The effect of strain and cultural treatment upon the seed production of birdsfoot trefoil, and a preliminary study of pod shatter-proofing
by Howard Rhoads

A THESIS Submitted to the Graduate Faculty in partial fulfillment of the requirements for the degree of Master of Science in Agronomy
Montana State University


Abstract:
Ten strains of birdsfoot trefoil were evaluated for seed and forage yielding ability when cut for seed. No significant difference existed. Differential ability to withstand late spring freezes was observed between strains and susceptibility ratings assigned.

The effect of several cultural treatments upon seed yields and forage yields when cut for seed was studied using Empire strain. Width of row and rate of seeding did not affect seed yields; significantly better yields were obtained where 2,4,D was employed to control weeds.

In this test, row spacing did not affect forage yield; best forage yields were obtained where the seeding rate was 6 lbs. per acre. Hay yields were superior, where 2,4,D was applied, over yields where early mowing was used to control weeds.

The extreme variability of rate of maturation of pods was substantiated. A relationship between length of pods and percentage shattering was apparently lacking; color of pods and shattering percentage was significantly correlated. The relationship between age of pods, percentage shattering, color of pods, weight of seeds, and germination percentages of seeds of different ages was studied.

A preliminary evaluation of the possibilities for shatterproofing by chemical methods was made. Para-chlorophenoxyacetic acid was apparently effective and the reaction was quite stable for all concentrations used and on all dates of harvest. Some concentrations of 2,4,D, methylcellulose gum, naphthaleneacetic acid, and p-chloro-phenoxyacetic acid appear to be more effective than other concentrations. Certain concentrations of 2,4,5,T, and 2,4,D may result in increased shattering. Interaction evaluations indicate that certain chemicals react differently on different dates of harvest following spraying and that some concentrations of various chemicals react differently on different harvest dates.

# THE EFFECT OF STRAIN AND CULTURAL TREATMENT UPON THE SEED PRODUCTION OF BIRDSFOOT TREFOIL, AND A PRELIMINARY STUDY OF POD SHATTER-PROOFING

by

HOWARD RHOADS

A THESIS

Submitted to the Graduate Faculty

in

partial fulfillment of the requirements

for the degree of

Master of Science in Agronomy

at

Montana State College

Approved:

A. H. Post
Head, Major Department

R. F. Eslick
Chairman, Examining Committee

J. A. Nelson
Dean, Graduate Division

Bozeman, Montana
March, 1952

## ACKNOWLEDGMENT

The writer wishes to acknowledge the advice and assistance given him by the staff members of the Agronomy and Soils Department, especially R. F. Eslick who suggested the problem, contributed the planted plots used in the study, and gave valuable advice and assistance concerning the analysis and statistical interpretation of the data obtained.

The writer wishes to express his thanks and appreciation to R. L. Warden, the Dow Chemical Company, and the American Chemical Paint Company who contributed chemicals for use in the study, to D. J. Davis for the use of the Montana Grain Inspection Laboratory facilities in order that germination percentages of several seed lots might be ascertained, and to the many other persons of the faculty and student body who contributed time and advice to help make this study possible.

TABLE OF CONTENTS

LIST OF TABLES



(continued on page 5)

LIST OF TABLES (continued)



(continued on page 6)

LIST OF TABLES (continued)



LIST OF FIGURES