Abstract

During the last decades a lot of research have been made on the use of cover crops. Cover crops are grown for many purposes, but most of the resent interest have focused on their effects on nitrogen. Studies have been made on catch crops grown to catch N from the soil a prevent leaching losses to the environment and on legume green manure crops grown to improve the N supply for succeeding crops. Many of the experiments have been agronomic studies, where choice of plant species or management strategies have been tested to identify the optimal way to grow cover crops in a specific situation. Other experiments have aimed at gaining more basic understanding of the effects of catch crops or green manure crops on N dynamics. These studies include subjects as catch crop growth, root growth, N uptake and so depletion, kill-date, N mineralization and pre-emptive competition, and how these factors interact with soil, climatic conditions, and the main crops in the cropping system, both in the short term and in the longer term. Together, the results from these studies have given a more comprehensive understanding of the mechanisms by which a catch crop or a green manure affect N leaching losses and N supply for succeeding crops. The principles governing the effect of catch crops on N supply for succeeding crops have been found to differ basically from the effects N effects of added organic matter. This is mainly due to the fact that a catch crop do not add N to the soil, the N which is incorporated with the catch crop has first been taken from the soil. In the review, we discuss this new knowledge of catch crops and green manures, and how it helps us to understand why the effects obtained by catch crops are so variable. We also discuss how it can be used to develop strategies which will improve the results we obtain from catch crops and green manures, and to make them more predictable. Many s e been made on other effects of cover crops, on soil borne diseases, pests, weeds, soil structure,

erosion, soil biology, and other nutrients than N. Though there are many studies, they are scattered over a large number of themes, and research in cover crop effects in most of these

been observed, an there seems to be a significant potential for development of cover cropping also for other objectives than improved N husbandry.

ISSN (Print): 0065-2113
URL: http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B7CSX-4B3DT8W-5&_user=3891418&_handle=V-WA-A-W-AA-MsSAYZW-UUA-U-AAWYYZZBUU-AAWZVVDAUU-BWEVBUAED-AA-U&_fmt=summary&_coverDate=12%2F31%2F2003&_rdoc=5&_orig=browse&_srch=%23toc%2318034%232003%23999209999%23472003!&_cdi=18034&view=c&_acct=C000028398&_version=1&_urlVersion=0&_userid=3891418&md5=55b334b6e48f849131830031af15ed6b
CABI Record Number: 20053153742
Publisher: Elsevier Inc.
Location of publication: San Diego
Country of publication: USA
Language of text: English

Indexing Terms

Descriptors

catch crops | crops | green manures | growth | leaching | legumes | losses from soil | mineralization | nitrogen | nutrient uptake | rotations | simulation models | soil degradation | soil organic matter

soil physical properties | soil water content | temperate zones

Fabaceae

Identifiers

crop rotation | losses from soil systems | organic matter in soil | physical properties of soil | rotational cropping | stubble crops

Broader Terms

Fabales | eudicots | angiosperms | Spermatophyta | plants | eukaryotes