

**Soil Technologies Corp.
Research and Development Department**



Research Report

Title: Evaluation of MICROP®, Iowa State University

Location: Western Research Center. Castana and Ames, Iowa

Principal Investigators: Rick Cruse, Ph.D. Members at the Iowa State University of Science and Technology

Crop: Corn

Date: 1984

Abstract: The research report from the 1984 Annual Progress Reports at the Western Research Center in Castana, Iowa, details the evaluation of an agricultural product called "Microp." This study, conducted by Iowa State University, investigated the capability of Microp, which contains the green algae *Chlamydomonas*, to produce a polysaccharide capable of binding soil particles and enhancing soil aggregation. The report discusses the implications for soil erosion, rainwater infiltration, gas exchange, and water retention, with potential effects on crop yields. Field tests in 1984 at Ames and Castana revealed mixed results, with Castana showing somewhat higher corn yields in algae-treated plots.

SECTION D

EVALUATION OF MICROP

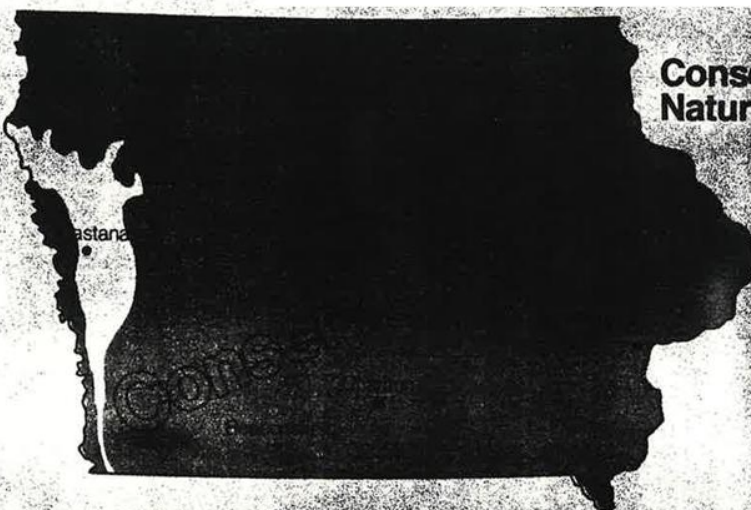
**IOWA STATE UNIVERSITY
ANNUAL PROGRESS REPORTS--1984
WESTERN RESEARCH CENTER
CASTANA, IOWA**

BY: RICK CRUSE, PH.D.

Annual Progress Reports—1984

Western Research Center

Castana, Iowa



**Conserve Our
Natural Resources**

● Indicates Association Owned Farms

■ Indicates University Owned Farms

Unshaded portion is area of major soil types covered in this report.

This 240-acre tract has been operating since March 1, 1946, and is owned by a nonprofit organization whose 500 members live in Crawford, Harison, Monona, and Woodbury counties. The Ida and Monona soils on this farm are typical of a large area of rolling land in the western part of Iowa.

Iowa State University of Science and Technology

Agriculture and Home Economics
Experiment Station
Cooperative Extension Service

Ames, Iowa March 1985
ORC84-10

Cooperating with
Western Iowa Experimental Farm
Association

EVALUATION OF "MICROP"

Iowa State University is involved in evaluation of an agricultural product (Microp) containing the green algae *Chlamydomonas*. When stressed, these single-celled plants are capable of producing a polysaccharide, or starch, that may be useful to agriculture. The polysaccharide may be capable of binding soil particles together; the observable result of this would be increased aggregation of the soil. Aggregated soil is less erosive and has greater infiltration of rainwater and perhaps better gas exchange properties and capacity to retain plant-available water. Many of these effects might be expected to have an effect on crop yields, particularly where soil structure has deteriorated or there are soil textural extremes.

While work proceeds in the controlled situation of the laboratory, field testing of this product is being carried out at the experiment stations near Ames and Castana. The material was applied to the soil surface with a backpack sprayer in the spring of 1984. At both locations, the experimental design consisted of four levels of nitrogen and algae/no algae in a randomized complete block with five replications.

At Castana, treatment means showed somewhat greater corn yields in algae-treated plots at all levels of nitrogen. Statistical analysis shows the difference seen with algae fell short of the 5% level of significance (6½%). Table 7 shows mean corn yield by algae treatment and nitrogen level.

TABLE 7. EFFECT OF NITROGEN AND ALGAE TREATMENTS ON CORN YIELDS.

	Nitrogen lbs/acre				Average
	0	90	135	180	
	-----Bushels per acre-----				
Algae	81.3	113.6	118.2	125.9	109.8
No Algae	75.4	106.3	115.2	116.1	103.2
% Increase	7.9	6.8	2.6	8.5	6.3

Field results at the Ames experiment station did not show as positive a response in 1984.

In the fall, the same plots were inoculated again with the product. As in the spring, soil samples were then taken at intervals of time. The soil samples will be analyzed for polysaccharide. Other lab work on the material includes measurement of soil shear strength and modulus of rupture as affected by this treatment.

In 1985 the field experiment at Castana will use a single level of nitrogen and will include a greater number of replications to make the design more sensitive to possible yield effects connected with this algal material.

--Rick Exner

WESTERN RESEARCH CENTER

1984

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