A new bait for pest birds of the grains industry

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Contents

Background 4
Stakeholder engagement 4
Surveys 5
Workshops 5
Technical assessment of candidate toxins 6
Economic analysis 6
Cost for stakeholders 6
Cost of control measures 6
Benefits 7
Draft project plan to progress work to develop a bait for pest birds 8
Overview 8
Scope 8
Budget and funding applications 9
Strategic Plan for Pest Birds 9
Conclusions 10
Appendix 10
Appendix 1. Pest bird impacts in South Australia - Stakeholder workshop summary 10
Appendix 2. Literature review of candidate toxins for baiting pest birds in Australia 10
Appendix 3. Pest bird control tool - Economic analysis. A report by BDO Services Pty Ltd. 10

Background

Pest birds include introduced species like feral pigeons and starlings as well as native species that are over-abundant and problematic like little corellas and silver gulls. When populations of pest birds are in high numbers, they impact primary industries, including grains, fruit, nuts, and fisheries, as well as infrastructure and residential properties in regional communities.

PIRSA partnered with Local Government Association (LGA) to analyse the costs and benefits of developing and registering a new bait for use on pest birds, which are impacting primary industries and communities.

To quantify impacts of pest birds, stakeholders were engaged through surveys and workshops. Information acquired through surveys and the workshop was modelled by independent economists to analyse the costs and benefits of developing and registering a new bait.

Impacts from pest birds have been increasing over the last decade. The surveys indicated that the most affected primary industries were the fruit, nut and tuna industries.

These findings strengthened the understanding of the need for, and the development and application of, a bait for pest birds. The cost versus benefit analyses highlighted the large benefits and relatively low costs of the new bait. This information will inform project plans and funding proposals to undertake the required research and development for the new bait.

This report summarises the findings of the project and provides a project plan for future actions.

Stakeholder engagement

To understand impacts and identify priorities, stakeholders were engaged from fruits, nuts, grains, and tuna industries, as well as local councils, landscape boards, and the Department for Environment and Water (DEW).

At a stakeholder workshop, PIRSA outlined findings of population modelling, which indicated exponential population growth of pest birds. The population models are reproduced in the report on the economic analyses of the proposed bait. Stakeholders also shared information on the relevant legislation and impacts of pest birds.

Short-, medium- and long-term actions were identified based on feedback from stakeholders. Full details are provided in Appendix 1. Pest bird impacts in South Australia - Stakeholder workshop summary.

Surveys

PIRSA surveyed over 65 stakeholders to understand and quantify the impacts of pest birds on primary industries and local communities. Findings from the surveys are summarised in Table 1.

Table 1. Production loss and control cost of pest birds on different industries and local governments.

Group	Production loss	Control cost
Grain growers (n = 4)	~9% crop loss	~$3/ha or ~11 days/year
Grain storage (n = 4)	~$1/t	~300 days per year
Fruit producers (n = 11)	100% of unnetted crops	~$4,500/ha
Nut producers (n = 7)	100% without control	~$500/ha
Tuna producers (n = 1)	~4% of stock feed (~$2 m)	$250,000/year
Kingfish producers (n = 1)	~$1.4 m/harvest	
Council – non-native birds (n = 26)	NA	~$10,000/year ~6 days/year
Council – native birds (n = 26)	NA	~$22,500/year ~18 days/year

Some costs (e.g., mental health, poor working conditions, and health risks) were harder to quantify but were noted in the economic analysis (see below).

Workshops

PIRSA facilitated a stakeholder workshop in February 2025, bringing together 32 representatives from local and state governments and primary industries to discuss pest bird impacts. Details of the workshop are included in Appendix 1.

Birds such as pigeons, sulphur-crested cockatoos, little corellas, cormorants, swallows and starlings were highlighted as causing increasing losses across the grain industry during seeding, harvest and storage. Impacts include crop consumption, infrastructure damage and fouling of stored grain, with concerns that impacts increase during droughts. Growers and handlers have trialled a range of controls including trapping, gassing, shooting and emerging technologies such as AI-assisted deterrents and a bait called *Ovo-control*.

Fruit and nut growers report that bird damage has become more severe over the past 10–15 years, with species such as rosellas, lorikeets and little corellas destroying buds and crops and damaging farm infrastructure. Some farms reported production losses of up to 80%, requiring substantial labour and resources for bird management. Exclusion netting remains the most reliable control method, but high costs and logistical constraints limit its widespread use. Uncoordinated management between neighbouring properties was highlighted as reducing the effectiveness of control measures.

In the tuna industry, silver gull numbers have increased over the past decade, with flocks around cages growing from small numbers to thousands. This has led to significant feed losses—estimated at an average of $1.76 million annually—and increased biosecurity and worker health risks. Current controls, such as egg oiling are costly and ineffective. Local councils are also receiving more public complaints

about pest birds, but Councils were uncertain about their role in management, with limited coordination and with some community opposition to lethal control.

At the workshop, PIRSA outlined the research and development work required to register a new bait for pest birds, including non-native species and abundant native species.

Technical assessment of candidate toxins

Toxins used to control pest birds have been used internationally, but few examples exist in Australia. PIRSA reviewed information to identify a candidate toxin, which could be used humanely while also minimising risks to non-target animals and the environment. The three candidate toxins that were assessed are outlined in Appendix 2. PIRSA, 2026.

The most suitable candidates were identified based on their species specificity, low risk of secondary poisoning and humaneness. Lack of trials in the field and in captivity were identified as gaps that were required to be addressed through future research.

Economic analysis

PIRSA engaged BDO Pty. Ltd. to conduct an economic analysis using the information gathered from stakeholder surveys and workshop discussions. The full economic analyses are included in Appendix 3. BDO Services Pty. Ltd.

Cost for stakeholders

Economic impacts identified by the analysis are listed in Table 2. The fruit industry was the most impacted followed by the nut industry and aquaculture industry.

Table 2. Impact of pest birds on industries. Abbreviations – GSP = gross state product; FTE = full time equivalent

Sector	Total GSP (20 yrs)	Direct GSP	Flow-on Effects	Avg Annual GSP	Employment Impact (Avg FTE)	Direct FTE	Flow-on FTE
Fruit growing	$503 M	$403 M	$100 M	$25 M	+32	+17	+15
Nut growing	$138 M	$268 M	–$129 M	$7 M	–145	–116	–29
Aquaculture	$15 M	$6 M	$9 M	$1 M	+5	+2	+3
Other sectors	$6 M	$16 M	–$10 M	$0.3M	–3	<–1	–2

Cost of control measures

The economic analyses modelled the projected costs of pest bird control measures using stakeholder inputs and population modelling undertaken by PIRSA.

In 2030–31, ten bait stations are proposed to be constructed across South Australia at a cost of $10,000 each to support coordinated pest bird control. From 2031–32 onwards, coordination costs are estimated at $250,000 per year and baiting at $500,000 per year, with ongoing bait station repairs estimated at $20,000 annually from 2032–33 (Table 3). The research and development for a bait will cost $5,040,000 to test three candidate toxins, analyse data and report findings (Table 4).

Table 3. Estimated cost of coordinated area-wide pest bird control deployment costs (Appendix 3. BDO Services Pty. Ltd., 2025).

Control measures	Timeline	Cost
Research and development of bait (Table 4)	3 years commencing 2027	1,260,000 X 4 phases
Deployment of ten bait stations	1 year commencing 2030-31	$10,000 per station x 10
Delivery and coordination of a control program	2 years commencing 2031-32	$250,000 per year x 2
Baiting operations	2 years commencing 2031-32	$500,000 per year x 2
Repair and maintenance	2 years commencing 2031-32	$20,000 per year x 2
	Total	$6,680,000

Benefits

The economic analysis indicates that the proposed pest bird control tool is a worthwhile investment.

In South Australia, the program is projected to generate a net present value (NPV) of $604 million and a benefit–cost ratio (BCR) of 5.3, contributing $1.3 billion to Gross State Product over 20 years, or an average of $63 million annually.

The initiative is estimated to deliver an annual NPV of $5 billion and a BCR of 3.3, contributing $14 billion to GDP over 20 years. The largest annual sectoral benefits are expected in fruit ($542 million), grains ($62 million) and nuts ($52 million).

Draft project plan to progress work to develop a bait for pest birds

Overview

Industries and stakeholders most impacted by pest birds have been identified and consulted.

The development and registration of a new bait has been proposed to mitigate the impacts.

The next phase of the project will focus on continuing stakeholder engagement, seeking funding to progress work to research, development and registration of a bait.

The findings and processes of the project will be used to develop a Strategic Plan for Pest Birds, linking the impacts of pest birds, the proposed strategic actions, and the economic benefits to South Australia and nationally.

Scope

Continuing stakeholder engagement

The project involves stakeholders from the fruit, nut, grain and tuna industries, as well as local councils, landscape boards and the Department for Environment and Water (DEW). Future workshops will build on this existing stakeholder base to strengthen collaboration with, and co-funding from, national peak industry groups. Inputs from these stakeholders will achieve outcomes at state- and national- levels.

Bait research and registration

PIRSA will develop and submit proposals to research and register a new bait for pest birds, including both non-native species and abundant native species. PIRSA has experience in working to register a new bait for feral cats and PIRSA is in the process of registering a bait for feral deer.

There are limited toxins that could be used for pest bird control. PIRSA conducted a literature review to identify candidate toxins for pest birds. The review identified candidate toxins that have potential be delivered using bird-specific feeders with future incorporation of artificial intelligence (AI) recognition models to increase specificity of targets. To ensure that the bait is humane and does not impact non-target species, trials are proposed to be conducted in the following phases until a suitable bait is identified:

Phase 1 – Conduct aviary trials of DRC-1339
Phase 1A – Analysis and reporting
Phase 1B – If aviary trials are successful, the project would progress to the preparation of APVMA registration package for a bait based on DRC-1339.

Phase 2 – If Phase 1A is not successful, conduct aviary trials of sodium fluoroacetate (1080)
Phase 2A – Analysis and reporting
Phase 2B – If aviary trials are successful, the project would progress to the preparation of APVMA registration package for a bait based on sodium fluoroacetate.

Phase 3 – If Phase 2A is not successful, conduct aviary trials of cyanide
Phase 3A – Analysis and reporting
Phase 3B – If aviary trials are successful, the project would progress to the preparation of APVMA registration package for a bait based on cyanide.

Phase 4 – Analysis, reporting and liaison with APVMA through the registration process.

Trials would be undertaken in a controlled environment followed by analysis of the findings to inform whether the candidate toxins may be suitable for a new bait.

Baits are regulated by the Australian Pesticides and Veterinary Medicines Authority (APVMA) and must be target-specific, humane, and have minimal impacts on non-target species. This process requires expertise to develop and synthesise an application package that will be provided to the APVMA based on the literature reviews and aviary trials.

Budget and funding applications

Funding is required to progress the research and development of a bait for pest birds and to draft the application to the APVMA, and to engage with them during the 3-year registration process.

The project identified several primary industries that are impacted by pest birds. PIRSA would seek to discuss potential funding opportunities with representatives from the peak bodies of these industries, and with other state governments and the Commonwealth Government.

Economic analyses (Appendix 3. BDO Services Pty. Ltd., 2025) indicate that an investment of $5 million will be required to develop an effective and humane bait and secure national registration, with funding over four years from 2027–28. Literature review of bird toxins (Appendix 2. PIRSA, 2026) identified DRC – 1339, sodium fluoroacetate (1080) and cyanide has candidate toxins. Funding will enable completion of the phased research and development, which includes stop-go points, outlined below (Table 4).

If Phase 1 is successful then the project can move directly to Phase 4 resulting in the development of a bait for a minimum of $2,52,0000.

Table 4. Estimated cost of research and development of a bait.

Research and development phases	Cost	Timeline
Phase 1 – Aviary trials of DRC -1339	$1,26,0000	2027 - 2028
Phase 2 – Aviary trials of 1080	$1,26,0000	2028 - 2029
Phase 3 – Aviary trials of cyanide	$1,26,0000	2029 - 2030
Phase 4 – Analysis and reporting	$1,26,0000	2027 - 2030
Total	$5,040,000	

Strategic Plan for Pest Birds

A strategic plan for the management of pest birds in South Australia is essential to ensure a coordinated, evidence-based approach across government, industry and community stakeholders.

A clear framework would enable prioritisation of resources, alignment of short and long-term actions, and integration of emerging tools and technologies to improve effectiveness.

It would also provide defined objectives and measurable outcomes, supporting accountability and sustained reduction in economic, environmental and social impacts.

Conclusions

Population modeling indicated that several species of pest birds are increasing exponentially, and the independent economic analyses indicated that pest birds are already having significant economic impacts on several primary industries. Impacts are likely to worsen as populations of pest birds continue to increase, especially since no effective method of control exists.

A systematic approach to the research, development and registration of a bait has been outlined, which would result in the availability and deployment of a bait that will benefit impacted sectors.

Appendix

Appendix 1. Pest bird impacts in South Australia - Stakeholder workshop summary
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Appendix 3. Pest bird control tool - Economic analysis. A report by BDO Services Pty Ltd.