

# SOIL AND AGRONOMIC MONITORING STUDY (SAMS)

The Morley Agricultural Foundation (TMAF) has an almost unique opportunity to conduct long-term trials and undertake monitoring of commercial farm practice. The Morley SAMS project, carried out by NIAB, implements detailed on-farm crop and soil monitoring sites across the farm as part of a long-term study of soil health and its impact on yield, profitability and resilience.

## Identifying monitoring sites

Yield maps across 12 years were integrated to examine patterns through time, as well as in space. The integrated yield maps, together with the practical understanding of the Morley Farms farm manager, were used to identify a network of 30 monitoring sites (Figure 1).

## Soil variation across farm – soil texture

Large variation is recorded across all depths, with 5 of the 11 textural classifications found. This variation will affect many aspects of a cropping system including the soils ability to retain soil organic matter, nutrient availability, water holding capacity and leaching risk (Figure 2).

## Soil organic matter (SOM)

SAMS sites that were in permanent grass pasture in aerial imagery from the 1940s still maintain higher SOM levels, despite being in arable rotations since at least 1986. The Morley SAMS project will track how farming systems impact soil properties, such as SOM across time. These data sets have also provided a framework for further studies. A NIAB trial compares how optimal nitrogen and fungicide rates might vary under different SOM level soils at different SAMS sites (Figure 3).

Figure 1. Yield performance across the SAMS sites



Figure 2. Soil texture by depth across the SAMS sites

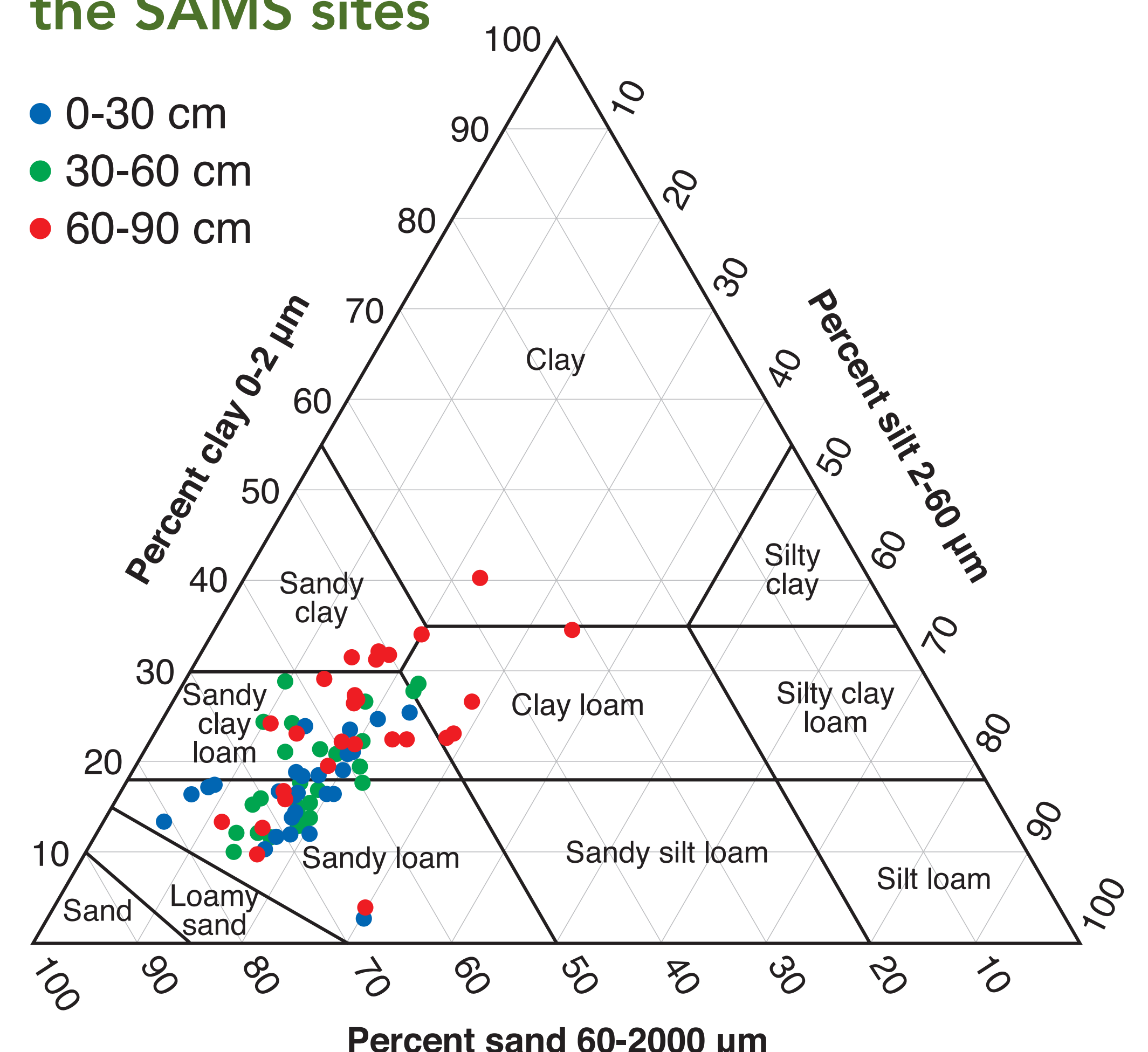
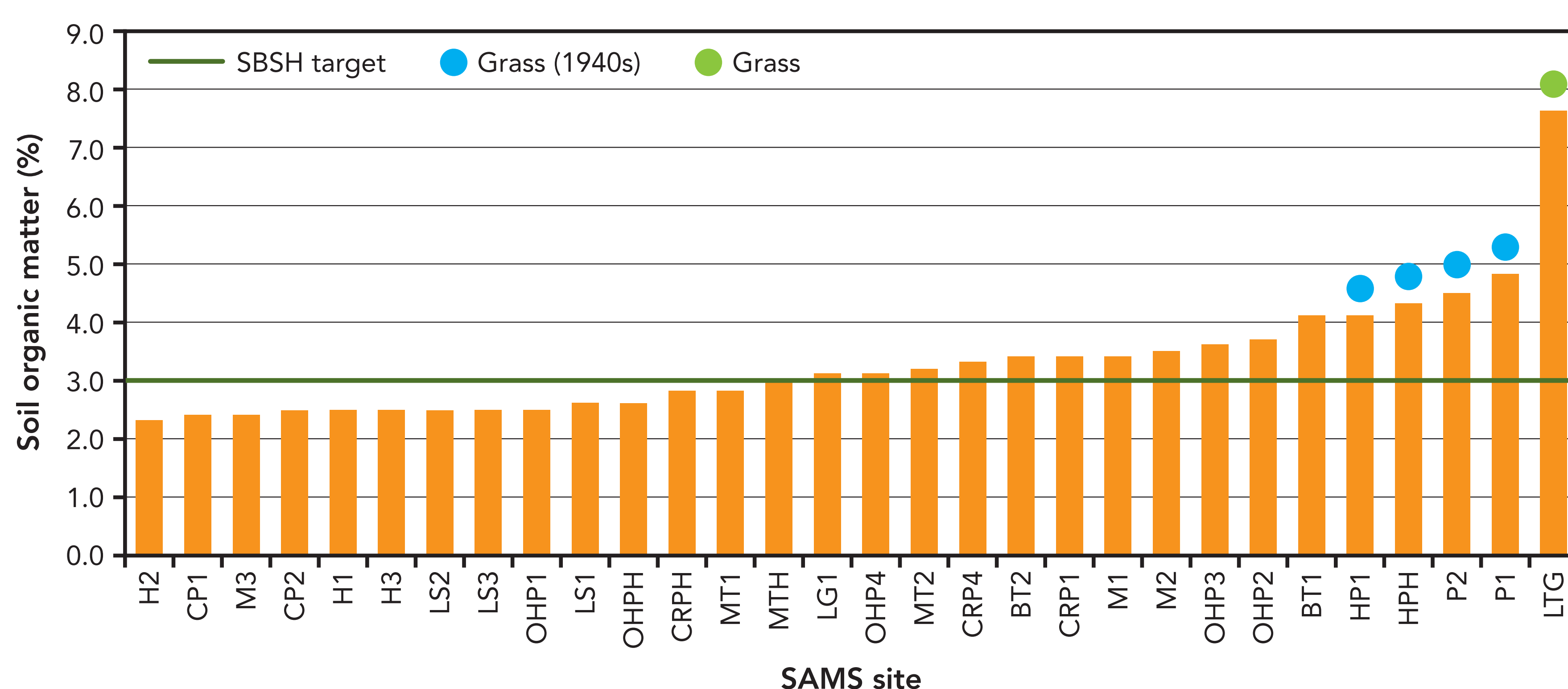


Figure 3. Soil organic matter (%) across SAMS sites. Target levels for medium soil type also presented



## Going forward

Problems and solutions to agricultural impacts lie in actions at the local level on-farm. SAMS is filling a critical gap in the chain linking research and its application.