

🐦 Learning Plant Language

by Wayne Smith

wsmith@agronomy.com.au

www.agronomy.com.au

@agriprof

Text books present nutrient deficiencies in crops when there are no other things wrong. However, the real world is not that simple. A wheat plant might be zinc deficient, but also be droughted, or waterlogged, or be suffering from nematodes or leaf diseases, and perhaps also be nitrogen and sulphur deficient. This can make the zinc deficiency look very different to what the text books say it should look like.

But, the plants are showing us what is wrong and do show us what is the main problem, then the second, then the third etc. I call it “Learning Plant Language”. i.e. learning to see what the plants are telling us.

I have grown up in Western Australia where soils are very sandy and nearly all soils are deficient in everything except silica :-). It was normal for me see crops with multiple deficiencies and over the years, it



This is what text books show is zinc deficiency. Two parallel dead strips down the middle of the middle leaves.



However, zinc deficiency is more commonly seen like this. A dead lesion in the middle of the middle leaves.

became clear that there was a consistency in the way plants show what is wrong. As an example, the photo

below on the left is what text book zinc deficiency is meant to look like. However, in the fields/paddocks, it usually looks like the photo on the right (lesions in the middle of the middle leaf, not two parallel dead lines).

However, that is still not what it usually looks like in the field. It can look like the photo on the right.

This is not only zinc deficient, it is also sulphur deficient. As you can see, it is not as clear and looks quite different to what text books show, but there are consistent clues as to what is the main problem and what is the second.

There is not the space nor the time to show all the variations of how cereals show nutrient deficiencies, but my staff and I are not far from completing a website that will have all of the information. It should be available to everyone before the end of 2016. The website name is www.learningplantlanguage.com. Please check the site later this year. Initially it will concentrate on wheat, barley, oats, triticale and canola, but once the website is released, it will continue to be updated to include other crops like corn/maize, soybean, peas, beans, lentils, chickpeas and lupins.

As a final example of nutrient deficiencies and learning plant language, sulphur deficiency in text books shows the bottom leaves of wheat being green and the newest leaves as pale yellow and erect. However, there are symptoms before that happens. Here is the order of mild to severe sulphur deficiency symptoms in cereals.

- 1) New leaves are vertical.
- 2) A red stem above the ground and *only* on the side the sun shines on (as seen in the photo to the right). The other side of the stem is green.
- 3) Top leaves become paler than the bottom leaves.
- 4) Plants do not tiller and do not respond to nitrogen.

During the presentation, I will explain why the best way to learn plant language is to turn the phosphate fertiliser off at sowing time. This will show you very clearly how much phosphate your crop needs, and



Then it gets more complicated when there are two things wrong. This is zinc and sulphur deficiency.



This is stage two of sulphur deficiency in wheat. Red patch on stems above the ground but only on the side of

show you what is the next nutrient that is lacking. Please check our new website later this year on www.learningplantlanguage.com.