Research for the Development of PICs Breadfruit Industry Workshop

The Workshop on research for the development of Pacific island countries breadfruit industry was held at the Tanoa Tusitala Hotel on the 26th to 27th April 2012. Pacific Agribusiness Research for Development Initiative (PARDI) in collaboration with the Australian Centre for International Agriculture Research (ACIAR) and the Scientific Research Organization of Samoa (SROS) through this workshop allowed breadfruit research workers from the region, USP and external experts to review the present research and development activities for the Pacific. The overall aim of this workshop was to determine priorities for future research and value chain activities to further progress the sustainable development and value of the breadfruit industry.

The breadfruit (Artocarpus altilis) has been identified as one of the horticulture tree crops that have a potential to become a major export industry for some of the Pacific Islands, including Samoa. Recent assessments however have revealed the dearth of relevant scientific research and economic data relating to productivity, value adding and market acceptability of breadfruit to realize this potential for a profitable and sustainable industry.
Breadfruit is an easily grown, hardy food tree that has been propagated by village farmers for centuries. South Pacific Island communities currently grow their breadfruit in a non-systematic way in village spaces or in food gardens. Breadfruit is a popular food crop in the Pacific with a positive carbon footprint and the capacity to contribute significantly to rural income.

Markets for breadfruit exist in Australia, New Zealand and US; however, the volume and reliability of supply by the South Pacific Islands is not sufficient to meet market demand. There is significant potential to tap into and benefit from these markets once the industry develops a consistent and quarantine approved supply of breadfruit.

Some of the goals and activities of the breadfruit projects which was shared and agreed upon by participants during the workshop was: first, to identify varieties that will enable year-round production and develop systems for their propagation; second, to develop best practices for the establishment and management of small-scale commercial breadfruit orchards; and thirdly, to establish harvesting and post-harvest systems to meet export market requirements such as establishing harvesting and post-harvest trials to determine the best practice to maximize quality and shelf life.

Some of the aims discussed by participants was to have breadfruit small holders and exporters working together efficiently to meet a growing international demand for breadfruit. It is also anticipated that the project will provide the needed stimulus for the commercial processing of breadfruit. In particular the Pacific Island farmers are likely to: be part of networks with access to reliable and productive plant material; have established orchards ranging from 50-100 trees to supply export markets and local processing enterprises; be able to make informed decisions on the potential of investing in breadfruit orchards as an income generating enterprise; and follow best practice post-harvest handling systems.
The Food and Agriculture Organization (FAO) has been urged to take on the new and emerging challenges relating to the adverse effects of climate change and the frequent devastating natural disasters in the Asia and the Pacific region. This was one of the major recommendations made at the Ministerial-level session of the 31st FAO regional conference for the region held in Hanoi, Vietnam from 12th – 16th March 2012.

A total of 19 Ministers and 8 Vice-Ministers responsible for agriculture participated in the ministerial-level session held after the senior officers meeting. Delegates from Samoa, Tonga, Fiji, Kiribati, Palau, Cook Islands, Vanuatu, Solomon Islands and PNG also participated.

The ministers and high-level delegates highlighted the many challenges countries faced in achieving food and nutrition security for all people of the region and underscored the recommendations of the senior officers meeting held earlier.

They particularly highlighted the new and emerging challenges relating to climate change and natural disasters occurring more frequently in the region and requested FAO to provide more support in meeting these challenges.

The ministers and delegates also stressed the need to increase agricultural production and productivity, and to facilitate transparent, open and efficient trade of food to accelerate progress towards food security in the region.

They supported the strategic thinking process initiated by the FAO Director-General and ongoing efforts to implement further decentralization reforms, while emphasizing the importance of focusing the work of FAO on key challenges faced by countries so as to achieve measurable progress through the effective and efficient use of available resources in line with FAO’s comparative advantages.

They highlighted the importance of strengthening collaboration with partner organizations at global, regional and national levels, including with research institutions, multilateral development institutions, civil society organizations, private sector, and other international and regional development and knowledge organizations. The value of increased South-South cooperation was particularly highlighted.

While recognizing many common challenges and needs in the region, the conference stressed that countries in the region faced a range of challenges and had varying needs. In this respect, the ministers and delegates emphasized the importance of developing sound and focused country programming frameworks, through participatory consultative processes, to effectively identify priority needs and corresponding assistance requested.

FAO’s Assistant Director-General and Regional Representative for Asia and the Pacific, Mr Hiroyuki Konuma, said the decisions and recommendations adopted by the conference will certainly serve as a solid foundation for both the conference as well as FAO to formulate future priorities, programmes and actions for policy advice and technical assistance to member states. These recommendations will also serve as important inputs for finalizing the Multi-year Programme of World 2012-15 for the FAO regional conference for Asia and the Pacific, and in undertaking priority actions for the Programme of Work and Budget 2012-13 including areas of priority actions for the following biennium 2014-15.
Maluafou College took first place in the science fare for secondary schools in the senior and junior divisions. The projects were to create natural energy for gas or electricity. For their senior project Maluafou student’s project was turning pig manure into biofuel while the students in the junior division did a project on solar energy.

Using pigs from the USP-IRETA farm the students set up a display and demonstrated how biogas is produced from pig manure. The production process is to first take the manure from the pig pen and place it in a digester which is an airtight container/tank/brick chamber underground in which bacteria digest and breaks it down. What comes out is biogas which can be used as fuel for cooking or lighting using gas lamps.

The benefits include minimal costs and labour input as biogas can produce electricity for homes and replace firewood and fossil fuels used for cooking that are becoming more expensive as supply lags behind demand. After the waste is used for biogas the solid fertilizer is excellent organic manure for crop production.

The Ministry of agriculture and fisheries who also assisted the students with their project has built a digester through the Samoa-China project to carry out this process and have carried out trainings for farmers as well.
GMO safety issues based on science

In Australia, CSIRO researchers took a gene from a kidney bean, which produced a certain pesticide, and inserted it into peas to kill the pea weevil. The researchers did an allergic-type test on mice that no other GMO food crop developer had done before.

When they exposed mice to the proteins from the kidney beans, it caused no reaction. They expected the same to happen when mice were exposed to the "same" protein produced by the transgene inside the peas. In fact, the amino acid sequence was identical in both proteins as the one produced by both the bean and the pea. But the mice developed an inflammatory response to the protein produced in the GMO peas. It was an immune type response that was very dangerous, suggesting that the peas might create a deadly anaphylactic shock or other types of immune or inflammatory reactions in humans.

To understand why the GMO pea caused the severe allergy problems, the researchers looked very carefully at the protein structure and found that the sugars that had attached had a slightly changed pattern. They said it was the slightly changed pattern of the sugars that made the peas harmful. The problem is that the potentially deadly GM peas had already passed all the allergy tests that are normally used to get GM foods on the market. The only reason they were stopped was because the crop developer had chosen to use a mice study that had never been used on any other GM food crop. This shows that the regulatory system, as practiced, is a failure, and may be letting deadly allergens on the market. To the credit of the CSIRO they discontinued bringing the GMO pea to the point where it would be grown commercially. (Prescott 2005)

GMO effect on Mothers and Children

The greatest concern for humans is that the toxin from pesticide producing GMOs can be found in bloodstream of women and their unborn children. A Canadian study published in the scientific journal, Reproductive Toxicology, found the pesticide toxin from GMO crops in the blood samples of women and their unborn babies. The GMO toxin was found in 93 percent of maternal blood samples and of greater concern in 80 percent of fetal blood samples. These women were eating the typical Canadian diet. (Aris and Leblanc 2011)

Given the evidence of the changes to the offspring of animals fed a GMO diet, this Canadian study should be the cause of great concern amongst health professionals and regulators to ensure that the GMO foods that are currently being consumed are not doing damage to our future generations.
One of the most concerning issues is the negative effects that occur in the offspring of rats and mice that are fed GM diets. These effects include increased infant mortality, reduced litter sizes and reduce body weights of the offspring.

In experimental trials male and female mice were fed GM soy and then mated. The early stage embryos (4-8 cells) showed a temporary decrease in gene expression. This was not found in embryos whose parents ate natural non-GM soy. (Oliveri 2006)

There is strong body of science that shows that subtle changes to gene expression in embryos can cause permanent negative effects in the development of offspring.

A Russian rat study conducted by Dr Irina Ermakova and colleagues found that offspring of rats fed in GM soy had higher levels of mortality than rats fed with non GMO soy. (Ermakova 2006)

The scientists noted that babies of the rats that were fed GMO diets developed at slower rate, had lower weights and looked markedly different than the babies of rats that were fed non GMO diets.

Ermakova and her colleagues found that when they mated the offspring from the GM group, that they did not conceive. This is a serious concern that needs to be fully investigated with more scientific research.

One of the possible causes for the developmental differences and the lack of fertility in the offspring of mice that are fed GMOs is that several studies have found that GMO diets cause structural changes to the testicles.

A study published in the European Journal of Histo-chemistry found that testicles of mice fed GM soy had altered structures and function which influenced sperm development. (Vecchio 2004)
USP Alafua kicked off the first debates of the year on Tuesday, 17th of April with two teams debating on the topic “Socialism is the most suitable governmental system in the Pacific region”. With team yellow led by Ioane Malaki taking the affirmative side and team Red led by Ken Lameta on the negative side. The winner from this debate was team yellow.

The second debate was on the topic “Democratic Governments have greater economic stability for Pacific Island Countries” between team blue led by Falaniko Amosa who took the affirmative argument while team green led by Sonny Lameta took the negative argument who were also the winners of this debate.

On Friday 27th April, team yellow and team green the winners from the previous two debates came together to debate the topic “It is Defensible for Pacific Island Country’s to restrict the Freedom of Speech”. This time team yellow came out as the winners of the SAFT final debate. The team yellow will represent USP Alafua at the Faculty of Business and Economics (FBE) Debates in Suva, Fiji in May 2012.
Speaking at the closing of a workshop on scoping new livestock research opportunities in PNG held at NARI headquarters last week, Director General Dr Raghunath Ghodake noted that not much has been done in terms of research and development in this sector.

“We have been really struggling in livestock research and development in the country over the last 10 - 15 years despite of its importance” Dr Ghodake said.

Dr Ghodake called on all partners of the proposed project to work together to improve livestock services in the country.

The sector makes significant contributions to the livelihoods of more than 600,000 smallholders, mainly through subsistence and small commercial production of pigs and poultry, with cattle, small ruminants and inland aquaculture playing an increasing role. However, there are a number of constraints limiting the people from benefiting from these enterprises and efforts are urgently required to improve the livestock services.

The proposed project “improving smallholder livelihood through enabling livestock services in PNG” promises to have a major impact in the overall livestock services in the country. The purpose of the workshop was to gather all potential partners to discuss and put together a project proposal to the Australian Centre for International Agricultural Research (ACIAR) for funding.

The project is expected to address key research question regarding common animal health, production and market constraints in priority livestock species. The role of improved housing, hygiene, animal management and nutrition and use of local herbal medicines on animal health and reproduction on profitability of smallholder semi-intensive and commercial livestock enterprises will also be addressed. It is also expected to look into overall management issues and capacity building needs both at farmer and institutional.

Past efforts may not have seriously addressed these constraints. NARI’s research effort in livestock has been focusing on feeding systems. This resulted in successful development of feeding options for poultry (broiler) and growing pigs using locally available resources. The broiler concentrate and pig silage using sweet potato have been officially released to the farming community and are being promoted for smallholders farmers to trial them. The proposed project can build on lessons learnt from these projects and other relevant projects relating to animal health and production undertaken elsewhere.
One thousand taro suckers were planted at the USP-IRETA farm to build up the planting material.

The two varieties grown are Number Two which is white in colour and Number Three which is pink. These two were selected from the five varieties that were bred and have been proven to be tolerant to the taro leaf blight disease.

Samoa is looking at increasing its taro production to resume exports. The ‘white’ and ‘pink’ varieties are well liked by local and overseas consumers.

Three new poultry houses are being built at the USP-IRETA farm. One house is now complete and the other two will be completed by end of May. A total of 1000 layers will be moved into this house later this month.

Once all 3 houses are completed it should be able to house 3000 additional layers. The farm continues to develop and operate as semi commercial activity in order to become sustainable and also give students and staff a wider platform for research and practical work.
USP Alafua Students Compete in Samoa Uni-Games

Tony Siamomua

‘University Sport Samoa’ organized its first ever inter-university games on Saturday, 29 April, 2012 which was held at the National University of Samoa grounds. At the Opening Ceremony – NUS DVC – Emma Kruse-Vaai remarked the event as a milestone and hoped to see a successful day unfold with many more occasions as such that brings academic institutions together to eventuate in the future.

USP, OUM and NUS are member universities and all participated in the two day event in various sports from Touch Rugby, Netball, Volley to Rugby Sevens in which NUS triumphed in all sports. There are many areas for improvement in this new initiative but more importantly, there was a show of high quality sportsmanship, new acquaintances were made and overall, it was enjoyed by everyone.
April Images

Scope for orchids in the Pacific

Cactus and euphorbia that can grow in the Pacific

Healthy sheep grazing

Poultry farm that incorporates housing and free range egg production

Free range poultry farm

Students at the games

Breadfruit workshop participants from Fiji (Livai Tova), Kiribati (Takena Redfern) and Samoa (Afea Notise).