

Soil C pools with different activity:  $C_{org}$ , POM,  $CO_2$ .  
1. Effects of composted manure, biodynamic preparations and mineral fertilization



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It has been observed under various site conditions that nutrient supply from farmyard manure is normally weaker than from mineral fertilization in order to achieve a high yield level. Soil organic matter formation, however, usually is better when manure is applied. With selected parameters we investigated the effects of long-term use of farmyard manure and mineral fertilization, particularly on soil organic matter fractions with long-term and short-term turnover: organic carbon content ( $C_{org}$ ), particulate organic matter content (POM) and carbon dioxide development after re-wetting of air-dried soil samples ( $CO_2$  flush in 24 h).

In a long-term trial farmyard manure in two treatments with and without application of biodynamic preparations is compared with mineral fertilization (calcium ammonium nitrate, super phosphate, potassium magnesia), each applied at levels of 60, 100 and 140 kg ha<sup>-1</sup> nitrogen. The treatments are practised in 4 replicates and on 4 adjacent fields where 4 different crops have been cultivated. The results presented here refer to the spring wheat field.

The manured treatments with and without preparations had higher contents of long-lived C pools:  $C_{org}$  and heavy fraction of POM compared to the minerally fertilized plots. In contrast, the light fraction of POM had higher contents after mineral fertilization. In this soil fresh organic matter (e.g. crop residues) probably has been decomposed more slowly than in the manure fertilized soils, those having a higher biological activity. This view is supported by the results of the  $CO_2$  flush also being higher in the manure treatments. The effects on  $C_{org}$  and  $CO_2$  have been more pronounced with compared to without biodynamic preparations.