



PLOT SPRAYER FOR RESEARCH ON KANGAROO ISLAND

RESEARCH SUMMARY

AKI118G

FAST FACTS

PROBLEM

Hand spraying of trial plots led to inaccuracies due to muscle fatigue and natural variability.

PROJECT

SAGIT funding enabled Agriculture KI to build a specially designed plot sprayer that would ensure greater consistency, accuracy and flexibility.

PARTICIPANTS

Agriculture Kangaroo Island:
Jenny Stanton.

DATES

Start: 1 March 2018
Finish: 30 June 2019

After many years of hand spraying trial plots, Agriculture KI initiated the design and build of a dedicated plot sprayer. Having a plot sprayer enables trials to be sprayed more evenly, both in terms of spatial coverage and application rate (i.e. the forward speed of the sprayer).

The sprayer wheels span the width of standard trial plots and the 3 metre boom allows spraying of wide plots.

The sprayer is available for use on any cropping trial plots on Kangaroo Island.

BACKGROUND

Accurate spray applications are an important and often critical aspect of cropping trials.

While hand spraying is feasible for the small area of trial plots, Agriculture KI recognised that variations in walking pace and spray application are inevitable. These become amplified by muscle fatigue after any amount of time is spent spraying.

RESEARCH AIMS

The purpose of this project was to build a dedicated plot sprayer for use by Agriculture KI and other research groups on Kangaroo Island.

IN THE FIELD

SAGIT funding enabled Agriculture KI to proceed with the design and build of a dedicated sprayer for cropping trial plots. The sprayer is built on a simple, light frame with a single axle and small bicycle wheels. The wheels travel forward of the boom so that chemical does not get rubbed off by the wheels travelling over just-sprayed plants.

The engineering and construction of the boom was done by Will Stanton, using parts sourced from The Spray Shop and eBay.

It was originally hoped that the operator would be able to guide the sprayer from the side, however this was found to add too much design complexity. The operator still needs to follow behind the boom to keep everything symmetrical.

The sprayer has a 3 metre spray boom for wide plots. Unrequired width can be shut off by installing nozzle blanks into the unwanted nozzle bodies, for a simple form of section control.

RESULTS

The plot sprayer has been a huge success.

It allows constant ground speed and boom height to be maintained regardless of the length of the plot. The 1.8 metre axle allows the wheels to run in the narrow gaps between plots, eliminating plant impact while the 3 metre boom ensures spray reaches the edges of the plot or covers wider plots with ease.

The only difficulty experienced is that the wide axle means the sprayer needs a full-sized ute tray (i.e. not a crew cab) for transportation.

VALUE FOR GROWERS

Although developed by Agriculture KI, the plot sprayer is available for all cropping trials on the island, including projects undertaken by PIRSA, Landmark and Elders.



The plot sprayer.

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