

Directed Herbicide Spray in Sugarcane

Project Bluewater Case Study

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Converting Irvin legs for 2,4-D droplet size compliance

The Irvin Spray System has been widely used in the sugar industry for many years.

Often referred to as octopus legs or spider legs, the Irvin Spray System is an inter-row dropper developed specifically for weed control in sugarcane.



Fig 1. Irvin Spray leg Setup

The system consists of a spray bar with 6 or 8 low pressure nozzles on a dropper in each inter-row space, see Fig.1 (above). The nozzles are directed to minimize herbicide contact with the cane crop, whilst directing herbicide more effectively to weeds and the soil surface.

The Problem

In October 2018, the APVMA introduced new label requirements for products containing the active ingredient 2-4,D. Changes included new requirements regarding weather conditions, buffer zones and record keeping.

The change also included a mandatory statement to use nozzles that produce droplets no smaller than Very Coarse (VC) spray quality category. Unfortunately, nozzles that are commonly used on an Irvin leg, do not meet this criteria.



Fig 2. APVMA 2-4,D Gazette



Solutions/Alternatives

Alternative 1 (unfeasible)

The most obvious and **cheapest solution** to this problem is simply to change all nozzles to a type capable of producing a VC droplet. This is achieved through the use of suitable 'air-induced' type nozzles see Fig 3. (right).



Fig 3. Air-induced nozzles

In practice, regular blockages occur due to the dust and trash below the crop canopy during a spray operation. The [Project Bluewater](#) team trialled a set of low pressure air-induced nozzles (AIXR) to test this theory and found **5 of 6 nozzles blocked** with either dirt or trash within one spray swath (approx. 350m).

Alternative 2 (recommended)

The **ideal solution** is to fabricate a bracket to utilise the **existing Irvin leg** framework and replace the 6 nozzle spray platform with a swivel and 2 or 4 Floodjet® nozzles, see Fig 4. (pictured right). The Turbo Floodjet® is a high application volume nozzle capable of producing VC droplets or larger. This upgrade/adaptation costs approximately **\$200/Leg**.

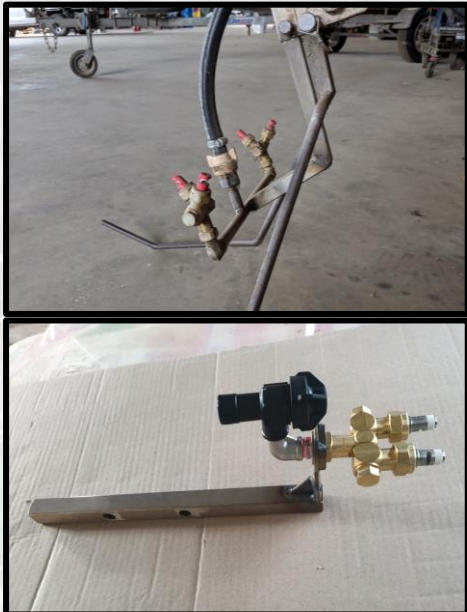


Fig 4. Fabricated dropper adaptors

Summary

Recent legislative changes regarding the use of 2-4D, have meant that the Irvin spraying system must be upgraded to comply with spray droplet requirements. **Upgrading the spray bar system** to Floodjets® is the most suitable alternative and is **strongly recommended** by Farmacist and the [Project Bluewater](#) team.

Although the primary focus of this upgrade was to meet **legislative requirements**, changing from traditional nozzles to Floodjets® may have the additional benefits of **less crop damage** and **improved weed control** due to a reduction in spray drift.

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