

Bath Monitor Farm

Meeting 10 : Soils – the physics, chemistry and biology

**8 November 2016
Manor Farm, Stratton on the Fosse, BA3
4QF**

Speaker: Joel Williams

**For more information, visit:
cereals.ahdb.org.uk/bath**



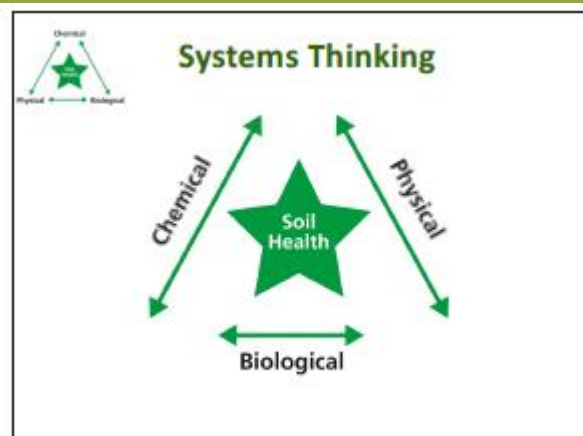
Rob Addicott

Meeting summary

1. Essential to look at micro and macro, short and long term soil chemistry nutrition for long term fertiliser savings and plant health.
2. Promote soil biology. The message is carbon, carbon
3. 'Ask' the plant what it wants and keep the soil and plant in balance to optimise nutrition. Think of the plant and soil as one.
4. OBSERVE - LEARN - ADAPT

The physics, chemistry and biology of soils

- Soil health is a balance of the three and they are all related. Need to consider how management will affect the balance
- Organic matter is the key to soil health. Many intensive practices promote bacterial populations in soil – bacteria are not efficient humus builders. Need practices to promote fungal populations which help to store carbon and promote good aggregate structure.
- Disturbance reduces fungal populations. Need to consider cultivations and rotation to minimise.



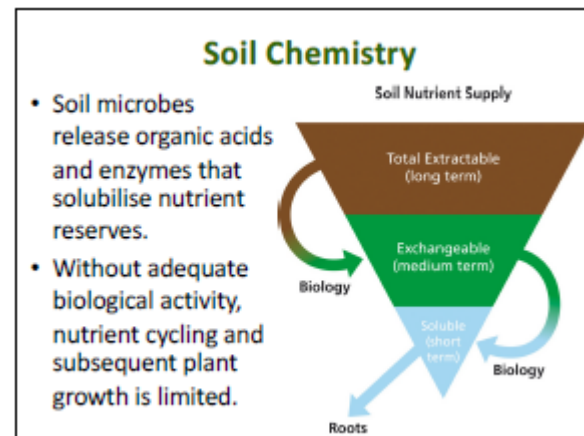
- It is a most important point to be aware if damage has been caused and what you can do to correct it.
- To get the right chemical balance to provide good plant nutrition, essential to carry out soil AND tissue tests.

Historically the role of soil biology has been minimised / neglected compared to physical and chemical considerations. We should challenge whether current testing regimes tell us enough about the soil biology.

- Mycorrhizal populations can increase access by the plant to the soil volume by 1000% - what impact could this have on the fertiliser bill?!
- Nutrients do not need to be soluble but available in the soil. Through the microbial bridge, this is possible.
- Big mycorrhizal 'walls' around plant roots provides disease protection. This is an area for additional research into varietal differences
- Mycorrhizal populations occur in the main on living roots. Therefore fallow ground reduces populations.
- Brassicas and Chenopods do not form mycorrhizal associations. Consider inoculation in the rotation after these crops.
- Soluble applied fertilisers are largely wasted by the plant.
- Soluble N and P reduces mycorrhizal activity.
- Molybdenum levels key to converting N to protein. Test for it!

ACTION PLAN:

- Avoid fallow
- Use cover crops - dense planting rate key
- Minimise cultivations
- Consider rotations to manage and incorporate strongly mycorrhizal legumes such as clovers and vetches
- Use soil and tissue tests – measure to manage , test it or guess it!



Soil and Plant are One



Next meetings

13 Dec 2016	6pm	The Long Barn, Fosse Farm	Machinery choice
14 Feb 2017	12 noon	The Long Barn, Fosse Farm	Future fungicide strategies
11 Apr 2017	5.30pm	Manor Farm	Cover crops

To attend meeting, please contact your AHDB Cereals & Oilseeds Knowledge Exchange Manager:

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To find out more about AHDB's benchmarking tool, please contact:

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