

NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION
PROJECT OUTLINE

Project No.	5-190
Date	9-5-57
Submitted	9-25-57
Approved	
Revised	

1. Title Studies on the Gastro-Intestinal Helminths of Dairy Calves.

2. Objective(s)

To determine if a three month old, helminth free dairy calf will remain helminth free on virgin pastureland up to age one year.

3. Reasons for undertaking Investigations*

In North Carolina dairy calves are routinely held in housing, dry lot, or portable pens, and fed hay and concentrates until they are about 12 months of age. Similar practices with some slightly shorter housing periods are standard for the entire Southern region of the United States. Cheap feed in the form of lush pasture is available generally, yet the parasite problem prevents these pastures from being utilized. If parasite free calves can be put on virgin pasture at a younger age and remain parasite free, it should lead to the production of dairy replacement heifers at 1/3 to 1/2 less cost at 1 year of age than is presently the case. Such a reduction in cost would be very significant for the entire dairy industry of the region.

*Including economic justification

4. Previous work and present status of investigations in the field of this project:

It has been previously established that helminth free dairy calves can be raised in the isolation facilities of the Animal Disease Laboratory at N. C. State College¹. Calves raised in these facilities appear alert, thrifty, normal and their growth rate is satisfactory. Mayhew² and others^{1,4} have successfully raised helminth free calves for experimental purposes. Helminth free calves at 3-4 months of age readily become heavily infested when placed on ground or pastures that have recently been contaminated with the feces of parasitized cattle¹. The reaction of the host under these levels of infestation is severe.

Indication that virgin pastureland will be required in this study is given by the results of experiments^{2,3} to determine the survival on pasture of larval and egg forms of gastrointestinal nematodes of cattle. These reports showed several species of cattle nematodes survive beyond 256 days on pasture. Exact survival time on pasture of the various species has not been determined.

The relationship between levels and types of nutrients to total numbers of gastrointestinal parasites has been studied by Vegors^{5,7} and others⁶. Interspecies infestation by internal parasites has been studied by Porter⁸ and others^{4,9}.

Attempts to raise calves helminth free on pasture from age three months to 1 year have not been reported.

5. Outline of Procedure:

- a. Nine male dairy calves will be picked up at birth and moved into isolation units and raised helminth free according to procedure previously established at the laboratory to age 3 months. These calves will be castrated at age 2-3 weeks.
- b. A small acreage of woodland (surface drainage generally away from it) will be cleared by bulldozer and seeded to the following:

Area I	Crimson clover and small grain
Area II	Ladino clover and orchard grass
Area III	Temporary summer pasture

Commercial fertilizer and lime will be applied according to standard recommendations. The total pasture area will be fenced with woven wire.

- c. Calves will be hauled and placed on pasture at about 3 months of age. The calves will receive supplementary feeding on pasture as follows: range type pelleted concentrate at the rate of 4 lbs. per calf per day. If pasture becomes inadequate at any time during the 9 month pasture period, the calves will receive autoclaved hay in amounts indicated by the condition of the pasture.

The calves will be weighed at day 1, 3 months and when removed from pasture. Fecal samples will be run at the beginning and at two week intervals during the pasture phase of the study. Three calves will be selected at random to be necropsied at ages 6 months, 9 months and 12 months. The gastrointestinal contents of each calf will be screened for helminths.

6. Probable Duration of Project:

2 years

7. Date of Initiation:

As soon as approved

8. Personnel:

Name	Department	Relation to Project
J. C. Osborne	Animal Industry	Leader
E. G. Batte	Animal Industry	Cooperator
W. R. Murley	Animal Industry	Advisor

9. Coöperation:

a. Interdepartmental

None

b. Other Agencies

None

10. Financial Support:

a. Proposed Budget ... 1957... to ... 1958..

Items	ALLOCATION OF FUNDS				
	Hatch	Regional Research	State	Other	Total
1. Salaries			1400		
2. Labor			400		
3. Travel					
4. Equipment & Supplies			400		
5. All Other					
Total			2200		

b. Proposed Future Budgets:

Year	Salaries	Total Expenditures	Estimated Income
1958-1959	1400	2000	

11. General Remarks:

SIGNATURES OF APPROVAL

1. Approval of Project Leaders

Date 9/16/57J. Clark OsborneTitle LeaderDate 9/16/57Edwards BattTitle CooperatorDate 9/20/57W. Ray MurleyTitle Advisor

2. Approval of Heads of Departments or Cooperating Agencies

Date 9/23/57J. W. Dow
Head, Animal Industry

Date

Head,

Date

Head,

3. Approval of Director

Date Sept 25, 1957H. A. Stewart
andDirector, North Carolina Agricultural
Experiment Station

4. Approval of U. S. D. A.

Date

Chief, Office of Experiment Stations