Soil nutrient analysis report – Dev Farm Meadow, UEA, March 2023, Dr Matt Tomlinson.

12 samples were taken on dev farm meadow, with the help of the UEA conservation and wildlife society, using a soil auger in a W pattern (for uniform coverage). Care was taken to avoid areas with high fertility loving plants (e.g., nettles) and rabbit latrines. February was chosen for sampling as this is the period when the highest levels of nutrients are present in the soil (i.e., no actively growing vegetation). These 12 samples were then pooled and mixed thoroughly; a representative sample was sent to Lancrop Laboratories for analysis. These results establish a baseline soil fertility for Dev farm meadow (triangular meadow located between Dev farm and the lake). Effectiveness in management techniques, such as cutting and collecting arisings can then be evaluated.

Notes: ppm is the same as mg/kg, index values are also shown to allow comparison to published guidelines. Nitrate levels were not assayed as they are too mobile in soils to be useful.

Conclusion – The high soil phosphorus level detected in the samples is likely to lead to greater levels of grass growth as they are better at taking up phosphorus than wildflower species. This might make it challenging for the establishment of wildflowers in the resulting dense sward. Phosphorus is a limiting factor for grass vigour. Until phosphorous levels drop we should focus on growing species which will tolerate higher fertility levels and the resulting competition from the meadows grass species (Microsoft Word - Wildflowers tolerant of soil fertility FINAL.docx (magnificentmeadows.org.uk)).

This autumn it would be worth trying plug plants (I am happy to raise them) and yellow rattle and red bartsia seeds again to reduce grass vigour by a semi-parasitic means. Importantly I am expecting a reduction in phosphorus levels in 1-2 years with using the cut and collect regime. Being a sandy free draining soil, I am anticipating phosphorus level reduction will be seen sooner than with a heavy clay soil, the analysis results show the Cation Exchange Capacity is also within the normal range. Repeating the soil analysis again in 2 years will show the impact of a late annual cut and collect.

It will be important to keep this management practise ongoing as the low fertility soils needed for diverse wildflower meadows can take several years to establish - but are really well worth the effort!

Analysis Results

pH 7.5 High. Matches with what was reported in earlier soil pH tests. A calcareous meadow. Good as an alkaline environment will reduce the availability of certain nutrients - particularly P, K, B, Co, Cu, Fe, Mn and Zn.

Phosphorus (ppm) 28 High (Index 3.1) This is probably a result of not using cut and collect for several years, leading to the accumulation of soil bound phosphorus. Removal of arisings will see this reduced over several years. See Plantlife Meadows | Soil and Microsoft Word - Soil Nutrient Testing FINAL.docx (magnificentmeadows.org.uk) for desired values in wildflower meadows. The lower the better as it's a limiting factor for grass growth (but not wildflower growth).

Potassium (ppm) 52 Very Low (Index 0.9)

Magnesium (ppm) 62 Normal (Index 2.2)

Calcium (ppm) 3181 Normal

Sulphur (ppm) 5 Low

Manganese (ppm) 86 Slightly Low

Copper (ppm) 5.5 8.0 Low

Boron (ppm) 1.94 Normal

Zinc (ppm) 9.3 7.0 Normal

Molybdenum (ppm) 0.03 Normal

Iron (ppm) 473 Normal

Sodium (ppm) 21 Very Low

C.E.C. (meq/100g) 16.5 Normal Cation Exchange Capacity indicates a soil with a good nutrient holding ability.