Environment, gender-equity and biosecurity benefits delivered by international R&D

Research that helps developing countries implement agricultural practices that protect and restore their natural resources means their agriculture will be more sustainable long-term. Sustainable agriculture delivers improved food security, reduces poverty, and means developing countries are better able to mitigate and adapt to climate change.

People working on ACIAR projects in developing countries are very conscious of the need to empower smallholder women farmers. Often women do not have decision-making power and conduct the most labour-intensive agricultural tasks while maintaining their domestic households. Achieving food and nutrition security means empowering women.

Through our global and national agricultural R&D networks, Australia and its international partners also monitor pest and disease outbreaks affecting our biosecurity. We also share technological innovations to help overcome and eradicate these risks.

Diplomacy and reputation gains from investment in international agricultural R&D

Australia’s investment in international agricultural R&D is pivotal to our foreign aid program and commitment to the United Nations’ 2030 Agenda for Sustainable Development. As a prosperous country, Australia has a responsibility to contribute to global efforts to reduce poverty, alleviate suffering and promote sustainable development. This also serves our interests because the more that countries can provide economic opportunity for their citizens, the more stable they will be.

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Australia’s investment in international agricultural R&D is well-targeted and contributes to the economic competitiveness of Australian farmers. Australia’s investment has facilitated the development of sustainable agricultural industries, gender equity, adaptation to pest and disease threats, and helped countries meet UN Sustainable Development Goals.

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Australian investment in international agricultural research pays its way

Investment in international agricultural research and development is highly beneficial to overseas farmers and economies. It also brings significant returns to Australia’s farmers, biosecurity, scientific knowledge and our global diplomatic reputation. Recent studies commissioned by the Crawford Fund demonstrate:

- Economic returns on investment range between a minimum of $3 to $10 for every dollar invested.
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Our reports demonstrate that Australia’s investment in agricultural development through our aid budget is an outstanding success. It is well-targeted and contributes to the food and nutrition security of low-income countries, as well as their environmental and economic sustainability and resilience, and to gender equity and regional stability.

For further information
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Photo: ACIAR, Conor Ashleigh

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The accomplishments of our investment into agricultural R&D and capacity-building contribute to influence and ‘soft power’, and improve Australia’s international reputation. We are perceived as a serious and significant contributor to the international community by willingly and freely sharing Australian intellectual property in agriculture.

Similarly, ACIAR’s role in leading the Global Research Alliance on Agricultural Greenhouse Gases demonstrates Australian commitment to climate change mitigation and adaptation.

Economic benefits for developing countries and Australia

- For every $1 invested in international agricultural R&D, $5 of results is delivered in economic benefits for developing countries and Australia.
- The benefit-to-cost ratio for ACIAR’s investment in its multilateral programme, through its support of the CGIAR program, is likely in the order of 10:1, with a minimum estimate of about 3:1.
- A reasonable estimate of the benefit-cost ratio for a well-managed portfolio of research projects is 10:1, which is consistent with econometric estimates for the agriculture sector in general and with the estimates for the CGIAR and national agricultural research centres in CGIAR partner countries.
- Access to new plant varieties developed by CGIAR Research Centers has delivered significant economic benefits for Australian farmers and consumers, and maintained our farmers’ competitiveness in world markets.

BY THE NUMBERS

Since 1982, ACIAR has commissioned and managed more than 1,500 research projects in 36 countries partnering with 150 institutions and more than 50 Australian research organisations.

<table>
<thead>
<tr>
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<th>2012-2020</th>
<th>2021 and Beyond</th>
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<tbody>
<tr>
<td>Researchers</td>
<td>800</td>
<td>28</td>
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<tr>
<td>Countries</td>
<td>across Asia, the Pacific and Africa to pursue academic or leadership studies in Australia as ACIAR fellows</td>
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<tr>
<td></td>
<td>Between 2012 and 2020, the Crawford Fund supported</td>
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<tr>
<td>Short training courses, masterclasses and one-on-one mentoring programs attended by over 5,000 participants from 71 countries</td>
<td>395</td>
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In developing countries, an increase in agricultural productivity reduces poverty by twice as much as a comparable increase in productivity in other sectors of the economy.

Improving oyster productivity

An ACIAR project that assisted Vietnam to develop an oyster industry based on access to reliable oyster spat (oyster larvae attached to a surface) has seen production increase from 100 tonnes to 15,000 tonnes, providing incomes for 2,500 families in 28 provinces. In parallel with the work in Vietnam, Australian scientists have developed improved molecular tools which are being used to breed Sydney rock oysters with improved disease resistance, growth and meat condition.

Capacity-development across value chains changes lives and creates connections

The Crawford Fund’s niche and focus on capacity-development through workshops, masterclasses and mentoring allows it to complement ACIAR work and leverage its own extensive networks. The Crawford Fund’s work across agricultural value chains has demonstrated its ability to ‘punch above its weight’ and achieve:
- international networks that benefit a diversity of researchers in Australia and internationally
- positive global reputation for Australia’s agricultural R&D
- better understanding of the contextual and cultural issues facing agriculture in developing countries
- connections between people across diverse backgrounds and perspectives that lead to ‘cross-pollination’ of knowledge, and ideas on how to improve agricultural production and contribute to social and human development goals.

Australia gains new knowledge and skills

Australian farmers directly benefit from investment in international agricultural R&D by gaining new skills and knowledge.

- Australian researchers gain practical knowledge of how to improve the productivity of different crops in different climatic or agro-ecological conditions, which can benefit Australian farmers working with similar crops under similar conditions.
- New knowledge and skills are captured and shared through collaboration between Australian universities and research agencies, and our overseas counterparts.
- Australian researchers and biosecurity managers benefit from being able to study potential pests and diseases (to both cultivated plants and domesticated animals, and to native flora and fauna) before they reach Australia.
- International agricultural research relationships and networks enable prompt and coordinated responses to emerging issues in international plant and animal science.
- Through our international agricultural R&D, Australia gains detailed knowledge on international trade and value chains that is potentially useful for our own production and trade.
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| Since 1982, ACIAR has commissioned and managed | By 2021, ACIAR had supported |
| more than 1,500 research projects | 800 researchers from |
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| | |
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| | 102 impact assessment reports on its projects |

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**Happy seeding**

ACIAR’s projects on the rice–wheat rotation in India fostered the adoption of a new machine, the Happy Seeder (see below), for direct seeding of wheat into uncultivated soil immediately following rice harvest, which allows farmers to plant without burning the rice stubble. The Happy Seeder helps farmers to conserve their water and soil—resulting in increased crop yields and lower production costs. For planting in 2021, there were thousands of Happy Seeders operating in farmers’ fields in the Indian states of Punjab and Haryana.

**Increasing drought-resilience**

Subsistence farmers in Laos are now more food-secure thanks to an ACIAR project that introduced direct seeding of drought-tolerant rice with a machine rather than laboriously transplanting seedlings by hand. This means farmers have more time for other activities, such as growing vegetables. ACIAR and its partners invested $14.6 million in these projects from 1997 to 2012. This investment has yielded strong returns, with a net present value of $50.1 million, and a benefit-to-cost ratio of 4.4:1.
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The Crawford Fund works alongside ACIAR to build the capacity of scientists and farmers in low-income countries. Our developing country partners consider this capacity-building to be as least as valuable as the economic benefits from agricultural R&D.

Environmental, gender-equity and biosecurity benefits delivered by international R&D

The depth and breadth of the outcomes from Australia’s investment in international agricultural research demonstrate that we really are doing well by doing good.


2 The Benefits to Australia and to the Global Community from Investing in International Agricultural Research and Development (PDF, 698 KB) produced by Alluvium International (Dr Neil Byron, Dr Jan Edwards, Mette Kirk and Steve Charlton-Henderson), 2022. www.crawfordfund.org/3864576

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For further information

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