

INFECTION TO PROTECTION

NET FORM NET BLOTCH

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This page expands on the key concepts introduced in the 'Infection to Protection-net form net blotch' information sheet, providing further detail on net form net blotch (NFNB), including how agronomic choices and protecting the 'money leaves' are important, along with a review of a tool designed to support fungicide decisions.

We've provided these additional explanations and supporting information to provide more detail on NFNB, highlighting its relevance to barley production and resources which may be useful at grain fill.

This guide is intended as a general grower resource and is based on published information available at the time of writing. Recommendations may change as new research, product registrations, and resistance information become available. It should not be relied upon as a substitute for independent professional advice.

Agronomy matters

As highlighted in the previous issue of Infection to Protection ([When to act](#)), fungicides are a key management strategy for net form net blotch (NFNB) and decisions such as timing and product are important in ensuring efficacy.

Fungicides protect the yield potential that is already there (Poole & Arnaudin, 2014), rather than create yield, and as the season progresses there are other factors that need to be considered when controlling NFNB. When conditions are favourable for further disease development, more frequent crop inspections are required (Snyman, 2022). Therefore, it is important to consider the weather forecast as wet conditions significantly accelerate the development of NFNB (Melloy, et al., 2024). Using weather forecasts when monitoring disease can help identify periods of high disease risk and guide decisions in relation to additional fungicide applications.

Correct growth stage identification and an understanding of the key crop developmental stages that affect grain yield can: 1) enhance management decisions, and 2) avoid damage to the crop or ineffective fungicide applications which are not beneficial to yield (Radoi, et al., 2022). As the crop approaches flowering and grain fill, considering growth stage alongside existing disease levels and the weather ahead when making management decisions is crucial.

Agronomy matters- continued

Table 1. Highlights a ‘checklist’ that can be considered when assessing for disease later in the season.

Late-season disease monitoring checklist	
Disease severity	What level of disease is present now?
Weather conditions	Are the conditions likely to continue to favour disease? What is the forecast looking like for the upcoming weeks?
Fungicides	How many fungicides have been applied?
Key leaves	How much green leaf area is left to protect?
Crop	What growth stage is it at?
Yield	What yield potential remains?
Other diseases	Is there other disease present in the crop? Would additional management options target other diseases as well?

The money leaves

The leaf structure of barley and wheat differ. In wheat, the flag leaf is key, while in barley, the flag-1 and flag leaf sheath hold greater importance to yield, mainly due to the small size of the flag leaf (Poole & Arnaudin , 2014). The percentage of contribution to yield for each of the key leaves is thought to be (Poole & Arnaudin , 2014):

- 5-12% flag leaf
- 25-35% flag leaf sheath
- 20-40% flag-1
- 10-15% flag-2
- 5-10% flag-3
- 13-18% head

These leaves are key for yield development due to the position of these structures, being able to intercept a considerable amount of light energy that transforms into carbohydrates which is translocated to grains (Radoi, et al., 2022). It is therefore important to protect and maintain these leaf structures before and during grain development (Radoi, et al., 2022).

The money leaves- continued

The importance of fungicide application at GS31-GS32 and then a follow-up application if required at GS39 was highlighted in [Issue 3 \(When to act\)](#) of Infection to Protection.

In seasons where conditions are conducive, a 'head wash' fungicide application may also be considered. Generally, in low and medium rainfall zones, a head wash application is not required, however when high levels of disease are found it is a management strategy that can be considered.

A fungicide at GS59 helps protect the flag leaf, flag leaf sheath and head from infection when disease is less problematic in the lower canopy, providing a 'top up' when sprayed earlier at flag leaf emergence (Poole, 2017). This fungicide application is better to apply at head emergence-early flowering rather than late flowering-early grain fill (Poole, et al., 2022), as it is more economic and provides the best protection for grain quality by reducing the risk of disease affecting developing grain.

The head wash application is also beneficial in targeting diseases such as rusts and fusarium head blight as well as NFNB. When considering a head wash application, it is important to refer to the product label, particularly concerning maximum residue limits (MRL), ensuring the product is registered for that particular timing and growth stage.

Putting the tools to work

We have used a tool developed by the Department of Primary Industries and Regional Development (DPIRD) called [NetblotchBM](#), designed as a decision support tool to assist growers and consultants in determining the best management strategy to reduce net blotch diseases in barley (DPIRD, 2025).

How it works:

The user inputs paddock conditions including paddock selection, variety, seasonal conditions, prices, fungicide options and disease severity. The app uses this information and accounts for the major factors that influence net blotch in barley. The app then provides a series of scenarios so the user can explore their options for disease control, allowing a comparison of the likely profitability of different disease management strategies, while considering how much yield might be lost to the disease (DPIRD, 2025).

How we used it:

Using the GRDC net form net blotch trial hosted at Hart, we have used two real-life examples to show how this tool can be used.

We compared two varieties included in the trial: RGT Planet (SVS) and Maximus CL (MS), providing a comparison between varieties with different levels of NFNB resistance. It is important to note that Maximus CL is currently rated MS in South Australia, however in the app it is rated MRMS based on other state's rating and is not updated for SA. The examples used conditions at GS31, when the first fungicide application was made and initial disease assessment was conducted.

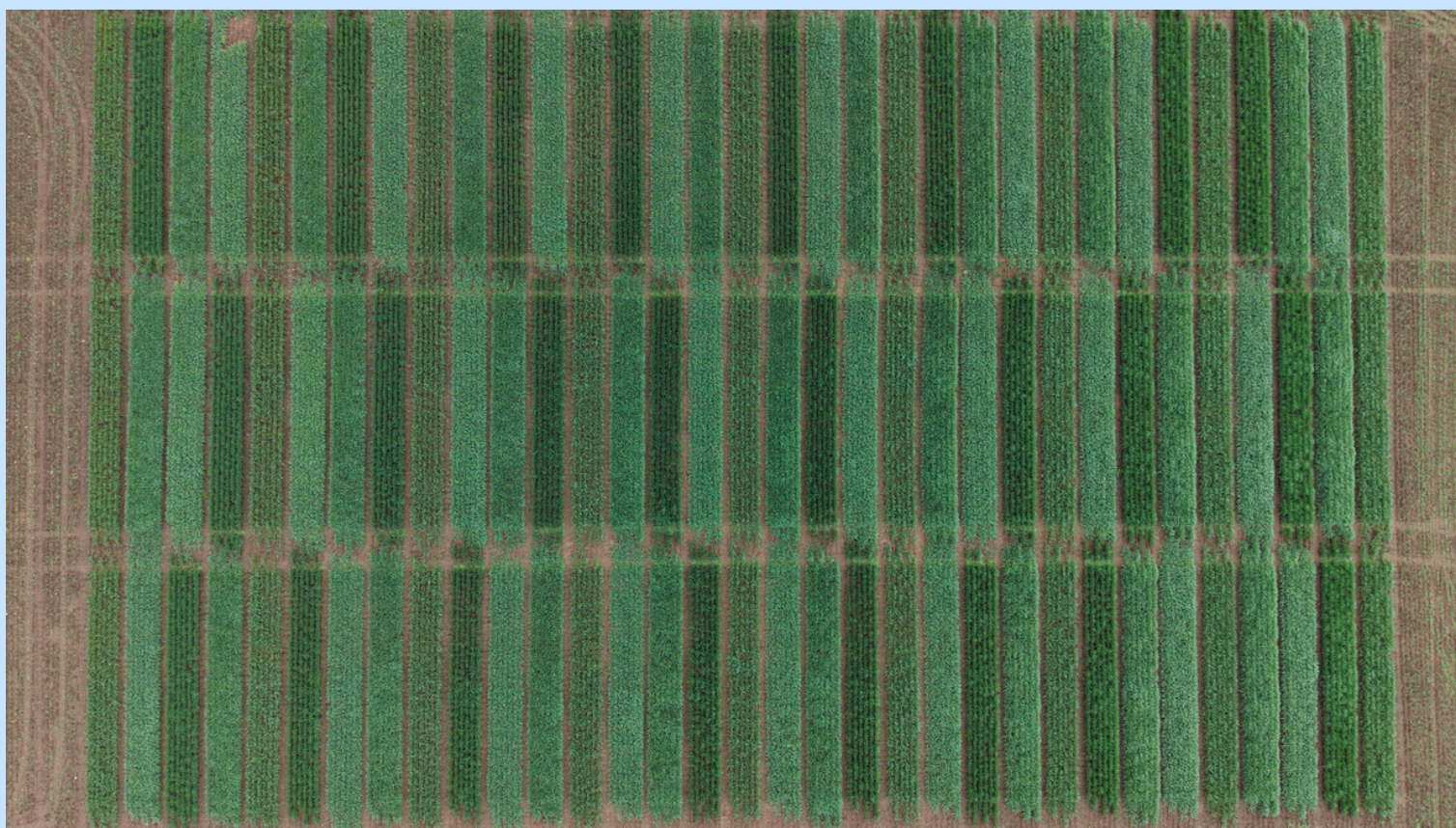
Putting the tools to work - continued

Once the details for both RGT Planet and Maximus CL plots were entered (Table 2), the app provided a summary and a full report. This included net return (\$/ha), expected yield (t/ha) and loss to net blotch (t/ha) across three scenarios: 1) no fungicide application, 2) one fungicide application and 3) two fungicide applications. Alongside this, graphs were provided to help compare the results across the different scenarios.

When comparing the results between the two varieties, Maximus CL performed better across all three scenarios, with a net return approximately \$200 /ha higher based on varietal performance alone when no fungicide was applied. This highlights the importance of the varietal resistance and why in a year conducive to net form net blotch, having a more resistant variety in a cropping system is so valuable. The two-fungicide scenario produced the best results for both varieties, with the highest net return and yield, while also reducing the losses from NFNB. The fungicide application timings were set to GS31 and GS39, representing key target spray timings.

The predicted yields (t/ha) for Maximus CL were consistently closer to the target yield across the different fungicide scenarios compared with RGT Planet (Figure 1 and Figure 2). This suggests that Maximus CL is better able to maintain yield potential under the NFNB pressure represented in the scenarios, again representing the positive correlation between varietal resistance and fungicide efficacy.

The results generated from the NetBlotchBM app have provided insights into the best management processes for controlling NFNB in barley crops at Hart. This helps demonstrate how factors such as varietal resistance, fungicide timings and paddock conditions can influence disease control, yield and net return, supporting more informed decisions around NFNB management.



Drone photo of GRDC NFNB trial located at Hart.

Photo: Mikaela Tiller

Putting the tools to work - results

Table 2. An example of our user inputs from the NetBlotchBM report for RGT Planet. Some inputs were entered manually, while others are selected from pre-set options within the app.

User input			
Location			
State	SA	Nearest place	Snowtown
Run date	2026-08-20		
Crop circumstance			
Target yield (t/ha)	5	Yield range:	0.1
Grain price (\$/t)	300	Grain price range:	0.15
Production cost (\$/ha)	400		
Crop condition			
Disease form	Net	Variety	RGT Planet
Crop growth stage	1st node detectable	Disease severity	20% leaf area infected
Barley in this paddock	More than two years	Stubble burnt	No
Weather forecast			
Season forecast	Wet	Forecast wet days next week	5
Fungicide used to now			
Seeding(sowing) treatment	SDHI Group 7	Number of previous foliar sprays	0
		Chemical group of 1st foliar spray	NA
		Chemical group of 2nd foliar spray	NA
		Foliar spray applied week (weeks ago)	NA
		Foliar spray protection period (weeks)	NA
Fungicide strategy			
Time of 1st spray (weeks from now)	Now	Time of 2nd spray (weeks from now)	2
Chemical group of 1st spray	DMI Group 3 (e.g. Prosaro)	Chemical group of 2nd spray	DMI/QoI Groups 3+11 (e.g. Amistar Xtra)
Protection period for 1st spray (weeks)	3	Protection period for 2nd spray (weeks)	3
Spray cost for 1st spray (\$/ha spray)	40	Spray cost for 2nd spray (\$/ha spray)	25
Other diseases			
Expected loss(%)	15	Expected mitigation/spray(%)	10

Putting the tools to work - results

Table 3. Summary table of results, displaying the net return (\$/ha), expected yield (t/ha) and loss to net blotch (t/ha) for RGT planet. This summary appears on the app once the paddock conditions are entered.

	No spray	Spray once	Spray twice
Net return (\$/ha)			
Minimum	381	616	653
Mean	534	764	796
Maximum	700	917	939
Expected yield (t/ha)			
Minimum	2.61	3.55	3.76
Mean	3.11	4.01	4.2
Maximum	3.66	4.51	4.65
Loss to net blotch (t/ha)			
Minimum	1.3	0.51	0.37
Mean	1.8	0.9	0.72
Maximum	2.29	1.3	1.06

Table 4. Summary table of results, displaying the net return (\$/ha), expected yield (t/ha) and loss to net blotch (t/ha) for Maximus CL. This summary appears on the app once the paddock conditions are entered.

	No spray	Spray once	Spray twice
Net return (\$/ha)			
Minimum	617	785	790
Mean	730	910	914
Maximum	843	1032	1037
Expected yield (t/ha)			
Minimum	3.42	4.11	4.21
Mean	3.77	4.5	4.6
Maximum	4.11	4.87	4.97
Loss to net blotch (t/ha)			
Minimum	0.92	0.23	0.15
Mean	1.15	0.42	0.32
Maximum	1.39	0.61	0.5

Putting the tools to work - results

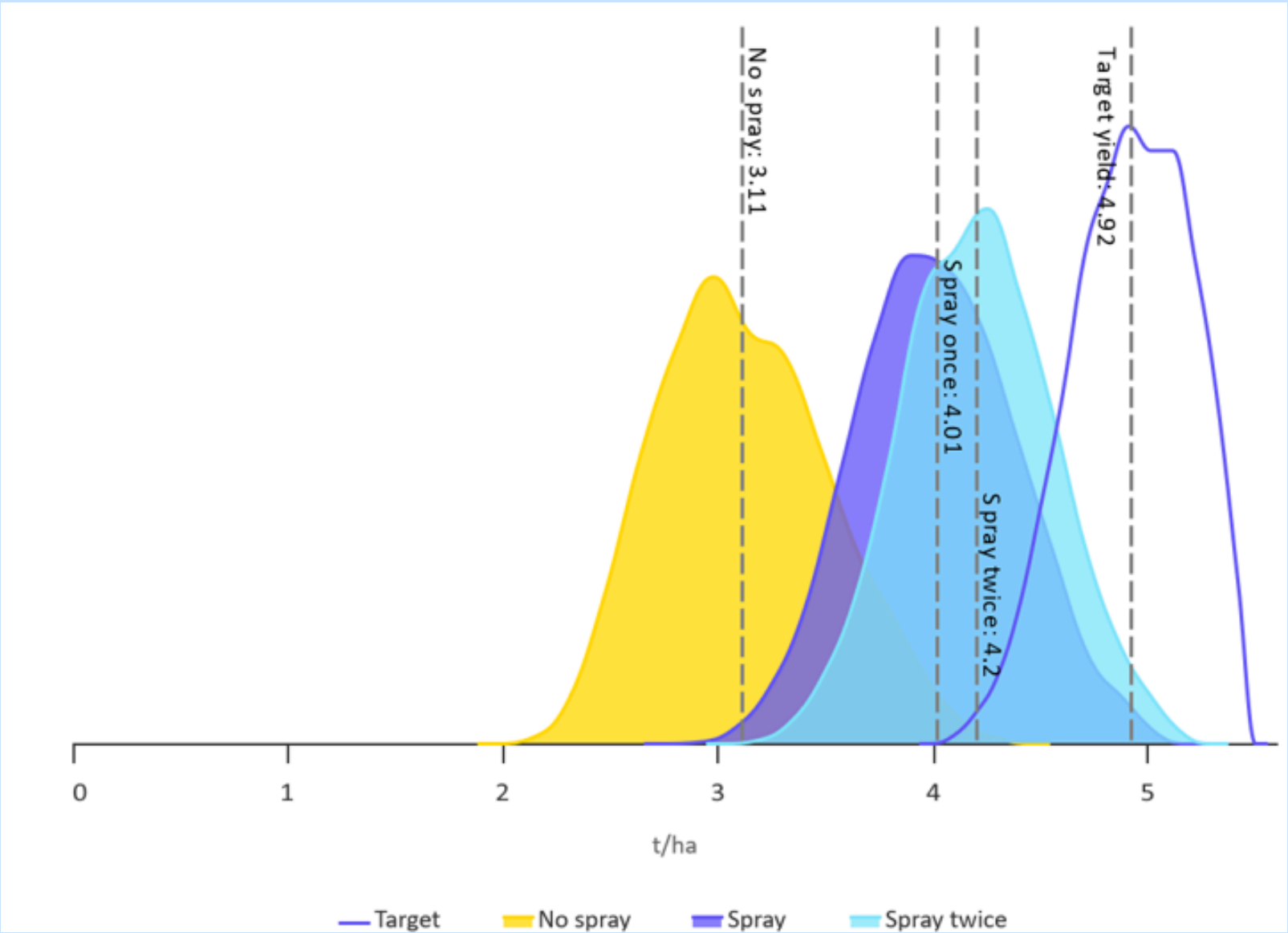


Figure 1. Target yield and expected yields (t/ha) for RGT Planet, considering the paddock conditions for all three scenarios.

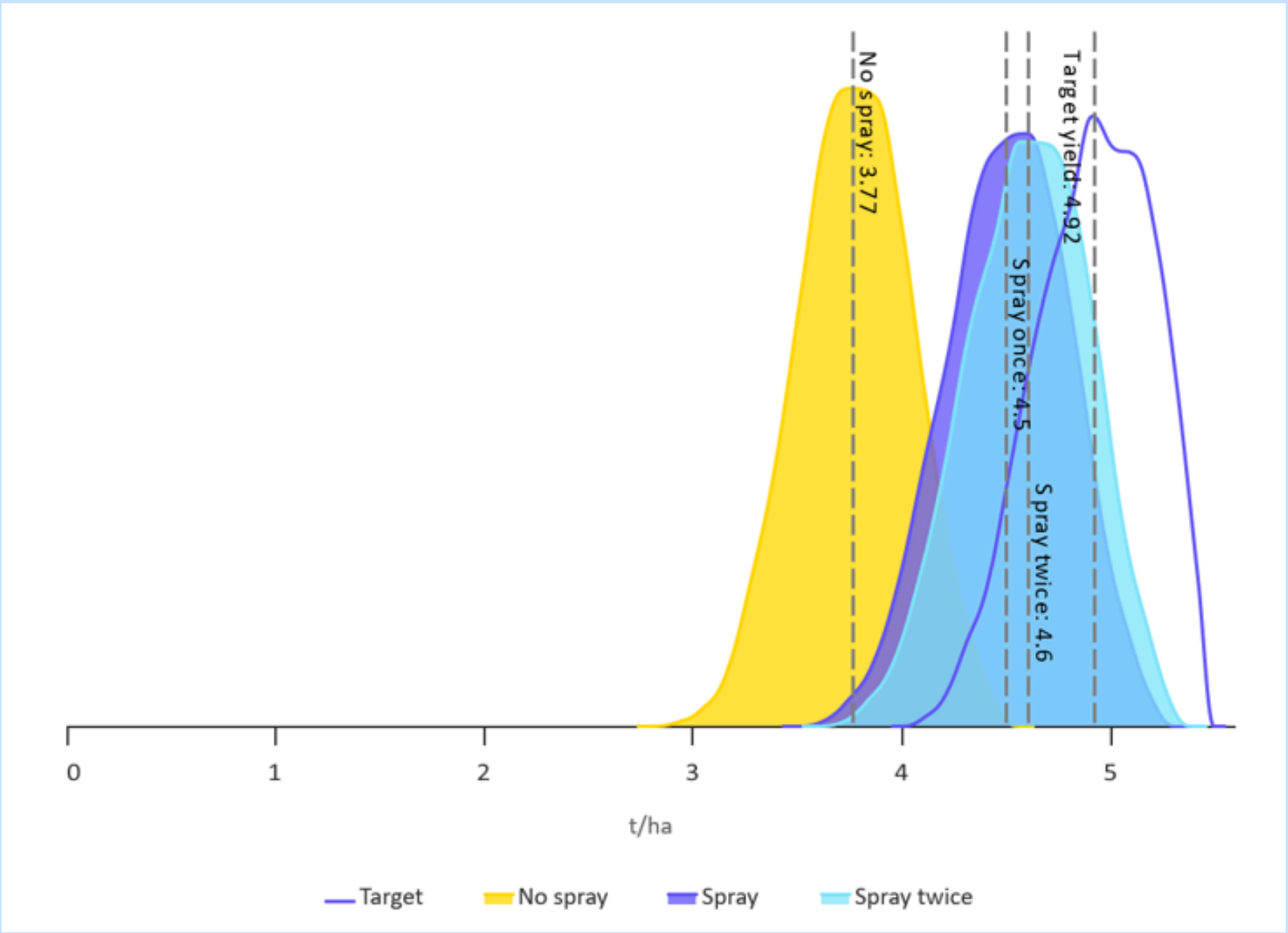


Figure 2. Target yield and expected yields (t/ha) for Maximus CL, considering the paddock conditions for all three scenarios.

Additional resources

NetBlotchBM- Decision support tool

<https://www.dpird.wa.gov.au/online-tools/netblotchBM/>



Decision support tools aid disease management decisions

<https://groundcover.grdc.com.au/weeds-pests-diseases/diseases/decision-support-tools-aiddisease-management-decisions>

NetBlotchBM Hart report- Maximus CL

[NetBlotchBM outputs\NetBlotchBM HART report MAXIMUS CL](#)

NetBlotchBM Hart report- RGT Planet

[NetBlotchBM outputs\NetBlotchBM HART report RGT PLANET](#)

The Effect of Fungicidal Treatment on Selected Quality Parameters of Barley and Malt

<https://pubs.acs.org/jafcau/article-abstract/54/4/1353/3487022/The-Effect-of-Fungicidal-Treatment-on-Selected?redirectedFrom=fulltext>

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