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Abstract

Keywords

1. Introduction

2. A framework for interpreting indicators of ecosystem services

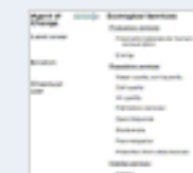


3. Criteria



4. The relationship between changes and indicators

4.1. Changes associated with agricultural use



4.2. Categories of indicators of ecosystem services from agriculture

5. Use of ecological indicators

6. Conclusions

Acknowledgments

References

Measures of the effects of agricultural practices on ecosystem services

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Abstract

Agriculture produces more than just crops. Agricultural practices have environmental impacts that affect a wide range of ecosystem services, including water quality, pollination, nutrient cycling, soil retention, carbon sequestration, and biodiversity conservation. In turn, ecosystem services affect agricultural productivity. Understanding the contribution of various agricultural practices to the range of ecosystem services would help inform choices about the most beneficial agricultural practices. To accomplish this, however, we must overcome a big challenge in measuring the impact of alternative agricultural practices on ecosystem services and of ecosystem services on agricultural production. A framework is presented in which such indicators can be interpreted as well as the criteria for selection of indicators. The relationship between agricultural practices and land-use change and erosion impact on chemical use is also discussed. Together these ideas form the basis for identifying useful indicators for quantifying the costs and benefits of agricultural systems for the range of ecosystem services interrelated to agriculture.

Keywords

Agriculture; Chemical; Erosion; Land use; Ecosystem services