

# Attachment 1 - Background and Scope of Requirement



Australian Government  
Australian Centre for  
International Agricultural Research



Australian  
International Food  
Security Research  
Centre

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## Plant biosecurity capacity development initiative for Sub-Saharan Africa

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## 1. Introduction

This document aims to provide information to Australian plant biosecurity agencies, institutions and related organisations who are interested in providing services to implement the Australian International Food Security Research Centre's (the Food Security Centre) plant biosecurity capacity development initiative (the Initiative) for Sub-Saharan Africa (SSA).

The document details the background and scope of the Initiative, outlines initial proposed activities, and identifies potential African biosecurity agencies that may partner in delivering the Initiative. The document's objective is to help Australian biosecurity proponents to determine whether they have and/or can assemble the necessary interest, skills, experience and partnerships with other Australian biosecurity organisations to participate in any or all of the Initiative and prepare Expression of Interest applications to deliver the Initiative.

While it is expected that activities outlined in this document will be the focus of the Initiative, it is acknowledged that the detail and relative emphasis of the Initiative's focus and activities may evolve during the Initiative's development process.

The first phase of the Initiative is to be implemented in first half of 2014 commencing with a technical/scoping workshop to determine specific plant biosecurity priorities in target sub-Saharan countries and the region as a whole, the strengths that Australian biosecurity agencies and institutions can bring to address these priority problems, any synergies and leverage with other donor and/or multilateral plant biosecurity initiatives in Africa, and the nature of activities (e.g. workshops, short term placements, etc) needed to achieve a measurable and sustainable impact of capacity development on African plant biosecurity needs.

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## 2. Background

Biosecurity<sup>1</sup> control is an integral pillar of food security (which is comprised of food accessibility, affordability and adequate use) and is at the core of many national and international agricultural research and development efforts aimed at increasing agricultural productivity, sustainability, market access and trade.

Effective and sustained management of biosecurity control is best served by an integrated and coordinated approach that links actors – both private and public – along the farm production, harvesting, processing and marketing/trade pathway. Given the spread of pests and disease disregards national borders, the effective management of biosecurity risks also requires strong linkages and commitment between biosecurity actors at regional and international levels.

Many developing countries have inadequate or fragmented public resources, systems and capacity to address and manage the wide range of biosecurity hazards/threats – primarily pests and diseases – that can impact on animal, plant and human health within agricultural production systems and processing and marketing/trade chains.

A lack of biosecurity resources and capacity<sup>2</sup> at the official level is particularly significant in least developed countries – including many within sub-Saharan Africa – which have limited public

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<sup>1</sup> According to FAO, biosecurity is a strategic and integrated approach that encompasses policy and regulatory frameworks that analyse and manage animal and plant health risks, food safety, biosafety and associated environmental risks

<sup>2</sup> Capacity is defined by OECD/FAO as "the ability of people, organizations and society to manage their affairs successfully." Capacity development is the process of unleashing, strengthening and maintaining capacity and includes: Human resource development; the process of equipping individuals with understanding, skills and access to information, knowledge and training. Organizational development: the enhancement of management structures, processes and procedures within

resources, infrastructure and human capacity to assess biosecurity risks and implement strategies, systems and policies to effectively address the animal health, plant health and food safety needs of various agricultural commodities and their value/market chains.

Limitations in biosecurity institutional and policy settings at the country and regional level not only jeopardize a country's agricultural productivity and food security, it can seriously undermine the impact of aid that focuses on research-led agricultural commodity or systems-based interventions.

Significant efforts have been made in recent years by a number of national, regional and multi-lateral agencies to enhance plant and animal protection capacity in Africa with work continuing – especially through the African Union (AU) and its departments, and regional economic groupings (RECS; e.g. COMESA) – to establish common protocols for pest and disease diagnostics, analysis and surveillance systems and phyto-sanitary trade requirements. However, official biosecurity control capacity remains challenged in many countries in SSA and significant efforts are required to achieve adequate and effective biosecurity control within national agencies and the various RECs.

The Food Security Centre was established at the end of 2011 with the specific objective of supporting research on the barriers to adoption of food security research for development innovations implemented by research and donor organisations. The [Food Security Centre's Strategy](#) is to focus investment in target countries in Sub-Saharan Africa through several Research Programs that are complemented by an Education, Training and Capacity Building Program which aims to build individual and institutional capacity for research development and management through:

- supporting the training of individuals in food security issues,
- strengthening institutional capacity to address food security, and/or
- establishing formal partnerships between African and Australian institutions.

In developing the Education and Capacity Building Program, the Food Security Centre was keen not to duplicate agricultural aid work undertaken by Australian agencies (including ACIAR), but rather to complement this work with a new type of capacity development program that builds on Australia's strengths and Africa's key needs to improve food security.

Biosecurity capacity development was identified as a potential capacity development priority for the Food Security Centre at discussions held at the [Centre Conference](#) in November 2012. It was noted at the Conference that Australia's biosecurity systems, agencies and institutions have strong expertise in biosecurity control and the protection and sustainability of plant, animal and food industries that could be leveraged to build capacity at both the national and regional level in SSA. Senior African delegates noted that intra-regional trade represented a key pathway into food security in SSA but that major (solvable) biosecurity challenges were presenting as obstacle to achieving this.

The AIFSC Conference concluded that a capacity building program that focused on strengthening biosecurity awareness and capacity of mid-level policy and decision makers at a national and regional level would contribute significantly to addressing these needs.

It was with these priorities and needs in mind that the Food Security Centre has worked during 2013 to scope a biosecurity capacity development initiative; the key goal being to implement a program to enhance the capacity of middle level managers and decision makers in target SSA countries to address, build and enhance national and regional biosecurity control capacity.

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*organizations including relationships between different organizations and sectors (public, private and community).  
Institutional and legal framework development: legal and regulatory changes to enable organizations, institutions and agencies in all sectors to enhance their capacities.*

This paper outlines the results of the scoping study and identifies initial investments, complementarities and activities needed to implement a capacity development program targeting plant biosecurity. The program aims to address priority plant biosecurity problems in the SSA region and to leverage the comparative advantages, expertise and best practice Australian biosecurity agencies can bring to address specific plant biosecurity control capacity problems and needs.

## **2.1 Scoping African biosecurity priorities and Australian comparative advantage**

A scoping study undertaken in mid 2013 in consultation with African agricultural research, development, economic and regional representative bodies and relevant AU departments and African national, regional and multilateral agricultural development<sup>3</sup> agencies, identified a wide range of biosecurity capacity development are needs at the national and regional level exist in sub-Saharan Africa.

Given that significant multilateral and bilateral development activities and investments exist in various areas of biosecurity control in Africa, priority areas for potential Australian capacity development assistance were assessed against the following criteria:

- the benefits that would accrue at both national and regional level of capacity development in African-nominated biosecurity areas – in particular to agricultural productivity and trade
- the comparative advantage of Australian biosecurity systems, institutions and agencies in the African-nominated biosecurity areas
- the potential alignment, interest and readiness in Australian and African biosecurity institutions and agencies in partnering in capacity development, and
- alignment and linkage of the African nominated biosecurity areas with ACIAR/AIFSC and related Australian agricultural research for development projects in Africa

To ensure maximal impact of the Initiative, the needs assessment focussed on identifying biosecurity issues of national and regional significance – hence a focus of consultations was with pan-African agencies and institutions.

This regional approach is in line with the Centre’s multi-country focus for research investment, and recognises that biosecurity pest and disease management works best at a regional level, and that developing a regional alumnus of participants will increase regional dialogue and cooperation to biosecurity control in the longer term.

Discussions with Australian agencies and institutions with biosecurity expertise were undertaken in parallel with scoping African biosecurity priorities in order to stocktake Australian biosecurity capacity development activities, expertise, potential linkages to African needs and comparative advantage<sup>4</sup>.

Reviewing African biosecurity priorities against the above criteria showed that plant pest, disease and contaminant surveillance and control was the biosecurity areas which aligns most closely with the biosecurity initiatives objectives and scoping study findings.

Note this does not imply that other areas of biosecurity capacity development should not be considered. Other areas of biosecurity capacity development may be delivered following evaluation of the effectiveness and impact of the pilot plant biosecurity program.

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<sup>3</sup> See Annex 1 for list of African agencies and individuals consulted.

<sup>4</sup> Annex 2 outlines Australian agencies, institutions and programs that have a role in biosecurity management both within Australia and internationally together with identification of biosecurity functions and activities. Note the listing of these agencies does not indicate they are prepared to partner in the Biosecurity Initiative.

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### 3. Plant biosecurity capacity development program priorities

Discussions with regional African agricultural and regional trade bodies showed that a high priority is placed on enhancing the capacity of national and regional agencies to undertake effective surveillance, identification, diagnosis and impact analysis of plant pests and diseases and to establish plans and systems to enhance the capacity of plant biosecurity management controls.

African Union agencies (under the Department of Rural Economy and Agriculture), regional trade bodies including COMESA and ACTESA, national agricultural agencies, and multilateral research and development bodies (ASARECA, ILRI, CABI) all highlighted that the development of plant pest and disease surveillance and diagnostic capacity is of high priority in the Sub-Saharan region; not only as a means to ensure agricultural productivity but also enhance regional agricultural trade capacity which is considered low and constrained by differing control capacity and trade standards.

Significant efforts have been made in recent years by ASARECA/ACTESA, IPPC, FAO, USAID and COPE in promoting and developing regional partnerships to establish common protocols for plant pest and disease diagnostics, analysis and surveillance within the region. CABI's Plant Wise has also worked at regional level to enhance plant pest and disease identification capacity.

Significant research for development efforts and donor investment are also being targeted at innovations and interventions to mitigate plant pest pressures and diseases – including significant expenditure on controlling aflatoxins in a number of crops and traded commodities (especially the most prominent staple food product maize).

Despite, and indeed to support these efforts, there remains a significant capacity development need for surveillance and management of plant pest and disease issues in sub-Saharan Africa the most important being:

- common frameworks and action plans for plant pest and disease surveillance and reporting – including pest risk lists;
- early warning systems and options for emergency plant pest and disease actions,
- plant pest and disease risk analysis;
- action plans for surveillance of aflatoxin contamination of plant products
- action plans for surveillance of fruit fly

While are a number of multilateral and bilateral plant and animal pest and disease programs in place in Africa, Australian competence and strength particularly in the area of plant pest and disease surveillance was specifically noted in a number of discussions as an area of comparative advantage which the Biosecurity Initiative would be well placed to service.

Discussions with African plant biosecurity stakeholders (ASARECA, CABI, KEPHIS, BecA, FAO, AU – departments (especially PACA) and the REC - COMESA) noted that Australian plant health expertise – including at regulatory and industry levels – would best directed to mentoring national plant protection and regional economic agencies in initiatives aimed at common understandings, systems, certification protocols, surveillance frameworks, and joint action for plant pest and disease plans across the region. These stakeholders also noted a willingness to partner with the Centre in the biosecurity Initiative.

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## 4. Scope of Requirement

### 4.1 Background

The Australian International Food Security Research Centre (the Food Security Centre) is seeking expressions of interest from Australian plant biosecurity agencies and related organisations to

implement a **Plant Biosecurity Capacity Development Program** (the Program) for target Sub-Saharan African countries.

The Program aims to address strategic African national and regional plant biosecurity capacity development needs by leveraging the comparative strengths and advantage in Australia's plant biosecurity agencies and institutions through delivering individual and institutional training focusing on priority African plant biosecurity needs.

#### 4.2 Scope

The Program will be delivered in two phases comprising:

- **Phase 1:** Scoping and development of a full business plan of activities for the Program through consultation with key African plant biosecurity partners, including a regional plant biosecurity workshop to be run in Nairobi (first half 2014)
- **Phase 2:** Implementation of approved Program business plan activities in Africa and Australia (2014/15 and 2015/16 financial years)

The successful provider will be contracted to undertake the following activities:

- In Phase 1 – work with Centre staff, partner African and Australian plant biosecurity agencies to run a technical scoping workshop in Africa in the first half of 2014 to identify and gain consensus on key plant biosecurity needs priorities, curriculum and modality of delivery of the **Plant Biosecurity Capacity Development Program** in 2014-15 and 2015-16.
- In Phase 1 - use the outputs of the workshop to develop a full business plan for Phase 2 of the Program outlining specific capacity building need and activities ensuring both regional and national plant pest and disease surveillance problems are considered and addressed, and Program activities are agreed among all partners
- The plant biosecurity problems, activities and Australian partners and linkages outlined in Table 1 - drawn from discussions with African plant biosecurity stakeholders – are to be used as the basis of developing the full business case, activities and budget for Program. The Phase 2 business plan must show:
  - a curriculum of activities to be delivered and the means of delivery (e.g. mix of short term placements/visits, sandwich courses and workshops that involve partnering with African bioscience institutions and Australian biosecurity agencies/providers and industry); delivery of activities should operate on a roughly 50:50 collaborative arrangement where possible
  - how activities aligns with the CAADP framework
  - how it leverages and complements plant biosecurity capacity development activities currently supported by other donors
  - an indicative budget that costs implementation and delivery expenses in Africa and Australia, and the in-kind contributions of Australian and African partner agencies
  - a timeline of activities including locations and partner involvement
  - a rigorous selection process that ensures appropriately qualified and placed participants are selected for capacity development; the selection process must involve participation with key partner organisations, sub regional and national bodies
  - a process to follow up and mentor biosecurity fellows and partner African institutions to ensure embedding of capacity building in-country and region and sustainable application to identified biosecurity problems (including a biosecurity fellows alumnus to facilitate communication and partnering between fellows)

- key performance indicators for the Program and a monitoring and evaluation activities to determine the impact and performance of capacity development activities at both the individual and institutional level, and the impact on Australian biosecurity capacity development capability
- a reporting schedule to report on the performance of the Program to the Food Security Centre.

#### **4.3 Timeline**

The EOI process is to be conducted in early 2014 with the aim of consultation with African regional bodies and Australian biosecurity agencies and providers, and a full business and implementation plan to be finalised by June 2014.

Implementation of activities by the successful tenderer should commence in the second half of 2014.

#### **4.4 Estimated Budget**

The estimated budget for the first phase of the Plant Biosecurity Capacity Development Program is to a maximum of A\$150,000 which will cover development and running of a technical scoping workshop and development of a full business plan for the Program.

The estimated budget for the second phase of the Program will be to a maximum of A\$650,000, which will be dedicated to both management, implementation and reporting of Program activities.

Final funding details will be determined upon selection of specific activities of plant biosecurity to be supported and nature and type of engagement with African and Australian agencies.

Note that the Plant Biosecurity Capacity Development Program will provide a “blueprint” capacity development program which may be scaled out to address other biosecurity areas of need in Africa, and be adapted by the Centre and ACIAR in other global regions and partner countries.

#### **4.5 Response**

The Conditions of the EOI response are detailed in **Schedule 1 –EOI Response Form and Schedule 2 - Response to Statement of Requirement**

**Table 1: Identified African plant pest and disease problem/need, strategic action, target activities and institutions vs. Australian agencies, expertise, and research alignment**

African plant pest and disease problem	Strategic action	Possible capacity development activities	African agencies	Aus agencies, expertise & alignment
<p>Plant biosecurity capacity, systems and infrastructure vary significantly in Africa.</p> <p>Plant pest &amp; disease surveillance is constrained by lack of frameworks for survey, identification and reporting.</p> <p>This creates differences in control capacity that undermines food security.</p>	<p>Establish consistent national and regional approaches to plant pest and disease surveillance, early warning systems, pest risk analysis, pest lists, certification systems</p>	<p>Capacity building activities to deliver:</p> <ul style="list-style-type: none"> <li>• Frameworks for pest and disease surveillance</li> <li>• Pest list development</li> <li>• Mentoring of African National Plant Protection Offices</li> <li>• Standardised Inspection and certification protocols</li> <li>• Regional/national partnership dialogue meetings</li> </ul>	<ul style="list-style-type: none"> <li>• KEPHIS</li> <li>• CABI</li> <li>• National Plant Protection Officers/Quarantine Agencies</li> <li>• African Union - COMESA, SADC</li> <li>• FAO</li> <li>• IPPC</li> </ul>	<p><b>Dept of Ag</b></p> <ul style="list-style-type: none"> <li>• Office of Chief Plant Protection Officer (OCPO) interest</li> <li>• International plant health program (surveillance, pest lists, diagnostics in SE Asia)</li> <li>• Plant biosecurity (certification)</li> </ul> <p><b>ACIAR</b></p> <ul style="list-style-type: none"> <li>• ASEAN pest list development project</li> <li>• ASLP on mangoes</li> <li>• SIMLESA projects</li> </ul> <p><b>Crawford Fund</b></p> <ul style="list-style-type: none"> <li>• Masterclass on Plant Health</li> </ul> <p><b>CRC Plant Biosecurity</b></p> <ul style="list-style-type: none"> <li>• Plant health diagnostics</li> <li>• Training programs</li> </ul>
<p>Lack of capacity and frameworks to conduct pest and disease risk analysis (PRA) – including for contaminants: foremost aflatoxin</p>	<p>Use Australia’s reputable pest and environmental risk analysis expertise to guide development of model PRA systems for Africa</p>	<p>Capacity building to deliver:</p> <ul style="list-style-type: none"> <li>• Develop standardised approaches across countries for PRA to link plant health systems and surveillance and guide management approaches</li> <li>• Mentoring of specific PRAs</li> <li>• Implementation of PRAs</li> </ul>	<ul style="list-style-type: none"> <li>• African Union - Inter African Phyto-Sanitary Council (IAPSC)</li> <li>• KEPHIS</li> <li>• CABI</li> <li>• COPE</li> <li>• COMESA</li> <li>• FAO</li> <li>• IPPC</li> </ul>	<p><b>Dept of Ag</b></p> <ul style="list-style-type: none"> <li>• OCPPO interest</li> <li>• Plant Biosecurity Division</li> </ul> <p><b>ACIAR</b></p> <ul style="list-style-type: none"> <li>• ASEAN pest list project</li> </ul> <p><b>CEBRA</b></p> <ul style="list-style-type: none"> <li>• Risk analysis protocols</li> </ul>



<p>Aflatoxin detection and management remain fragmented despite significant investment</p>	<p>Develop systems and approaches to aflatoxin management to enable sustained monitoring for mycotoxins thru the production and supply chain</p>	<p>Capacity building activities to deliver:</p> <ul style="list-style-type: none"> <li>• Design action plans and mentor institutions with aflatoxin control mandates</li> <li>• Assist develop criteria for monitoring aflatoxin contamination in traded and domestically produced and consumed grains (contaminant monitoring plans)</li> <li>• Promote adoption of quick test kits, post harvest processing and storage technologies</li> </ul>	<ul style="list-style-type: none"> <li>• African Union – Partnership for Afatoxin Control in Africa (PACA)</li> <li>• ILRI – BecA</li> <li>• CABI</li> <li>• COMESA</li> </ul>	<p><b>ACIAR</b></p> <ul style="list-style-type: none"> <li>• Grain storage and mycotoxin tutorial package</li> <li>• Peanuts and aflatoxin management</li> <li>• SIMLESA projects</li> </ul> <p><b>Plant Health Australia</b></p> <ul style="list-style-type: none"> <li>• Peanut production and aflatoxin management</li> </ul> <p><b>CSIRO – BecA, CSIRO Biosec Flship</b></p> <ul style="list-style-type: none"> <li>• Aflatoxin detection and control research program</li> </ul> <p><b>Uni of Sydney</b></p> <ul style="list-style-type: none"> <li>• Post harvest training program</li> </ul>
<p>Lack of effective fruit fly surveillance systems undermine production and market access for numerous crops</p>	<p>Leverage Australia’s expertise in fruit fly surveillance and management</p>	<p>Use Australia’s expertise in fruit fly surveillance and control to:</p> <ul style="list-style-type: none"> <li>• Design and implement common surveillance systems and management programs</li> <li>• Target crops of high value such as mango, avocado, paw paw</li> </ul>	<ul style="list-style-type: none"> <li>• ICIPE</li> <li>• KEPHIS</li> <li>• Fresh Produce Exporters Association – Kenya</li> <li>• SA Importers Association</li> <li>• CABI</li> <li>• NPPOs</li> <li>• AU – IAPSC, the Pan African Tsetse and Trypanosomiasis Control and Eradication Campaign (PATTEC)</li> </ul>	<p><b>ACIAR</b></p> <ul style="list-style-type: none"> <li>• Fruit fly research projects</li> </ul> <p><b>CSIRO Biosecurity flagship</b></p> <ul style="list-style-type: none"> <li>• Fruit fly detection and control research program</li> </ul> <p><b>Plant Health Australia</b></p> <ul style="list-style-type: none"> <li>• Fruit fly surveillance and control programs</li> </ul> <p><b>Dept of Ag – federal and state</b></p> <ul style="list-style-type: none"> <li>• Office of Chief Plant Protection Officer</li> <li>• QDPI</li> </ul> <p><b>CRC Plant Biosecurity</b></p> <ul style="list-style-type: none"> <li>• Plant health diagnostics</li> </ul>

**African Agencies Consulted**

<p>African Union - Rural Economy Division (DREA)                  Various areas including:</p> <ul style="list-style-type: none"> <li>• Partnership for Aflatoxin Control for Africa (PACA)</li> <li>• Pan Africa Tsetse and Trypanosomiasis Eradication Campaign (PATTEC)</li> <li>• Pan African Veterinary Vaccine Centre (PANVAC)</li> <li>• Inter African Bureau for Animal Resources (IBAR)</li> </ul>
CABI – CABI Africa
COMESA – Common Market for Eastern and Southern Africa ACTESA – Alliance for Commodity Trade in Eastern and Southern
ILRI – International Livestock Research Institute BeCA – Biosciences Eastern and Central Africa
AATF – African Agricultural Technology Foundation
ISAAA – International Service for the Acquisition of Agri-biotechnology Applications
KEPHIS – Kenya Plant Health Inspection Service
FAO – Food and Agriculture Organization
ASARECA – Association for strengthening Agricultural Research in Eastern and Central Africa

## Australian Biosecurity and Related Agencies and Institutions\*

\*Note this listing provides a partial snapshot of Australian biosecurity related organisations. Listing does not indicate these organisations are partners in the AIFSC Biosecurity Initiative.

Agency	Biosecurity Functions	Capacity Building Activities/Linkages
<a href="#">Australian Government Department of Agriculture, Fisheries and Forestry (DAFF)</a>	<p>Develops and implements policy, specific regulatory functions and operations supporting Australian agri-food industries; delivers a range of international biosecurity capacity activities esp to animal, plant health regulatory agencies.</p> <p><b>Border Operations</b> : Regulatory functions in import and export management of agri-food products</p> <p><b>Plant Division</b>: Plant Biosecurity, Australia Chief Plant Protection Office</p> <p><b>Animal Division</b> : Animal biosecurity, Australia Chief Veterinary Office</p> <p><b>Food Division</b>: Food export operations (mainly meat, dairy and fish)</p>	<ul style="list-style-type: none"> <li>• Australian Fumigation Assurance Scheme – international capacity building for heat and fumigation treatments for cargo</li> <li>• International Plant Health Program – international capacity building esp for plant health surveillance systems/remote diagnostics etc</li> <li>• Plant biosecurity risk assessments</li> <li>• Plant biosecurity import/export operations</li> <li>• Plague Locust Commission</li> <li>• National Plant Health</li> <li>• Animal Pre-Border Program – international capacity building esp for animal health surveillance systems</li> <li>• Animal biosecurity risk assessments</li> <li>• Animal and biological biosecurity import/export operations</li> <li>• National animal health</li> <li>• Food export operations and certification; Codex contact point</li> </ul>
<a href="#">Food Standards Australia New Zealand (FSANZ)</a>	<p>Bi-national food standards setting agency; develops food standards and undertakes food safety risk assessments</p>	<p>Delivers several international food regulation and safety capacity building projects including for APEC.</p>
<a href="#">Office of the Gene Technology Regulator (OGTR)</a>	<p>Establishes and oversees enforcement of regulations governing genetically modified organisms in Australia including regulatory, standards, guidelines, risk assessment</p>	<p>Delivers several international gene technology regulation and safety capacity building projects including several associated with African countries</p>
<a href="#">CSIRO</a>	<p>Australia’s national research organisation is involved in a wide range of agriculture and biosecurity research programs.</p>	<ul style="list-style-type: none"> <li>• Various Divisions run programs targeting animal, plant health or food safety.</li> <li>• Has recently established a <a href="#">Biosecurity Flagship</a></li> <li>• Runs the <a href="#">CSIRO-AusAID African Food Security Initiative</a> aims to lift food security and agricultural productivity in Africa through research and capacity building</li> </ul>
<a href="#">Co-operative Research Centres</a>	<p>Australian Government initiative that supports end user driven research collaborations to address major</p>	<p>Includes the <a href="#">Invasive Animals CRC</a> and <a href="#">Plant Biosecurity CRC</a> each with its own set of public and private partners and key</p>

<b>(CRCs)</b>	challenges facing Australia	objectives and deliverables. Each CRC has training and education programs – mostly at postgraduate level. Have also delivered international capacity building through <a href="#">Crawford fund</a> for food security
<b>Universities</b>	A number of Australian universities have departments, programs, courses, centres and collaborative arrangements that are involved with biosecurity training and research	<a href="#">Plant Biosecurity Program</a> (collaboration between a number of universities running training courses in plant biosecurity) <a href="#">CEBRA</a> : Centre of Excellence in Biosecurity Risk Assessment (runs projects on biosecurity risk assessment mainly for DAFF)
<b>State departments of agriculture and health</b>	Several state agencies deliver biosecurity services and activities; including in international capacity development	For example: <a href="#">AgWest Food Security</a> has delivered a range of international biosecurity capacity development initiatives including to Africa. Occasionally host research and or training activities on or related to biosecurity
<a href="#">Plant Health Australia</a> and <a href="#">Animal Health Australia</a>	Not-for-profit public companies established by the Australian, state and territory governments and major national industry organisations to address farm and trade biosecurity issues	Each deliver a range of plant and health training products and activities aimed primarily at on farm biosecurity management within Australia
<b>Other research and training</b>	<a href="#">Rural research and development corporations</a> (RDCs) – public private partnerships between the Australian government and peak rural industry bodies that co-invest usually in industry specific objectives e.g. Grains Research and Development Corporation, Meat and Livestock Australia <a href="#">Crawford fund</a> a non-profit, non-government organisation, dedicated to raising awareness of the benefits to developing countries and to Australia of international agricultural research.	RDCs invest in a range specific research activities which at times link with capacity development in biosecurity; including occasionally to international biosecurity capacity development Runs a number of training activities with various partners including universities, CRCs, CSIRO, etc – many have been directed at <a href="#">biosecurity training</a>
<b>Industry bodies</b>	Various rural industry associations and individual companies provide opportunities and activities that support specific biosecurity capacity building activities	Occasionally host research and or training activities on or related to biosecurity