Event title: Getting Started with Foliar Feeding

Date of event: 11th January 2024

Host: Trewidland Village Hall

Foliar feeding refers to applying nutrients directly to a plant's leaves, rather than to the ground. Following a meeting on the 10th January, Farm Net Zero was fortunate to invite farmer Tim Parton and his former agronomist (now retired) Nick Woodyatt to speak at Trewidland Village Hall. This event was made possible with thanks to the National Lottery Community Fund who fund the Farm Net Zero project.

The talk started with an introduction to the science of foliar feeding with Nick Woodyatt. Nick explained that, typically, plants only resort to foliar uptake of nutrients when their demand for nutrients exceeds what they can get from the soil through roots. This is why the traditional focus of nutrient applications has been to the soil itself. However, Nick suggests that modern plants may not be able to take up as many nutrients from the soil as they once were when they are growing at a greater rate than previous varieties. There are a number of limiting factors to root uptake including limited mobility of nutrients, limits from soil conditions and the localised need for nutrients within a plant.

Therefore, there are opportunities to increase nutrient use efficiency through foliar feeding. Nick also suggested that nutrients should be applied in combination rather than singularly. He explained that the process of photosynthesis requires a range of nutrients including calcium, boron, phosphorus and sodium. By supplying these nutrients, the efficiency of photosynthesis can be improved and the plant's ability to maintain itself and grow is also improved.

Tim Parton provided a practical insight into using foliar feeding on farm. Tim is a farm manager responsible for 300 hectares in Staffordshire with a 50:50 split between spring and winter cropping and a rotation that includes wheat, oilseed rape, spring barley, oats, beans, lupins, wildflower for seed and grass haylage. As a farm manager, profit is Tim's primary aim, and he has come to the conclusion that the easiest way to achieve this is by working with nature rather than against it. The farm is in Countryside Stewardship Mid Tier and Tim has started to use the Sustainable Farming Incentive to support his farming operations - for example, all crops are now grown with a clover understorey to qualify for IPM3 companion crop with a payment of £55 per hectare.

Tim says the key to his system is in a living, biological soil. To achieve this, Tim uses a mixture of reduced cultivation, compost and foliar feed. Crops are established using a strip till drill to reduce soil disturbance. At the same time, a combination of diatomaceous earth (for Silica) and compost extract is applied to help the crop form associations with the soil biology which can help the plants find nutrients in the soil. Composting is used to develop microbiology which is then multiplied in IBCs and applied using a conventional sprayer fitted with a peristaltic pump.

Calcium is a key nutrient for Tim's farming, as it helps with the uptake of other nutrients and is important for root development and cell strength. To add calcium, Tim uses 100kg/ha of Calcifert in early spring and finds that it also has a better neutralisation value than lime.

Financial and environmental benefits from Tim's approach are considerable. He has grown spring barley with just 20kg/hectare of prilled nitrogen, plus 18kg/ha of foliar feed. 12 tonne/ha of wheat has been achieved with a gross margin of £62/ha grown with just 50kg/ha of nitrogen. This saved Tim £307.50/ha across 117 hectares. Reducing the amount of artificial nitrogen applied will also help to reduce the farm's carbon footprint.

Key takeaways:

- **Applying nutrients beyond traditional N, P, K can improve the crop's ability to find naturally occurring nutrients**
- **Improving plant nutrition helps to improve plant health and resilience to pests and disease**
- **Foliar feeds can reduce the need for artificial nitrogen fertiliser, which has a high carbon footprint.**

Discussions among the farmers present at this meeting have led to the design of foliar feeding trials across the Farm Net Zero group. The findings of these trials will be shared through Farm Net Zero.