



# BAR DIGEST

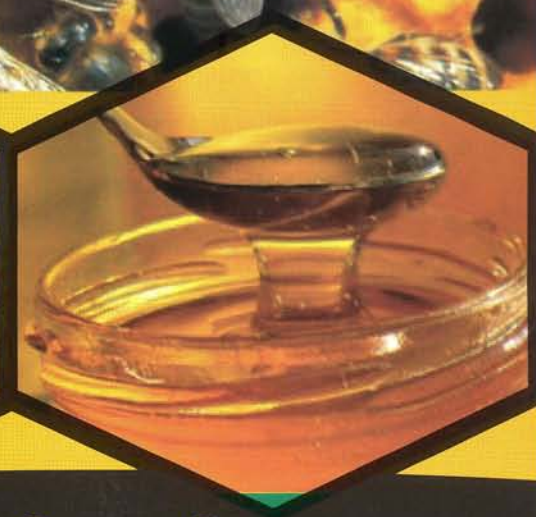
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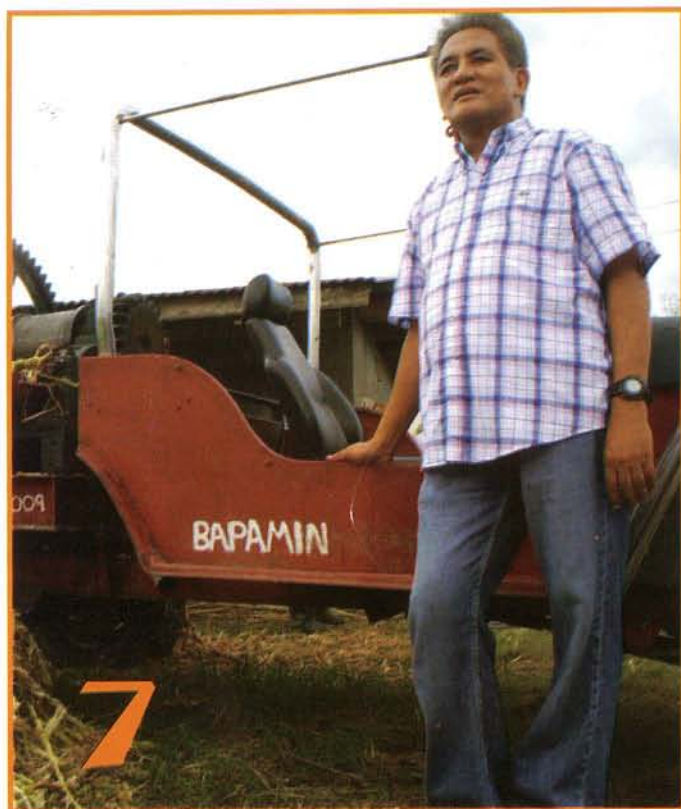
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January - March 2011



## Why beekeeping is for keeps

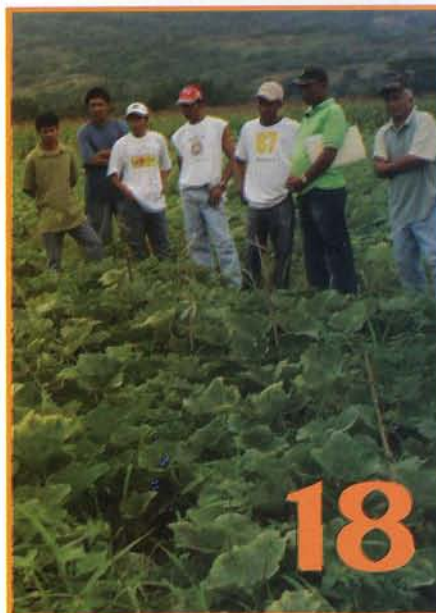




# CONTENTS

Jan-Mar 2011

BAR R&amp;D DIGEST



## 3 CREATING GREAT IMPACT AT THE GRASSROOT LEVEL

Director Eleazar R&D Notes for this issue focuses on the creating impact at the grassroots level through the projects funded under the Kennedy Round 2 (Kr2) grant facility.

## 5 THE KENNEDY ROUND 2 (KR2) GRANT FACILITY: A PRIMER

A primer on the KR2 (Grant Assistance for Underprivileged Farmers) which was designed to assist developing countries, like the Philippines in achieving food sufficiency through augmentation plans and program.

## 7 SWEET BUSINESS ENTERPRISE FROM SWEET SORGHUM: THE BAPAMIN EXPERIENCE

A success story of the Arcangel couple, Engr. Antonio and wife, Doris, former OFWs based in Toronto, Canada, who made the decision to establish a business on sweet sorghum in the Philippines.

## 11 "GREENER" OR JUST "MORE" PASTURES FOR OUR PEANUT FARMERS?

A BAR-funded project in Sorsogon teaches farmers on how to plant *Asha* peanut in a coconut-based farm and explore on its income and production potentials.

## 14 PROMOTING MANGO WINE & DRIED MANGO FOR COMMERCIALIZATION

RMTU looks into the value-adding potentials of mango by processing them into mango wine and dried mango for commercialization.

## 16 WHY BEEKEEPING IS FOR KEEPS

Exploring the potential of apiculture as a promising industry. The project also promotes on the sustainable use of indigenous bee resources for the industry in the country.

## 18 HYBRID SQUASH SEED PRODUCTION: PROVIDING A BRIGHT FUTURE FOR STO. NIÑO FARMERS

A research study to determine the viability of shifting from the traditional corn-corn cropping pattern to corn-squash hybrid seed production.

## 21 LOW COST TECHNOLOGY MINIMIZES POSTHARVEST LOSSES

The Extended Hot Water Treatment, developed by UPLB is a cost-effective and simple postharvest technology that could help the country meet the requirements of the world market.

## 23 EMPOWERING ABACA FARMERS THROUGH ABAKAYAMANAN

A practical way of farming which aims to increase productivity in Bicol through the adoption of integrated farming system (IFS) and value-adding activities. Specifically, the project seeks to enhance the capacity of abaca farmers and update them with the latest production technologies.

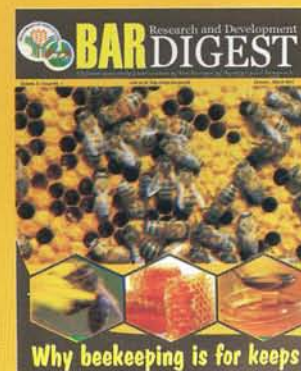
## 27 PRODUCING HIGH-VALUE ORGANIC VEGETABLES UNDER PROTECTED AGRICULTURE

A project that responds to DA's battle cry on providing nutritious, accessible, affordable, chemical-free food for every Filipino.

## 29 EXPLORING OPTIONS IN RUBBER PRODUCTION TECHNOLOGIES

A project that hopes to introduce and showcase rubber production technologies and document their production performance.

## ON THE COVER



Apiculture as a promising industry p16



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Created by virtue of EO 116, BAR is one of the staff bureaus of the Department of Agriculture (DA) mandated to ensure that all agricultural research is coordinated and undertaken for maximum utility to agriculture. Further, EO 127 and 338 reinforced and expanded the roles of BAR in the central coordination and management of agriculture and fisheries R&D programs.

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## Creating great impact at the grassroot level

BY DR. NICOMEDES P. ELEAZAR CESO IV

**T**he Bureau of Agricultural Research is committed to unifying, consolidating, and enhancing the research and development programs of the National Research and Development System in Agriculture and Fisheries (NaRDSAF) for R&D to create strong impact for the growth and development of the agriculture and fisheries sector. This is being achieved by BAR through its strategy of forging of strong partnerships with key research institutions for the generation and development of technologies and knowledge aimed at finding solutions to major problems and concerns that affect the sector.

By themselves, the generation and development of technologies alone would be exercises in shortsightedness if research results are not utilized by the intended beneficiaries - the farmers, fisherfolk, and other stakeholders. Seeing the low utilization of mature technologies in the country, we, at BAR, have embarked on the novel approach of supporting the extension systems of local government units. Our determined effort to accelerate technology transfer led to the eventual establishment of the Bureau's Technology Commercialization Program (TCP) in 2005.

The TCP promotes mature technologies leading to their commercialization to help pave the way for the attainment of the goals embodied in the Agriculture and Fisheries Modernization Act (AFMA) which are: food security, increased productivity and profitability, poverty reduction, global competitiveness, farmer/fisherfolk empowerment, sustainable natural resources, and agribusiness development.

The TCP is unique in that it involves process documentation of selected projects funded by BAR that are implemented by DA research bureaus, attached agencies, and regional integrated agricultural research centers. It can generate valuable information on the implementation of strategies being adopted, the benefits and impacts on the various stakeholders, problems and constraints encountered, and lessons learned. Under a feedback and feed-forward system, the findings serve as sound bases for effective project implementation and replication in other areas to benefit a wider base of beneficiaries. The information and knowledge generated increase the efficiency and effectiveness of services delivered by BAR under the TCP and can be of use in interventions carried out by other DA units in the TCP areas.

As a modality, the program expedites the dissemination of research results to the public and potential investors and, in the process, helps strengthen the linkages among research, development





and extension. The Technology Management for Competitive Agriculture and Fisheries component of the program specifically aims to speed up the availability of mature technologies to farmers and fishers' for enhancing their profitability and incomes. With effective commercialization of technologies, agriculture and fisheries can be transformed into a market-oriented sector.

Seeing the strong potentials of the TCP in the development of the rural areas, the Department of Agriculture gave its official recognition and support on February 6, 2006 through DA Administrative Order No. 3 and recast the program as the National Technology Commercialization Program (NTCP). The NTCP has since become one of BAR's banner programs.

With DA recognition has come outside support. The program is now getting funding under the Kennedy Round 2 (KR2) facility, now known as the Grant Assistance for Underprivileged Farmers. The grant is provided by the Japanese government and other sources. It is a facility designed to assist developing countries in striving to achieve food sufficiency and implement food augmentation plans.

Beginning with the 21<sup>st</sup> KR2 Tranche, the KR2 peso proceeds has been shared by the DA- National Agriculture and Fisheries Council (NAFC) and the National Economic Development Authority (NEDA) at 80%-20% in favor of the DA. The portion of the DA is the fund source for the implementation of BAR's

TCP agriculture and fisheries projects as provided under a memoranda of agreement between BAR and NAFC executed in 2008.

To date, BAR has implemented a total of twenty-seven (27) projects nationwide under partnerships with research institutions that include state universities and colleges (SUCs), the DA- Regional Integrated Agricultural Research Centers, the DA-BFAR Regional Integrated Fisheries R&D Centers, a number of private institutions, and several international organizations. These projects are not limited to the commercialization of mature technologies but include developmental aspects. Technologies that have undergone testing and refinement include those on crops, livestock and poultry, and fisheries. A major feature of the NTCP is the participation of the beneficiaries in the implementation of technology commercialization projects and this has worked to increase user confidence on the usefulness of the technologies.

Although most are still at the research/verification stage, we already see the potentials of many technologies for commercialization. Of particular note is the evaluation for adaptability and performance of introduced sweet sorghum varieties, and their commercialization and promotion in Northern Luzon. This project was conceived in response to the need for a viable feedstock for the production of ethanol which is now used as an additive to imported fossil-based motor fuels not

only to lessen their cost but also to help reduce air pollution since ethanol has the property of increasing the efficiency of internal combustion engines. This project is already being replicated in Western Visayas and in Western Mindanao.

Other notable projects under the program are the introduction of higher-yielding rubber clones for adaptation and commercialization in Eastern Visayas, and rapid propagation of rubber plants through somatic embryogenesis conducted by the University of Southern Mindanao. We are optimistic that these projects shall help invigorate the country's rubber industry and enable the country to join the ranks of the world's major rubber producers and net exporters.

Also of interest is the production and utilization of underutilized plants such as *sapinit* (*Rubus rosifolius*), a plant whose fruits resemble raspberry and has potentials for the cottage industry. We view other projects as also having the potential to impact heavily on the agriculture and fisheries sector based on the fact that technology and knowledge comprise the cutting edge of economic growth.

We are confident that the technologies that we have developed and identified for commercialization will contribute significantly towards increasing the beneficiaries' incomes and create job opportunities, thus, leading to poverty reduction in the rural areas. It is our firm belief at BAR, together with our partner institutions, that our efforts shall be a major asset in the development of the agriculture and fisheries sector. #



# The Kennedy Round 2 (Kr2) grant facility: **A PRIMER**

BY PATRICK RAYMUND A. LESACA

**T**he Kennedy Round 2 or KR2, now known as the Grant Assistance for Underprivileged Farmers, is a grant facility designed to assist developing countries, like the Philippines, achieve food sufficiency through augmentation plans and program. The assistance comes in the form of grants which is used to procure farm inputs such as fertilizers, pesticides, farm machinery and other agricultural equipment. The recipient country monetizes these farm inputs and the peso proceeds are used to finance agricultural projects. The Philippine Government has availed of the KR2 Program under the supervision and administration of the Department

of Agriculture (DA).

During the 20th KR2 Tranche in 1996, the administration of the Program was assigned to the National Economic Development Authority (NEDA) for a prescribed time. However, beginning with the 21st Tranche, programming of the KR2 peso proceeds has been shared between the DA-National Agricultural and Fishery Council (NAFC) and NEDA at 50 percent for agriculture and fishery projects and 50 percent for social development endeavors including the Local Government Unit's (LGU) poverty alleviation program as well as contribution to the Project Development and Monitoring Fund (PDMF). This is based on the approval on August 2001 by the Investment Coordination Committee (ICC) of this

programming arrangement based on the utilization framework agreed upon by NEDA and DA-NAFC with the specific provision that the peso proceeds shall be used to fund or finance specific items identified under the Agriculture and Fisheries Modernization Act (AFMA).

The ICC is one of five inter-agency committees established under Executive Order No. 230, or "Reorganizing the National Economic and Development Authority", which is tasked to act as a recommendatory body to the NEDA Board. It consists of the Secretary of Finance as Chairman; the NEDA Director-General as co-chairman; the Executive Secretary; the Secretaries of Agriculture, Trade and Industry, Budget and Management, Energy; the Governor of the Bangko Sentral ng Pilipinas; and



## KR2Grant



the Executive Director of the Coordinating Council for the Philippine Assistance Program (CCPAP) as members.

The ICC advised DA and NEDA to discuss with the Japanese Government, the major KR2 donor for the Philippines, the programming flexibility in allocating the proceeds of the 21st and subsequent tranches of the Program. The Japanese Embassy advised NEDA that the utilization of the KR2 proceeds is the prerogative of the Philippine Government. The ICC therefore recommended the use of the KR2 peso proceeds as budget support for AFMA activities which constrained NEDA to proceed with the programming of its share in support to PDMF and various poverty alleviation projects under the 21st and succeeding tranches.

Eventually, the DA requested to utilize 100% of the peso proceeds for the Department's activities and projects under the AFMA. In response, NEDA proposed and secured DA's concurrence for an 80% - 20% sharing of the peso proceeds in favor of DA. Under said arrangement, NEDA will utilize its share of the proceeds to support productivity-enhancing activities.

The Kennedy Round was the sixth session of the General Agreements on Tariff and Trade (GATT) trade negotiations held in 1964 to 1967 in Geneva, Switzerland. The Congressional passage of the US Trade Expansion Act in 1962 authorized the White House to conduct mutual tariff negotiations ultimately leading to the Kennedy Round. 66 nations, representing 80 percent of

world trade, attended the official opening on May 4, 1964 at the Palais des Nations. The director general announced the round's success on May 15, 1967. The final agreement was signed on June 30, 1967 --- the very last day permitted under the Trade Expansion Act. The round was named after the American President John F. Kennedy, who died six months before the opening negotiations.

### Technology management for competitive agri and fisheries sector

The Government of the Philippines (GOP), through the DA and DA-NAFC, received grant funds from the Government of Japan (GOJ) to implement and financially augment agriculture and fisheries projects throughout the country. And, in conformity with the provisions set forth in the Agriculture and Fisheries Modernization Act of 1997 (AFMA), the Bureau of Agricultural Research (BAR) and NAFC sealed a covenant through a Memorandum of Agreement that will spearhead the implementation of a food production program to be known as the Technology Management for Competitive Agriculture and Fisheries Sector (TMCAF). The TMCAF is a DA-NAFC-BAR initiative under the Japan's Official Development Assistance (ODA) project funding.

The NAFC, through the years, has been collaborating with the Japanese Government and other agencies to support a range of diverse projects focused on the adoption of agricultural technology and

commercialization for sustainable agricultural growth, improvement of employment opportunities, and ensuring food security – all of which are central to poverty alleviation.

BAR, for its part, is mandated to ensure that all agricultural research are coordinated and undertaken for maximum utility to the agri-fisheries sector. The Bureau is therefore tasked to manage and work in partnership with concerned agencies with the end view of making technologies work for agriculture, fisheries, industries, people and communities.

The need for a vehicle that would serve as the back bone for the commercialization of agriculture and fisheries technology has been addressed by the creation of BAR's National Technology Commercialization Program (NTCP) as set forth under the AFMA. This program promotes the research and development (R&D) technology breakthroughs generated and developed by R&D institutions that include the different DA agencies, selected state universities and colleges (SUCs), local government units, and the private sector under a common framework.

To date, this partnerships under the TMCAF has resulted to the funding of 27 projects by BAR. #

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Sweet business enterprise  
from sweet sorghum:

# The BAPAMIN experience

BY RITA T. DELA CRUZ

**E**very business, whether big or small, starts with a great idea; it must be followed with the determination to succeed and sustained with hard work. From then on, everything else (well, almost) comes easy.

For the Arcangel couple, Engr. Antonio and wife, Doris, former OFWs based in Toronto, Canada, the decision to establish a business in the Philippines was prompted by a choice between selling their 20-hectare idle land in Ilocos Norte or to continue cultivating it. Portions of

their land, although planted to rice and tobacco, were mostly idle and unproductive. Once they made up their choice, there was no turning back. With their decision to keep the land came the search for the great idea: what crop to plant? They did not have to look far.

Around this time, Engr. Antonio had heard and read so much about sweet sorghum and its potentials. The enactment into law of Republic Act 9367, otherwise known as the Biofuels Act of 2006 in January 2007, provided fresh incentive for the government to kick into high gear its

efforts to develop, produce, and distribute high-quality, reasonably-priced and environment-friendly alternative fuels. One crop that was being looked into for its potential as feedstock for bio-ethanol production was sweet sorghum.

It also helped a lot that the Arcangel farm was just near the Mariano Marcos State University (MMSU), which through a funding support from BAR, was then conducting sweet sorghum technology demonstration and production in field trials at the MMSU campus. The sweet sorghum varieties being tested for adaptability came from



## KR2 ON Sweet Sorghum



the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) a research organization based in India that first introduced the crop in 2005.

With their interest caught, the Arcangel couple sought the assistance of Dr. Heraldo L. Layaoen, MMSU's vice president for administration, planning and external linkages who happens to also be the national program coordinator for the sweet sorghum project, to help them establish a sweet sorghum plantation.

### Sweet sorghum is not just about the fuel

Although sweet sorghum is being intensively promoted as an excellent source of biofuel, its use for fuel production needs bigger investments both in hectareage of sweet sorghum plantation that needs to be established and in the required distilleries that will process them into ethanol. While the realization of extensive biofuel production is yet to be realized, farmers must make the most out of the acreage of sweet sorghum they have planted. Happily, aside from fuel, sweet sorghum is also an important source of food, feed, and fertilizer. That's why it is appropriately

dubbed as the "F<sub>4</sub> crop".

Due to the nonexistence of local distilleries for sweet sorghum to produce the ethanol, MMSU has supported activities for developing other products from sweet sorghum. This is complemented by R&D initiatives from other institutions such as the Pampanga Agricultural Colleges (PAC), Isabela State University (ISU), and the Department of Science and Technology (DOST).

Sweet sorghum produces two important products: the grains which bear starch and the stalk which holds sugar-rich juice. Developed from the grains by researchers are sweet sorghum pop and flour which can be processed into bread and pastries while from the stalk's juice come products like *basi* or wine, vinegar and the syrup which is promoted as a healthy alternative to sugar and sugarcane-based syrup.

### Establishing the BAPAMIN Farmers' Cooperative

Realizing the potential of sweet sorghum food products as an agribusiness enterprise as well as a viable livelihood for farmers, MMSU not only developed sweet sorghum products but also disseminated the





production technologies to sweet sorghum farmers. The farmers started processing sweet sorghum products at the micro level but, in time, reached the attention of other interested private individuals like the Arcangels.

"These farmers, although they have tried adopting the technologies we taught them, they had no experience in marketing their products. Furthermore, there was this lack of a marketing arm to sustain the industry. It was at this point that the Arcangel couple came into the picture. They were receptive to new technologies so we encouraged them to invest in the production and the utilization of sweet sorghum as well," revealed Dr. Layaoen.

But instead of merely going into sweet sorghum production as a family enterprise, the couple was also convinced by Dr. Layaoen to organize a farmers' cooperative, now known as the BAPAMIN Farmers' Cooperative, which engaged in the actual production of grain and juice from sweet sorghum, and which also went into the marketing of the produce.

To make sure that there would be ample supplies of sweet sorghum to process, the couple had to encourage more farmers to plant the crop. They also

had to look for ways to ease the entry of other farmers into sweet sorghum production. One of the first problems that had to be solved was the milling of sweet sorghum. At that time, there was only one stationary mill for sweet sorghum and it was situated in Bungon, Batac, Ilocos Norte.

"Transporting these stalks would be expensive so we designed a mobile mill which the Arcangel couple fabricated with their own money. The advantage of this mobile mill is that it can be taken directly to the field and extract the juice right away, thereby simplifying the whole method of processing and transporting the juice," explained Dr. Layaoen.

To further ensure the continuous production of sweet sorghum, the Arcangel couple tapped the Bungon Seed Producers Multipurpose Cooperative, a group of farmers that plant and grow sweet sorghum for seed production, to supply them the planting materials for expansion.

#### **Marketing food products from sweet sorghum**

The couple started processing

**Dr. Nicomedes P. Eleazar (left) suggests to Engr. Tony Arcangel of BAPAMIN that the only way that the sweet sorghum products could compete globally was to have better packaging.**

sweet sorghum flour to make cookies and pandesal and producing other products including vinegar, syrup and, recently, sweet sorghum juice. They also started joining several product exhibits and trade fairs including the DA-BAR's 2009 National Agriculture and Fisheries Technology Forum and Product Exhibition, an annual affair held at the SM Megamall. It was here that Dr. Nicomedes P. Eleazar, director of BAR saw how BAPAMIN packaged their products.

"That was the opening since Dr. Eleazar knew he could be of help. He knew that the only way our products could compete globally was to have better packaging. So we submitted a project proposal to BAR for funding titled, 'Sweet Sorghum Processing and Marketing Towards Commercialization in Ilocos Norte', and luckily it was approved and funded under the Japan Official Development



## KR2 ON Sweet Sorghum



Engr. Arcangel points at the displays of BAPAMIN's sweet sorghum vinegar which are now being sold in one of the grocery stores in Ilocos Norte along with the commercially-known products.

Assistance's (ODA) - KR2 Program Grant Assistance for Underprivileged Farmers," recalled Engr. Arcangel.

Specifically, the project aims to: 1) improve the packaging of BAPAMIN's sweet sorghum products; 2) adopt processing and packaging technologies developed by research institutions such as MMSU, PAC, ISU, and DOST; 3) standardize the processing technologies and specifications of sweet sorghum products; and 4) explore and establish local markets for sweet sorghum products by participating in trade fairs and exhibits.

"The project started in January 2010 and, from then on, we have joined several trade exhibits and have given seminars about the importance of sweet sorghum. We also made available sweet sorghum planting materials and access to the market for the farmers and the producers," said Engr. Arcangel.

Currently, BAPAMIN products include food items, flour and feed processed from the sweet sorghum grains, and vinegar and syrup processed from the stalks' juice. Most of the sweet sorghum-based food products are

processed in its warehouse in Batac, the bulk of which is vinegar. But unlike traditional vinegar processing, BAPAMIN has developed a faster way of processing the juice into vinegar with an acetator

technology that also assures that the product can pass rigid quality control with technical assistance from the DOST and MMSU. The sweet sorghum vinegar that Engr. Arcangel produces is sold at a price competitive with other sugarcane-based vinegar.

BAPAMIN also sells sweet sorghum seeds for planting purposes. According to Engr. Arcangel, the standardization of these products is important because it will soon be adopted nationally. "Luckily, the market potential is now turning into reality and is coming into us and this also gives confidence to the farmers that they have a solid marketing group that will buy their produce," he added.

### The future of the sweet sorghum industry

"With the emergence of markets that are interested in the sweet sorghum products, we can now envision ourselves as going into massive promotion of the planting of sweet sorghum around Ilocos or even

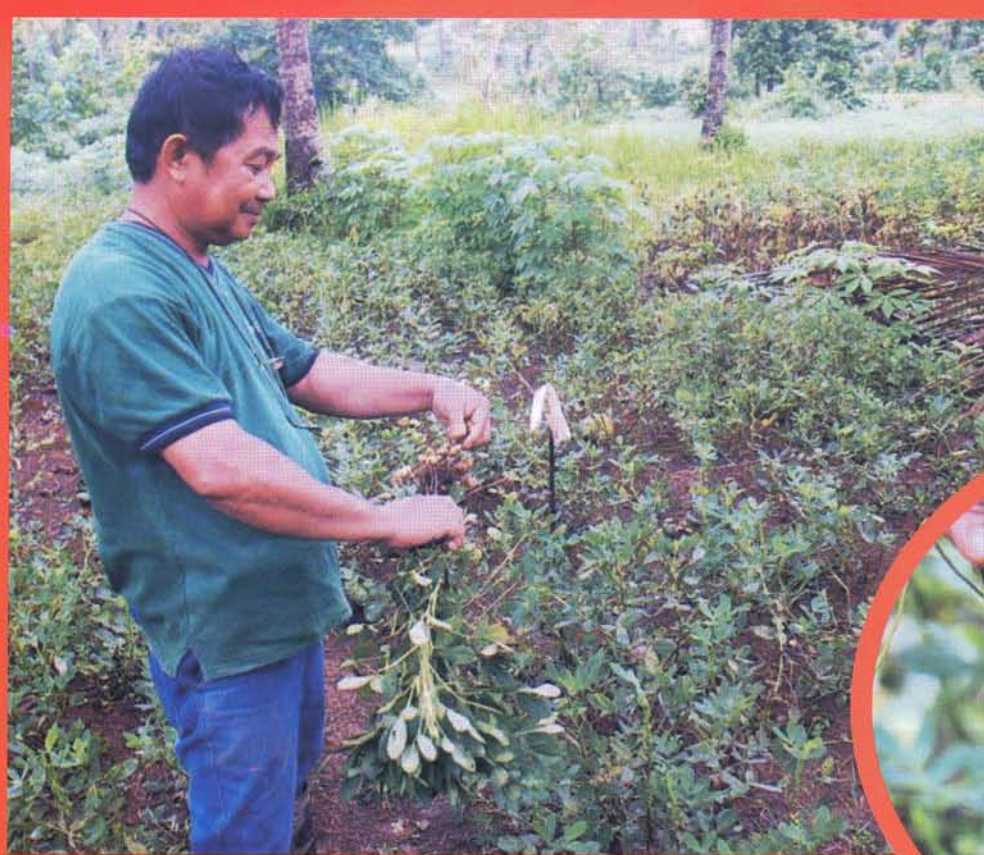
other areas," revealed Engr. Arcangel.

From the initial 20-hectare plantation, an additional 10-hectare from farmer-cooperators, the sweet-sorghum plantation is slowly growing. "Our own goal is to have at least 100 hectares of sweet sorghum for this year. At the national level, the goal is to have an alternative source of biofuel for energy production and sweet sorghum is a very good alternative for fuel and it helps the environment. The ethanol production industry remains the big picture that we would like to look into. It is a viable industry for the nation and will generate jobs and opportunities in the provinces," he said.

Opportunities continue to pour in as more big companies become interested in buying their products. "Now that we have several groups together planting sweet sorghum, we are assured of good volumes to start with particularly in meeting the demands to supply these big companies," the happy engineer announced.

"Different organizations and radio programs as well have been inviting us to talk about the sweet sorghum products and, little by little, it's now getting known widely and I am happy and confident that, with the increasing popularity of sweet sorghum in the Philippines, it will soon come out as a high value crop," he concluded. #





# “Greener” or just “more” pastures for our peanut farmers?

BY MARIA ANNA M. GUMAPAC

**F**or most city folks, the sights out of town are a novelty. The fresh air, local folks, more trees for that matter, and greener scenery is a refreshing change. Along the way, one can witness locals as they go about their day, and you may quietly surmise how simple and content they may appear to be.

One may even remark how these greener pastures may be better than going back to the humdrum of city living.

However, are “greener” fields in fact better?

During ones travels to the countryside, you are sure to come across a number of people toiling these

fields. Granted, these depend on the season and the hour, but the plight of these farmers—particularly *our* farmers—are unfortunately consistent.

One of the problems often faced by farmers is what to do with time between planting and harvesting. This is, of course, aside from the already obvious concerns of generating additional income while waiting. In a newspaper article, a writer wrote “...a glaring sight one can see is the abject poverty of farmers. One begins to wonder why, despite all the technological revolutions that have taken place in agriculture, Filipino farmers are still quite unproductive.”

Therefore, it does look promising that a project was conceived, aiming to promote promising varieties of peanut under coco-based areas in the province of Sorsogon. Suffice to say, the endeavor is geared toward increasing the income of coconut farmers in the province, more specifically to: 1) determine the economic performance of three peanut varieties under the conditions of coco-based areas in Sorsogon; 2) compare the farmer's practice to the new technology to be introduced; 3) strengthen farmers–technician relations; and 4) showcase to the farmers economically viable peanut



## KR2 ON ASHA Peanut



Sorsogon ROS Superintendent Dolores Ricafranca (left) and Mayor Olivia M. Bermillo (right) of Castilla, Sorsogon are holding freshly harvested Asha peanuts. On-going on the area is a BAR-supported project titled "Technology Promotion of Promising Varieties Under Coco-based Areas in the Province of Sorsogon."

production technologies for coco-based areas.

### ***Peanut in a nutshell***

First off, we have to recognize that peanut (*Arachis hypogea* L.) is nutritious and affordable. This product is used for a number of food applications, confectionary, roasted, salted, or as butter. Second, in terms of health benefits, peanuts are considered a very good source of monounsaturated fats, the type that is emphasized in the heart-healthy Mediterranean diet. According to available information, "Studies of diets with a special emphasis on peanuts have shown that this little legume is a big ally for a healthy heart." Also, not only do they contain oleic acid, the same good kind of fat found in olive oil, but research shows that these legumes are also rich in antioxidants as many fruits. "While unable to boast an antioxidant content that can compare with the fruits highest in antioxidants, such as pomegranate,

roasted peanuts do rival the antioxidant content of blackberries and strawberries, and are far richer in antioxidants than apples, carrots or beets."

In our country, these legumes are as laid back as its people. Individuals walking down a street munching on said snack, hanging by a street corner, folks having a drink or two: in fact, you probably have encountered a vendor on a bus with its passengers as consistent consumers. Apparently, a peanut vendor can sell 15–25 kilos of roasted peanuts a day. With this in mind, the aforementioned project appears timely in its conception.

### ***Earning more than just coconuts***

An article back in 2009 cited a young farmer's experience with a new variety of peanut. He quipped that he was a lazy farmer and that a peanut is a lazy farmer's crop. It does not require much attention nor does it require a big capital. It can be grown in wet and dry seasons and there is a big demand

for it at a fairly good price. However, he observed that growing native peanut is not profitable with its low yield of 1.2 tons/ha. In the same vein, he has discovered that Asha peanut is "outstanding." Each plant produces 45 to 72 pods per plant, which could easily be three times the number produced by the native variety (Agriculture Business Week, 2009).

Based on an evaluation of confectionary peanuts conducted at the Research Outreach Station (ROS) in Sorsogon City by the Department of Agriculture - Regional Field Unit 5, Asha and Namnama varieties were found to be promising.

The project sites include the municipalities of Bacon, Sorsogon City and Castilla in Sorsogon Province. The Sorsogon-ROS has conducted trainings, land preparation, fertilizer and seed inputs covering three hectares (0.3 hectares for each of the 10 farmer participants).

This research study is composed of four components conducted in the



different areas in the Sorsogon province during wet and dry season cropping which are:

- **Component 1** – Varietal evaluation of three peanut varieties (Asha, Namnama, and local variety).
- **Component 2** – Improved cropping system (Coco + Asha peanut + Vegetables).
- **Component 3** – Coco + Asha peanut + Livestock integration (Goat).
- **Component 4** – Marketing/Processing of product.

Components 1 and 2 were implemented in Bacon District, Sorsogon City, while components 3 and 4 were conducted in Castilla, Sorsogon. It should be noted that Components 2 and 3 involved 10 coco-based farmers each. Recommended management practices for peanut production were followed, and regular monitoring and technical assistance was provided. Component 4, which focuses on post-harvest practices, processing, and value-adding of products was set to start a year after commencement of the project.

Findings from the varietal evaluation show that of the three peanut varieties, Namnama and Asha varieties are prone to rat infestation because of its late maturing characteristics and the heavy branching habit of Asha peanut which rodents use in building nests. However, in the absence of rat infestation and with good soil conditions, it was observed that a crop cut of Asha peanut on the trial could yield 2.8 kg/15 m<sup>2</sup> or at 2.3 ton/ha. On the other hand, trials show that the local variety is prone to leaf spot and defoliates under conditions of constant rain.

In the second component, it was observed that varying germination percentages obtained among farmers may be attributed to soil characteristics of individual farms and depth of planting used. In terms of problems encountered, bacterial wilt was the only alarming disease observed in the area during the vegetative stage of the Asha peanut. Uprooting the affected plants followed by burning/sanitation, and the re-application of lime were thus done.

However, though the area was weed-free, rat infestation was found during the formation of young nuts up to their maturity. This reduced the yield and the problem was compounded by farmers refraining from using pesticides because of their backyard poultry. Improvised rat traps were considered for the next cropping.

Peanuts are off-season for the months of October to December and farmers could demand for a higher price. However, off-season technology remains to be mastered first by the farmers. To ensure that this project is working toward its initial objective of expanding the farmers' options while waiting for the harvest of peanut, the coco-farmers maximized their vegetable area along borders and fences for additional income.

The third component covered a 4-hectare area, with a quarter of it reserved as a demo farm, wherein rice hull was utilized as mulch. The remaining 3 hectares were planted with Asha a cover crop. The local government unit provided the use of a tractor during land preparation, with the farmer's equity in the form of labor and planting. As part of the project's objectives, each farmer-beneficiary also received a doe for goat production to provide additional livelihood. It should be noted that the does were already pregnant and payment would be in the form of one kid from each doe to be given to ROS-Sorsogon for re-dispersal to other worthy beneficiaries.

The fourth and final component, which is focused on post-production processing and marketing, is set to be

implemented after the second cropping cycle.

### **Better pastures**

Working together, as proven by this project, should help improve the situation of these people who often appear against the stark background of greenery as one passes by. After all, these people comprise a major entity in agriculture on which our economy is largely based.

And working with what we already have, we can now proceed toward improving the lives of our local farmers. If we continue as planned, hand in hand with the people responsible for launching this project in the first place, as well as keeping in mind the objectives and the people for whom we strove to start this study in the first place, we can look forward to providing more than just possibilities to our farmers, and provide them with more and real options. We certainly hope that in this case, "more" is followed by "better" living for our farmers.

In due time, "greener" pastures shall no longer pose as a metaphorical question in response to pursuing the life of a farmer. Said life often seen in mere passing, it is transformed from an inference to a definitive statement. #

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***We hope that we could encourage more farmers in Sorsogon to plant Asha peanut because it has high potentials to compete in the market and could complement the more popular pili nut in Bicol. ~ Ricafranca***



## KR2 ON MANGO WINE



# Promoting mango wine and dried mango for commercialization

BY PATRICK RAYMUND A. LESACA

**W**hen one speaks of the province of Zambales, former President Ramon Magsaysay, Mt. Pinatubo and, of course, the delicious mangoes of the province come to mind. Their fame has gone beyond the fair shores of these tropical islands.

Philippine mango is considered a champion crop and ranks as the country's third most important fruit crop next to banana and pineapple. It is also one of the most marketable fruits

because of its unique taste. The country's export variety, "*Carabao Mango*", is one of the best varieties in the world and Zambales has the reputation of growing one of the best, if not the best, of the carabao mangoes.

The fruit is widely produced in the province of Zambales and is one of its highly-valued high value commercial crops. In fact, Zambales-grown mangoes are known as the sweetest, not only in the country, but in the entire world.

### Icon of Philippine Mangoes

Realizing the potential of mango and its competitiveness here and abroad, the Ramon Magsaysay Technological University (RMTU) in San Marcelino, Zambales sought the assistance of the Bureau of Agricultural Research in upgrading their mango processing facility. The request eventually became a full-blown project proposal and was funded by the Bureau in 2009.

The general objective of this project is to strengthen the mango



research and development capability of the university. RMTU also aims to improve the packaging of processed mango products, secure IPO and BFAD accreditation, produce IEC materials on dried mango and mango wine production such as technoguides, and establish market linkages for processed mango products, among others.

According to Dr. Elizabeth Farin RMTU vice president for Research, Extension and Training, one of the identified bottlenecks in mango processing is the availability of supply. Furthermore, fresh fruits, such as mangoes, are not only highly perishable but highly seasonal. Once the supply of mangoes increases, prices normally tend to go down, thus affecting the supply and demand scenario --- and, if left unchecked, the incidence of fruit wastage rises.

The classification of produce as sub-standard fruits (not always as rejects) sometimes happens because harvesting, sorting and grading are done manually. Mango sorters are paid by exporters to sort or segregate quality fruits from the less premium ones. This is a subjective process which can lead to further losses due to the stringent quality requirements of the mango export business. The usual sub-standards are those fruits which are extra large, small sized or those with cuts or bruises. Such losses can be converted into profit if these "rejects" are processed into other more marketable forms such as dried mangoes, wine, and vinegar.

Under the project, the syrup by-product of the process of soaking the mango pulp before drying will also be utilized for wine or vinegar production. The processing of mango through drying and turning of the syrup into wine will also lessen postharvest losses.

Professor Susana S. Garcia, research director of RMTU's San Marcelino Campus in Zambales emphasized that the project will not only benefit the university, but the mango growers and the unemployed in the province, thus, improving the economy of the province, in particular, and the country, in general. Furthermore, the



**Dr. Elizabeth Farin, RMTU vice president for Research, Extension and Training**

skills developed for making dried mangoes and mango wine can lead to additional sources of livelihood for the people.

#### **Commercial Technology Profile**

The utilization of spent syrup for mango wine production was initiated by faculty researchers of the Botolan Campus in Zambales in May 2005.

Results of the initial studies showed that the addition of unripe mango to spent syrup increases the fermentation rate for a high alcohol content of 12.73 percent. However, the use of syrup alone could also produce comparable alcohol content of 12.46 percent at 26 Brix sugar concentration. Therefore, the use of the spent syrup without the addition of slices of ripe, unripe or half ripe mango is recommended because it gives the highest possible returns and it ranked second in overall acceptability in a sensory evaluation.

A similar study was also conducted in the years 2006 and 2007 by the same faculty researchers. But this time, the group studied the performance of different varieties of mangoes at different degrees of ripeness. The idea was to identify the best combination of mango variety and ideal stage of ripeness. In the statistical analysis, factor A is composed of the different varieties used (Carabao, Pico and Indian mango which are the varieties commonly grown in

Zambales), and factor B is the degree of ripeness (unripe, slightly ripe and fully ripe).

The alcohol content was determined through specific gravity method using the pycnometer wherein, at the end of fermentation period, the treatment with slightly ripe mango had the highest alcohol content with a mean of 6.74 percent which is significantly different with those of the other two (unripe and fully ripe) in terms of degree of ripeness. During the ageing period, the use of slightly ripe Carabao variety registered the highest alcohol content and, consequently, the lowest sugar content at 11.96 percent alcohol and 6.0 Brix sugar content.

To date, the University has produced bottled mango wines out of spent syrup. The wine comes in 750 ml bottles and shall be commercially available once the product is adopted by selected farmer cooperators and associations. Further, BPSU is also waiting for the approval of the technology patent and BFAD accreditation.

The Mango Wine Production Guide, as well as the technology on the step-by-step procedure for dried mango production, has been widely disseminated.

For more information, please contact:  
Dr. Elizabeth Farin, vice president, Research, Extension and Training email address: [elizabeth-farin@yahoo.com](mailto:elizabeth-farin@yahoo.com)/ CP # 09178609655 or Prof. Susana S. Garcia, research director, San Marcelino Campus/ CP # 09178667677



# WHY BEEKEEPING IS FOR KEEPS

BY MIKO JAZMINE J. MOJICA

**D**espite its popularity, apiculture, or the art and science of beekeeping, still hasn't gained more than a foothold in the Philippines. In many reports, including those published by the Food and Agriculture Organization (FAO), the potential of beekeeping as a sustainable means to boost agricultural yields and farmers' incomes, and reduce poverty is

well established and acknowledged.

It is now common knowledge that bees play an important role in the pollination of flowers which makes for the success of many agricultural crops. Bees have a big role in the maintenance of biodiversity and in increasing the yields of crops. Man continues to benefit from their primary products such as honey, beeswax, pollen, propolis, royal jelly, and even bee venom for many of his food and non-food requirements.

## Beekeeping in the Philippines

In the Philippines, the available accounts tell us that modern beekeeping was introduced during the American regime. It was in that time that the European honeybee (*Apis mellifera*), the preferred species for commercial beekeeping, was recorded to have been introduced in the country. Prior to that, the indigenous species found in the Philippines were the Asian honeybees, *Apis cerana* and the stingless *Trigona* spp., as well as the giant *Apis dorsata* which defies domestication.

However, beekeeping as an industry has barely ascended in the Philippines compared to its neighboring countries such as Vietnam, Thailand, and Taiwan.

The presence of pests, lack of capital, equipment, facilities, and proper training on beekeeping technologies for marginal farmers, as well as the cost of importing of *A. mellifera*, are the main reasons why the Philippines continue to fail to realize the potential of the industry in the country.

At present, there are a few actively managed and known commercial, albeit, small apiaries in the country. Two of the most popular are Ilog Maria in Silang, Cavite, and the Bohol Bee Farm in Panglao, Bohol. While they have become well-known among tourists and health enthusiasts interested in the benefits of honey and apiary by-products, both remain as small businesses and thus only produce very limited supply that barely meets the needs of the local market. Under this situation, the Philippines will remain a net importer of honey and other by-products of beekeeping unless a major change takes place.

## Revitalizing the beekeeping industry

The University of the Philippines Los Baños (UPLB) Bee Program under the university's Institute of Biological Sciences is one of the existing institutions undertaking research and development (R&D), and promotion of beekeeping in the country.

Recently, with funding support of the Bureau of Agricultural Research (BAR),



Dr. Cleofas Cervancia, a bee expert from UPLB and project leader of the BAR-funded initiative on apiculture.





a staff bureau of the Department of Agriculture (DA), the UPLB designed a program aimed at reviving the beekeeping industry in the country. As part of the Asian Apicultural Association, the UPLB Bee Program endeavors to modernize beekeeping practices in the country to match international standards specific for the honey market.

Dr. Cleofas Cervancia, a long-time bee expert in the country and the project leader of this BAR-funded initiative, points to the recent outbreak of the infectious American Foulbrood Disease (AFB) which affected 90 percent of apiaries, most of which make use of imported honeybees, in Luzon alone as one of the greatest challenges to the industry. Thus, the project includes developing strategies to sustain the industry by exploring the potentials of the local species, *A. cerana*, *A. dorsata*, and *Trigona spp.*

### Emerging from hunting-gathering stage

According to Dr. Cervancia, farmers in the hinterlands gather honey from the wild unaware of the proper ways of harvesting them and the value of other bee products such as beeswax, propolis, and pollen which usually just go to waste.

Specifically, in the case of *A.*

*dorsata*, Dr. Cervancia said that making use of the proper techniques of harvesting honey is one way to conserve the indigenous species.

To help honey collectors emerge from the hunting-gathering stage, who are the beneficiaries of this project, pilot or demo apiaries for training and production of bee colonies and products will be established. The key communities that will be involved in this project are located in Calamba, Laguna; General Nakar, Quezon; and Guinobatan, Albay.

### Training and promotion

While the training course for the management of native bees and processing of value-added products, such as wine, candle, and soap, will be limited to farmer-cooperators identified for the project, the technology-demonstration site will be open to the public. The project likewise aims to further promote the bee products of the beneficiary communities in agri-trade fairs.

Moreover, the expected outputs of the project include the production of female workers of queens to improve stocks of existing colonies and for the production of starter colonies. Furthermore, the project aims to produce 1,000 bee colonies in farmer apiaries in target communities.

A national bee product testing and development center is also envisioned to further promote good practices that include the proper processing and packaging of bee products.

### Beekeeping and organic agriculture

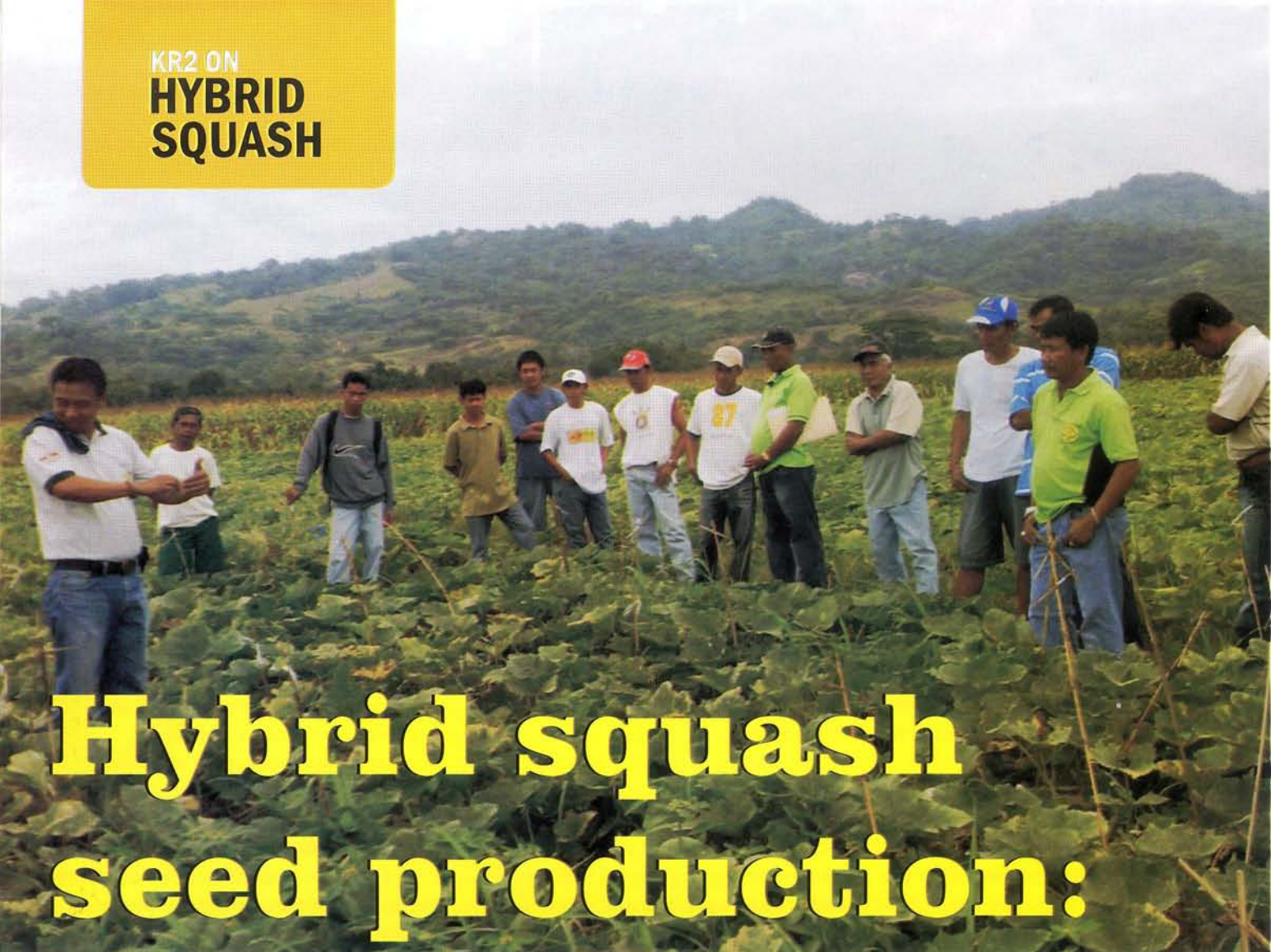
With the conduct of this project, the sustainable use of indigenous bee resources shall be promoted and appreciation for the industry in the country shall be brought to a new level.

With the on-going implementation of the National Organic Agriculture Program pursuant to the Organic Agriculture Act of 2010, the country is in a good position to bring new life to the beekeeping industry in the country as an organic and sustainable means of livelihood in the pursuit of development goals and in preserving national agrobiodiversity.

And while at it, the revival of the beekeeping industry will enable farmers to augment their income and take advantage of emerging opportunities which, in turn, shall brighten up agribusiness in the country.

For more information, you may contact Dr. Cleofas Cervancia at the UPLB Bee Program, Institute of Biological Sciences, University of the Philippines Los Baños, Tel. No. (049) 536-2893; Fax: 536-2517; Email: [beeprogram@uplb.edu.ph](mailto:beeprogram@uplb.edu.ph); [uplbbeeprogram@yahoo.com](mailto:uplbbeeprogram@yahoo.com)





# Hybrid squash seed production:

## Providing a bright future for Sto. Niño farmers

BY MA. ELOISA H. AQUINO

**K**umain ng kalabasa, pampalinaw ng mata" is a common expression of Filipino adults as they teach children to eat vegetables. Squash is a vitamin-rich vegetable particularly Vitamins A, B and C. It also has antioxidant, anti-inflammatory and anti-cancer properties and is rich in fiber. In the Philippines, *kalabasa* is the best known member of the squash group of vegetables.

But more than the nutritional benefits we can get from squash, this

vegetable crop can significantly increase farmers' income. This was proven by a two-year research study, "Commercializing and Integrating Squash Hybrid Seed Production Technology into the Cropping Systems of Sto. Niño, Cagayan", that was conducted by the Farmers' Community Development Foundation, International (FCDF). The research study sought to determine the viability of shifting from the traditional corn-corn cropping pattern to corn-squash hybrid seed production system.

### From corn-corn pattern to corn-squash pattern

The Municipality of Sto. Niño is located in Cagayan, one of the corn-producing provinces in the Philippines. Total corn production hit more than 297 metric tons in 2007 valued at almost 76 million pesos.

The socio-economic profiling done in 2008 before the start of the project revealed that the corn-corn pattern gives a gross profit margin of only PhP28,554 per hectare. Plowing and harrowing utilize tractors and/or draft animals. A total of 188 labor days are





required by the two cropping seasons in a crop year.

To determine profitability, the gross value added (GVA) per hectare was also measured. This is the difference between the gross value of production and total cash expenditures. For the two cropping seasons, the corn-corn cropping pattern (CP) shows a GVA of PhP43,011 per hectare.

According to the study, in order to reduce poverty incidence at the farm level, the GVA should be in the order of at least PhP50,000 per hectare. "This indicates that the corn-corn pattern would not be an effective cropping pattern for poverty reduction in the municipality," said Dr. Ponciano Batugal, the Project Leader.

"The introduction of squash hybrid seed production was meant to show the profitability of changing the traditional corn-corn pattern to corn-squash hybrid seed production pattern and, ultimately, encourage the local farmers to shift to the new farming practice," Dr. Batugal said. He added that the ultimate goal of the project is to improve the income and living conditions of the poor farmers and their families in the area.

The study was funded under the project, "Technology Management for Competitive Agriculture and

Fisheries Sectors", of the Bureau of Agricultural Research (BAR) and the National Agriculture and Fisheries Council (NAFC), with a grant given under the Japan Official Development Assistance's (ODA) - KR2 Program, Grant Assistance for Underprivileged Farmers. The BAR-NAFC project is a funding facility that aims to speed up the transfer of mature technologies for farmers' and fishers' use for increased productivity, and generation of income through the commercialization of improved technologies thereby transforming agriculture and fisheries into market-driven sectors.

The practice of having squash as the second crop was introduced to 117 farmers and covers about 50 hectares of river-flooded plains and corn-based farms in nine barangays of the Municipality of Sto. Niño. It came as no surprise that all the farmer-cooperators planted the recommended parental lines for squash hybrid seed production.

#### On the go...

A farmer's cooperative named "Sto. Niño Farmers Community Development Cooperative" was organized. The FCDF prepared a Squash Hybrid Seed Production Technoguide to provide farmers and prospective squash

growers a reference material that describes the step-by-step procedures from planting to harvesting of squash that emphasizes the use of the hand pollination technique.

After an orientation-workshop with the farmer cooperators to discuss the terms and conditions of the project, Dr. Batugal, together with the Project Staff, conducted a series of trainings on the basic steps/procedures in the production of squash seeds. Special training sessions on pollination techniques were held to enhance the technical skill of the farmers in producing hybrid seeds.

"The project loaned out production inputs, such as fertilizers and chemicals, and also supported part of the pollination costs," Dr. Batugal explained.

#### Production of hybrid squash seed

Hand pollination for hybrid squash seeds production is done between 7:00 AM to 10:00 AM everyday for 21 to 30 days to ensure the purity of the resulting progenies. After 45 to 50 days, squash fruits that show a yellow orange color and dry brown peduncles are deemed ready for harvest.

After the matured fruits have cured, the seeds are extracted and cleaned with the adhering pulp



## KR2 ON Hybrid Squash



**...farmers produced an average yield of 121.66 kg squash seeds/ha and received a guaranteed seed price of PhP 500/kg. Farmers could also use the squash flesh after seed extraction for food or feed.**

removed. The seeds are then dried for three days or until moisture content is reduced to 18 percent.

### Bright future

Projects results were positive. It showed that, with the corn-squash cropping pattern, a 20 percent increase in gross revenue, as compared with the corn-corn pattern, can be achieved. "Production costs and returns showed that the average gross return from squash hybrid seed production alone was PhP60,830 bringing the total gross revenue of the combined corn-squash hybrid seed production pattern to PhP107,510," Dr. Batugal proudly mused.

Total variable costs increased

to 9.5 percent while the gross profit margin rose to 42.5 percent. The marginal benefit-cost ratio (MBCR) of the new pattern is 3.1. "The high MBCR indicates that adopting the new cropping pattern is not only profitable but also meets the benefit-cost requirement of new technologies to account for the risk factor," Dr. Batugal explained.

The participating corn farmers produced an average yield of 121.66 kg squash seeds/ha and received a guaranteed seed price of PhP 500/kg. Farmers could also use the squash flesh after seed extraction for food or feed.

"Many farmers have expressed their interest in adopting the new cropping pattern and intend to expand

their areas for squash planting. Their endeavor could be sustained since the needed technology has been successfully adopted and the credit, marketing and institutional support systems are now in place," Dr. Batugal concluded.

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Sources:

\* The article was based on the study, "Commercializing and Integrating Squash Hybrid Seed Production Technology into the Cropping Systems of Sto. Niño, Cagayan", of the Farmers' Community Development Foundation, International (FCDF), Los Baños, Laguna, as reported by the Project Leader, Dr. Ponciano A. Batugal.

\* Nutritional benefits of squash, sourced from: <http://ezinearticles.com/?Nutritional-Benefits-of-Squash&id=5142839>





# Low-cost technology minimizes postharvest losses in fruits

BY MIKO JAZMINE J. MOJICA

**T**he export of fresh tropical fruits such as bananas, pineapples, and mangoes continues to generate big revenues for the Philippines.

However, while the Department of Agriculture's (DA) is bullish about the prospects of fruit exports due to rising global demand, the country faces challenges in the more stringent quality standards imposed by our major markets in China, Japan, US, South Korea, and Australia, as well as the increasing competition from other fruit exporting countries.

The availability of cost-effective and simple postharvest technology could help the country meet the requirements of the market and lead to higher incomes as this further

minimizes losses due to diseases, infestation and poor postharvest practices.

## Rediscovering HWT

Fortunately for entrepreneurs, there is an available and still underutilized technology that meets the need to preserve the freshness of fruits for export. While the technology itself is not new, efforts to promote the technology as a practical and chemical-free alternative to further lengthen the shelf life of fresh agricultural commodities such as tropical fruits are being undertaken anew at the University of the Philippines Los Baños (UPLB).

With funding support from the Bureau of Agricultural Research (BAR), Dr. Kevin Yaptenco of the University's

College of Engineering and Agro-Industrial Technology (CEAT) is leading the project to commercialize an appropriately-designed hot water tank for controlling pests and diseases of many agricultural commodities in the country.

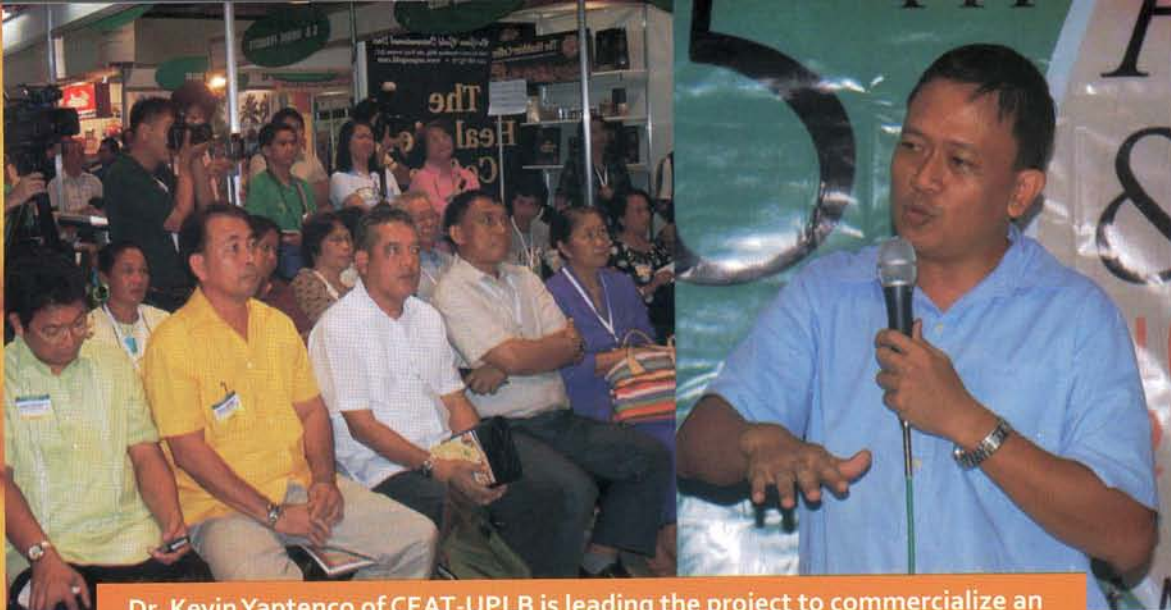
According to Dr. Yaptenco, bacterial plant pathogens in vegetable seeds, crown rot of banana, postharvest decay in mango and papaya, and insect larvae in mangoes can be controlled with hot water treatment (HWT). Moreover, this technology reduces losses due to postharvest decay, extends the marketable life of the commodity, and increases product quality. The prolonged good quality of the produce helps expand their access to and share of the market.

In a previous study, which was





## KR2 ON Hot Water Treatment



**Dr. Kevin Yaptenco of CEAT-UPLB is leading the project to commercialize an appropriately-designed hot water tank for controlling pests and diseases of many agricultural commodities in the country.**

also funded by BAR under its National Technology Commercialization Program (NTCP), Dr. Yaptenco led the production of a scaled-up version of an existing HWT tank initially developed by UPLB's College of Agriculture.

To accommodate a larger volume of fruits for large-scale operation, the original capacity was increased from 160 kg to 440 kg. To reduce the power requirement of the system, heat is now generated by liquefied petroleum gas (LPG) rather than electricity.

### Cost-effective technology

While some might be interested in more sophisticated and expensive technologies, our present reality favors lower costing investments that could still meet the needs of the industry.

Dr. Yaptenco explained that while the existing vapor heat treatment (VHT) is a feasible alternative to the extended HWT protocol, the cost of the VHT unit with 6.7 ton capacity can reach P18-20 million and a complete VHT facility will cost around P65 million.

He explained that, in contrast, the estimated cost of a HWT tank with a 500 kg-capacity is only P250,000. And using multiple units, an exporter can achieve practically the same capacity as VHT machine at a fraction of the cost.

He further explained that, to carry out HWT successfully, a tank with

sufficient water, a heat source with temperature controller, and a means for circulating water to ensure uniform water temperature are all that are needed to ensure that commodities are treated evenly and effectively.

### Standards and profitability

As part of the new project funded by BAR, standards will be developed to serve as basis for evaluating the efficiency and effectiveness of commercial models of HWT tanks that will be allowed in the market.

The financial viability of HWT tanks at different capacities and their application to specific agricultural commodities will also be determined. The analysis generated will be disseminated to the public.

To protect the design concept, Dr. Yaptenco is also preparing an application with the Philippines' Intellectual Property Office for the HWT tank as a utility model.

To further disseminate the benefits of the technology, Dr. Yaptenco is willing to hold public forums to attract potential users and interested machine fabricators.

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*For more information on hot water tanks, you may contact Dr. Kevin Yaptenco at the College of Engineering and Agro-Industrial Technology, UPLB, Tel. No. (049) 536 3291.*





## Empowering abaca farmers through **ABAKAYAMANAN**

BY RITA T. DELA CRUZ

**T** rue to its quality - strong and durable - the abaca fiber (*Musa textilis* Nee) industry remains one of the top dollar earners of the country. This centuries-old industry remains formidable and vibrant as abaca continues to be one of the most natural and unique treasures of the country being favorably competitive with the other fibers produced in the world.

The Philippines used to produce majority of the world's abaca fiber but recently, Indonesia is gearing up to be a strong competitor and is currently expanding its abaca plantations.

According to the Fiber Industry Development Authority (FIDA) of the

Department of Agriculture (DA), the Philippine abaca has the competitive advantage over other abaca fibers because of its versatility. It has different grades, (9 grades each for hand striped and spindle-striped abaca) compared to the Ecuadorian abaca for example with 5 grades only.

Today, the longest fiber plant is largely grown in Southern Leyte where a new variety called Lai-Lai, has been developed. This variety reported to be twice as strong and twice as expensive as other abaca fibers grown in other parts of the country.

### **Abaca production in the country**

Abaca earns top dollar for the

economy with about US\$76 million generated every year. This supports the livelihood of around 140,000 abaca farm workers, including 78,000 small farmers with more than 430,000 dependents and 143,429 strippers. The fiber craft industry remains an important source of livelihood to rural women and out-of-school youths. In the Philippines, Bicol and Eastern Visayas are the top two abaca-producing regions.

In a report by FIDA, figures show that in 2010 the production of abaca fiber declined. More specifically, in the Bicol region alone there was a 4-percent decline in production from 17,729 mt in 2010 to 18,441 mt in 2009.





Dr. Editha O. Lomerio, (2nd photo, center) OIC-regional director of FIDA- 5 teaches farmer-members of Gubat Abaca Growers Cooperative on how to improve the quality of their abaca products so that they could compete both locally and globally.

According to Dr. Editha O. Lomerio, OIC-regional director of FIDA in Region 5, the slack in production for abaca fiber could be attributed to several factors that include viral disease infestations, destruction of the forest ecosystems in which may be found many of the abaca farms, farmers' low receptivity and non-adoption of improved abaca production technologies, lack of information on value-adding activities, and low and unstable farm gate price of abaca fibers in the market.

She also mentioned that the decline in productivity of abaca farms and the increased frequency of harvesting of abaca fibers have affected the overall production of abaca in the Bicol region. "There was a time when Bicol ranked even below Eastern Visayas in terms of area and production due to production loss," Dr. Lomerio said. There is a report of producers of abaca cottage industry products in Bicol "importing" their raw material from Southern Leyte.

### Implementing the *Abakayamanan* Project

Working on the principle of empowering the abaca farmers and reinvigorating the abaca industry by increasing its production, FIDA Region 5, in collaboration with local government units (LGUs) and farmers' organizations, implemented the project titled, "Enhancing the Productivity of Abaca Farms in the Bicol Region through Integrated Farming System: The *Abakayamanan* Program" or simply, the *Abakayamanan* Project

With funding support from the Bureau of Agricultural Research (BAR) and the National Agriculture and Fisheries Council (NAFC) through the Japan Official Development Assistance's (ODA) - KR2 Program Grant Assistance for Underprivileged Farmers, the project was implemented in 2009.

*Abakayamanan* (abaka + kayamanan) is a practical way of farming which aims to increase productivity in Bicol through the adoption of integrated farming system (IFS) and value-adding

activities. Specifically, the project seeks to enhance the capacity of abaca farmers and update them with the latest production technologies.

The project has three components: enhancing the capacity of farmers through the introduction of new production technologies, establishing two pilot farms for existing and newly open areas for abaca plantations, and building the capability of farmers through trainings and seminars.

Since *Abakayamanan* promotes diversified and integrated farming system as an effective means to increase farm productivity, cash crops such as vegetables have provided income for the abaca farmers to tide them over while waiting for the harvest of abaca fibers. "We adopted integrated farming technologies to provide income to the farmers while awaiting the main crop to be productive. Vegetables such as beans, *pechay*, squash, eggplants, okra, peanuts and other leguminous plants are planted in between crops",





explained Dr. Lomerio.

Aside from the introduction of cash crops, another source of income for the farmers is the raising of livestock, such as goats, for meat production.

## Establishing *Abakayamanan* Model Farms

An important component of the project was the establishment of two *Abakayamanan* Model Farms, each of which consists of a newly-established abaca area to showcase the IFS (abaca + vegetables) technology, and an existing abaca plantation to demonstrate proper virus disease management and to serve as an immediate source of abaca fiber.

The model farms were established in Gubat in Sorsogon and Mililipot in Albay with the farmer-members of the Gubat Abaca Growers Cooperative (GAGC) in Brgy. Bentuco and the Malilipot Abaca Planters Association (MAPA) in Brgy. San Roque as beneficiaries. According to Dr. Lomerio, both organizations were

selected because "both consisted of members active and willing to be trained and be involved in the project."

The first model farm is a one-hectare plantation in Bentuco, Gubat in Sorsogon which used to be planted with coconut and bananas was leased by the GAGC and is now planted with *M. textilis* 51 and tissue-cultured *Musa* plants.

The second model farm is an existing plantation in Malilipot, Albay which is being managed by the MAPA. The area underwent the regular land preparation procedures such as plowing and harrowing and is now planted with *M. textilis* seed pieces obtained from the FIDA seed bank. The abaca plants were set in the field 2.5 meters x 2.5 meters apart.

Through the project, the farmer-beneficiaries were provided with agricultural inputs that included abaca planting materials (hardened tissue-cultured seedpieces), vegetable seeds (okra, eggplant, *bush sitao*, *kangkong*, *upo*) for intercrops, fertilizers, insecticides, herbicides, farm

supplies and equipment (rubber boots, hoes and sprayers), and information and communication materials (brochures and flyers).

To sustain the production of high quality fiber, FIDA has insisted on the production and use of disease-free abaca plants. "We advocate a system for disease eradication as well as the proper monitoring or early surveillance for disease incidences," stressed Dr. Lomerio.

For both new and existing areas, the beneficiaries were taught the protocols for proper spraying of insecticides and handling of agricultural chemicals as well as the use of organic fertilizers. "For the existing plantations, we gave a series of lectures on the identification of abaca diseases, especially the viruses, on the mechanism of transmission and the causes and effects in terms of the fiber produce, as well as the proper control of the diseases," she explained.

"We have also provided them with free training activities and seminars to technically equip them with the know-how on improved abaca production and





disease management, vegetable production, integrated farming system, and livelihood training," said Dr. Lomerio. She added that "since the women members of the association were more interested in handicraft-making, we trained them on product development and provided them with some livelihood equipment such as twining devices, handlooms, and sewing machines." This now becomes a major source of livelihood for the two associations.

#### Farmer beneficiaries

As opportunities and prospects arise, abaca remains the strongest commodity in the country's fiber industry providing strength to the Philippine economy. On this end, the happy and fulfilled faces of the Coop members are proof of the success of the project.

"This project on abaca is a big help for us here in San Roque because abaca farming is our major source of income. Unfortunately, due to the occurrence of viral disease infection in abaca and the lack of technical know-how on disease management and prevention,

the productivity of our abaca farms have declined. Given abaca's low productivity and income, many of us were forced to shift to short-season crops," revealed Reynaldo Bertillo, chairman of MAPA and one of the farmer-beneficiaries of the project.

"Through this project we learned various skills on handicraft-making such as *sinamay* weaving, Kenya twine and abaca *pinukpok*. We were provided vegetable plants and disease-free tissue cultured abaca seedlings as well as fertilizers. Making new products out of abaca has helped our family a lot. We can now send our children to school," Mang Reynaldo said.

Meanwhile, Manuel Feolino, chairman of GAGC, explained how the project assisted their Coop particularly in their livelihood activities from abaca. "We are now earning a lot from the handbags that we produce here. In fact some members of my family are already involved full-time in this livelihood activity. I am mainly into abaca stripping while my daughter makes and designs the handbags which our Coop sells."

The project also assisted the two Coops in marketing their products from abaca including cordage (ropes,

twines, marine cordage, binders, and cord), fibercraft (handbags, mats, purses and wallets), and handwoven fabrics (*sinamay*, *pinukpok*, and *tinalak*). According to Feolino, they now have a wider market for the handbags that they produce, even selling them outside Sorsogon.

With the *Abakayamanan* project, production of abaca fibers in Sorsogon and Albay has increased. "Many of our farmers have gone back to abaca production following some interventions on improved production and disease management by FIDA. Also, with our training on the development of products from abaca fibers, Coop members are profiting from the additional income from the making of handicrafts and handbags," said Feolino of GAGC.

For more information about the project, please contact: Dr. Editha O. Lomerio, OIC-regional director, Fiber Industry Development Authority V, Bicol University Compound, Legazpi City. Telefax: (052) 820-2481 or 435-0706 or email at: [fina\\_rov@yahoo.com](mailto:fina_rov@yahoo.com)

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# Producing high-value **organic vegetables** under protected agriculture

BY PATRICK RAYMUND A. LESACA

**T**he present awareness for and the level of importance given to organic agriculture in the country are such that it is already indicating the overall tempo and flow of agriculture and cultural practices in the country. For its part, the Department of Agriculture is now seriously looking into the potential of promoting organically-grown produce at a greater scale. This trend is seen to eventually lead to a healthier eating lifestyle among Filipinos, not to mention the beneficial effects of organic agriculture to the environment.

This development is also a manifestation of a concerted effort among agencies of government, private

individuals and state universities and colleges to reduce the incidence of poverty across the country as it is a very doable and low external input practice. The DA's battle cry on food security through the **Agri-Pinoy** agricultural framework serves as the call for improved food production. The challenge to all DA agencies, therefore, is to provide nutritious, accessible, affordable, chemical-free food for every Filipino.

Having such an endeavor is a project called, "Promotion of Protective Cultivation Technology for High Value Organic Vegetable Production", being administered by BAR and funded by NAFC through the Japan Official

Development Assistance's (ODA) - KR2 Program (Grant Assistance for Underprivileged Farmers).

The project proponent is the Bataan Peninsula State University (BPSU) located in Abucay, Bataan, whose mission is to provide quality and relevant education that will help develop highly qualified and competitive human resources responsive to national and regional development. BPSU is represented by its president, Dr. Delfin O. Magpantay.

According to the proponents, protective cultivation of organic vegetables significantly reduces the amount of chemical inputs in vegetable production and this will help address



## KR2 ON Organic vegetables



environmental hazards. The promotion of this technology will, therefore, not only give economic benefits to farmers but also provide communities with a supply of vegetables that are safe to eat and whose cultivation does not harm the environment.

This project seeks to produce off-season high value organic vegetables; utilize animal waste and plant residues as a source of organic fertilizers; and determine the least costing combination of farm inputs to produce a sufficient supply of nutritious and safe high value vegetables for the market. With these objectives, the project will find out the economic benefits of the technology in addition to its benefits to health and the environment. The immediate beneficiaries of the Project will be the marginalized vegetable growers, farmers and consumers within the district of Abucay.

The agri-business enterprise will also be replicated by 100 farmers in the other municipalities of the province. One innovation that is being done is engaging an agribusiness firm for technical assistance and market-tie up. With the assurance of a connection to the market, farmers shall be encouraged to adapt the technology. This arrangement will not only help the farmers' improve their incomes but it shall provide an adequate supply of safe organically-grown

vegetables for the market.

According to Dr. Jonathan Lacayanga, project leader and associate director for Research and Development of BPSU, growing vegetables in the region has been proven to be the major source of farmers' income especially during off-season. He also cited facts obtained through studies that continuous and unregulated application of inorganic fertilizers is the main cause of decreasing land productivity as it can lead to increased soil acidity. The application of organic fertilizers is one of the favored methods of rejuvenating depleted soils and sustaining fertility levels.

The project involves the establishment of low cost net houses (greenhouses) where high value organic vegetables such as lettuce, salad tomato, and bell pepper, among others, will be produced. The greenhouses are so designed such that cultivation, propagation, and protection of young seedlings being delicate plants shall be facilitated and enhanced.

Once the project reaches full completion, we can expect to see organically produced high-value vegetables finding their niche in the domestic market. The project proponent is optimistic that with the support of BAR and the financial assistance extended by NAFC through KR2, the project will meet success not only in the region, but also in other areas in the country where the cultivation of high value vegetables and organic agriculture has a potential and is a priority.

As of this writing, the University has already produced organically-grown lettuce, salad tomato and bell pepper under greenhouse conditions in their field trials. According to Dr. Lacayanga the initial results were impressive and they were able to meet expectations. The vegetables produced are presently being sold to nearby food establishments and restaurants.

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# Exploring options in rubber production technologies

BY MARIA ANNA M. GUMAPAC

**A** mall is the hub of activity on weekends. Nearly all levels are brimming with people from all walks of life.

You have food stores clamoring for even more customers, clothing boutiques indulging its clientele (depending on its intended market at times), stores filled with gadgets attracting the curious and the geeks, sporting goods stores calling the athletics and the aspiring ones to come in, and the ever rowdy toy store with children and the one too many woman/man-child in between. The common thread among all these establishments does not just involve people. Granted, it's an obvious key, but the one thing one would not often consider is, in fact, rubber.

Rubber is one of the most important products in the world, permeating nearly all facets of our daily living with its numerous functions. Take for example, automobiles with its tires and gaskets, industrial machinery and household appliances, and let us not forget articles of clothing and footwear as well as toys!

It should be known, however, that there are in fact two kinds of rubber: synthetic and natural. Natural rubber is a solid product obtained through coagulating latex produced by certain plants, particularly *Hevea brasiliensis*. Although there are a number of species that can produce secretions similar to latex when the bark is cut, only a select few can provide ample quantities with the same caliber of quality that is

adequate for exploitation on an economy-based scale. Synthetic rubber, on the other hand, is any type of elastomer, invariably a polymer. This type of rubber, however it alleviates the pressure and demand from production of natural rubber, is considered expensive—certainly more so than its natural counterpart.

In the Philippines, rubber is one of the important export products, which in turn is vital to our country's foreign earnings. However, because of the lack of support from the government, growth of the rubber industry in our country has certainly slackened, certainly close to a standstill. This is most apparent in cases wherein due to said lack of support, tire and rubber manufacturers were forced to import raw materials and incur higher production cost, prompting them to closing shop. Consequently, loss of job

opportunities and potential revenues for the government occurred. This is in spite of the fact that the Philippines ranks sixth in the world rubber production.

Rubber was introduced in the Philippines in the early 1900s. The rubber used to manufacture tires and shoes came from Thailand and Indonesia. In the early 1920s, rubber mills were established in Basilan, but it was only in the 1950s that local private corporations embarked on setting up rubber processing plants in Mindanao (Agriculture, 2008). As of 2008, Mindanao is considered one of the major rubber-producing provinces in the Philippines.

## Exploring and utilizing rubber in Rizal

In Rodriguez, Rizal, there is no available record which can point out that farmers of local folks engage in







planting rubber tree, when in fact soil and climate conditions are much favorable to the growth of the tree.

The municipality of Rodriguez is situated at the outskirts of metropolitan Manila. It is the biggest municipality in Rizal in terms of land area (36, 308 hectares, 26.81 percent of Rizal). Largely based on agricultural and rock quarrying, its economy is typical of pro-industrial towns. One-third of its area is alienable lands while the rest is a forest watershed reserve. More than half of the area consists of hilly mountainous suitable only for tree crops, pasture, and wildlife. The underutilization of its land has been one of the reasons for the low per capita income of the town's farmers.

The climate is characterized by two pronounced seasons: dry from December to May, and wet for the rest of the year. July and August are the rainiest months with 550–568 mm rainfall.

The predominant wind direction that affects Rodriguez is the southeast monsoon, with an average speed of 10 km per hour. However, this speed direction deviates to other directions,

thus reducing its impact to the town.

In line with this, the University of Rizal System (URS) and the local government unit (LGU) of Montalban through the Municipal Agriculture Office (MAO) hereby proposed the promotion and commercialization of rubber production technologies in Rodriguez, in view of the need to support the Philippine government in promoting rubber industry.

The objectives of the project include: 1) introduce and showcase rubber production technologies and document their performance under Rodriguez, Rizal conditions; 2) conduct social and economic preparations vis-à-vis the introduction of the rubber production system in Rodriguez, Rizal; and 3) document and assess the problems (technical, economic, political, etc.) encountered during the implementation of the project.

The project was implemented through the collaboration of three agencies: the URS, the LGU of Rodriguez, particularly MAO, and the Department of Agriculture–Bureau of Agricultural Research (DA-BAR). MAO

provided the land used for the said project, security of the area, as well as 50% of the labor cost. URS Rodriguez provided the manpower and other technical support, while DA-BAR shouldered the rest of the expenses and other services necessary in the conducting of the project.

The methodology of the project included the establishment of a nursery to propagate budded rubber seedlings. The seedlings of the following recommended clones, USM1, PB85, and RRIM 600, was to be planted in a 6-hectare plot in Rodriguez, Rizal, with at least 100 trees per clone. Of course, survival and growth of the seedlings in both nursery and field shall be documented, including latex yield (after 5–6 years), pests and disease incidence, as well as project implementation procedures.

Upon the start of the project, it was the program goal to promote natural rubber production in Rizal as a profitable and environment-friendly industry. One of the intended indicators of the program's success in achieving said goal was that at least 1,000 hectares of rubber would have been planted by 2020, with 6 hectares of





rubber demo farm established by the end of 2010.

The rubber industry was established on August of 2009. Thirty kilograms of rubber seeds were purchased from Laguna to serve as initial planting materials; of this, 2,500 seedlings were transferred to seedling bags. A second batch of seeds included another 30 kg, which was planted on September of 2010, with 2,450 seedlings transferred to seedling bags. To date, 3,500 seedlings are being kept in the nursery and being prepared for patch budding.

The bud wood garden was also established on August of 2009 with 350 budded seedlings purchased from Lucban, Quezon. Among the three clones utilized, RRIM 600 obtained the highest height, with an average height of 241.3 cm, followed by USM1 and PB330 with 235.9 cm and 235.6 cm, respectively. In terms of girth, however, PB330 obtained the biggest among the three with an average circumference of 10.3 cm, followed by USM1 and RRIM 600 with an average of 8.8 cm and 8.1 cm, respectively.

### **"I'm rubber, you're glue..."**

There's a saying, "I'm rubber, you're glue. Whatever you say bounces off of me and sticks to you." However, if one would consider the forecast of rubber production by the Association of Natural Rubber Producing Countries (ANRPC) to be believable, we are bound to be left lacking in rubber on 2011 and stuck in a puddle of glue. What metaphorical puddle, you mean? It signifies that we probably have to pay more for a product that we could grow in our own backyard, so to speak.

According to the program launched in Rodriguez, Rizal, one of the major problems they identified are the inadequate promotional efforts and technology dissemination, inadequate volume of planting materials, lack of viable financing scheme available to farmers and the absence of quality standards for rubber.

The promotion of rubber production technologies in Rodriguez included aiming toward the of conduction social and economic preparation vis-à-vis the introduction of rubber, and develop

Information Education and Communication (IEC) materials for distribution to farmers and Research and Development Extension in Rizal. Therefore, activities implemented to achieve the aforementioned aims and objectives involved conducting a seminar on rubber production for farmers and technicians. Furthermore, data was gathered in preparation for IEC on promotion of rubber production for Central Luzon.

As it is, ANRPC estimates that rubber production this year could be around 10.025 million tons, a lower figure than the earlier forecast of 10.060 million tons (Commodity Online, 2011). The program led by URS, alongside with Rodriguez, Rizal's MAO, and DA-BAR, should lead us out of the proverbial puddle of glue and develop a higher and more prominent yield of natural rubber in country. This campaign is vital and should be maintained consistently as we gear up for the foretelling of unstable and lower rubber production, courtesy of a staggering economy on a worldwide scale. #

The article was based on the study, "Promotion of Rubber Technologies towards Commercialization in Rodriguez, Rizal," by Freddie Regalario of the University of Rizal System. For more information please contact: Mr. Freddie Regalario at (63) 02-997-9765.

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Mig Bulay, a farmer and member of the Subanen Tribe in Midsalip, Zamboanga del Sur, holds his *Adlai* harvest. *Adlai* is a staple food in Midsalip and majority of the farmers cultivate it using their traditional farming practices because it is easy to grow and manage particularly in the upland. The Subanen cook and serve *Adlai* just like rice and use the grains to make wine which they serve during special occasions including festivals, weddings, and funerals. The Department of Agriculture-Bureau of Agricultural Research (DA-BAR) intensifies its promotion on this indigenous crop by funding adaptability and variety trials in selected regions of the country. PHOTO BY RDELACRUZ



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