

Report to grain growers

Bedstraw Eradication Program 2020/21

Foreword

On behalf of my fellow committee members, I am pleased to present this report outlining the delivery and outcomes of the 2020/21 Bedstraw Eradication Program to the contributors of the Grains, Seeds and Hay Industry Funding Scheme (IFS).

Three-horned bedstraw (*Galium tricornutum*) is a competitive weed that can cause considerable yield loss in crops, and its seeds are contaminants of fodder and grain. The presence of bedstraw requires infested areas to be quarantined whilst a nine-year program is undertaken – six years of herbicide treatments followed by a three-year ‘release phase’.

In 2020/21 the eradication has progressed well and all the arable paddock areas are now released with less than nine hectares of fenced “Bush Areas” in these paddocks remaining in quarantine.

With only one (known) infested site in the state, the Bedstraw Eradication Program is now close to eradication of all (known) sites in the State.

This will be a significant achievement and shows the value of the Grains Industry Funding Scheme and what can be achieved.

Rohan Day
Chairman

Grains, Seeds and Hay Industry Funding Scheme Management Committee
30 June 2021



Bedstraw plant at 2-3 weeks post germinating.

Program Review

The Bedstraw Eradication Program operates under the Biosecurity and Agricultural Management Industry Funding Scheme (Grains) Regulations 2010.

All program milestones have been met and the program has been delivered under budget.

Approved Plans developed annually for each infested property in consultation with the Grains, Seeds and Hay Industry Management Committee (GSHIMC), the Department of Primary Industries and Regional Development (DPIRD) and the landholders detail management actions, estimated costs and timeframes of agreed actions.

The two infested properties ended the final Release Phase of a nine-year eradication program at the end of 2019, with full release from quarantine restrictions of one property and significant reduction of quarantine area on the other property.

DPIRD implements the program which includes six consecutive years of winter spray treatments, followed by a three-year release protocol and post-eradication monitoring phase. Machinery inspections, quarantining, landholder compliance winter spraying and end of season double-knock herbicide treatments form the key components of the Approved Program.

The GSHIMC believes the current program is delivering the best value for the funding provided and is achieving the project outcomes of containment and eradication.

Achieved milestones

- The property completed the final year of the three-year “Release Phase” of the Eradication Program.
- Further reduction of area with remaining arable areas released from quarantine restrictions
- Thorough ground searching undertaken on the property, with four plants found in known infested bush.
- GrainCam surveillance in high-risk areas
- Cooperation and support by the landholder remain at a high level.
- Grain sampling through Cooperative Bulk Handling (CBH) analysis has greatly enhanced the program surveillance. To date no new infestations have been detected with this technology.

Program expenditure

The total expenditure for the 2020/21 Program was \$241 692 as at 30 June 2021 (Table 1) which was \$49 574 under the budgeted amount of \$290 904. There was a significant contingency built into the Approved Program budget for potential spraying and operational activities. Much of this contingency was not used.

The 2020/21 Budget was significantly less than the previous years, as most of the arable areas of the Approved Program are now out of quarantine and have returned to the landholder. As of 2021/22 all arable areas will be released and only nine hectares of (fenced) “Bush Area” will be under quarantine.

- Approximately \$181 692 was directed to program support and operational activities such as control treatments, regulation and property surveillance.
- A total of \$60 000 was allocated to CBH grain surveillance.

Table 1 Program expenditure 2020/21

Operational expenditure	
Employee expenses	\$113 243
Vehicles and administration	\$29 404
CBH surveillance	\$60 000
Contractors	\$25 837
Chemicals	\$6 175
Travel expenses	\$3 160
Other expenses	\$3 873
Total expenditure	\$241 692

Program results at a glance

Recent improvements

Improvements in the delivery of the program remain important for ongoing development and effectiveness. Significant operational refinements during 2020 included:

- Seed germination enhancing and destruction techniques by burning identified bush blocks.
- Levelling rock piles, to remove potential seed storing sites.
- Contingency treatment options to allow for seasonal variations and program needs.
- Implementation of GrainCam during crop harvest of released paddocks to support surveillance efforts and confirm bedstraw absence.

Compliance

Audit and compliance remain a strong focus of the program with strict quarantine protocols in place and maintained by DPIRD officers on both properties to prevent bedstraw spread outside the existing boundaries. This includes clean down processes for the movement of vehicles, machinery and equipment in and out of the quarantined areas and restricting stock access. Quarantine release processes were followed with full landholder and contractor cooperation.

Auditing of all treatments and operations occurred to ensure successful herbicide application and coverage over the whole of the required areas as well as ensuring bush clearing operation requirements are being met.

DPIRD assists the landholders with regulatory and operational facets of the program ensuring both the Approved Program and quarantine requirements are being met.

Industry Funding Schemes

The GSHIMC met in February 2020 and approved the programs for the control of skeleton weed and the eradication of three-horned bedstraw on behalf of the WA Grains Industry.

The Committee recommended a contribution rate on grains, seeds and hay be retained at 25 cents per tonne for grain and 12.5 cents per tonne for hay. These funds are used to support the Skeleton weed and Bedstraw Programs, with skeleton weed allocated 90% of the funds collected.

All contributions to the scheme are collected by purchasers of grain and hay and are paid into a GSHIFS Declared Pest Control and Compensation Account, which is managed by DPIRD in consultation with the GSHIMC.

Research

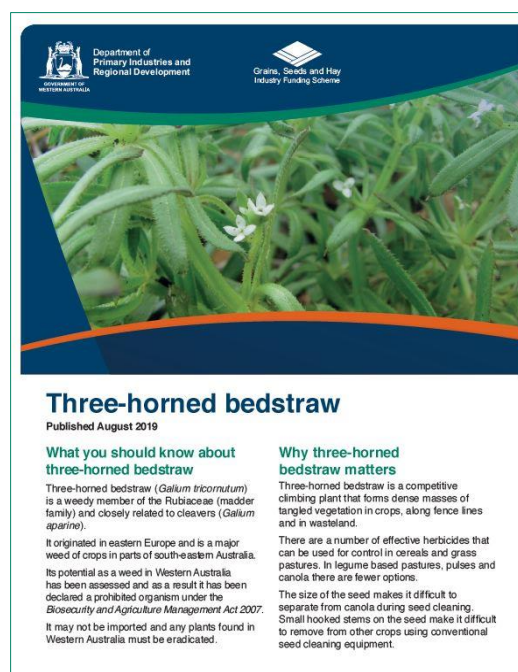
The program has continued to trial new surveillance techniques to detect bedstraw seed and map locations in the field. This included modifications to the GrainCam technology to allow autonomous use and better seed detection. The GrainCam is a device mounted to a combine during harvesting to detect seed and which previously required manual intervention to operate.

The program continued its research into improving bedstraw detection including in lupins, as this is the main crop planted in high-risk areas in 2020.

Extension and awareness

Neighbouring landholders of both affected properties were provided a status report of the Bedstraw Eradication Program. All contractors involved throughout the program also received an update and letter of appreciation.

The new three-horned bedstraw factsheet, developed to assist growers and the general public in identification and reporting, was available at agricultural field days (Wagin Woolorama) in 2020 and 2021).



The factsheet cover features a photograph of three-horned bedstraw plants with small white flowers. At the top, it includes the logos for the Department of Primary Industries and Regional Development and the Grains, Seeds and Hay Industry Funding Scheme. The title 'Three-horned bedstraw' is prominently displayed in a blue box, with the publication date 'Published August 2019' below it. The content is organized into two columns: 'What you should know about three-horned bedstraw' and 'Why three-horned bedstraw matters'.

Department of Primary Industries and Regional Development
Grains, Seeds and Hay Industry Funding Scheme

Three-horned bedstraw

Published August 2019

What you should know about three-horned bedstraw
Three-horned bedstraw (*Galium tricornutum*) is a weedy member of the Rubiaceae (madder family) and closely related to cleavers (*Galium aparine*). It originated in eastern Europe and is a major weed of crops in parts of south-eastern Australia. Its potential as a weed in Western Australia has been assessed and as a result it has been declared a prohibited organism under the Biosecurity and Agriculture Management Act 2007. It may not be imported and any plants found in Western Australia must be eradicated.

Why three-horned bedstraw matters
Three-horned bedstraw is a competitive climbing plant that forms dense masses of tangled vegetation in crops, along fence lines and in wasteland. There are a number of effective herbicides that can be used for control in cereals and grass pastures. In legume based pastures, pulses and canola, there are fewer options. The size of the seed makes it difficult to separate from canola during seed cleaning. Small hooked stems on the seed make it difficult to remove from other crops using conventional seed cleaning equipment.

Program results at a glance

Findings

Success of the Program is evident with the remaining paddocks having completed the final year of the Three-Year release phase in 2020 and released from quarantine restrictions.

Seven fenced bush areas within the released paddocks still remain under quarantine. Four bedstraw plants were detected.

Successful and timely treatments and searches have prevented seed set and exhausted the seed bank. No bedstraw plants were detected in other areas during property inspections.

No bedstraw plant or seed was detected through post eradication monitoring activities.

No bedstraw seeds were detected during CBH seed image analysis, providing some level of confidence that bedstraw has been contained to the two known properties and has not been identified in the grain growing areas of WA.

After evaluation of this year results, the Program recommends continued surveillance using seed imagery technology, as the risk of bedstraw incursions into WA is ever-present. Early detection is the best strategy to quickly eliminate infestations at a minimal cost.

Infested properties

There is currently one property in WA known to be infested with three-horned bedstraw. A second property in the Merredin shire with one paddock of 48 hectares was declared bedstraw free and formally released from quarantine restrictions in November 2019.

West Arthur: This property has two paddocks and several bush areas equating to 109 hectares under quarantine, reduced from 280 hectares.

In 2020, the two remaining quarantined paddocks completed the final year of the three year release phase and were formally released from quarantine restrictions in November 2020.

Several small bush areas within the released quarantine paddocks, totalling 9 hectares, still remain under various stages of the eradication phase. These have been fenced to exclude stock and will continue receiving full chemical eradication treatments.

Area searched

Whole of paddock searches were conducted during September by DPIRD search teams. This included all quarantine paddocks, all bush areas within the quarantine boundaries as well as non-quarantine areas (an estimated 150 hectares). Continuous monitoring of known hotspots also occurred throughout the season.

Post eradication monitoring: Monitoring of released paddocks included inspections of historical hotspots at both properties and the use of GrainCam on the West Arthur property during lupin harvest of 90 hectares of the previously infested 171 hectares.

CBH Grain surveillance

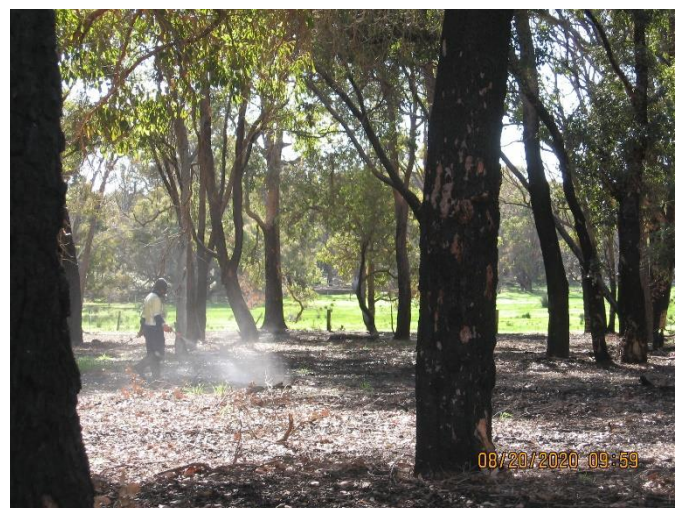
The eradication activities were complemented by a passive surveillance program funded by the GSHIFS in partnership with CBH.

CBH screening technology employed for commercial grading of grain and assessment of bedstraw seed contamination was used on 12 671 grain samples from the 2020 harvest collected from targeted CBH sites throughout the state. All samples reported as “suspect” were visually inspected to confirm that no bedstraw was present.

Infested area

West Arthur: Seven bush areas within the released paddocks are known to be actively infested. Four bedstraw plants were found at two bush sites during the 2020 season.

Merredin: No bedstraw plants have been detected since 2014.



Contractor treating known infested site for bedstraw control.

Program results at a glance

Control treatments

Timely and successful treatments were applied to all quarantined areas with both properties receiving a double knock treatment at the end of the season, including those paddocks in the release phase. This provides confidence that any undetected bedstraw will not survive to produce seed. The West Arthur property also received treatment to designated bush blocks.

Timely and successful treatments were applied to all quarantined areas, with arable areas in the final release phase receiving a contingency grass herbicide treatment to assist searching, as well as a double knock treatment at the end of the season.

This provides confidence that any undetected bedstraw will not survive to produce seed. All designated bush areas received two treatments during the season.

All operations were audited by DPIRD officers for treatment effectiveness.



Top, mid and bottom photos: Search team making the best of a paddock devoid of bedstraw



Bedstraw plant in bush block.



Planned improvements to the program in 2021/22

A meeting with the landholder and DPIRD staff was held at the end of the 2020 Approved Program activities season, to review the program and look at what is working well and identify areas for improvement. Also discussed and finalised was the 2021 Approved Program and post eradication monitoring activities.

Main items discussed and recommendations:

- **Burning of leaf litter in designated bush areas was successful in removing debris and improving spray application.**

Continue burning operations at identified locations as these assisted the program to manage bedstraw by promoting germination and destroying any potential seed.

- **Four of the seven fenced bush areas will complete the final year of the six-year eradication phase at the end of 2021 and enter Year 1 of the three-year release phase at the beginning 2022.**

All bush blocks will continue receiving two treatments each season during the release phase

- **Post eradication monitoring of newly released quarantine areas.**

All historical infested paddocks released from quarantine, will continue to be inspected to ensure bedstraw has not re-established, as part of the ongoing (post eradication) monitoring program.

All newly released paddocks placed in crop will be searched during harvesting using GrainCam technology as well as grain sample collection for seed contamination screening to provide an added measure of surveillance on these paddocks.

- **Ongoing awareness raising of bedstraw, its identification and reporting is important to the grains industry and other relevant stakeholders.**

Continue enhancing education and awareness by including bedstraw and skeleton weed information and awareness raising activities at field days, farmer events, and the DPIRD website.



GrainCam was used on a property during lupin harvest