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Committee Secretary
Senate Foreign Affairs, Defence & Trade References Committee
PO Box 6100
Parliament House
Canberra ACT 2600

Dear Dr Dermody

Inquiry into the Indian Ocean Region

Please find attached the Australian Centre for International Agricultural Research (ACIAR) submission to the Inquiry into the Indian Ocean Region. The ACIAR contact officer for the inquiry is Dr Simon Hearn, Principal Adviser.

I hope the attached submission is of assistances. My best wishes for a successful and productive inquiry.

Yours sincerely

Nick Austin
Chief Executive Officer

Australian Government

Australian Centre for
International Agricultural Research

SUBMISSION TO THE

SENATE COMMITTEE ON FOREIGN AFFAIRS, DEFENCE AND TRADE

INQUIRY INTO INDIAN OCEAN REGION AND AUSTRALIA'S FOREIGN, TRADE AND DEFENCE POLICY

MAY 2012

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Inquiry into Indian Ocean Region and Australia's Foreign, Trade and Defence Policy

Executive Summary

The Australian Centre for International Agricultural Research (ACIAR) is a statutory authority that operates within the Foreign Affairs and Trade portfolio. The Centre's activities are part of Australia's Aid Program, with the objectives of advancing Australia's national interest through poverty reduction and sustainable development. ACIAR was established in 1982 to assist and encourage agricultural scientists in Australia to use their skills for the benefit of developing countries while at the same time working to solve Australia's own agricultural problems.

ACIAR facilitates the undertaking of agricultural research in developing country partners by working with the countries to identify their needs and priorities. These are matched with Australian research providers who identify the opportunities to extend their work to meet developing country needs in agricultural science and related disciplines. ACIAR also funds R&D to assess and enhance the policy environment affecting the adoption of the results of the research undertakings.

ACIAR commissions research groups and institutions, including universities, CSIRO and State departments of primary industry, private consultants and non-government organisations (NGOs) to carry out agricultural research projects in partnership with their counterparts in developing countries. In this submission the term 'agriculture' includes fisheries and forestry research.

Given its agricultural research funding, regional partnerships and management roles, ACIAR's activities may have a bearing on some aspects of this Senate Committee Inquiry's terms of reference. In particular the increasing emphasis on agricultural research as an essential component of regional and global food security policies have implications for social and political stability in the future. The United Nation's Food and Agriculture Organisation (FAO) estimates that nearly one billion people experience hunger every day, with two-thirds living in the Asia-Pacific region. In Sub-Saharan Africa almost one in three people suffers from hunger. In terms of the Indian Ocean region ACIAR's research activities and collaborative partnerships cover important regional countries including India, Indonesia, eastern and southern Africa and Burma ,Thailand, Bangladesh and Pakistan.

Australia is justifiably regarded as a world leader in a range of arid, semi-arid, temperate and tropical agricultural research and production systems, much of which is directly relevant to conditions in Indian Ocean regional developing countries. Australian researchers and agricultural producers also operate in similar agro-ecological conditions to those prevailing in a number of Asian and African regional countries. In addition to research partnerships ACIAR also provides for both formal and informal capacity building activities though both educational and joint project undertakings. Capacity building in its various formats is considered an important means of enabling developing countries to maintain ongoing research in the future and to improve the prospects of adoption of research results including new technologies and agricultural systems.

Against this background ACIAR works to:

- Deliver multidisciplinary agricultural research outcomes to improve sustainable agricultural production and food security in developing countries – this research covers crops, livestock and fisheries, natural research management, economics and social sciences
- Fund informal and postgraduate training to build developing country research capacity to deliver and implement projects
- Communicate the results and impacts of its research
- Conduct and fund development activities that support research programs
- Administer the Australian Government's multilateral research partnerships including contributions to the research centres of the Consultative Group on International Agricultural Research (CGIAR).

In this submission further detail is provided for the Standing Committee on Foreign Affairs, Defence and Trade covering examples of ACIAR's involvements in India, Indonesia, Burma and Sub-Saharan Africa.

Indian Ocean Region Agricultural Research

India

The Indian Government recognises agricultural development as a key mechanism of inclusive growth. The goals of agricultural development in India are: growth in productivity and incomes while maintaining food security; sharing growth, with an equity focus on small and marginal farmers, women and populations in eastern India; and maintaining sustainability of agriculture by concentrating on environmental concerns. Overall, agricultural R&D remains a high priority in India, with a strong focus on poverty reduction.

Australia and India share many of the same agricultural and natural resource management problems and research challenges. ACIAR has supported collaborative agricultural research between Australia and India since 1983. The large and well-developed national agricultural research system led by the Indian Council of Agricultural Research (ICAR) is a cornerstone of the India program. The research activities have been increasingly linked to the food security problems of other South Asian states, and thus have a growing multilateral character, including the programs delivered in conjunction with the five International Agricultural Research Centres (IARCs) active in the South Asian region.

Based on formal in-country consultations convened in India by ICAR and ACIAR during February 2011, the medium-term strategy for 2011–16 is centred on joint partnerships with increasing co-investment by ICAR and other Indian partners. The India program emphasises collaboration in four areas of Australian and Indian research challenge and scientific expertise, in which there is potential for positive impacts at both field and national levels. The consultation confirmed increased emphasis on systems research, seeking synergies from multidisciplinary initiatives within and across the research clusters, as well as a progressive shift in geographical emphasis to the eastern states, where deep poverty persists. The medium-term strategy is focused around four clusters:

- Agricultural water management, particularly in rainfed areas
- Sustainable intensification and diversification of conservation agriculture zero-tillage cropping systems
- Faster breeding of improved varieties of wheat and other crops
- Assisting policy development in relation to agricultural adjustment and climate change.

As the current national joint projects phase down, increasing emphasis will be placed on subregional and regional engagements, noting the common contexts of extensive poverty and climate change, and the common agricultural research issues of agricultural intensification and better resource management. In this connection, trilateral partnerships with Australia, India and other countries or regions will be considered. Co-funding of research will increasingly be requested with India and other emerging economies of the region,

An outline of each of the four research clusters follows:

Land and water resources cluster

The research is focused on water management in the less favourable rainfed areas, in recognition of the fact that these areas were largely bypassed by the Green Revolution and are relatively poor. The projects are multidisciplinary in nature and based on watershed development at a range of scales, and recognise projections for climate change. The projects' outputs are directed at influencing both water policy development and the implementation of watershed-based agricultural improvements, or both. The cluster approach has promoted cross-project collaboration including data sharing. There is a need to consolidate and coordinate the communication of results, especially those with policy significance, to government and other stakeholders. The stakeholder consultation has suggested that there is scope to improve in the following areas:

- Planning of small water-storage structures in rainfed areas, particularly for groundwater recharge

- Technical and institutional solutions for improved use of water in small storages in rainfed areas
- Consolidated and coordinated presentation of policy recommendations from the projects to policymakers
- Exploration on extending the results to eastern India
- Implementation and scaling up of the results of the projects through multidisciplinary teams.

Better water management is one of the highest priorities for improving livelihoods in the more marginal rainfed areas of central India. Water harvesting, as part of a broader watershed development agenda to increase water availability, is a key policy initiative of the Indian Government in these areas.

The program comprises closely linked projects to enable a more holistic approach to water resource management.

Cropping systems cluster

Food security and poverty reduction, coupled with a threatened resource base for food production (water, soils), remain as common resource and crop management problems for India and Australia. Key initiatives from ICAR include systems research at the Modipuram complex of stations in eastern India, nutrient-based subsidies, and crop residue (including rice straw) management. The ICAR–ACIAR program has supported the development of zero-till rice–wheat cropping systems over nearly two decades, through the development of zero-till wheat systems, innovation with permanent beds and direct-seeded rice, nutrient and water management, pest and weed management, and development of the Happy Seeder—which is capable of zero-till sowing of wheat into 8+ tonnes of rice straw, and maintaining or increasing wheat yields. With limited adaptation, the machine will be ready for the eastern Indo-Gangetic Plain and rainfed areas. Consultations with stakeholders in India indicated the following areas of potential focus and research intensification:

- Sustainable intensification with diversification of farming systems
- A farming systems approach oriented to site-specific crop management for system productivity, water-use efficiency and nutrient-use efficiency
- Year-round zero tillage in rice- and wheat-based systems with integrated tillage – water nutrient management practices and carbon sequestration
- Technologies favouring precision agriculture
- Developing and testing of appropriate delivery models in resource-poor and remote areas.

The cropping systems research priority adds impact to improved wheat germplasm in two ways. Research is conducted on improved management of rice–wheat cropping systems, to increase cereal and oilseed crop yields and improve the efficiencies of water, nutrient and other input use. This research also increases the resilience of cropping systems to climate and other risks through conservation agriculture, thus stabilising farmers' incomes.

Wheat improvement cluster

The Indo-Australian program on marker-assisted wheat breeding (IAP-MAWB) is a co-funded program working on problems of mutual interest. Marker-assisted selection is the hub or delivery mechanism, and the output is better and faster developed wheat germplasm for farmers. The IAP-MAWB components cover faster breeding, bioinformatics, rust resistance, water-use efficiency through root architecture and crop establishment, water logging, micronutrient stresses, sodic soils and end-use processing quality. Since inception in September 2008, there has been excellent progress in all aspects of disciplinary research. The joint program is now underway, using basic data management and electronic field books. Extending these gains in bioinformatics to allele mining and functional genomics will require a longer term commitment by both countries. Future focus areas include:

- Widespread transfer of the above-mentioned components to farmers' fields through elite wheat varieties

- Bioinformatics research, association genetics and cross-prediction
- More wheat traits for conservation agriculture
- Improved human nutrition from wheat
- Marker-assisted selection for Sr26, and other traits such as aluminium and boron tolerance.

A set of projects revolves around the development of improved wheat varieties able to cope with biophysical soil constraints such as waterlogging, soil sodicity/salinity and other biotic constraints. A subset of these wheat breeding projects constitute the IAP-MAWB, following the 2007 agreement to strengthen the focus on application of marker-assisted selection as a tool to achieve greater efficiencies in wheat breeding.

Agriculture policy cluster

Past ACIAR research to examine the facilitation of efficient agricultural markets in India assessed competition and regulatory reform requirements and policy options for a new framework. The project components include emerging trends in food value chains, application of policy and infrastructure development. Various options suggested by the consultations include:

- A regulation framework to include a transparent review process and regular monitoring of the farm sector
- Facilitating efficient input and output markets, with necessary targeted assistance and safeguards for vulnerable groups; application of competition law to food chains; and management of the buffer stock
- New farm programs that focus on more-appropriate measures of productivity and market failure issues, studies of markets and policies in the context of changing food consumption and demand, improving rural wholesale markets, and recent innovations such as contract farming and futures markets
- Policies related to climate change.

Creating the most appropriate domestic policy environment for reform in the agricultural sector has the potential to deliver major positive impacts. Australia has significant expertise in policy analysis, particularly in assisting India with the implications of its transition from a highly regulated economy to a more open market economy. The current ACIAR partnership is addressing scope for phased deregulation and market reform options. As India moves towards domestic reform, its capacity to engage in more-open domestic and international markets is expected to increase, with consequent productivity and income opportunities for Indian farmers. In the broader environmental context, agricultural offsets are emerging as a key element of potential future greenhouse gas abatement policy in many countries. In India and Australia, there is increasing interest in policy and program mixes targeted at exploitation of cost-effective abatement schemes as new opportunities for farmers.

Indonesia

Indonesia is ACIAR's largest partner-country program, due to both its proximity and strategic importance to Australia and to the imperative of reducing the large proportion of its population living in poverty (49% live on less than US$2 per day). The agricultural sector accounts for 40% of employment but only 14% of GDP. This indicates the high proportion of the poor engaged in agriculture, and the consequent importance of strengthening the sector in order to reduce poverty. Strengthening agriculture (including the crop, livestock, forestry, marine fisheries and aquaculture subsectors) is critical for poverty reduction and equitable development across Indonesia, as both underpin the country's economic growth strategy.

ACIAR's program in Indonesia directly supports the Australia Indonesia Partnership 2008–13 (AIP). The AIP is a comprehensive plan of Australia's support to Indonesia that focuses on poverty alleviation. ACIAR's support, through Pillar 1 of the plan—Sustainable growth and economic management—focuses on improved economic opportunities for rural people through increases in productivity, access to markets, and better infrastructure and growth of small- to medium-size enterprises in target provinces.

The AIP emphasises that 'support for applied research will be increasingly important in informing debate and policy settings in Indonesia, including in regional areas. Support will be given to partnerships between Australian, Indonesian and multilateral institutions (where relevant) that can improve Indonesia's capacity to identify relevant research topics and improve the quality of applied research ...'. ACIAR contributes to this through its agricultural policy, agribusiness development and technical research for development, to support increased productivity and more-effective and equitable access to markets for agriculture, forestry and fisheries. In addition to supporting research on productivity, ACIAR research is addressing related pest and disease management issues, including shared crop and livestock biosecurity concerns; postharvest processing; and market development issues. Protection of the resource base is supported through research collaboration on sustainable cropping, forestry and fisheries management, and through policy research on effective engagement in markets, particularly with respect to domestic agricultural policy.

The geographic focus of the Indonesia program includes some of the poorest regions (e.g. six provinces in eastern Indonesia) as well as the more developed provinces in Java and Bali. This gives the research program flexibility in tackling rural poverty through alternate approaches, including ensuring food and nutritional security through enhanced productivity and food quality, and developing improved market linkages for high-value products sourced from smallholder production systems. It also facilitates better linkages between national and province-based research agencies.

ACIAR's research program uses Indonesian systems for defining research priorities and the delivery of programs and projects. ACIAR works with Indonesian partners to involve next and end users during the development of projects to embed activities within value chains and at the farming community level, and to integrate researchers with a wide range of stakeholders—including farmers, the private sector, NGOs, extension services and policymakers, where appropriate.

While the program emphasises implementation of research through institutional partnerships, ACIAR also supports the longer term sustainability of research outcomes through both individual capacity building and institutional development. In 2012 ACIAR will assist Indonesia in implementing a revitalisation of its agricultural R&D systems through a US$100 million World Bank-supported program, Sustainable Management of Agricultural Research and Technical Development, focusing on institutional strengthening within the Indonesian Agency for Agricultural Research and Development (IAARD).

Wherever opportunities exist, ACIAR seeks to implement its Indonesian research program as part of a whole-of-government approach, especially with AusAID and the Department of Agriculture, Forestry and Fisheries. Two ACIAR projects are currently being implemented that respond to Indonesian priorities as part of the Comprehensive Economic Partnership Agreement being developed between the two countries. In 2012 ACIAR will conduct an analysis of agribusiness development opportunities in eastern Indonesia to help inform the implementation of the Australia Indonesia Partnership Decentralisation – Rural Economic Development Program, a large AusAID-funded project that will commence in late 2012.

ACIAR's program is also delivered through partnerships with international development agencies such as the International Fund for Agricultural Development (IFAD) in the provinces of Papua and West Papua. An increasing number of ACIAR projects involve major private-sector partners sharing implementation and funding, with two notable examples being PT Mars Symbioscience Indonesia (cocoa and seaweed research projects) and PT Garuda Foods (peanut supply-chain research).

The current medium-term research strategy (2012–16) was agreed in February 2012, based on consultations held in November 2011 between ACIAR's research programs and key Indonesian research coordinating agencies and stakeholder organisations. The strategy was also informed by priorities that emerged from focused consultations within the fisheries program (March 2010), Animal Health and Livestock Production programs (September 2011), Horticulture program (October 2011) and Forestry program (October 2011).

Under the medium-term research strategy, ACIAR's program addresses the following key priorities:

- Strengthening livestock production and biosecurity systems
  - Establishing effective disease surveillance, control policies and systems
  - Developing options and procedures for control of zoonotic diseases
  - Strengthening livestock management and marketing systems
  - Protecting food/feed safety and quality
  - Managing livestock in a changing climate
  - Improving animal welfare
- Increasing the productivity, profitability and competitiveness of Indonesian horticultural and other high-value plant products
  - Improved domestic and export market access, increased efficiency of value chains and identification of value-added and product development opportunities
  - Improvement of seed systems, production of disease-free planting material, selection of superior cultivars and maintenance of species diversity
  - Development of ICM systems (pest and diseases, nutrition, irrigation management, canopy management)
  - Improvement in postharvest handling, quality, sanitary and phytosanitary standards; overcoming technical market access constraints; improving food safety; and development of organic production systems
  - Revitalisation of farming and seed supply systems to improve field crop and vegetable production in a post-tsunami Aceh
  - Development of scaling-up systems and production systems and strategies for adaptation to climatic variability
- More-profitable smallholder aquaculture systems and enhanced capture fisheries management
  - Development of policy options and approaches for reducing overexploitation of stocks; illegal, unreported and unregulated fishing; and ecosystem degradation
  - Sustainable management of fisheries, and conservation of fish resources and ecosystems
  - Development of appropriate technologies for small- and medium-scale aquaculture and fisheries in eastern Indonesia
  - Breeding and genetic improvement of key aquatic resources (e.g. shrimp, finfish, shellfish, seaweed)
  - Development of disease management, monitoring and surveillance systems for fish and environmental health
  - Value-adding and safety of seafood products, and development of quality assurance and certification

- Enhancing livelihoods from forestry products and services
  - Improving productivity and reducing impacts from pests and diseases in commercial plantations
  - Enhancing outcomes from small-scale commercial plantations, agroforestry and development of non-timber forest products
  - Capturing more value from plantation wood products through improved processing technologies, and development of new products matched to appropriate markets
  - Sustainable management of native forests and restoration of landscapes
  - Adaptation to and mitigation of climate change, including implementation of REDD+
- Profitable agribusiness systems
  - Improving smallholder access and competitiveness in rapidly transforming markets
  - Identifying and promoting profitable market opportunities and agribusiness systems
  - Enhancing smallholder access to market information, knowledge, skills and technology options
  - Increasing capacity in market, business and value-chain analysis
- Improving policies to underpin agribusiness development, a cross-cutting program that will enhance the above sectoral priorities with policy analysis that might include:
  - Examining domestic market and trade regulatory developments in the context of food price volatility and risk
  - Analysing farm adjustment policy options in response to climate change and variability influences
  - Analysing the ability of smallholder farmers and fishers to increase product value as markets rapidly transform, and developing appropriate policy mechanisms to support these transitions.

Burma

Australia's strategic approach to aid in Burma is to improve the lives of the Burmese people in the short term, and to help support improved capacity to design and deliver essential services and encourage reform in the long term. To achieve this goal, Australia is currently providing support to activities that target immediate needs in the health, education, and livelihoods and food security sectors. The focus is on strengthening the capacity of people and organisations in these sectors, as well as supporting vulnerable populations across Burma and on the borders with Thailand and Bangladesh. ACIAR's program is fully aligned with the above approach of the Australian Government. A multidisciplinary program has been developed in collaboration with AusAID with the main focus on improving food security and livelihoods for smallholders in the central dry zone and the Ayeyarwady Delta. The program is targeting, through research, development and extension, the immediate needs of the generally vulnerable Burmese people. There will also be a strong focus on capacity building for both people and institutions, as many of Burma's agricultural scientists have been isolated from international cooperation over recent years.

ACIAR's aim is to continue to work predominantly through international organisations and NGOs, including Australian-accredited organisations. Working with agencies with a longstanding presence on the ground has proved that it is possible to deliver assistance in an effective and accountable way. For example, promising results have been achieved in a multilateral ACIAR project led by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT, India) on improving the productivity of legumes in the central dry zone of Burma. The current program is based on the achievements of these projects and on scoping missions to identify research gaps, in consultation with the Burmese counterparts, donors and potential research providers.
Future research priorities would be within the following spectrum:

- Further collaboration for improvement in the productivity of grain legumes

- Diversification and intensification of rice-based cropping systems to increase overall productivity and farm income
- Smallholder and community aquaculture development, and post-Nargis community remediation in the Ayeyarwady Delta
- Research support for smallholder livestock-based cattle enterprises in the central dry zone
- Socioeconomic factors affecting the acceptability and adoption of promising technologies.

Africa

Australia's strategic approach to aid to Africa during 2011–15 is to 'contribute to improvement against African regional targets for eradicating extreme poverty and hunger, reducing child mortality, improving maternal health and increasing sustainable access to safe drinking water and basic sanitation'. The first objective of this strategy is to help selected African countries progress Millennium Development Goals (MDGs) in areas where Australia has particular strengths, where progress is seriously off track, and where strong frameworks exist for achieving effective results. One core strategy to tackle poverty and food insecurity is to increase agricultural productivity through farming systems intensification, diversification and improved market access.

Continental Africa is the most food-insecure region in the world, with one in three people suffering from chronic hunger. Low food crop productivity, rising food prices, increased fuel costs and the global recession have worsened food and nutrition security outcomes. ACIAR is assisting with delivering key elements of the Australian Government's enhanced engagement with Africa through the 'Overseas Development Assistance – Food Security through Rural Development' initiative. Australian support (of A$100 million over 4 years), which is strongly focused on country needs, is aligned with the African Union's Comprehensive Africa Agriculture Development Programme and Australia's international expertise in rainfed mixed farming systems.

Since 1983, ACIAR has completed over 45 projects in Africa. Research results to date have included improved cropping systems, low-input fertiliser practices in risky environments, Australian trees for various environments, vaccine for Newcastle disease in chickens, a tick-resistance diagnostic test and a tick-fever vaccine for cattle, demonstration that indigenous cattle breeds have growth potential that is equal to commercial breeds, and improved market access for cattle and grain produced by smallholders. The research is implemented through partnerships between Australian and African national and subregional research organisations as well as the CGIAR, including the International Livestock Research Institute (ILRI), World Agroforestry Centre, International Institute of Tropical Agriculture (IITA), International Crops Research Institute for Semi Arid Tropics (ICRISAT) and International Maize and Wheat Improvement Centre (CIMMYT). Australian technical knowledge and expertise is highly relevant because similar temperate, Mediterranean and subtropical production environments are found on both continents. Water constraints and soil-management requirements are also frequently quite similar. Australia's advanced research, extension and farm-management systems experience, together with the capabilities of its formal tertiary agricultural education institutions, is relevant to human and institutional capacity building in a range of African countries. The involvement of the CGIAR reduces research transaction costs, and taps complementary research expertise.

The ACIAR research program in Africa has been developed through systematic consultations with African and Australian stakeholders. The research includes new projects under the Australia International Food Security Centre (AIFSC) established by the government as a part of ACIAR in late 2011. ACIAR research currently addresses the following aspects of sustainable agricultural development and food security:

- Water management in rainfed and irrigated systems
- Improvement of food crops
- Cropping systems management, including conservation agriculture
- Agroforestry and food systems
- Poultry and ruminant disease management and production

- Fisheries management, notably pearl culture
- Grain and livestock value chains, especially improved smallholder access to input and produce markets.

The underlying themes for the above research towards increased agricultural productivity and improved food security are: (1) sustainable management of natural resources; (2) better production practices, which combine improved germplasm/breeds and management/husbandry; and (3) better access to production inputs and markets. The research tackles both technological and markets policy challenges covering soil, water, crops, horticulture, livestock, trees and aquaculture. The role of decision-making in production and value chains is recognised. The broad systems approach integrates production management, input and market chains (with agribusiness a dominant actor), and improved varieties and breeds.

The ACIAR research program is concentrated in three African regions—eastern–central, southern and northern Africa; and consideration is being given to possible work in West Africa. Each region has a different focus, which has emerged from consultations with partners.

In southern Africa, the research focus lies on livestock and cropping systems for previously disadvantaged farmers in South Africa, Botswana and Zimbabwe (with the support of ILRI; ICRISAT; CIMMYT; the Queensland Department of Employment, Economic Development and Innovation; and Murdoch University); and on water security in South Africa, Zimbabwe and Mozambique (with the support of the Australian National University). The research investigates the opportunity provided by the growing demand in southern Africa for meat in both domestic and export markets, and also consumer preference for higher quality meats. There is recognition of the interdependence between livestock production management and marketing chains, in which feedlots are increasingly playing a significant role. One of the major challenges is smallholder access to these profitable market chains, especially for traditional indigenous cattle breeds. In addition, the interface between livestock and crop production, notably fodder and feed, is being investigated in Zimbabwe.

In eastern and southern Africa, the Sustainable Intensification of Maize–Legume cropping systems for food security in Eastern and Southern Africa (SIMLESA) project operates in five countries (Ethiopia, Kenya, Malawi, Mozambique and Tanzania)—with the support of the South African Agricultural Research Council, CIMMYT, ICRISAT, and Australian partners at the University of Queensland and Murdoch University. The research focuses on the intensification and reduction of risk in mixed farming systems in eastern and southern Africa, to achieve improved dietary energy and nutritional quality, and increased household income. Through organised spillovers of the research results, Botswana, Zambia, Rwanda, Uganda and South Sudan are benefiting from this initiative. In addition, small projects have been assessing the role of gender in agricultural research, fodder markets, innovation platforms, energy and the interactions between mining and agriculture. Opportunities for research on poultry, evergreen agriculture, vegetables and peri-urban horticulture are also being explored.

Across Sub-Saharan Africa, the AIFSC is building on and adding functionality and value to ongoing ACIAR research programs, based on foresight studies, farming systems analysis and systematic consultation with potential partners in Sub-Saharan Africa and Australia. The following areas were identified for fast-track implementation, building on ongoing ACIAR efforts: evergreen agriculture embracing agroforestry and maize systems, farmer risk management and technology adoption, and mechanisation in conservation agriculture. Additional topics under consideration for the Centre include smallholder poultry and small ruminant productivity, through better disease control and management and value-chain enhancement; water management in southern Africa; and indigenous and other vegetable production under supplementary irrigation.

Southern Africa

The livestock research emphasis is designed to develop livestock production and value-chain systems capable of providing opportunities for smallholder farmers to meet market requirements; and raise awareness of product quality, human nutrition and sustainability imperatives. Livestock management is identified as an important source of farm-level diversification for smallholder farmers in South Africa and elsewhere in the region. With population growth and increasing urban demand for meat, the pressure for intensification adds to the need for improved smallholder livestock–crop systems to achieve sustainability and productivity gains. As demand for quality meat increases, the research tests novel approaches to animal health, as well as the integration of legume and other nutrient management strategies into crop and pasture systems. Approaches are needed for communities to manage their land and enhance livestock production. An important research theme for these projects is improved linkages between farmers and the private agribusiness sector.

The livestock research emphasis is complemented by research on water security, and the integration of crops and livestock in mixed farming systems.

Eastern Africa

Research will identify socioeconomic, commercial and climatic drivers and constraints in selected farming systems and associated value chains. The project will then test local innovation and learning platforms for accelerated scaling out of new maize and legume varieties, and sustainable management technologies. The release, multiplication and distribution of improved maize and legume varieties will be supported. A number of other research thrusts in areas such as vegetable production and peri-urban horticulture complement the backbone of the cropping systems intensification. New research will be undertaken on the capacity of agroforestry and crop farming systems to enhance food security in eastern Africa.