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## Earthworms: Agriculture's Underground Engineers

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By consuming organic residues and soil, earthworms create nutrient-rich casts, increase aeration and water infiltration, accelerate decomposition and nutrient cycling, and foster beneficial microbial communities that collectively boost plant growth and soil health.

### 1. Soil Structure Improvement

Deep burrows made by earthworms serve as natural pipelines in the soil, enhancing root penetration, aeration, and drainage. This lessens compaction and is particularly advantageous in conservation agriculture.

### 2. Enrichment of Nutrients in the Soil

Earthworm casts, or their excrement, are extremely valuable for seedling establishment and root zone fertility because they contain more plant-available nitrogen, phosphorus, potassium, and micronutrients than the surrounding soil.

### 3. Acceleration of Organic Matter Decomposition

By breaking down crop residues, earthworms speed up nutrient cycling and help convert organic matter into humus; the "drilosphere" (earthworm-influenced soil) becomes a hotspot of microbial activity and enzyme production.

### 4. Beneficial Effect on Microbial Communities in Soils

Earthworms increase the biological activity and health of the soil for crops by stimulating beneficial microbes that enhance nutrient availability and suppress disease.

### 5. Farm Management Practices' Functions

Earthworm populations increase under reduced tillage, mulching, residue retention, and organic amendments but decline under heavy ploughing and pesticide misuse.

### 6. Utilization in Farming

In order to reduce reliance on chemical fertilizers, vermicomposting uses earthworms, primarily Eisenia fetida, to transform organic waste into nutrient-rich compost and vermiliquid. Earthworm counts are also used as markers of soil health.

### Conclusion

In conclusion, earthworms are crucial to resilient, productive soils because they physically enhance soil structure, chemically enrich the root zone, biologically stimulate microbial processes, and aid in the recycling of on-farm organic residues into nutrients that plants can use.

### Reference

1. [https://www.fao.org/agriculture/crops/thematic-sitemap/theme/spi/soil-biodiversity/soil-organisms/by-type/earthworms/en/?utm\\_s](https://www.fao.org/agriculture/crops/thematic-sitemap/theme/spi/soil-biodiversity/soil-organisms/by-type/earthworms/en/?utm_s)