## TABLE OF CONTENTS

PAGE


### Climatological Notes

1. Some climatological notes, 1970 — 1

### Crookston Experiments

2. Available soil moisture survey, 1970 — 15
3. Iron and zinc trials on corn and flax — 19
4. Sugarbeet rotation studies, 1970 — 23
5. Weather summary, 1970 — 26

### Elk River Sand Plain Experiments

6. Field experiments with asphalt barriers (AMB) on sandy soils in Sherburne County — 29
7. Field experiments with soil modification on an irrigated Hubbard loamy coarse sand — 39
8. Potatoes and alfalfa fertilization, 1970 — 43
9. The effect of nitrogen and potassium on 1969 and 1970 corn yield on an irrigated Hubbard loamy coarse sand in Sherburne County — 47
10. The relative effect of sulfur coated urea and other forms of nitrogen on 1970 corn yield and composition when grown on an irrigated Hubbard loamy coarse sand in Sherburne County — 50

### Lamberton Experiments

11. Experiments with nitrogen source, placement and time of nitrogen application to a Webster clay loam at Lamberton from 1960 through 1970 — 56
12. Lime plots, 1970 — 64
13. Small grain fertilization — 68
14. Winter versus spring fertilization on 1970 corn yields — 71

Morris Experiments

15. Continuous corn silage 74

16. Corn irrigation experiment 76

17. Phosphorus and potassium fertilization of alfalfa 78

18. Phosphorus fertilization of continuous corn 79

19. Potassium fertilization of corn 80

20. Small grain fertilization of corn 82

21. Weather summary, 1970 88

22, Yields of field corn grown in each of fourteen years (1957-1970) with varying rates of nitrogen fertilization at Morris. 89

23. Zinc fertilization of continuous corn 92

Waseca Experiments

24. 1970 corn tillage experiment 93

25. Fertility experiments with corn on high fertility soils, 1970 98

Alfalfa Fertilization

26. Irrigated alfalfa production 100

Analyses of Tile Water

27. Analyses of tile and open ditch drainage waters in several south central Minnesota counties 103

Corn Planting Trials

28. 1970 Method of corn planting study 107

Fertilization for Grass and Grass Seed

29. Sulfur fertilization of Kentucky bluegrass 114

30. The effect of nitrogen fertilization on seed yield and chemical composition of grasses when applied along or with phosphorus and potassium, 1970. 116

31. Trace element study with Kentucky bluegrass on peat, 1970. 120

32. The effect of a North Dakota lignite base "Reinforced" fertilizer on lawn grass growth in 1970. 129

Fragipans

33. Soils with fragipans in west central Minnesota 133

## Plant Analyses

34. Irrigated corn foliar leaf analyses 135

35. The effect of some dry ashing factors on the elemental composition of plant tissue as analyzed by emission spectroscopy 141

36. Variability of Webster and Waukegan soil series for some soil elements and related plant composition 147

## Small Grain Fertilization

37. The 1970 yields of twelve small grain fields in the Red River Valley Basin following fertilization with major, secondary and micronutrient elements 156

## Soybean Fertilization

38. Effect of micronutrients on soybean seed yields 160

39. Effect of residual potassium fertilizer sources and rates on soybean yield 163

40. Soybean chlorosis studies 165

41. Soybean fertilizer placement study 170

42. Soybean nitrogen fertilizer studies 174

## Sulfur Fertilization

43. The effect of sulfur applied on a high pH soil 176

44. Sulfur fertilization of corn in southern Minnesota 180

## Soil Testing

45. Soil testing, 1970 186

## Zinc

46. Five years of experiments with different zinc fertilizer sources and phosphate for continuous corn on a zinc deficient Hamerly loam near Benson, Minnesota 188

47. Studies on causes of variations in zinc availability to corn in a calcareous Kandiyohi county soil 194

* Subject index begins on page 196 with experiments classified by crops and plant nutrients.