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Dehydrogenase activities in a brown luvic soil

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Actual and potential dehydrogenase activities were determined in the 0-20, 20-40 and 40-60 cm layers of a brown luvic soil submitted to a complex tillage, crop rotation and fertilisation experiment. Dehydrogenase activities in both non-tilled and conventionally tilled soil under all crops of both rotations decreased with increasing sampling depth. It was found that no-till - in comparison with conventional tillage - resulted in significantly higher soil enzymatic activities in the 0-20 cm layer and in significantly lower activities in the deeper layers. The soil under maize or wheat was more enzyme-active in the 6-than in the 2-crop rotation. In the 2-crop rotation, higher enzymatic activities were registered under wheat that under maize.In the 6- crop rotation, the enzymatic indicators of soil quality decreased, depending on the nature of crops and kind of fertilisers (mineral NP or farmyard manure), in the following order: minerally fertilised (m.f) wheat ≈ m.f. oat . clover mixture >farmyard manured maize > m.f. soybean > m.f. clover > m.f. maize. Farmyardmanuring of maize . in comparison with its mineral (NP) fertilisation . led to a significant increase in each activity.