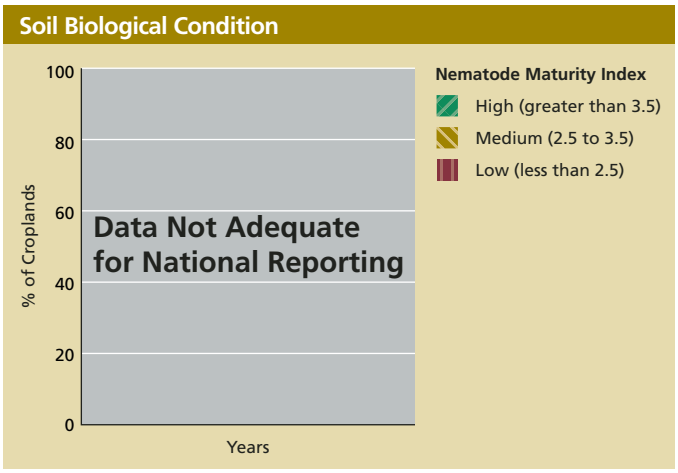
⊖ Soil Biological Condition



What Is This Indicator, and Why Is It Important? This indicator would report the percentage of croplands in three different ranges on the Nematode Maturity Index (NMI), an index that measures the types of roundworms, or nematodes, in the soil. A map showing the percentage of cropland in each major cropland region with low index values (indicating disturbed soils) would accompany the nationwide data.

Healthy soils contain many different microscopic animals. Agricultural practices often disturb the soil, and the amount of disturbance can be measured by changes in these microscopic animals. This indicator is based on the identification of various types of nematodes, each of which has a different tolerance for soil disturbance. Calculation of the NMI is based on the proportion of nematodes with different levels of tolerance for disturbance. Low NMI values (less than 2.5) are often found in soils subjected to intensive agricultural production methods, like monoculture and the use of high levels of nitrogen fertilizer and pesticides. Midrange values (from 2.5 to 3.5) suggest a more diverse soil community and often reflect such practices as crop mixtures and rotations and no-till farming. High NMI values (greater than 3.5) are rarely found on cultivated lands.

Soil biological condition, along with organic matter content (p. 99), erosion (p. 100), and soil salinity (p. 101) are key indicators of soil quality, reflecting the effect of agriculture on soils and the influence of changing crop and soil management practices

Why Can't This Indicator Be Reported at This Time? Measuring soil quality by measuring soil organisms has gained broad scientific acceptance. While the Nematode Maturity Index is a promising indicator, it has not yet been adopted by a nationwide monitoring program. However, NMI has been applied successfully in two statewide surveys (North Carolina and Nebraska) carried out in cooperation with the National Agricultural Statistics Service.

Reporting of soil quality based on nematode populations would require large-scale implementation of the indicator described here. This could be done through an existing national monitoring program, or state-based monitoring using consistent methods would allow the resulting information to be aggregated at the national level.

The technical note for this indicator is on page 236.