

Why continuous cropping obstacles occur and how to alleviate it: A review and future perspectives

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Abstract: **【Background】** Agricultural intensification has greatly increased food production, addressing the problem of food demand created by the dramatic increase in global population and consumption levels. At the same time, it also poses severe challenges to the agricultural ecosystem owing to long-term monoculture and excessive inputs of chemical fertilizers and pesticides. The continuous cropping obstacles caused by long-term monoculture lead to the soil micro-ecological system deteriorating and crop yield reduction, which seriously hinder agricultural green and sustainable development. The occurrence of continuous cropping obstacles is the result from the interaction of multiple factors, which is deserved in-depth study. **【Method】** Therefore, we systematically review the literature to explore the main factors of continuous cropping obstacles to bring about a comprehensive landscape for better understanding the effects of these factors on root-shoot growth and yield. **【Result】** These factors include accumulation of self-toxic substances, decreased soil enzyme activity, imbalance of microbial community structure, and deterioration of physicochemical properties. At the same time, we also propose effective strategies for alleviating continuous cropping obstacles and improving crop yield. Such strategies include multiple crop rotations to increase temporal and chemical diversity of plants, application of various fertilizers to improve the soil structure, introduction of beneficial microorganisms to inhibit the proliferation of pathogenic bacteria, and the use of physical, chemical and biological methods to disinfect soil, thus alleviating soil degradation, yield decline, and weeds pests and diseases aggravation caused by continuous cropping.

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