

Our experience with Yield Prophet over the last five years has shown us that, as conditions improve, or a rainfall event occurs, there is a significant increase in activity on the website. This year we have seen more reports generated than any year previously. For the first time in a number of years, encouraging growing conditions have been realised in most of the major grain production zones of Australia. These conditions have meant that, in general, Yield Prophet subscribers are cautiously optimistic about the season's prospects. It is a great asset to have a tool like Yield Prophet to help us to achieve a clear perspective on our genuine potential.

★ New Waterlogging Chart ★

Over recent years the number of Yield Prophet subscribers in high rainfall zones has been steadily increasing. Consequently, there have been requests for waterlogging to be incorporated into Yield Prophet reports. Recently the Yield Prophet team completed the waterlogging chart which was promptly added to the Crop Report. Figure 1 shows an example of a waterlogging chart for a paddock located in southern Victoria at Rokewood.

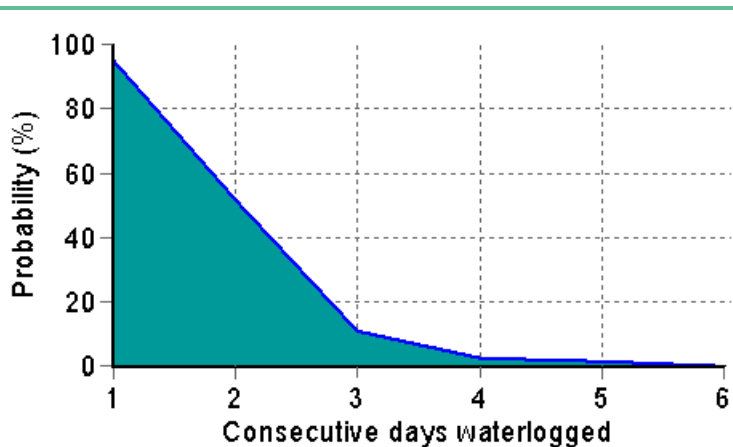


Figure 1: Crop Report probability of future waterlogging events on a wheat crop at Rokewood (VIC).

The chart indicates that this paddock has a 95%, 50% and 10% chance of experiencing one, two and three day waterlogging events respectively between now and the end of the growing season. While Yield Prophet cannot simulate the effect of waterlogging on yield potential, it can indicate the likelihood of it occurring.

In addition, post waterlogging events, subscribers can review the water and nitrogen budgets to see the effect that the event had on the soil nitrogen levels. The 3mm of runoff in Figure 2 is evidence that that this paddock

had a waterlogging event. It also indicates that this event caused 1kg/ha of nitrogen to be lost through denitrification.

Water Budget

Initial PAW status @ 1-Apr	94 mm
Rainfall since 1-Apr	144.8 mm
Irrigations	: mm
Evaporation since 1-Apr	89 mm
Transpiration since 1-Apr	4 mm
Deep drainage since 1-Apr	0 mm
Run-off since 1-Apr	3 mm

Current PAW status: 140 mm

Nitrogen Budget

Initial N status @ 01-Apr	154 kg/ha
Mineralisation since 01-Apr	6 kg/ha
N applications	23-May: 9 kg/ha
Total N in plant	33 kg/ha
De-nitrification since 01-Apr	1 kg/ha
Leaching	0 kg/ha

Current N status: 135 kg/ha

Figure 2: Crop report water and nitrogen budget on a wheat crop at Rokewood (VIC).

Crop Phenology Advice

One of the key considerations in providing Yield Prophet subscribers with accurate simulations is the phenology of each crop. In order to maintain a high standard, the Yield Prophet team needs to conduct national phenology trials to validate current simulations and test new varieties. In 2009, 16 wheat varieties are being grown at three sites (Birchip, Vic; Ardrossan, SA and Gatton, Qld) with three sowing dates to allow the phenology of each variety to be mapped relative to the prevailing climatic conditions. This information will be used to improve the phenology of simulations.

Early analysis at Birchip has shown that some varieties have progressed through the early growth stages (up to GS32) a lot more quickly than we would have expected.

Without an opportunity to analyse the climate data, we are not sure if our expectations were incorrect or the prevailing climatic conditions have been unusual. The Yield Prophet team advises you to check your current crop growth stage is corresponding with simulations. If they are disparate by more than a week, please contact Tim McClelland to advise on the best action.

Hay Yield Outcome

If your crops are well advanced -particularly Hindmarsh barley - and are at risk of being affected by frost, we remind you of the Crop Reports hay yield outcome chart, figure 3. This output is designed to help growers and consultants consider the potential returns of cutting your crop for hay as opposed to taking your crop through to harvest if affected by frost or a poor finish.

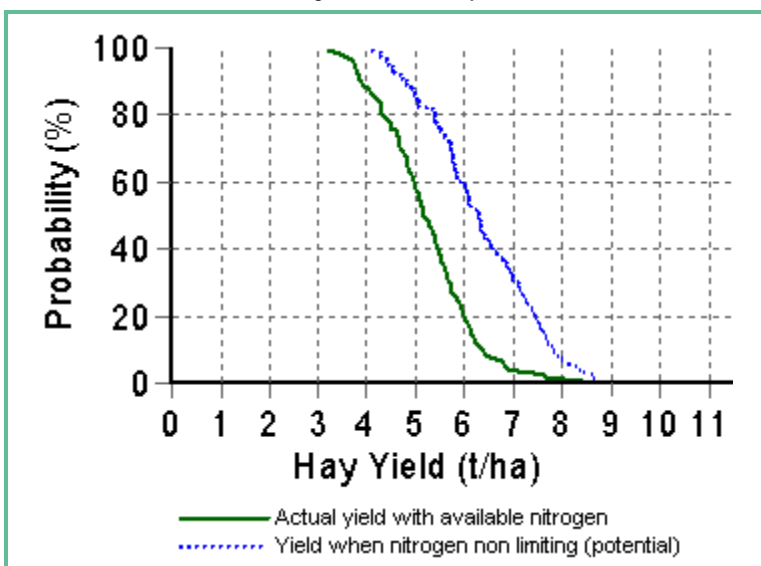


Figure 3: Crop Report hay yield chart for an oat crop at Birchip (VIC).

The curves in the hay yield chart are calculated by assuming that when above-ground dry matter is below 2t/ha, hay yield is assumed to be 70% of total dry matter, with a moisture content of 13%. When dry matter is between 2t/ha and 12t/ha, hay yield is assumed to be between 70 and 75% of dry matter (sliding scale). When dry matter is above 12t/ha, hay yield is assumed to be between 75 and 80% (sliding scale). The hay yield percentages are incorporated to account for the losses resulting from cutting about ground level.

Growth stage chart and fungicide applications

We are all aware of the importance of controlling leaf diseases. 'Approximately 75% to 80% of yield is generated by the top three leaves so these are the most important to protect from disease' (PIRSA, Crop Monitoring Guide, 2006). Crop or varieties lacking disease resistance may require the application of appropriate foliar fungicidal treatments to achieve full yield potential. Fungicidal sprays need to be timed to provide maximum protection for the most important plant components. 'For maximum benefit, fungicide

often needs to be applied between the start of stem elongation and full ear emergence (GS 30 - 59)' (PIRSA, Crop Monitoring Guide, 2006).

As well as assisting growers with planning nitrogen applications the Crop Report growth stage chart, figure 4, can also help growers with planning fungicidal applications. Figure 4 below shows that this paddock is expected to reach the end of tillering (GS30) on 11 August and reach ear emergence GS50 between the 16th and 28th of September. If disease is discovered in your area you can use this chart to prioritise fungicidal applications without leaving your office.

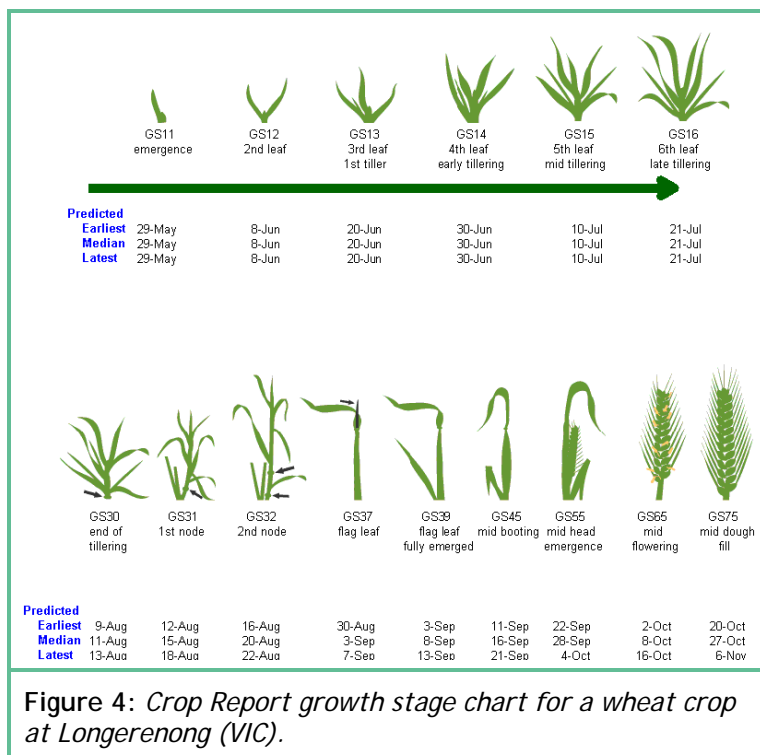


Figure 4: Crop Report growth stage chart for a wheat crop at Longerengong (VIC).

Nitrogen Stress Charts

With many regions experiencing good growing conditions growers have been considering the application of additional nitrogen. As a result there have been a lot of enquiries regarding the Crop Report nitrogen stress chart, Figure 5. "Why does the nitrogen stress chart indicated that my crop is under stress when the nitrogen budget says I have 39kg N/ha available to my crop?" There are two possible explanations for this occurrence:

1. The nitrogen in the soil is located below the crop root zone.

- The concentration of nitrogen in the root zone of the soil is too low for the crop to take up enough nitrogen to meet its daily requirement for growth.

additional applications of N. The nitrogen comparison and nitrogen profit reports are available for you to investigate the profitability and risk of additional N application.

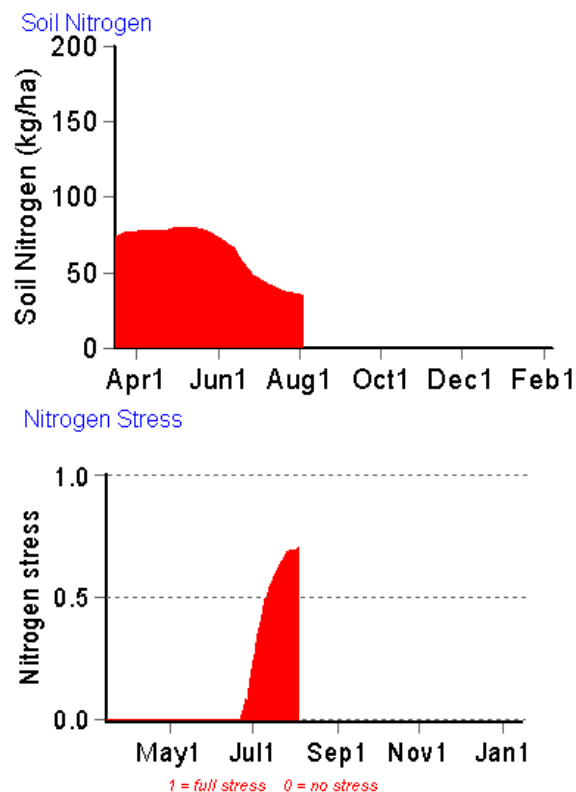


Figure 5: Crop Report soil nitrogen and nitrogen stress chart through time for an oat crop at Birchip (VIC).

The 'mean projected crop performance and requirements for the next 10 days assuming no rain and added fertiliser' section of the Crop Report, figure 6, will help identify this occurrence. The last column in this output highlights the 'N available to the roots (kg/ha)'.

The nitrogen stress chart shown in figure 5 reveals that this crop has a stress factor of 0.7. This means that the crop is photosynthesising at 30% of its potential rate. It is important to note that brief periods of mild to moderate stress do not necessarily lead to reduced yield. However, if a stress factor in excess of 0.7 is realised for a period of greater than five days, visual signs of the stress may be evident in the crop which in turn will have an affect on your yield potential.

When low levels of stress are identified on the chart it is an indication that the crop will begin to suffer stress in the short to medium term if more N is not applied. It is designed to act as a trigger for growers to consider

Date	Growth Stage	Evap (mm)	Daily water use (mm)	Daily N use (kg/ha)	Water available to roots above stress threshold (mm)	Water available to roots above crop lower limit (mm)	N available to roots (kg/ha)
5-Aug	31.9	0.6	0.5	0.2	11.9	37.1	18.3
6-Aug	32.0	0.6	0.5	0.2	12.0	37.3	18.3
7-Aug	32.5	0.4	0.5	0.2	12.7	38.6	18.3
8-Aug	32.8	0.5	0.5	0.2	13.2	38.7	18.2
9-Aug	33.2	0.5	0.5	0.2	13.4	39.2	18.2
10-Aug	33.6	0.5	0.5	0.2	12.7	38.8	18.1
11-Aug	33.9	0.5	0.6	0.2	12.3	38.5	18.1
12-Aug	34.3	0.5	0.6	0.2	12.2	38.3	18.0
13-Aug	34.7	0.5	0.6	0.2	12.6	38.2	18.0
14-Aug	35.0	0.5	0.6	0.2	12.6	38.4	17.9

Figure 6: Crop Report mean projected crop performance and requirements for the next 10 days assuming no rain and added fertiliser for an oat crop at Birchip (VIC).

Suggestions and Comments

If there is something that you would like the Yield Prophet team to consider for inclusion in Yield Prophet reports please contact Tim McClelland.

For more information...

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