversation with an avocado grower who wanted to know how many trees per acre he could remove from his orchard and still make a profit if his orchard were affected by laurel wilt disease. My answer was, "You can remove several trees and still make a profit, but you can remove only a few if your operation is to remain profitable." He looked puzzled, so I explained what I meant. In this article, I'll explain again in greater depth, taking a closer look at the two terms, outlining the difference between them, and discussing a few things that growers can do to improve the profitability of a farm business
http://edis.ifas.ufl.edu/pdffiles/FE/FE93900.pdf
http://edis.ifas.ufl.edu/fe939

INFORMATION AND COMMUNICATION:

CGIAR Open Access and Data Management Policy (the "Policy") Approved by CGIAR Consortium Board, October 2, 2013

2013. Consultative Group on International Agricultural Research (CGIAR)
http://library.cgiar.org/bitstream/handle/10947/2875/CGIAR%20OA%20Policy%20-%20October%202%202013%20-%20Approved%20by%20Consortium%20Board.pdf?sequence=1

INNOVATION PLATFORMS:

Innovation Platforms Practice Briefs by International Livestock Research Institute (ILRI):

Research and innovation platforms. Lema, Z. and Schut, M. 2013. Innovation Platforms Practice Brief 3. Nairobi, Kenya: ILRI.
http://cgspace.cgiar.org/bitstream/handle/10568/34158/Brief3.pdf?sequence=6

Power dynamics and representation in innovation platforms. Cullen, B., Tucker, J. and Homann-Kee Tui, S. 2013. Innovation Platforms Practice Brief 4. Nairobi, Kenya: ILRI.
http://cgspace.cgiar.org/bitstream/handle/10568/34166/Brief4.pdf?sequence=1

Monitoring innovation platforms. Lundy, M., Le Borgne, E., Birachi, E., Cullen, B., Boogaard, B., Adekunle, A. and Victor, M. 2013. Innovation Platforms Practice Brief 5. Nairobi, Kenya: ILRI.
http://cgspace.cgiar.org/bitstream/handle/10568/34159/Brief5.pdf?sequence=1

Communication in innovation platforms. Victor, M., Ballantyne, P.G., Le Borgne, E. and Lema, Z. 2013. Innovation Platforms Practice Brief 7. Nairobi, Kenya: ILRI.
http://cgspace.cgiar.org/bitstream/handle/10568/34161/Brief7.pdf?sequence=1

Developing innovation capacity through innovation platforms. Birgit Boogaard (ILRI), Iddo Dror (ILRI), Adewale Adekunle (FARA), Ewen Le Borgne (ILRI), Andre van Rooyen (ICRISAT) and Mark Lundy (CIAT). 2013. ILRI/CGIAR Brief no. 8.
http://cgspace.cgiar.org/bitstream/handle/10568/34162/Brief8.pdf?sequence=1

Linking action at different levels through innovation platforms. Tucker, J., Schut, M. and Klerkx, L. 2013. Innovation Platforms Practice Brief 9. Nairobi, Kenya: ILRI.
http://cgspace.cgiar.org/bitstream/handle/10568/34163/Brief9.pdf?sequence=1

Facilitating innovation platforms by Rooyen, A. van, Swaans, K., Cullen, B., Lema, Z. and Mundy, P. 2013. Innovation Platforms Practice Brief 10. Nairobi, Kenya: ILRI.
http://cgspace.cgiar.org/bitstream/handle/10568/34164/Brief10.pdf?sequence=1

Impact of innovation platforms. Duncan, A.J., Le Borgne, E., Maute, F. and Tucker, J. 2013. Innovation Platforms Practice Brief 12. Nairobi, Kenya: ILRI.
http://cgspace.cgiar.org/bitstream/handle/10568/34271/Brief12.pdf?sequence=1

VALUE CHAINS:

Innovation platforms for agricultural value chain development

Birachi, E., Rooyen, A. van, Some, H., Maute, F., Cadilhon, J., Adekunle, A. and Swaans, K. 2013. Nairobi, Kenya: International Livestock Research Institute (ILRI)
Innovation Platforms Practice Brief 6.
http://cgspace.cgiar.org/bitstream/handle/10568/34160/Brief6.pdf?sequence=1

Revolutionising finance for agri-value chains

Centre for Agricultural and Rural Cooperation (CTA)
Brussels Development Briefings http://brusselsbriefings.net/
2014. Held on 5 March 2014
Topics: Finance as a key driver for value chain development; Concept of agricultural value chain finance; New opportunities for financiers; New context of value chain finance in Africa – including the development of ICTs that support innovative applications.
You can view recorded sessions at:
http://www.ustream.tv/channel/cta-brussels-briefings
http://www.ustream.tv/recorded/44537858

- **Finance innovations combining ICT's and warehouse receipts** by David Ruchiu, Africa Director, Farm Concern International, Kenya, paper presented at **Revolutionising finance for agri-value chains**. Brussels Development Briefings, 5 March 2014
You can view recorded sessions at:
http://www.ustream.tv/channel/cta-brussels-briefings
http://www.ustream.tv/recorded/44537858