Area Wide Viticulture Weed Management Project

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OBJECTIVES OF THIS ACTIVITY

1. Identify consistent problematic weeds in Riverina vineyards

2. Collaboratively engage with the Cotton and Grains RDCs

3. Establish a demonstration site to implement treatment methods and monitor responses.

TRIAL SITE DETAILS

YINEYARD LOCATION

Yenda NSW

WINEGRAPE VARIETY

Chardonnay & Sauvignon Blanc

TARGET WEED

Silverleaf Nightshade (*Solanum elaeagnifolium*)

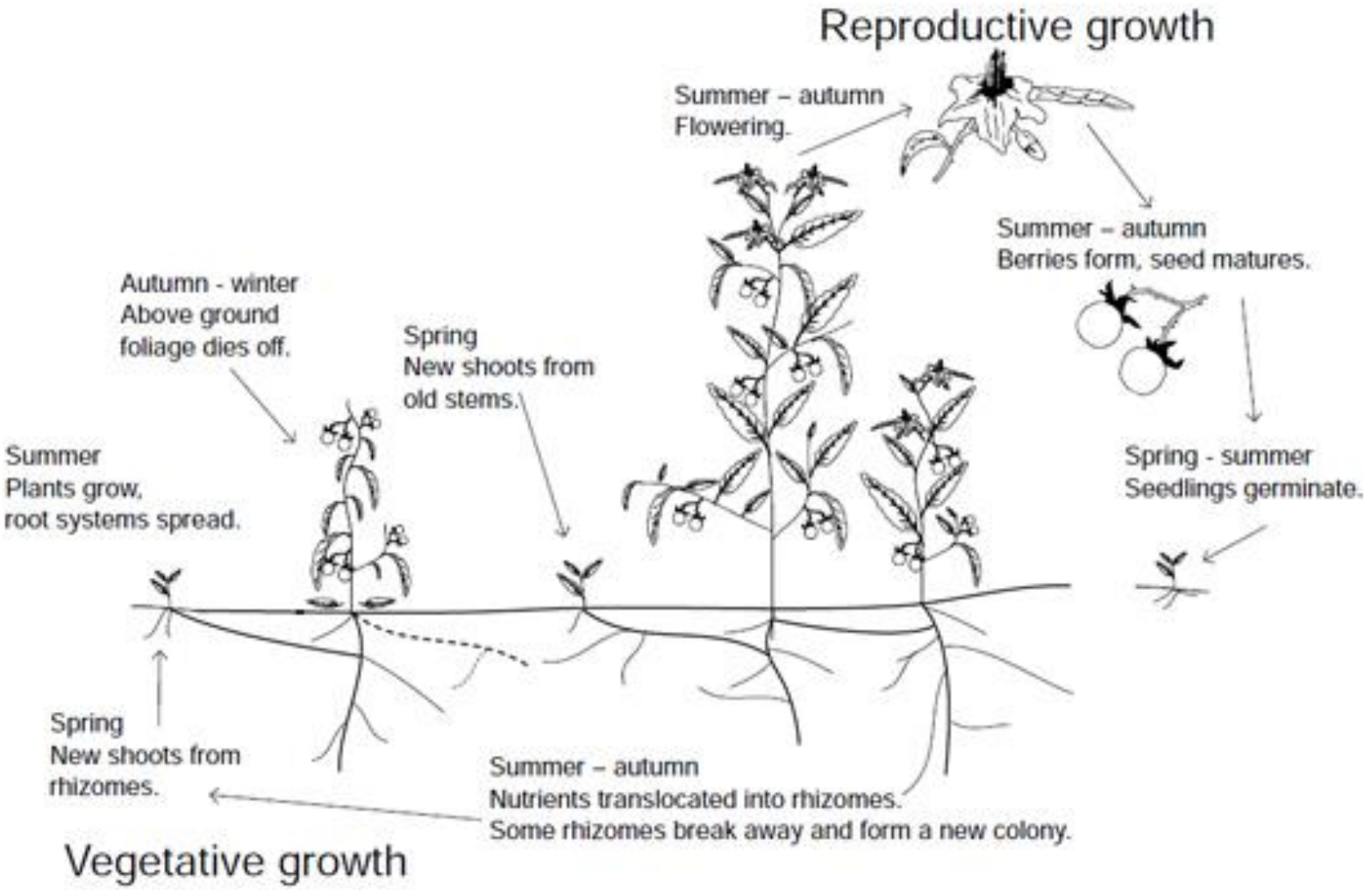
TRIAL OUTLINE

Control – Standard Vineyard Practice - Basta, Hammer & SOA
Treatment 1 – Spray-Seed with BS1000 Adjuvent
Treatment 2 – Double Knock Spray-Seed & Spray-Seed

TRIAL DESIGN

- Limited registered herbicide options in vineyards
- Silverleaf Nightshade becoming more of a horticultural issue in Griffith & in Leeton in the past couple of years
- Double knock idea based on Syngenta trial work in NZ using Paraquat to control Annual Ryegrass

Figure 1. Silverleaf nightshade life cycle



to desiccation (Iggy Honan, pers. comm.). In areas such as the Eyre Peninsula spread by fragments is not observed, and is effectively ignored as a vector.

FIGURE 36. Newly-emerging shoots from stem cuttings buried vertically or horizontally, under favourable glasshouse conditions.

Vegetative reproduction

Silverleaf nightshade has an extensive, robust and resilient perennial root system (Fig. 31). Energy reserves stored within the root system allow the plant to survive underground to avoid low air temperatures during winter and early spring, resist most management strategies, and to rapidly re-establish a competitive shoot canopy during the warmer months. The network of lateral roots growing below the cultivation layer (15 to 60 cm deep) produce new daughter shoots and increase clonal colonies by 1 to 2 m in diameter each year. There are about five lateral shoots arising from each tap root, and these grow horizontally to about 2 m long before turning to grow down. Fragmentation damage caused by cultivation can increase shoot density as new shoots arise from buds on damaged roots. New shoots originate from 1 to 50 cm deep, depending on cultivation depth.

FIGURE 31. Excavated silverleaf nightshade root system on Eyre Peninsula in SA – note the depth of tap roots, and the horizontal connection between the two tap roots (Photo: Iggy Honan).

% Brownout of glyphosate resistant Perennial ryegrass, Marlborough NZ, Nov 2014.

Buster 5L/ha fb
Preeglone 5L/ha

94% Control

Where:
Buster = Basta

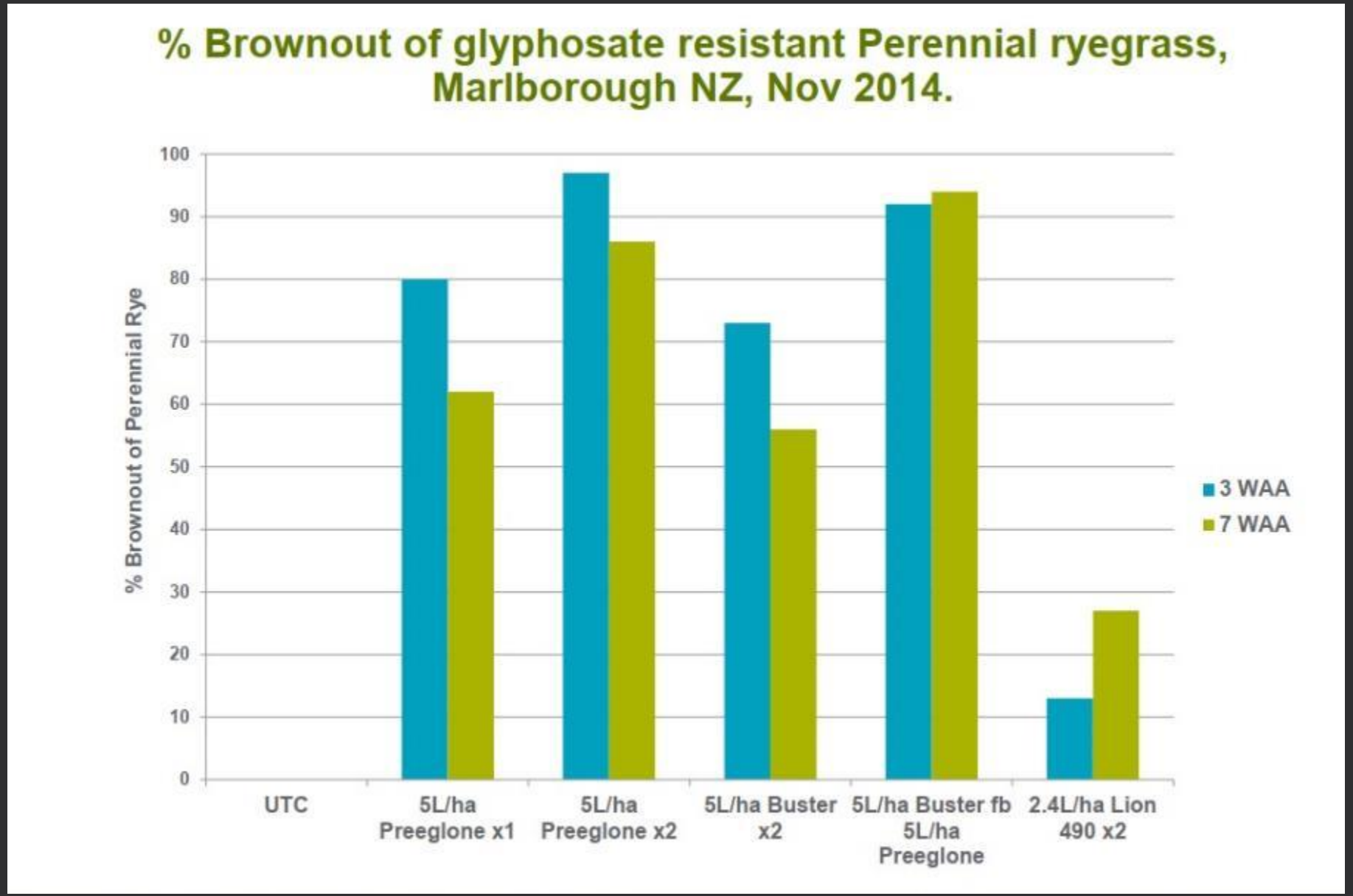
Preeglone = Spray-Seed

% Brownout of glyphosate resistant Perennial ryegrass, Marlborough NZ, Nov 2014.

Preeglone 5L/ha fb
Preeglone 5L/ha

86% Control

Where:
Preeglone = Spray-Seed



Where:
Buster = Basta

Preeglone = Spray-Seed

Lion 490 =
Glyphosate 490g/l

HERBICIDE APPLICATION DETAILS

MACHINERY USED

Vineyard Boom Sprayer

WATER RATES

400lt/HA (Basta)
300lt/HA (Spray-Seed)

HERBICIDES USED

‘Weedshot’ (generic Basta) *200g/L Glufosinate-Ammonium*
Hammer *400g/L Carfentrazone-ethyl*
Liquid Assist (liquid SOA) *417g/L Ammonium Sulphate*
Spray-Seed *135g/L Paraquat, 115g/L Diquat*
BS1000 *1000g/L Alcohol Alkoxylate*

HERBICIDE APPLICATION DETAILS

CONTROL AKA “Industry Practice”
5lt/HA Basta
45ml/HA Hammer
2lt/100lt Liquid Assist

TREATMENT 1
3.2lt/HA Spray-Seed
120ml/100lt BS1000

TREATMENT 2
3.2lt/HA Spray-Seed *followed by another application of*
3.2lt/HA Spray-Seed (yet to be done)


PRIOR TO BASTA APPLICATION
SITE 2
471

PRIOR TO BASTA APPLICATION

SITE 2


PRIOR TO BASTA APPLICATION
SITE 3

PRIOR TO BASTA APPLICATION

SITE 3

5 DAYS
POST
BASTA

5 DAYS
POST
BASTA

5 DAYS
POST
BASTA

5 DAYS
POST
BASTA

5 DAYS
POST
BASTA

5 DAYS POST
BASTA

18 DAYS
POST BASTA

SITE 2

18 DAYS
POST BASTA

SITE 2


18 DAYS POST BASTA
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18 DAYS
POST BASTA

SITE 3

18 DAYS
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18 DAYS
POST BASTA

SITE 3

54 DAYS
POST BASTA

SITE 2

54 DAYS
POST BASTA

SITE 2

54 DAYS
POST BASTA

SITE 2

54 DAYS
POST
BASTA

SITE 3

54 DAYS
POST
BASTA

SITE 3


PRIOR TO SPRAYSEED
APPLICATION
SITE 2
2 DAYS
POST SPRAY-SEED
SITE 2

2 DAYS
POST SPRAY-
SEED

SITE 2

2 DAYS
POST SPRAY-
SEED

SITE 2

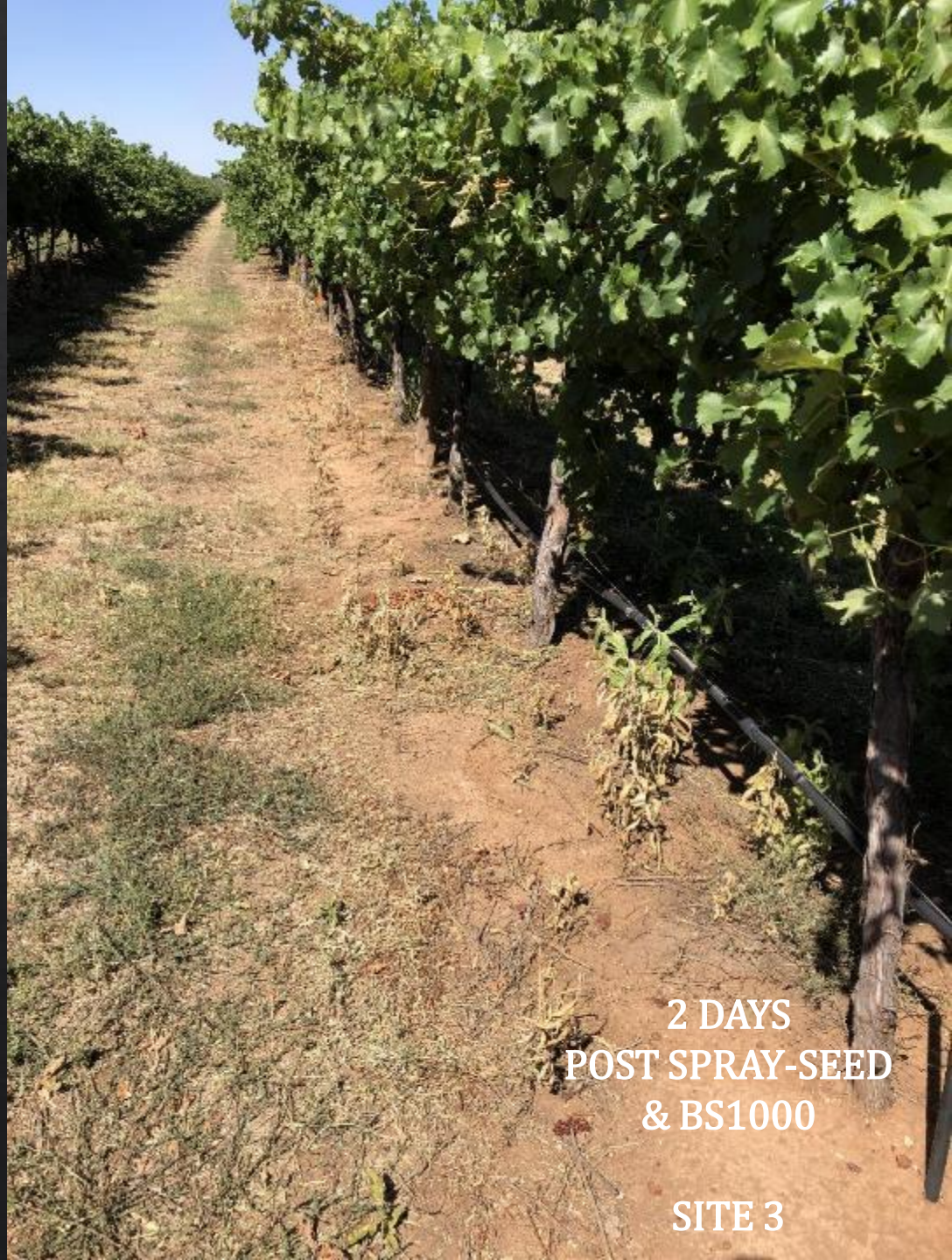
2 DAYS
POST SPRAY-SEED

SITE 2

2 DAYS
POST SPRAY-SEED

SITE 2


PRIOR TO
SPRAYSEED &
BS1000
APPLICATION
SITE 3


2 DAYS
POST SPRAY-SEED
& BS1000
SITE 3

2 DAYS
POST SPRAY-
SEED & BS1000

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2 DAYS
POST SPRAY-
SEED & BS1000

SITE 3

2 DAYS
POST SPRAY-
SEED & BS1000

SITE 3

2 DAYS
POST SPRAY-SEED &
BS1000

SITE 3

TRIAL TO BE CONTINUED…

KEY MESSAGES:

"EXHAUST THE ROOTS"

WEED CONTROL PROGRAM/
PLAN YOUR HERBICIDE SPRAYS/
KEY TIMINGS

LIMIT SEED SET

LIMIT CULTIVATION

LIMITED RESOURCES & CHEMICALS AVAILABLE – USE THEM WISELY!

Further Silverleaf Nightshade Resources:

https://www.pir.sa.gov.au/__data/assets/pdf_file/0003/334632/Silverleaf_Nightshade_-_Australian_Best_Practice_Management_Manual_2018.pdf

https://weeds.dpi.nsw.gov.au/Weeds/SilverleafNightshade

https://www.mla.com.au/globalassets/mla-corporate/blocks/research-and-development/silver-leaf-nightshade-best-practice-management-guide.pdf