

FARMERS GRASP THE BUSINESS OF CHANGE



An Australia–Indonesia program, working initially with peanut and cocoa growers, is linking researchers, extension officers and private companies to alleviate rural poverty by encouraging farmers to operate more commercially

BY BRAD COLLIS

Sitting, legs folded, on the mosque's polished porch in their village, Pengenjet, in central Lombok, the farmer group sips coffee and talks animatedly about its first experience of working with agricultural researchers as part of an ACIAR initiative.

In two seasons the new knowledge the farmers have learnt and applied to growing peanuts in paddies after the rice harvest has had a rapid effect on quality and yields and this, of late, has taken on a new significance.

Previously peanuts were a handy, but not overly rewarding, crop that could be grown in the dry season by taking advantage of soil moisture remaining in the paddies. Crop productivity and nut quality were highly variable, generally adequate only for low-priced local markets, and sometimes came with a high aflatoxin health risk.

However, for the farmers of Pengenjet and several other Lombok districts, their peanut crops have new-found stature. While rice provides staple food, peanuts provide money, and the level of payment relates directly and transparently to improved quality and productivity. Peanut growing, and by extension, farming, is becoming a business, not merely

a traditional way of life. And a more reliable income from this business means money for improved health and education and a far more secure existence.

These Lombok peanuts, and also cocoa in Sulawesi, are two of the pilot crops at the heart of an ambitious new program—the AusAID-funded SADI initiative. It is an extensive collaboration between a wide spread of research providers and companies and it is introducing a new approach to agricultural development among poor rural communities. Based on 'market pull' as opposed to 'research push', the program—SADI stands for Smallholder Agribusiness Development Initiative—is endeavouring to lift smallholder farming from its traditional poverty-stricken levels to a farming structure that is more robust and sustainable because it has a commercial driver. The rationale is that if conditions exist to directly link successes in yield and quality (and landscape management) with significantly higher net incomes, a more permanent improvement in agricultural production will result.

Thinking and working within a commercial framework is a fundamental shift in perception and practice for most smallholder farmers. It is

a change being nurtured by the establishment of a vertically integrated supply chain, joining production to processing, and raised market expectations. Research and extension support is being applied at both ends of the chain to make sure higher-quality crops are matched by



PARTNER COUNTRY: Indonesia

PROJECT DESCRIPTION: The Smallholder Agribusiness Development Initiative (SADI): support for market-driven adaptive research

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Peanut farmers in central Lombok, Mr H. Syukri (left) and Mr H. Muhajirin (centre) discuss their crops with senior agronomist Mr Lalu Wirajaswadi.



PHOTOS: BRAD COLLIS

Peanut growing, and by extension, farming, is becoming a business, not merely a traditional way of life.

higher quality—and higher value—processed product.

PARTNERSHIPS ARE THE KEY

The model, of course, requires long-term commitment and partnerships among researchers, farmers and the companies buying the crops.

For both peanuts and cocoa, the International Finance Corporation (IFC) is managing the agribusiness development in partnership with GarudaFood, which provides the buyer/processor input for peanuts, and Mars Symbioscience (a division of the global food company Mars, Incorporated), which is the commercial partner for the cocoa initiative.

For the Pengenjet farmers, researchers from the ACIAR project showed them how regular seed spacing improved sowing efficiency, the crop's water-use efficiency, and made cultivation and harvesting easier. The improved water-use (irrigation is limited), along with improvements to the rate and timing of fertiliser applications, has contributed to increased yields, and new knowledge about the use of fungicides has helped them deliver a

much healthier and higher quality harvest.

When they deliver to GarudaFood the farmers remain present while their peanuts are assessed. The company buyers explain or demonstrate the quality parameters behind the peanuts' valuation. For example, if the crop has been harvested too soon, the immaturity results in a lower price, but the farmer is instructed how to avoid repeating the mistake.

FARMERS IN RESEARCH

Leader of the Pengenjet farmer group Mr A. Indra says the experience has been enlightening for the villagers, who are keen to continue being involved with ACIAR in research trials. Next season they hope to be sowing seed from improved varieties and are already looking forward to assessing the results. Mr Indra says the program has opened their eyes to possibilities they were not aware of: "Until now our farm productivity has been unchanged for as long as we can remember. Now we are seeing what we can achieve and our ambition is not just to grow peanuts, but to grow high-quality peanuts."

This is the kind of thinking that transforms a farm into a small business.

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TRIALLING A HOLISTIC MODEL FOR PROGRESS

The \$38 million Smallholder Agribusiness Development Initiative (SADI) is a new, innovative approach to lifting smallholder farming from traditional subsistence levels to a more sustainable and more business-oriented agricultural economy.

The 10-year program, in Eastern Indonesia, contains three sub-programs:

1 Community development by enhancing smallholder production and marketing—implemented by the Indonesian Government through its national community development program (PNPM) with management support from the World Bank.

2 Strengthening private-sector agribusiness and developing small to medium enterprises—implemented by the International Finance Corporation (IFC).

3 Supporting market-driven adaptive research and development (ACIAR).

The initiative is a partnership between AusAID and Indonesia's National Development Planning Agency, BAPPENAS.

Dr Peter Horne*, who has been ACIAR's manager

of the 'Support for Market-Driven Adaptive Research' sub-program, explains that SADI is designed to bring the three principal elements together, to find ways in which research, agribusiness development and rural development can be combined to maximise the overall impacts.

Under sub-program one, farmers can apply for block grants to spend on mentoring support or technologies that will help them collectively improve their agricultural livelihoods.

Sub-program two, run by the IFC, is aimed at strengthening agribusinesses, particularly agribusinesses linked to supply chains that involve large numbers of smallholders. Two examples of this are farmer–processor developments in peanuts and cocoa production. The IFC looks at ways of improving these business relationships, and of improving access to finance and markets, by partnering farmers with lead firms.

The third sub-program, managed by ACIAR, is helping province-based research organisations build their capacity to undertake research targeted towards the priorities of the province



Dr Sahardi Mulia (left), head of BPTP in South Sulawesi, with ACIAR's Dr Peter Horne.

and its market opportunities (Figure 1, page 10).

Dr Horne says it is 'adaptive research' since it recognises that, for many of these priorities, there are already promising technologies that just have not been locally adapted. "This adaptive research can involve examining adaptation to local biophysical factors (such as climate and soils), but also adaptation to the constraints and opportunities that exist within local farming systems and social environments, and adaptation towards local market opportunities.

"During the first three-year phase—the pilot

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Lombok peanut farmers Mr A. Saprun (left), co-operator farmer from Pengerjek village, and leader of the Pengerjek farmer group Mr A. Indra (right) showing the effects of the fungal diseases late leaf spot (upper leaves) and rust (mid and lower leaves). These are predominant in tropical environments. Yellowing of leaf can be either due to jassid (sucking insect pest) and/or nutritional disorders.



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phase—we are learning how to strengthen the concrete linkages between community development, agribusiness development and adaptive research.

“If you look at the peanut program in Lombok as an example (sub-program two), the IFC has partnered with GarudaFood, a major Indonesian peanut buyer and processor, to identify ways in which they can improve peanut farmers’ access to markets, finance and technical support.

“At the same time, ACIAR–SADI has funded an adaptive research project to address technical issues such as water management, crop management, varieties and improved seed supply.”

“There are overriding challenges, such as transport infrastructure, and we also need to find more companies like GarudaFood and Mars Symbioscience that are genuinely interested in developing—with farmers—vertically integrated supply chains on the understanding that their future is based on farmers having a sustainable future.”

• Dr Peter Horne is now ACIAR’s Livestock Production Systems research program manager in Canberra. The new Makassar-based ACIAR sub-program manager for SADI, as of February 2009, is Dr Thomas Oberthur.

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BUILDING BUSINESS

This ACIAR–SADI project is working directly with farmers linked to the GarudaFood supply chain. GarudaFood currently sources peanuts from 3,500 farmers in Lombok, but through the partnership with SADI, plans to expand this to 18,000 farmers.

The GarudaFood processing plant in Lombok is managed by Mr Budiono Sukadri, who says the venture is concentrating on the fresh-peanut market, in which demand far exceeds supply; there is ample room in which to accommodate increased production.

Mr Sukadri says the Lombok peanuts are cleaned, boiled and partially roasted before being sent to the company’s Java headquarters for final processing and packaging.

He says the company opened its Lombok plant in 2005 hoping to increase production by increasing the area planted to peanuts. However, it soon realised that putting up a sign saying ‘We will buy your peanuts’ was not enough to bring farmers and their peanuts to the front gate. The villagers were just as happy growing maize or soybean in rotation with rice. They needed a reason to take the risk of committing to peanuts.

AUSTRALIAN CONNECTION

In March 2008 the key Australian partner, the Queensland Department of Primary Industries and Fisheries, hosted a visit by Mr Sukadri and a

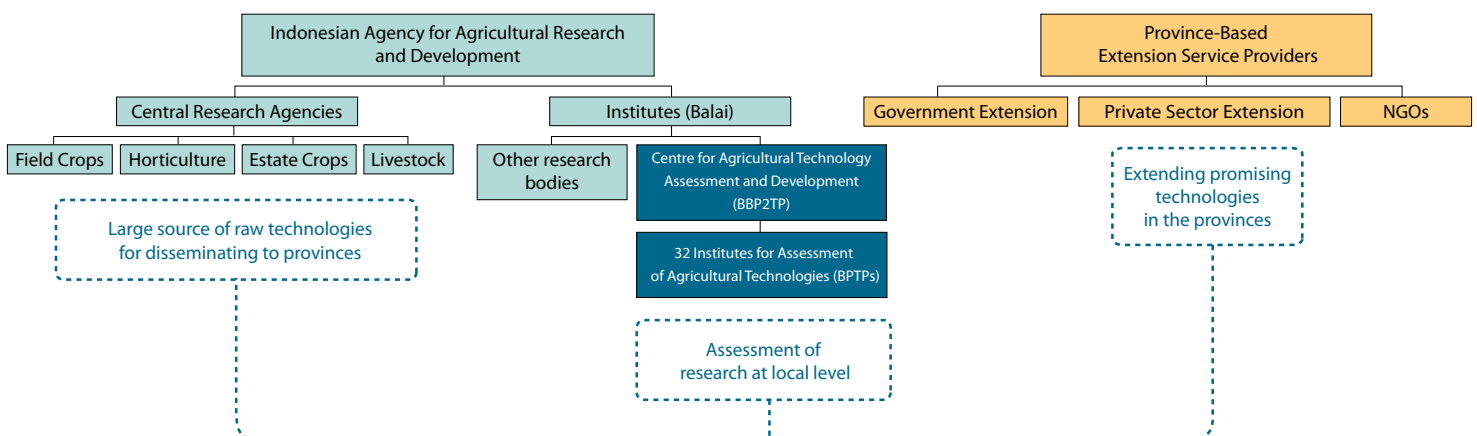
group of Indonesians to the heart of Australia’s peanut industry—Kingaroy, Queensland. They studied how the industry operates and manages a vertically integrated supply chain, albeit on a vastly different scale, and looked at methods and technologies that might be able to be scaled and adapted for use in Indonesia.

“The main constraints in Lombok are water and seed management, and lack of mechanisation, because manpower is a big problem,” Mr Sukadri says. “Like everywhere, the young people are moving to the cities, so farmers have serious labour shortages at seeding and harvest. So we need mechanisation, but it has to be adapted to smallholder operations.”

Mr Sukadri believes Lombok peanut production has made a strong start towards achieving its initial goal of replacing some of the 100,000 tonnes of fresh peanuts that Indonesia currently imports each year, but he says success will rest heavily on mutual development: on growers being able to meet higher quality and supply parameters and on the company continuing to be able to pay growers adequately for their efforts.

Figure 1 is a simplified view of the structure of agricultural research and extension in Indonesia. Through the Smallholder Agribusiness Development Initiative (SADI), ACIAR is working closely with Indonesia’s Centre for Agricultural Technology Assessment and Development (BBP2TP) and the province-based Institutes for Assessment of Agricultural Technologies (BPTPs). Strengthening their links with the central research agencies and province-based extension services is improving the flow of information between national research initiatives and on-the-ground needs of farmers. This puts provincial extension providers in a better position to adapt and adopt beneficial research outcomes that may otherwise fail to reach farmers. The Eastern Indonesian program could become a model that can be applied elsewhere to boost the effectiveness of agricultural development.

Figure 1 Strengthening links between research and extension



ACIAR is helping to strengthen links between research initiatives and extension at the national and province level.

Future rests on genetics

The development of partnerships through SADI is also playing a key role in the revival of the cocoa industry on the eastern Indonesian island of Sulawesi. There are more than half a million smallholder farmers on the island, making it the third-largest cocoa producer in the world over the past 20 years.

Cocoa growing began seriously in Sulawesi in the late 1980s and considerably lifted the fortunes of cocoa-growing communities over the next two decades. But since the early 2000s production has been hit hard by a build-up of pests and diseases, tree senescence and deteriorating soil fertility, causing many farmers to lose heart and abandon the crop.

The SADI program, with its extensive government and commercial partnerships, is bringing in the expertise and technologies to revive and improve the industry. It is giving smallholder farmers more control over the long-term sustainability of their cocoa production,

and is restoring the economic opportunities that cocoa offers poor rural communities.

GENETIC BASE

Central to the rebuilding effort is the need for a large-scale cocoa genotype improvement program that can deliver to growers disease and pest-resistant seedlings which produce good-quality cocoa that is also locally adapted. This involves farmers identifying superior individual plants in their area from which grafts can be taken for cloning onto rootstocks. It is labour-intensive and requires farmers to be trained in cocoa selection and grafting techniques. Grafting is preferred over conventional seed propagation because clonal propagation transmits all the characteristics of the parent tree without dilution.

Training and nursery establishment are now under way, boosted by the involvement of the main buyer for cocoa, Mars, which is still a family-owned company with a long history of building mutually beneficial relationships as part of its business strategy.

NEW TECHNOLOGIES

Noel Janetski, president director of Mars Symbioscience Indonesia, says cocoa production has the potential to continue to make a substantial difference to the economic and social circumstances facing smallholder farmers

in Sulawesi (and Eastern Indonesia generally), but considerable technical intervention and social awareness are needed to overcome the production constraints that have built up.

"Many of the current trees originate from seed brought from Malaysia without quality screening," Mr Janetski says. "So we need an improvement program (to lift quality and pest/disease resistance), we need advanced tree management and agronomy, a lift in soil fertility, and improved postharvest hygiene and quality control. Compounding this is the hesitancy of smallholder farmers to adopt or stick with new technologies. This is caught up with sociological issues and a lack of appreciation that their farms can be, or need to be, run as businesses."

Mr Janetski says the complexity of the challenge means the only way

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Cocoa grafts.

THE HARD GRAFT AFTER THE HONEYMOON

La Trobe University botanist Dr Philip Keane is one of the scientists whose expertise is being made available to Indonesian cocoa smallholders through the support and facilitation of AusAID and ACIAR.

Dr Keane explains that the problems afflicting Indonesia's cocoa industry are symptomatic of the end of the natural 'honeymoon period' for cocoa growing, after its initial rapid expansion in a new region, such as Sulawesi. The same situation occurred in Papua New Guinea in the 1960s.

Trees can grow quite healthily for up to 20 years, he says, before succumbing to the build-up of pests and diseases and decline in soil fertility associated with a lack of management that can be common among smallholder farmers during the initial production period.

For the past two decades Indonesian farmers have enjoyed a cocoa boom, but Dr Keane says farmers now need a concerted program of

varietal improvement and more advanced farm management to ensure the industry overcomes the production constraints that have built up.

To place the industry on a long-term sustainable footing, Dr Keane says the involvement and training of farmers is crucial to the program's success.

Farmers are being taught how to identify superior types among their own genetically diverse cocoa and how to graft this better material onto substandard trees, which are eventually cut back to become the rootstocks. Alternatively they can graft seedlings, which are then planted into gaps in the farm.

"Farmers are encouraged to compare the performance of the selected genotypes with their standard trees," Dr Keane says. "This is one of the 'big ideas' we are promoting: farmer experimentation ... 'suck-it-and-see'. This helps farmers consider themselves as businessmen and

as 'scientists' and helps to dispel the perception that they are merely 'peasant' farmers.

"We are trying to do the same with simple pest and disease-control methods: try them on 20 trees and compare the results with neighbouring trees."

Working in PNG in the 1970s, Dr Keane discovered the fungal cause of vascular-streak dieback (VSD), which is a destructive disease in the region.

In this ACIAR-supported project he is working with La Trobe colleague Dr Peter McMahon, Professor David Guest from the University of Sydney and Dr Smilja Lambert from Mars Australia. Dr Jeff Neilson from the University of Sydney is conducting sociological research on factors limiting the uptake of new farming methods. And Mars Symbioscience field coordinator, Mr Hussin bin Purung, has been applying these ideas with farmer groups in Sulawesi.



Agriculture students Adi Cahyo (left) and Alfina.

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forward is by working in partnership with others, so a spread of resources and expertise can be leveraged.

“On the technology development side we have found ACIAR a very good partner because it brings a technical capability and has the credibility that allows it to connect with organisations such as the Indonesian Cocoa and Coffee Research Institute and Indonesia’s Institutes for Assessment of Agricultural Technology (BPTPs),” Mr Janetski says. “Also, when we start working with ACIAR in developing or adapting technologies, it provides a catalyst for others to start partnering to transfer those technologies and to involve farmers in the decision. It is laying down much stronger foundations for sustainable change—for the creation of a new, sustainable farming system.”

FARMER INVOLVEMENT

Mr Janetski says that, where possible, farmers are being helped to take responsibility for developing some of the support services that are needed, such as nurseries and fertiliser supplies. In this way other small businesses can develop on the back of farming.

Some farmers are establishing commercial nurseries. The limited supply of seedlings and grafted plants originating from high-yielding and disease and pest-resistant stock is a major factor holding back farmers’ renewed enthusiasm for cocoa. Supplying this demand for superior trees is providing new business opportunities for farmers who develop quality-controlled nurseries, often with the support of commercial partners such as the IFC or Mars.

Research into turning pod husks, pruning

The ACIAR–Mars collaboration has been crucial in demonstrating to farmers the connection between improved cultivation and access to higher-value markets.

– DR SAHARDI MULIA



Australia’s Minister for Foreign Affairs Stephen Smith and Indonesia’s Foreign Minister Hassan Wirajuda meeting with farmers, researchers and buyers at a demonstration cocoa farm in South Sulawesi in August.

waste and other organic waste, such as seaweed, banana stalks and rice paddy stubble, into compost is also adding a new commercial element to smallholder cocoa production. The compost is a valuable source of nutrients, especially during the early growth stages of newly planted seedlings. The compost improves soil condition and carbon balance, feeding the microorganisms that provide natural controls to the soil-borne fungus that causes pod rot disease.

Composting is a simple technology, but it has become a venture that turns waste matter into a product with value, whether farmers make compost for themselves or for sale.

ACIAR–MARS COLLABORATION

Dr Sahardi Mulia, head of BPTP South Sulawesi—the institutional link between research and grower adoption—says the ACIAR–Mars collaboration has been crucial in demonstrating to farmers the connection between improved cultivation and access to higher-value markets.

He says this has given much more impetus to resolving problems, such as the susceptibility of existing trees to cocoa pod borer, vascular-streak dieback (VSD) and pod rot disease. In particular he says the supply of new pest and disease-resistant genotypes and integrated management is reviving farmer confidence in cocoa.

“Until the disease and pest problems started, farmers growing cocoa enjoyed a better economy,” Dr Sahardi says. “Their standard of living was higher and many could even afford to send their children to university.” In Indonesia, farmers receive about 80% of cocoa’s market value, much higher than in other major

cocoa-growing countries.

Cocoa farmer and head of a farmer group in the Luwu Utara district, Mr Pesianus Lesnusa, says the level of collaboration between the Indonesian agencies, Mars and ACIAR has given farmers in his area new confidence in their future.

He says knowledge of management practices, such as pruning and fertilising, plus the prospect of new pest and disease-resistant varieties, has shown farmers that not only can they maintain their production, but improve it.

“Cocoa is very important to us because the market is good, the prices are good and this crop changed the whole economy of the district,” he says. “When cocoa pod borer, VSD and phytophthora appeared it was a serious worry.”

Mr Lesnusa and his farmer group, Beringan Sejahtera (which comprises more than 700 members), are hosting an ACIAR cloning trial in which 12 new genotypes are being assessed for local adaptation and cocoa quality. He says the problem now is a shortage of seedlings from the superior clones. However, this is something that farmers are learning how to address themselves.

Mr Lesnusa says the research, the knowledge and the ACIAR clone trials have improved the district’s economic outlook and done much to lift morale in the district.

TRAINING THE NEXT GENERATION

The cocoa revival is exemplified by the jump in students studying cocoa cultivation and management at the local vocational school for agriculture. The number of first-year enrolments in cocoa studies has risen from 25 to 110 in three years.

The school works closely with extension staff from Mars. Students have established almost 12,000 trees, which have become a source of superior genotypes for wider distribution.

Student Adi Cahyo says he decided to study agriculture because it offers a rewarding career and cocoa promises economic security. His classmate Alfina says she is studying agriculture and cocoa management so she can contribute to the improvement of her family’s farm. The family switched from corn to cocoa two years ago, believing it now offers better options. Students such as Adi and Alfina see farming and agriculture as careers, not just as the continuation of a family tradition. They have been shown that their landholdings, as small as they are, can be more productive, more diverse and capable of providing sustainable incomes as well as staple foods. ■

PARTNERS FIND A COMMON VOICE FOR FARMER DIALOGUE

The hope that the ACIAR–SADI program will engender a more commercial mindset among Eastern Indonesia's smallholder farmers has been helped by a new framework of collaboration recently established among the different research and extension agencies, particularly in the cocoa sector. This has arisen from the formation of the Cocoa Sustainability Partnership (CSP), a forum through which the many stakeholders have been able to synchronise the messages that are delivered to farmers.

Chair of the CSP's secretariat Rafiuddin Palinrungi, from the International Finance Corporation (IFC), says the CSP is a forum in which Indonesia's cocoa stakeholders discuss all aspects of the cocoa-rehabilitation program—technical activities, research and farmer/community empowerment.

The CSP includes the IFC, Mars Symbioscience, PT Hakiwa (cocoa exporters), State Crops Development of South and West Sulawesi, Trade and Industry Department of South Sulawesi, the Indonesian Cocoa Association, the Indonesia Coffee and Cocoa Research Institute, the BPTPs (the province-based institutes that assess new agricultural technologies) and a variety of NGOs that implement programs in the field.

Rafiuddin says that from 2001 to 2005, when efforts to save the cocoa industry began in earnest, there were numerous projects being funded by government agencies and private companies. They were all aimed at maintaining and even improving cocoa production by trying to resolve the worsening pest and disease problems.

"But these stakeholders were all working independently and this was resulting in cocoa farmers receiving different messages," Rafiuddin says.

"For example, many groups were working on preventing infestations by cocoa pod borer. One body of advice was frequent harvests, pruning, fertilisation and improved postharvest sanitation. Others were recommending changes in pesticide management, and there was one recommendation to cover the pods with plastic to keep out the borer. Each institution was promoting its own ideas to the same groups of farmers and, not surprisingly, farmers starting asking whose advice they should follow. That's when people realised we had to standardise the messages."

Rafiuddin says the first practical outcome

from this was the development of 'standard practices', which are the minimum practices that farmers need to apply, and 'additional practices', which are practices required for specific local conditions or environments.

The engagement with farmers is critical for any lasting changes to farming practices and 'farmer empowerment' is a central component of the ACIAR–SADI program.

GLOBAL COCOA MARKET

Part of the move to raise farmers' awareness of their smallholder farm as more than a basic food provider, but rather as a business, is to give farmers more control over the sale of their crops. To put farmers in a stronger bargaining position when selling, the IFC has developed an SMS service that provides farmers with market information for cocoa and maize.

The service provides global cocoa prices from the New York and London commodity exchanges, and converts this into local currency so that farmers can relate their production to world markets.

Rafiuddin says this price information service has been running for two years and its use is increasing as farmers realise the benefits of entering a sales negotiation knowing what the wider market is paying. He says the service is now receiving up to 5,000 'hits' a month, with farmer awareness of the service being raised by reminders printed on a popular agronomy/growing-season calendar.

The CSP calendar has been designed to allow different research and service-provider partners to

customise it according to their particular services, brand it with their logo and distribute it to the farmers they deal with. In this way it is widely circulated. The calendar's main communications element is the provision each month of information relevant to the management of the crop at that time. "May and June, for example, are harvest months for cocoa, so the calendar provides information on after-harvest care of cocoa beans, plus the reminder to access current market information using the SMS service."

The calendar supplements a website, quarterly newsletters, and farmer training manuals and brochures.



Field coordinator for Mars Symbioscience Hussin bin Purung, the Cocoa Sustainability Partnership has helped to coordinate the training of field officers and the advice given to farmers.

REVITALISING COCOA IN INDONESIA

Cocoa is the main source of income and livelihood for more than one million farm households in Indonesia and contributes export earnings in excess of US\$1.4 billion a year. More than half of these producers are in Eastern Indonesia. These farm livelihoods are now being threatened by declining quality and productivity of cocoa through increasing pest and disease pressure, ageing tree stock and declining soil fertility. Farmers are experiencing losses of up to 50% of the production they might have had if those pests and diseases

were properly managed and if good farming practices were consistently employed.

In mid-2008, the Indonesian Government announced a large national program for revitalisation of the cocoa industry (known as Gernas Pro Kakao). With funds from AusAID and ACIAR, the Indonesian Cocoa Industry Association (ASKINDO) co-sponsored a workshop in Indonesia in October 2008, under the umbrella of the CSP, to provide technical recommendations for the implementation of Gernas Pro Kakao.