

Effective Microorganisms - the Fundament of Ecological - Engineering

A. Murányi

Research Institute for Soil Science and Agricultural Chemistry of the Hungarian Academy of Sciences, Herman Ottó 15, H-1027 Budapest, Hungary

Abstract : *In Hungary a new soil conditioner can be used on fields if it has got a licence for application. Therefore EM had to be evaluated and accepted by the Ministry of Agriculture and Rural Development, by the Ministry of Environmental Protection and by the Ministry of Health. The author financed and managed to get the necessary permissions for EM. In 2000, EM had got the official licence as a soil conditioner in Hungary. Within Hungarian agriculture the importance of ecological farming keeps growing. The certified area has increased from 1500 ha in 1989 to 80000 ha in 2001 and is projected to increase to 300,000 by 2006, Since 1997 the conversion of conventional farms into ecological farms has been subsidised. Since 1999 the laws have regulated the conditions of ecological farming in Hungary.*

The ecological farming is strictly controlled in Hungary. In 2001 the author had got the official licence for EM that permits its use on Hungarian ecological farms.

EM researches in Hungary includes

- 1. The characterisation of EM1 which includes the determination of the microbiological composition and metal contents and toxicity tests. No toxicity was detected.*
- 2. The effects of EM1 on soils principally Dehydrogenase activity. EM1 treatments resulted in significant increase of the dehydrogenase activity in test soils. Also Cellulose decomposing activity was significantly increased by EM1 treatments, independent of the texture and humus content of the soils. EM1 treatment resulted in increased natural soil respiration in both test soils. The added carbon source increased the respiration of test soils to a great extent.*
- 3. The effect of EM1 on the germination, EM1 have high positive effects on Sinapis Alba on a good chernozem soil. EM1 did not have significant effects on Sinapis Alba on a poor humic sandy soil.*
- 4. The effects of EM1 on plant production : EM1 was used in field experiments for biological amelioration of three types of degraded soils. The yield of millet increased on two degraded soils. The yield of maize did not increase on the third soil. EM1 had larger beneficial effects on more degraded and lower quality soils.*

The overall effect of EM is determined not only by biological but also by chemical and physical factors. The EM concept should unite the ecological approach and the engineering practice. EM can be considered as the fundamental of the Ecological - Engineering Science.
