



# PollenSmart™

## User Manual



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## User Manual

Version 2.2



PollenSmart 'Single Dispenser' 3.5m row



PollenSmart 'Double Dispenser' 5m row



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## Introduction

Congratulations on your new PollenSmart purchase. In order to ensure safe operation and to maximise the lifespan of your PollenSmart pollinator, please read this manual prior to use of the machine.

- All persons responsible for operation must, at minimum, read and comprehend the sections on operation and safety of these operating instructions.
- All persons responsible for assembly, maintenance and/or repair must read and comprehend all these operating instructions.
- The user is responsible for interpretation and use of this manual under all conditions. Should you have any doubts or questions regarding the correct interpretation, please contact the owner or the supervisor.
- Changes to the machine are not permitted without prior written approval from the supplier.
- Comply with the safety requirements as given on page 4 at all times.
- Proper functioning as well as the safety of the machine can only be guaranteed if the recommended maintenance is carried out correctly and on time.

### Manufacturer

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### Machine Overview

Machine Dimensions	
Length (ex PTO)	4130 mm
Width	1360 mm
Height	1300 mm

### Main Components

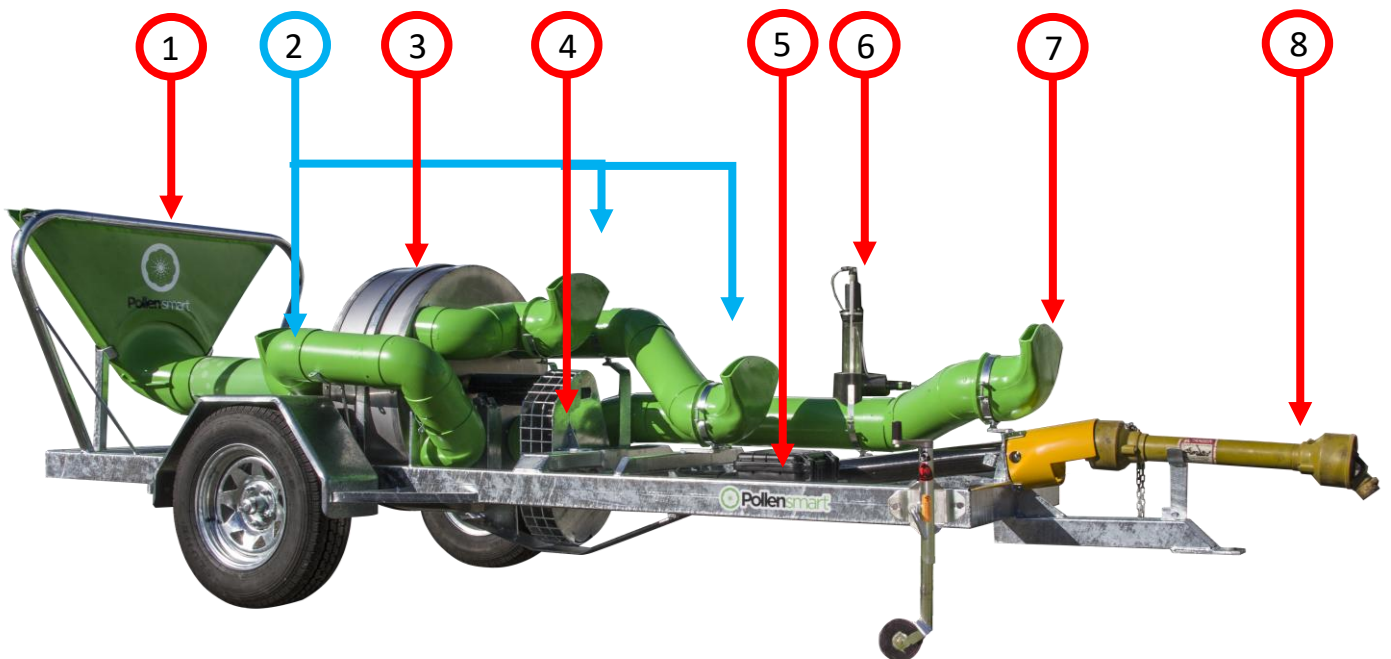


Figure 1: PollenSmart main components diagram

Label	Component	Description
1	Vacuum Intake	Air intake for recycling of pollen
2	Blower Outlets	Blow air and recycled pollen into canopy
3	Fan & Fan housing	Generates a vacuum for the intake and blows air through blower outlets
4	Pulley belt	Transfers power from the PTO to the fan
5	Main control box	Case to house pollen dispenser control unit
6	Dispenser	Holds pollen and releases at controlled rate into main pollen blower
7	Main pollen blower	Blows pollen from dispenser as well as recycled pollen into canopy
8	PTO shaft	Transmits power from the tractor to the pulley belt



## Safety

Safety depends on everyone who operates, maintains, or works nearby operating machinery. It is crucial that all those working with or around the machine during operation are familiar with the following safety notices.

### Pre-Operation

- Inspect equipment before use, for damaged parts and cords
- Ensure all guards and shields are fitted in place
- Check that the inside of the fan housing is clear by removing the intake (See page 6) as well as clearing the vacuum intake and all blower outlets
- Check that belt is at correct tension and is unobstructed, and that all grease points are sufficiently lubricated
- Ensure jockey wheel is pivoted to its horizontal position, and that the PTO is correctly coupled
- Clear the operational area of any hazards

### Operational Safety

- Do not operate if machine is damaged or has undergone any modifications not authorised by the supplier
- Do not operate during wet or adverse weather conditions
- Do not operate while under the influence of any drugs or alcohol, or while otherwise unfit to operate machinery
- Do not engage the PTO unless the tractor is at idle
- Do not turn too tight around headland as it may cause damage to the PTO
- **Use only 540rpm PTO speed**

### Post-Operation

- Ensure that all electronics including dispenser control and all cables are placed in the main control box with the lid sealed
- Park the PollenSmart in a sheltered area out of rain and direct sunlight

## Operation

It is important that the safety information listed on page 4 is followed when operating your PollenSmart. Failure to do so may lead to serious injury or result in damage to the equipment.

### Filling the dispenser with pollen

To fill the dispenser with pollen, remove the stirrer & motor by unscrewing the two stainless steel rods. Once the rods are undone, the stirrer can now be removed and the dispenser filled with pollen.

Ensure that the stirrer & motor are replaced correctly with the stainless steel rods hand tightened.



Figure 2: Pollen dispenser removal

### Adjusting belt tension

Belt tension can be adjusted by undoing the nuts and bolts on the top of the guard, and then hinging the guard back from the bottom. Doing so will provide access to the belt tensioner, which can be adjusted to tighten or slacken the belt.

Ensure that the belt is not over-tightened, and that the guard is replaced before the PollenSmart is operated.

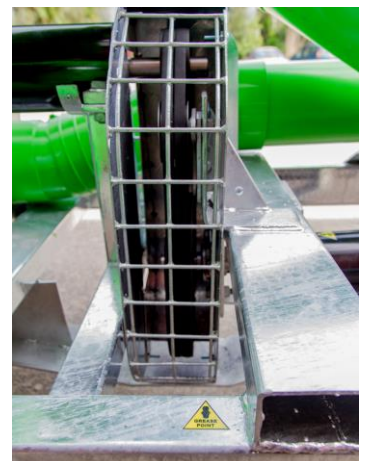


Figure 3: Pulley belt and guard

## Removing the vacuum intake

To obtain access to the fan, remove the pipe clamp nuts and bolts labelled 'A' and the tek screws labelled 'B' in figure 4. Lift the intake slightly and slide the pipe out of the stainless steel housing.

## Electronics

To set up the cabling for use, first attach the on/off switch lead to the main control box and route leads through the grooves as shown in figure 5.

Attach the dispenser plug to the bottom of the dispenser, and the stirrer plug to the top. Ensure that the plugs line up with their sockets, and that they are tightened.

Check that there are no low hanging cables, ensuring that the on/off switch lead is routed safely away from any moving parts.

Using the pollen dispenser table, set the speed of the pollen dispenser with the dial located in the main control box according to the desired amount of pollen per hectare.

## Charging

To charge the inbuilt battery, remove the on/off lead from the main control box and replace it with the charging lead.

Ensure the battery is fully charged before use, and is recharged at least once every 6 months during the off season. Failure to do so may decrease the lifespan of the battery, and may void warranty.

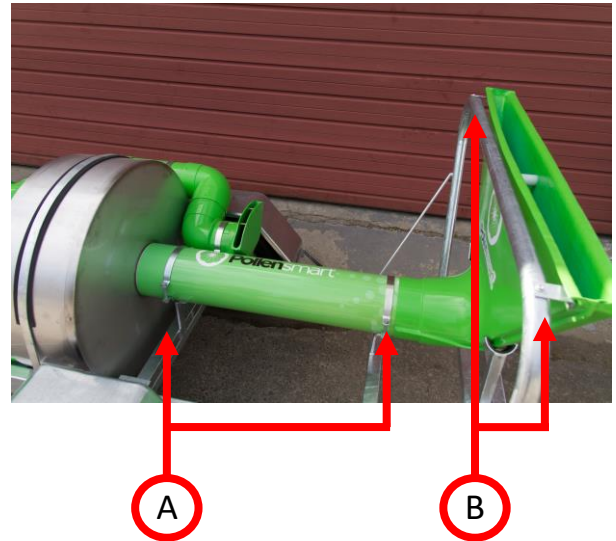


Figure 4: Vacuum intake and pipe



Figure 5: Main control box



Figure 6: Plugging in charging adaptor



## Setup & Calibration

### Setup

The PTO shaft supplied will need cutting to length to suit each individual setup. To measure the length that the PTO must be cut to, first attach your Pollen Smart to the rear end of your tractor and turn your tractor to the tightest lock that it will encounter during operation. Measure from the tractor PTO output spline to the Pollen Smart PTO input spline, and add 200mm; this is the maximum length that the PTO must be cut to. Ensure that the telescoping tubes overlap by at least 1/3 of their length while in use.



To cut the PTO, first remove the shielding and separate the two drive tubes. Lay them parallel and mark for cutting to the desired maximum length.



Shorten the inside and outside drive tubes to the required length one at a time, by cutting the same length from each. Round off the edges with a file and cut the plastic shield tubes to the same length.



Grease the internal drive tube and reassemble the shielding on the driveshaft. Check the length of the driveshaft in the minimum and maximum positions of the machine, ensuring that the tubes overlap by 1/3 of their length during operation.





### Calibration

The calibration rates shown on the sticker attached to the main control box are a guide only, and are accurate to within 10% of the actual value. The rates shown are for an application spread of 3m-3.5m on a single dispenser Pollen Smart at 5km/h ground speed, with tractor PTO revs between 320rpm-400rpm.

Using the sticker on the main control box as a guide (also appended to the end of this user manual), calibrate your machine to the desired pollen application rate. This calibration should be tested on one hectare initially, ensuring that the desired amount of pollen is being applied.

**Please note: use only 540rpm PTO speed during operation**



## Maintenance

At the beginning and end of each pollination season, the following steps should be taken to ensure maximum lifespan of your PollenSmart.

### Greasing

All 8 grease points marked with the grease point symbol as shown in figure 2 should be lubricated properly at the beginning and end of each pollination season.

Grease points are located as follows:

- 5x on the main PTO shaft
- 1x on the pulley belt
- 2x on the top shaft between pulley belt & fan housing



Figure 2: Grease point symbol

### Worm drive

At the end of each pollination season, clean the worm drive at the bottom of the dispenser (marked component 5 in figure 1) with a blast of compressed air or a soft bristle brush. **Never attempt to clean the worm drive with any sharp or rigid object.** Doing so may damage the plastic, causing incorrect amounts of pollen to be dispensed during use and voiding warranty

### Battery Charging

During the off season, the battery must be recharged at least once every 6 months. Failure to do so will result in a drastic decrease in battery life and will void the one-year warranty on the supplied battery. Ensure that the battery is fully charged prior to use at the start of the season.

### Intake/outlet covers

In order to prevent any birds or rodents from entering the PollenSmart, all openings leading to the fan housing should be covered when not in use. Should any of the openings remain exposed while not in use, ensure that the fan housing is thoroughly checked and cleared before the PollenSmart is used again.

## Warranty

The Wrangler Ltd provides a two-year limited warranty against manufacturing defects in materials and workmanship on any PollenSmart purchased from an authorized dealer.

### What does it cover?

- Any defect in material or workmanship.
- Any defect with the dispenser or electronics.
- Any defect with the supplied battery.

### For how long?

- Defects in material or workmanship, including the dispenser and electronics will be covered for two years from the date of the original purchase.
- Defects in the supplied battery will be covered for one year from the date of the original purchase

### What will we do to help you?

- **Labour**  
During the two-year limited warranty period, The Wrangler Ltd will provide, when needed, service labour to repair a manufacturing defect.
- **Parts**  
Repairs may be made with new or recertified parts, or the entire unit may be replaced with a new or rectified unit, at The Wrangler Ltd's option and sole discretion. Replacement parts or replacement units provided under this limited warranty are warranted for the remaining portion of the original warranty period, or for 90 days from warranty service or replacement, whichever is later.



### **What is not covered?**

- Damage from misuse, abuse or neglect
- Damage resulting from failure to follow safety or maintenance procedures stated in this manual
- Damage resulting from use of an already damaged PollenSmart
- Products that have had modifications not authorised by the manufacturer
- Damage caused by abnormal environmental conditions or other acts of nature
- Any costs or damages exceeding the original purchase price of the product



### Single Dispenser Application Rates:

Margin of error +/-5%

1 ½ = 14 RPM

2 = 21 RPM

2 ½ = 26 ½ RPM

3 = 32 RPM

3 ½ = 38 RPM

4 = 44 RPM

4 ½ = 51 ½ RPM

5 = 59 RPM

5 ½ = 64 RPM

6 = 71 RPM

6 ½ = 77 ½ RPM

7 = 85 RPM

7 ½ = 90 ½ RPM

8 = 97 RPM

8 ½ = 101 RPM

9 = 107 RPM

9 ½ = 111 RPM

Tractor PTO RPM  
approx 400

@ 5kph 3.5m rows:

36 RPM = 60g per Ha

62 RPM = 120g per Ha

97 RPM = 180g per Ha

111 RPM = 250g per Ha

Note:

1 = 0 RPM (stationary)



**Pollensmart**

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\*NZ Patent 714560 \*International Patent App. PCT/NZ2015/050199



### Double Dispenser Application Rates:

Margin of error +/-5%

1 ½ = 14 RPM

2 = 21 RPM

2 ½ = 26 ½ RPM

3 = 32 RPM

3 ½ = 38 RPM

4 = 44 RPM

4 ½ = 51 ½ RPM

5 = 59 RPM

5 ½ = 64 RPM

6 = 71 RPM

6 ½ = 77 ½ RPM

7 = 85 RPM

7 ½ = 90 ½ RPM

8 = 97 RPM

8 ½ = 101 RPM

9 = 107 RPM

9 ½ = 111 RPM

Tractor PTO RPM  
approx 400

@ 5kph 5m rows:

20 RPM = 60g per Ha

30 RPM = 100g per Ha

36 RPM = 120g per Ha

62 RPM = 200g per Ha

75 RPM = 250g per Ha

**Note:**  
1 = 0 RPM(stationary)



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\*NZ Patent 714560 \*International Patent App. PCT/NZ2015/050199