OJECT NO.	2. PAR FOR PERIOD:	3. COUNTRY	4. PAR SERIAL NO.
30-475	FY 1973 TO FY 1974	5	

OJECT TITLE

Control of Hemoprotozoal Diseases

9310475 (6)
PD-AAP-541-C1

OJECT RATION: Began FY6-30-68 Ends FY6-30-76	7. DATE LATEST PROP	8. DATE LATEST PIP	9. DATE PRIOR PAR
			4p

NDING	a. Cumulative Obligation Thru Prior FY: $ 1,365,931	b. Current FY Estimated Budget: $ 325,000	c. Estimated Budget to completion After Current FY: $

11. KEY ACTION AGENTS (Contractor, Participating Agency or Voluntary Agency)

a. NAME	b. CONTRACT, PASA OR VOL. AG. NO.
Texas A & M University	CSD - 1947

12. NEW ACTIONS PROPOSED AND REQUESTED AS A RESULT OF THIS EVALUATION

ACTION (X) AID/W	Other	B. LIST OF ACTIONS	C. PROPOSED ACTION COMPLETION DATE
		1. General	
	X	a. Premunize (protect) cattle against infection with *Anaplasma marginale*, *Babesia bigemina* and *Babesia argentina*.	March 30, 1976
	X	b. Conduct large scale field trials of premunition techniques to demonstrate statistically valid conclusions.	March 30, 1976
	X	c. Identify stains of the disease agents in relation to regions in which they are found.	January 1, 1976
	X	d. Demonstrate accelerated growth rates and improved condition of animals protected from these diseases.	March 30, 1976
	X	e. Compare mortality rates in protected and non-protected animals.	March 30, 1976
		2. Research	
	X	a. Select local isolates to assure antigenic conformity	January 1, 1976
		b. Establish red blood cell lines *in vitro* to grow disease agents in sufficient quantity to produce true immunity.	January 1, 1975
		c. Explore new drugs for improved treatment and premunition.	March 30, 1975
	X	d. Evaluate stress factors such as heat, animal movement and concurrent diseases in the degree of serious consequence from these hemoprotozoal diseases.	March 30, 1976
		3. Training	
	X	a. Train Latin American technicians on the job level.	March 30, 1976
	X	b. Train Latin American students in Colombia and the United States at the graduate level.	March 30, 1976

REPLANNING NEEDS REVISED OR NEW: ☐ PROP ☐ PIP ☐ PRO AG ☐ PIO/T ☐ PIO/C ☐ PIO/P

E. DATE OF MISSION REVIEW: 2/11/74

OJECT MANAGER: TYPED NAME, SIGNED INITIALS AND DATE	MISSION DIRECTOR: TYPED NAME, SIGNED INITIALS AND DATE
Niels M. Konnerup, NMK 2/21/74	Omer J. Kelley

PROJECT NO.	2. P. FOR PERIOD: TO	3. COUNT	4. PAR SERIAL NO.
PROJECT TITLE			

PROJECT DURATION: Begun FY _____ Ends FY _____	7. DATE LATEST PROP	8. DATE LATEST PIP	9. DATE PRIOR PAR

U.S. FUNDING	a. Cumulative Obligation Thru Prior FY: $	b. Current FY Estimated Budget: $	c. Estimated Budget to completion After Current FY: $

11. KEY ACTION AGENTS (Contractor, Participating Agency or Voluntary Agency)

a. NAME	b. CONTRACT, PASA OR VOL. AG. NO.

A. ACTION (X) AID	AID/W	HOST	B. LIST OF ACTIONS	C. PROPOSED ACTION COMPLETION DATE
			c. Train Latin American students at post graduate level in the United States.	March 30, 1976
			4. Other	
		X	a. Carry out cooperator demonstrations with ranchers and small livestock farmers.	September 1, 1975
		X	b. Develop visual aids and information aimed at acquainting livestock producers with the benefits in controlling hemoprotozoal diseases.	March 30, 1975
			c. Develop institutional linkages to assure outreach programs in other countries.	January 1, 1975
			d. Encourage the commercial production of anaplasmosis vaccine and babesia vaccine when successful research is completed.	March 30, 1976

D. REPLANNING REQUIRED

REVISED OR NEW: ☐ PROP ☐ PIP ☐ PPO AG ☐ PIO/T ☐ PIO/C ☐ PIO/P

E. DATE OF MISSION REVIEW

PROJECT MANAGER: TYPED NAME, SIGNED INITIALS AND DATE	MISSION DIRECTOR: TYPED NAME, SIGNED INITIALS AND DATE

Hemoparasitic Research Accomplishments

TA/AGR has supported a research program by Texas A & M University during the past four years on the control of hemoprotozoal diseases in Colombia. Recent completion of three replicated experiments indicate conclusively that these most serious tropical diseases - anaplasmosis and babesiasis - can be effectively controlled at a low cost. The system - premunition - infecting animals with a standardized inoculum of organisms followed by specific chemotherapeutic treatment to moderate the effect of infection has proved highly effective. Animals can be protected for a year and if continuously exposed to moderate tick infestation will remain free of the disease thereafter. This system is economical and relieves the small livestock raiser of the cost of maintaining a costly and often ineffective dipping or spraying program to control ticks.

Demonstrations in the North Coast area of Colombia show three groups of 8 calves each, all uniform in age and weight, responded spectacularly to three regimes. The first group was premunized by a standard inoculum of Babesia bigemina, Babesia argentina and Anaplasma marginale and treated with Imidocarb and Gloxazone to moderate infection. The second group was exposed to infection by ticks with undetermined by high level parasitemia and treated as above. The third group were exposed but untreated. Tables 1-2-3 show the results. Essentially, observations over a 10 month period show an average group weight gain of 2,040 lbs. for group 1, 1,640 lbs. for group 2 and 602 lbs. for group 3. This amounts to more than a three-fold weight benefit in less than a year.

If this system can be widely applied in Latin America, it could result in at least doubling the meat and milk production in that area.

Another recent research development has been the successful growth of red blood cells in cultural media making possible the concentrating of antigens (immunity inducing agents). This will probably lead to production of a true vaccine and eliminate the need for the more complicated premunition.

PREMUNITION

Premunition is a form of cattle immunization using a stabilized inoculum of red blood cells infected with the hemoparasite or with a combination of three hemoparasites; Babesia bigemina, Babesia argentina and Anaplasma marginale and simultaneously treat them with Imidocarb and/or Goxazone to moderate the infection. In the case of anaplasmosis, animals need to be handled only once - in the case of babesios, the chemotherapeutic material should be re-injected in one to two weeks. When animals are subsequently exposed to infestation by infected ticks, they will have a solid lifetime immunity. If they are protected from infected ticks, immunity in the case of anaplasmosis will persist for 2 - 8 years, and in babesiosis will vary from 4 months to 2 years.

The chemotherapeutic materials are not costly - 10-20 cents per head - and generally the cattle or preferably calves can be handled during routine handling for other purposes.

Imidocarb and Gloxazone is administered at the rate of 5 mg. per kg. body weight subcutaneously or intermuscularly.