



INSTRUCTORS MANUAL

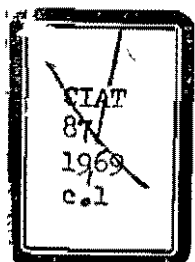
~~LIVESTOCK~~ PRODUCTION SPECIALIST
TRAINING PROJECT,



Centro Internacional de Agricultura Tropical (CIAT)

— CALI - COLOMBIA —

CIAT-T G-LPSTP-CHM
December, 1969



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Manual para Instructores
Instructor's Manual
CIAT-PEEPP-CHM-XII-69

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Instructor's Guide

LIVESTOCK PRODUCTION SPECIALIST TRAINING PROJECT

Centro Internacional de Agricultura Tropical

Cali, Colombia

December, 1969

The Ministry of Agriculture Resolution number 263 and the Instituto Colombiano Agropecuario (ICA) Resolution number 398 establish in general terms a national system to provide supervised credit and technical assistance to farmers and ranchers. The success of this approach to the diffusion and application of new technology and more efficient methods on the farm and ranch depends on the quality of technical assistance provided.

CIAT, in collaboration with national entities, places high priority on providing opportunities for the advanced training of personnel involved in various phases of agriculture. One area of emphasis is to train "generalists" in livestock production as described in the appended project description. This training project, in addition to providing advanced technical training for veterinarians and animal husbandrymen, is oriented toward helping the trainees acquire a broader frame of reference about livestock production and management than is usually attained by the student in undergraduate or post-graduate courses of study. The intent is not (nor is it possible) that these "generalists" will be expert in all of the subject-matter areas listed in the appended "Subject Matter Outline for Lecture and Discussion Series, January-March, 1970." Rather that through classroom, laboratory, and field (on-the-job) experience we expect that they will become aware of the broad spectrum of scientific disciplines and technologies which must be assimilated and integrated simultaneously in order to achieve efficient and economical agricultural production,

that their imagination and powers of observation and logical reasoning will develop as the basis for "pragmatic innovation" which will provide producers with a wider range of management options,

that they will acquire investigative skills sufficient to guide them in developing more productive systems and better resource utilization which is in harmony with the native environment

In order to achieve these goals, it is necessary that the student or trainee be an active rather than passive learner. Group discussions and laboratory or field exercises are stressed in preference to formal lectures, although certainly these will necessarily be an integral part of the process. Instructors are therefore asked to consider the following points

- 1 That the trainees recognize clearly from the outset the relationship of the subject being presented or discussed to the realities which they will face in the field, and how the subject matter can be applied to solving field problems,
- 2 That the trainees understand the material sufficiently well to be able to integrate it with their present knowledge in order to improve their overall understanding and orientation, including awareness of their deficiencies,
- 3 That the trainees, to the extent permitted by time and the subject matter, have the opportunity to practice actual application of the information presented by the instructor

Despite the fact that each instructor has received personal communication suggesting a general topic for presentation, it is hoped that you will review the "Subject Matter Outline" in order to insure that your presentation is oriented to the overall theme of the training course. In addition this may be of some help in developing the details of your participation

Where there are overlapping interests or specialties, instructors are invited to decide among themselves in-so-far as possible the specific areas each will cover, or if indicated, two or more instructors might meet the trainees at the same time for the sake of well-rounded discussion. (This has already been anticipated in some cases as seen in the accompanying "Lecture, Demonstration

and Discussion Schedule¹⁾) If it is impossible for you to be present on the date or hour indicated, please let us know as soon as possible so that it can be re-scheduled. If you wish, you may arrange directly with another instructor to trade dates, in which case please inform us well in advance of such changes.

If you plan in your presentation to make reference to hand-out materials or to specific textbooks it would be well to send these materials (or reference to the textbook) in advance so that the students will be prepared to participate fruitfully. If you desire that the students do advance reading on specific topics, please advise us. We shall assign this material to them to the extent that our library permits.

If you will inform us of your needs in advance, we shall make every effort to have available for you the desired equipment for visual aids or the more common laboratory exercises. Bring with you any special equipment or reagents which you may require.

As will be noted on the "Schedule," the trainees will be examined periodically and graded. Thus, we ask each of you to prepare a series of thought-provoking questions (with answers) covering the topic of your presentation which can be included in the appropriate examination or you may administer the examination personally if you so desire. In some cases, perhaps the most appropriate examination will be an assigned exercise or problem.

Also, we would ask that each of you provide us with a copy of the complete text of your presentation (or at least an outline) so that we may prepare for the students a bound manual for future reference or if indicated, a book or "proceedings" - type publication. A bibliography, especially of good reference sources in Spanish, would also be extremely useful.

For those who prefer to make their presentation in English, "simultaneous" translation will be available. It is preferred by the students especially in those cases where a lack of fluency in Spanish hinders the instructor's full expression of his ideas.

We anticipate that there will be between 15 and 20 trainees attending these discussions. The majority, if not all, will be graduate veterinarians or veter-

inary-zootecnistas You will probably find them weakest in the areas of mathematics, statistics, physics and chemistry and should plan accordingly if these subjects comprise a major part of your presentation

The time allotted in the "Schedule" for each topic has been, of necessity, a rather arbitrary matter and is subject to change at the discretion of the instructor concerned to the extent possible With this in mind, we have left some free periods in order to make additional time available when necessary

For those instructors who are not on the CIAT staff, CIAT will pay for all transportation, lodging and meals, and will provide tickets for air travel in advance if informed of the desired schedule sufficiently in advance Reimbursement will be made on the basis of a statement (with receipts when appropriate) rendered by the instructor Hotel reservations will also be made for instructors if requested

Please let us know at your earliest convenience whether the date and time for which your presentation is scheduled is acceptable, or if not, what alternative time would be possible

This project constitutes an experiment Its success depends in great part upon your participation, including suggestions for improvements or changes in content or orientation Your collaboration will be greatly appreciated We thank you in advance for your good will

PROYECTO DE ENTRENAMIENTO DE ESPECIALISTAS
EN PRODUCCION PECUARIA

Conferencias, Demostraciones y Discusiones, Enero-Marzo, 1970

CIAT - PEEPP - CHM - XII-69

Horario para el Mes de Enero de 1970

<u>FECHA</u>	<u>HORAS</u>	<u>TEMA</u>	<u>NOMBRE DEL CONFERENCISTA</u>
Enero 7		Instalación personal, asignación de dormitorio, suministro de equipos y orientación a las facilidades	
Enero 8	8 00 - 12 00	Recorrido de El Porvenir y explicación de las normas de la Hacienda	Drs Johnson Thompson Forero
	13 00 - 17 00	Recorrido de la biblioteca y explicación de su uso	Dr Bloch
Enero 9	8 00 - 12 00	Bienvenida al CIAT, explicación de las normas administrativas	Drs Grant Alvarez Raun Byrnes Toro
	13 00 - 17 00	Reunión de los participantes del PEEPP para orientación al proyecto	
Enero 10	8 00 - 12 00	Examen de pre-entrenamiento	Drs Byrnes Wilkus Mullenax
Enero 12	8 00 - 12 00	Examen de pre-entrenamiento	Drs Byrnes Wilkus Mullenax
	13 00 - 17 00		
Enero 13	8 00 - 12 00	Examen de pre-entrenamiento	Drs Byrnes Wilkus Mullenax
	13 00 - 17 00		
Enero 14	8 00 - 10 00	Patología General	Dr E D Roberts
	10 00 - 12 00	Hemoparásitos	Dr L G Adams
	13 00 - 17 00	Hemoparásitos, laboratorio	Dr L G Adams

<u>FECHA</u>	<u>HORAS</u>	<u>TEMA</u>	<u>NOMBRE DEL CONFERENCISTA</u>
Enero 15	8:00 - 12 00	Patología y Hemoparásitos	Drs E. D. Roberts L G Adams
	13 00 - 17 00	Técnicas de necropsia y muestreras	Dr E D Roberts
Enero 16	8 00 - 10 00	Patología Especial	Dr E D Roberts
	10 00 - 12 00	Virología y arbovirus en CIAT	Dr R B Mackenzie
	13 00 - 17 00	Manejo de animales	Sr L E Plazas
Enero 17	8 00 - 12 00	Prácticas en manejo físico de animales	Sr L E Plazas
	13 00 - 17 00		
Enero 19	8 00 - 10 00	Economía Agrícola	Drs Trant Andersen
	10 00 - 12 00	Virología y Zoonosis	Drs Mackenzie Jonkers Wilkus
	13 00 - 17 00	Uso de la biblioteca y fuentes de referencia, prácticas	Dr T Bloch
Enero 20	8 00 - 10 00	Economía Agrícola	Drs Trant Andersen
	10 00 - 12 00	Epidemiología y Medicina Preventiva	Drs Mackenzie Jonkers Wilkus
	13 00 - 15 00	Ingeniería Sanitaria	Dr P Owens
Enero 21	8 00 - 10 00	Economía Agrícola	Drs Trant Andersen
	10 00 - 12 00	Nutrición, Higiene y Salud Humana	Drs Sanmartín Mackenzie
	13 00 - 15 00	Ingeniería Sanitaria	Dr P Owens
	15 00 - 17 00	Ingeniería Sanitaria, prácticas	Dr P Owens
Enero 22	8 00 - 10 00	Economía Agrícola	Drs Trant Andersen
	10 00 - 12 00	Arbovirus y Epidemiología	Drs Sanmartín Trapido
	13 00 - 17 00	Entomología, prácticas en identificación	Dr H Trapido
Enero 23	8 00 - 10 00	Economía Agrícola	Drs Trant Andersen

<u>FECHA</u>	<u>HORAS</u>	<u>TEMA</u>	<u>NOMBRE DEL CONFERENCISTA</u>
	10 00 - 12 00	Suelos	Dr J Spain
	13 00 - 17 00	Suelos, prácticas en Suelos	Dr J Spain
Enero 24	8 00 - 12 00	Examen	Dr J Spain
Enero 26-30		Curso sobre "Tractorista en Ganadería"	Dr G Roldán L
Enero 31	8 00 - 12 00	Exámenes	Sr H Silva

PROYECTO DE ENTRENAMIENTO DE ESPECIALISTAS

EN PRODUCCION PECUARIA

Conferencias, Demostraciones y Discusiones, Enero-Marzo, 1970

CIAT - PEEPP - CHM - XII-69

Horario para el Mes de Febrero de 1970

<u>FECHA</u>	<u>HORAS</u>	<u>TEMA</u>	<u>NOMBRE DEL CONFERENCISTA</u>
Febrero 2	8 00 - 10 00	Comunicación	Dr F C Byrnes
	10 00 - 12 00	Extensión	Dr T Trail
	13 00 - 15 00	Desarrollo y Sociología Rural	Dr R Duarte
	15 00 - 17 00	Discusión	Drs Byrnes Trail Duarte
Febrero 3	8 00 - 10 00	Conferencia especial	Dr E Alvarez
	10 00 - 12 00	Parasitología	Dr G Mateus
	13 00 - 17 00	Parasitología, prácticas de laboratorio	Dr G Mateus
Febrero 4	8 00 - 10 00	Nutrición de Porcinos	Dr J Maner
	10 00 - 12 00	Manejo de Porcinos	Dr J Gallo
	13 00 - 17 00	Visita a Porcinos, ICA, Palmira	Drs Maner Gallo
Febrero 5	8 00 - 12 00	Pastos y Forrajes	Drs O Paladines G Herrera
	13 00 - 15 00	Pastos y Forrajes del Trópico	Dr L Escobar
	15 00 - 17 00	Visita a Pastos y Forrajes, ICA, Palmira	Drs Paladines Herrera Escobar
Febrero 6	8 00 - 10 00	Preparación de Ensilaje	Drs R Rubio A Serrano
	13 00 - 15 00	Aspectos de lechería	Dr A Serrano
	15 00 - 17 00	Visita a lechería, ICA, Palmira	Dr A Serrano
Febrero 7	8 00 - 12 00	Examen	

<u>FECHA</u>	<u>HORAS</u>	<u>TEMA</u>	<u>NOMBRE DEL CONFERENCISTA</u>
Febrero 9	8 00 - 12 00	Manejo y Nutrición de Aves	Drs A Warren O Paladines
	13 00 - 17 00	Visita al campo	Drs A Warren O Paladines
Febrero 10	8 00 - 10 00	Nutrición de rumiantes	Dr N S Raun
	10 00 - 12 00	Aspectos comparativos en nutrición entre aves, procinos y rumiantes	Drs Raun Maner Paladines
	13 00 - 15 00	Ingemerfa Agrícola	Dr G Dunkelberg
Febrero 11	8 00 - 10 00	Topograffa y Fotograffa aérea	Dr R Thompson
	10 00 - 12 00	Conferencia especial	Dr U J Grant
	13 00 - 15 00	Ingemerfa Agrícola	Dr G Dunkelberg
Febrero 12	8 00 - 10 00	Cosechas	Dr R Thompson
	10 00 - 12 00	Ingemerfa Agrícola	Dr L Johnson
	13 00 - 17 00	Ingemerfa Agrícola - Visita al Campo	Dr G Dunkelberg
Febrero 13	10 00 - 12 00	Conferencia especial	Dr R K Waugh
	13 00 - 17 00	Ingemerfa Agrícola	Dr L Johnson
Febrero 14	8 00 - 12 00	Examen	
Febrero 16	8 00 - 12 00	Ecología y Manejo de la Vida Silvestre - Mesa Redonda	Drs J Hernández T Yuill N Peterson R B Mackenzi J L Wilkus
	13 00 - 15 00	Epidemiología	Drs G J Noreño J L Wilkus
	15 00 - 17 00	Discusión	Drs Hernández Yuill Peterson Mackenzie Noreño Wilkus
Febrero 17	8 00 - 12 00	La Ganadería en Colombia - Mesa Redonda	Drs R Londoño D Parra O Patiño J Estupiñán H Sarmiento

<u>FECHA</u>	<u>HORAS</u>	<u>TEMA</u>	<u>NOMBRE DEL CONFERENCISTA</u>
Febrero 17	13 00 - 15 00	Crédito Ganadero	Dr H Sarmiento
	15 00 - 17 00	Crédito Agrícola - Mesa Redonda	Drs Londoño Parra Patiño Estupiñán Sarmiento Trant Andersen
Febrero 18	8 00 - 10 00	Responsabilidad profesional del punto de vista de un ganadero	Dr H Quintero
	10 00 - 12 00	Discusión	Drs Quintero Londoño Parra M Alvarez
	13 00 - 15 00	Inmunología	Dr J L Wilkus
Febrero 19	8 00 - 10 00	Entrenamiento de empleados	Dr H Dominguez
	10 00 - 12 00	Enfermedades bacteriológicas	Dr T Vera
	13 00 - 15 00	Enfermedades bacteriológicas	Dr T Vera
	15 00 - 17 00	Inmunología	Dr J L Wilkus
Febrero 20	8 00 - 10 00	Enfermedades bacteriológicas	Dr T Vera
	10 00 - 12 00	Enfermedades micológicas	Dr M J Torres
	13 00 - 17 00	Serología - prácticas de laboratorio	Drs Vera Torres Wilkus Ayudantes
Febrero 21	8 00 - 12 00	Examen	
Febrero 23	8 00 - 12 00	Enfermedades Virales	Drs E D Roberts J L Wilkus y otros
	13 00 - 15 00	Entrenamiento de empleados	Dr H Dominguez
Febrero 24	8 00 - 12 00	Producción de Ganado Vacuno en el Trópico	Drs I Rush J Vergara G Escobar F González

<u>FECHA</u>	<u>HORAS</u>	<u>TEMA</u>	<u>NOMBRE DEL CONFERENCISTA</u>
Febrero 24	13 00 - 15 00	Discusión	Drs Rush Vergara Escobar González J Cortez
Febrero 25	8 00 - 12 00	Manejo de empresas ganaderas	Drs J Cortez
	13 00 - 15 00	Entrenamiento de Empleados	Dr H Dominguez
Febrero 26	8 00 - 12 00	Genética, Selección y Reproducción de Ganado Vacuno	Dr H H Stonaker
	13 00 - 15 00	Inmunología	Dr J L Wilkus
Febrero 27	8 00 - 12 00	Estadística y Análisis de Datos	Drs P Andersen J L Wilkus
	13 00 - 15 00	Manejo y Fertilidad de Suelos	Dr K D Frank
Febrero 28	8 00 - 10 00	Manejo y Fertilidad de Suelos	Dr K D Frank
	10 00 - 12 00	Examen	

PROYECTO DE ENTRENAMIENTO DE ESPECIALISTAS

EN PRODUCCION PECUARIA

Conferencias Demostraciones y Discusiones Enero-Marzo 1970

CIAT - PEEPP - CHM - XI - 69

Horario para el Mes de Marzo de 1970

<u>FECHA</u>	<u>HORAS</u>	<u>TEMA</u>	<u>NOMBRE DEL CONFERENCISTA</u>
Marzo 2	8 00 - 11 00	Algunos aspectos sobre extensión rural	Dr. Barrera
	10 00 - 12 00	Contabilidad de haciendas	Drs. Zuluaga Wilkus
	13 00 - 15 00	Ensilaje	Dr. Rubio
	15 00 - 17 00	Economía Veterinaria	Dr. Wilkus
Marzo 3	8 00 - 11 00	Contabilidad de haciendas	Drs. Zuluaga Wilkus
	10 00 - 12 00	Avicultura	Dr. F. García
	13 00 - 17 00	Avicultura - Visita al campo	Drs. F. García Warren
Marzo 4	8 00 - 12 00	Nutrición humana	Drs. Pradilla Linares Torres
	13 00 - 17 00	Higiene de alimentos	Dr. Torres
Marzo 5	8 00 - 12 00	Aspectos médicos sobre serpientes Visita a la Universidad del Valle Facultad de Medicina	Drs. D'Alessandro Trápido
	13 00 - 17 00	Ecología y vida silvestre Visita al Museo de Historia Natural	Dr. Lehmann
	8 00 - 12 00 13 00 - 15 00 15 00 - 17 00	Comunicación Climatología Climatología - Visita al campo	Dr. Byrnes Dr. Gómez Dr. Gómez
Marzo 7	8 00 - 10 00	Inmunización de los Trainees	Dr. Medina
	10 00 - 12 00	Enfermedades venéreas	Dr. Medina

<u>FECHA</u>	<u>HORAS</u>	<u>TEMA</u>	<u>NOMBRE DEL CONFERENCISTA</u>
Marzo 9	8 00 - 12 00	Política Agraria Colombiana	Dr Barbosa y otros
	13 00 - 17 00	Comunicación	Dr Byrnes
Marzo 10	8 00 - 12 00	Reproducción y fertilidad	Dr Stiefken
	13 00 - 17 00	Laboratorio de reproducción y fertilidad	Dr Stiefken
Marzo 11	8 00 - 12 00	Cirugía	Dr Mullenax
	13 00 - 17 00	Purificación y pureza de las aguas	Dr Owens
Marzo 12	8 00 - 12 00	Pastos y Forrajes	Dr Herrera
	13 00 - 17 00	Pastos y Forrajes Visita al campo	Drs Herrera Paladines
Marzo 13	8 00 - 12 00	Pastos y Forrajes	Dr Herrera
	13 00 - 17 00	Pastos y Forrajes Visita al campo	Drs Herrera Paladines
Marzo 14	8 00 - 12 00	Pastos y Forrajes	Dr Herrera
	13 00 - 17 00	Pastos y Forrajes Visita al campo	Dr Herrera
Marzo 16	8 00 - 12 00	Control de Artrópodos en ganado vacuno	Dr F Uribe
	13 00 - 17 00	Leyes Laborales	Dr De la Peña
Marzo 17	8 00 - 12 00	Aspectos toxicológicos de químicos agrícolas	Dr Guerra
	13 00 - 17 00	Cirugía	Dr Mullenax
Marzo 18	8 00 - 12 00	Ecología	Drs Hernández Heller Trapido y otros
	13 00 - 17 00	Ecología Visita al campo	Drs Hernández y otros
Marzo 19		Conferencia Especial	
Marzo 20	8 00 - 12 00	Cirugía	Dr Mullenax
	13 00 - 17 00	Exámenes	

<u>FECHA</u>	<u>HORAS</u>	<u>TEMA</u>	<u>NOMBRE DEL CONFERENCISTA</u>
Marzo 21	8 00 - 10 00 10 00 - 12 00	Inmunización de los Trainees Higiene personal	Dr Medina Dr Medina
Marzo 23	8 00 - 12 00 13 00 - 17 00	Salud humana Manejo de animales	Dr Aguirre y otros Dr Mullenax
Marzo 24	8 00 - 10 00 10 00 - 12 00 13 00 - 17 00	Patología Toxicología Necropsia	Dr Roberts Drs Mullenax Roberts Dr Roberts
Marzo 25	8 00 - 12 00 13 00 - 17 00	Exámen Discusión del Exámen	
Marzo 26 29		Vacación	
Marzo 30 31		Días de estudio para Exámen de post- entrenamiento y viaje a Monterfa	
Abril 1-4	8 00 - 12 00 13 00 - 15 00	Exámen de post-entrenamiento en Monterfa Exámen de post-entrenamiento en Monterfa	



LISTA DE CONFERENCISTAS
Serie de Conferencias y Discusiones
Enero-Marzo de 1970

CIAT - PEEPP - XII-69

<u>Nombre</u>	<u>Especialidad</u>	<u>Dirección</u>	<u>Teléfono</u>
1 Acosta, O	MVZ, Lechería Sanidad Animal	Apdo 7984 ICA, Bogotá	419012
2 Adams, L G	Patología Veterinaria Hemoparásitos	F Rockefeller Apdo 5813 (LIMV), Bogotá	447805/06
3 Alvarez, E	Ciencias Agrícolas	Apdo 67-15 CIAT, Cali	761964
4 Alvarez, M	MVZ, Fisiología Educación	Apdo 7984 ICA, Bogotá	419012
5 Andersen, P P	Economía Agrícola	Apdo 67-13 CIAT, Cali	582111 Ext 242
6 Bloch, T A	Bibliotecario	CIAT, Cali	761964
7 Byrnes, F C	Entrenamiento y Comunicaciones	CIAT, Cali	761964
8 Cortes, Joaquín	Administración, MVZ	ICA, Villavieja	
9 Chaverra, H	Ciencias Agrícolas, Pastos y Forrajes, Investigaciones	ICA, Bogotá	419012
10 Dominguez, H	MVZ	CIAT, Cali	761964
11 Duarte, R	Extensión, Jefe de la División de Desarrollo	ICA, Bogotá	419012
12 Dunkelberg, G	Ingeniería Agrícola	ICA, Palmira (U Nebraska)	09-271-71 427790
13 Escobar, Gustavo	MVZ, Ganado de Carne	ICA, Palmira	09-271-71
14 Escobar, Libardo	Pastos y Forrajes Administración	ICA, Montería, Reg II	
15 Estupiñán, J	Virología, MVZ	ICA, LIMV, Apdo 583 Bogotá	447805/06

	<u>Nombre</u>	<u>Especialidad</u>	<u>Dirección</u>	<u>Teléfono</u>
16	Frank, K D	Fertilidad y Manejo de Suelos	Univ Nebraska, Bogotá	427790
17	Gallo, J	Nutrición Producción Porcina	ICA, Tibaitatá	419032/37
18	González, Foción	Producción Pecuaria Ganado de Carne	ICA, La Libertad, Villavicencio	
19	Grant, U J	Fitogenética Administración	CIAT, Cali	761964
20	Hernandez, C J	Naturalista, Biólogo, Ecologista	INDERENA, Bogotá	813530 Ext 31
21	Johnson, L	Ingeniería Agrícola	CIAT, Cali	761964
22	Jonkers, D	M D , Virólogo	CIAT, (LIMV), Apdo 583 Bogotá	447805/06
23	Lobo, J C	MVZ, Virólogo Aftosa	ICA, (LIMV), Apdo 583 Bogotá	447805/06
24	Londoño, R	MVZ, Ganadería, Administración	Facultad de Med Vet U de Antio- quia, Medellín	334423
25	Mackenzie, R B	M D , Epidemiólogo, Virólogo	CIAT, (LIMV), Apdo 583 Bogotá	447805/06
26	Maner, J	Nutrición, Producción Porcina	CIAT, Cali	761964
27	Mateus, G	MVZ, Parasitología	ICA, (LIMV), Apdo 583 Bogotá	447805/06
28	Mullenax, C H	DVM, Producción Pecuaria	CIAT, Cali	761964
29	Noreño, J G	MVZ, Epidemiólogo	Facultad de Med Vet , U Antio- quia, Medellín	334423
30	Owens, P	Ingeniería Sanitaria	R F , U del Valle Cali	541746
31	Paladines, O	Avicultura Pastos y Forrajes	Apdo 67-13 CIAT, Cali	761964
32	Parra, R D	MVZ, Sub-gerente técnico	Fedegan, Bogotá	345114
33	Patiño, O	MVZ, Nutrición, Ganado de Carne	ICA, Tibaitatá	419032/37

<u>Nombre</u>	<u>Especialidad</u>	<u>Dirección</u>	<u>Teléfono</u>
34 Peterson, N	Mamalogía, Manejo de vida silvestre, Ecologista	Facultad de Med Vet , U Antioquia, Medellín	334423
35 Plazas, L E	Ganadero, Práctico en Ganadería	Villavicencio	
36 Quintero, H	Ganadero	Bogotá	362854
37 Raun, N S	Nutrición, Ganado de Carne	Apdo 67-13 CIAT, Cali	761964
38 Roberts, E D	DVM, Patología	CIAT, Cali	761964
39 Rubio, R	Forrajes	ICA, Palmira	09-271-71
40 Rush, I	Extensión y Comunicación Pecuaria	U Nebraska, Apdo 12031 Bogotá	427790
41 Sanmartín, C	M D Virólogo, Epidemiólogo	Soc de Medicina U del Valle	561151 -
42 Sarmiento, H	Economía Agrícola y Mercadeo	Banco Ganadero USAID, Bogotá	349560
43 Serrano, A	MVZ, Ganado de leche	ICA, Turipaná	
44 Silva, H	Motorista, mecánica	Apdo 67-13 CIAT, Cali	761964
45 Spain, J	Suelos	CIAT, Cali	761964
46 Stiefken, C	MVZ, Fertilidad y reproducción	Fac de Med Vet Univ Nacional Apdo 583 Bogotá	542794 443320
47 Stonaker, H H	Genética y selección de ganado	Univ Nebraska Apdo 12031 Bogotá	427790
48 Thompson, R	Agrónomo Producción de cosechas	CIAT, Cali	761964
49 Toro, J C	Agrónomo Administración	CIAT, Cali	761964
50 Torres, M J	MVZ, Microbiología, Higiene de Alimentos	Fac de Med Vet , Univ Nacional Apdo 583 Bogotá	442799
51 Trail, T	Sociología Rural, Producción	Univ Nebraska Apdo 12031 Bogotá	427790

<u>Nombre</u>	<u>Especialidad</u>	<u>Dirección</u>	<u>Teléfono</u>
52 Trant, G	Economía Agrícola	Apdo 67-13 CIAT, Cali	581282
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54 Vergara, J	Producción Pecuaria, Administración	ICA, Montería, Reg II, Univ de Nebraska Apdo 12031 Bogotá	427790
55 Warren, A	Producción Avícola	ICA, Palmira	09-271-71
56 Waugh, R	Ciencias Animales Administración	Fundación Rockefeller, Bogotá	418848
57 Wilkus, J	DVM, Epidemiólogo, Producción Pecuaria	Apdo 67-13 CIAT, Cali	761964
58 Yuill, T	Virólogo, Ecologista	Fac de Med Vet , Univ de Antioquia, Medellín	334423
59 Vera, T	DVM, Microbiología	Univ de Nebraska (LIMV), Apdo 12031 Bogotá	427790 447805/06

LISTA DE CONFERENCISTAS (SUPLEMENTARIA)

Serie de Conferencias y Discusiones

Enero-Marzo de 1970

CIAT - PEEPP - XII - 69

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4	D'Alessandro, A	M D	Facultad de Medicina U del Valle, Cali	561151
5	De la Peña, F	Abogado	Bogotá	490412
6	García, F	M V Z	CIAT, Palmira	
7	Gómez, J	Metereólogo	ICA, Palmira	27171
8	Guerra, A	M D , Farmacólogo	Facultad de Medicina U del Valle, Cali	511111
9	Heller, H	Comerciante	Procolma Ltda , Nariño	
10	Lehmann, C	Biólogo, Ecólogo	Museo Historia Natural, Cali	891634
11	Linares, F	M D , Nutricionista	Facultad de Medicina U del Valle, Cali	581288
12	Medina, P	M D , Microbiólogo	Facultad de Medicina U del Valle, Cali	511111
13	Pradilla, A	M D , Nutricionista	Facultad de Medicina U del Valle, Cali	581288
14	Uribe, L	M V Z	Cooper McDougall y Robertson Ltda , Cali	811553
15	Zuluaga, H	Contabilista	CIAT, Cali	761964

CENTRO INTERNACIONAL DE AGRICULTURA TROPICAL
PROYECTO DE ENTRENAMIENTO DE ESPECIALISTAS EN PRODUCCION PECUARIA

CIAT-PEEPP-CHM-XII-69

ESQUEMA PROVISIONAL DEL HORARIO DEL PRIMER CURSO

Enero de 1970 - Junio de 1971

- I Orientación de "Trainees" (7-9 enero, 1970)
 - A Presentación del personal del CIAT
 - B Entrega del Manual de Orientación y Procedimiento Administrativo del CIAT
 - C Gira de Orientación
 - D Orientación al Proyecto y al Trabajo
 - 1 Horario del proyecto
 - 2 Filosofía y metas
 - 3 Expectativas y esperanzas de los trainees y del CIAT
 - 4 Suministro y entrega de equipos

- II Exámenes de Evaluación antes del Entrenamiento (10-13 enero, 1970)
 - A Escrito
 - B Práctico
 - C Sicológico y de Aptitud

- III Conferencias formales, Discusiones en Mesa Redonda, Trabajos Prácticos y de Laboratorio, (14 enero - 31 marzo, 1970)

- IV Orientación al Sitio de Trabajo Definitivo (Costa Atlántica) y Encuesta de la Zona (1-15 abril, 1970)

- V. Aplicación de Programas para Mejorar la Producción en las Haciendas Colaboradoras, Seminarios quincenales (16 abril 1970 - 30 abril, 1971)

- VI Análisis de Datos, Evaluación del Proyecto e Informe Final (1-31 mayo, 1971)

- VII Exámenes Finales y Acta de Terminación (1-15 junio, 1971)

FACTORS FUNDAMENTAL
TO
SUCCESSFUL LIVESTOCK PRODUCTION
(Provisional Outline)

The viability of any enterprise depends upon its successful interaction or integration with the physical and social environments in which it operates. Reduced viability or demise of the enterprise is the result of adaptive failure or rejection by the environment.

- I Environmental Factors
 - A Physical
 - B Sociopolitical and Cultural
 - C Economic
 - D Technological

- II Management Factors

- III Production Factors

- IV Applied Research in the Application of New Technology

I Environmental Factors

A Physical

- 1 Climate
- 2 Soils
- 3 Natural Resources

B Sociopolitical and Cultural

- 1 Human Resources
 - a Labor
- 2 Infrastructure
 - a Transportation
 - b Input Sources
 - c Marketing System
 - d Technical Assistance
- 3 Land Tenure and Extension
- 4 Regional Social Organization and Stability

C Economic

- 1 Markets and Marketing
 - a Local
 - b National
 - c International

- 2 Credit
 - a Sources and availability
- 3 Taxation

D Technological and Educational

- 1 Assistance
- 2 Local Research
- 3 Extension Service
- 4 Continuing Education

II Management Factors

A Managerial Skill

- 1 Operational Organization
 - a Physical facilities
 - b Work Schedule
 - c Record Keeping and Operational Analyses
 - d Logistics and Input Selection
- 2 Personnel Management
 - a Working Conditions
 - (1) Salaries
 - (2) Incentives
 - (3) Housing

(4) Health

(5) Nutrition

b Psychosocial Manipulation

c Education

d Industrial Safety

e Family Planning

B Technical Proficiency

1 Crop Selection (breed, type, variety)

2 Land Use and Management

3 Selection, Use and Maintenance of Tools

4 Crop Production, Mixed Farming

5 Crop (Livestock) Handling, Care and Management

C Economic Proficiency

III Production Factors

A Basic Production System (Management)

1 Selection of Seed Stock

a Genetics, selection, breeding

2 Fertility and Reproduction

a Artificial insemination

- b Reproductive diseases
- c Fertility testing

3 Nutrition

- a Pastures and Forages
- b Supplements
- c Minerals

4 Animal Health

- a Preventive Medicine
- b Epidemiology
- c Diagnostics
- d Therapeutics

B Efficiency of Production (Finished Product)

- 1 Natality
- 2 Morbidity - Mortality
- 3 Growth Rates and Feed Conversion Efficiency
 - a Energy calculations and heat exchange
- 4 Economic considerations in selection of finished product

IV Applied Research in the Application of New Technology

- A Scientific Method
- B Ecology
- C Epidemiology
- D Data Acquisition, Storage & Analysis

SUBJECT MATTER OUTLINE FOR
LECTURE AND DISCUSSION SERIES *
JANUARY-MARCH, 1970
(PROVISIONAL)

LIVESTOCK PRODUCTION SPECIALIST TRAINING PROJECT
CIAT - LPSTP-CHM - XI-69

- I VETERINARY MEDICINE (ANIMAL HEALTH)
- II LIVESTOCK MANAGEMENT (ANIMAL HUSBANDRY)
- III RANCH MANAGEMENT
- IV PERSONNEL MANAGEMENT
- V NUTRITION, FEEDS AND FEEDING
- VI CROPS, PASTURES, AND FORAGES
- VII SOILS ANALYSES, PREPARATION, UTILIZATION, CONSERVATION
- VIII AGRICULTURAL ENGINEERING
- IX AGRICULTURAL ECONOMICS, MARKETING, CREDIT UTILIZATION
- X AGRICULTURAL DEVELOPMENT
- XI ECOLOGY AND NATURAL RESOURCE UTILIZATION
- XII SCIENTIFIC METHOD AND RESEARCH

* A guide to course orientation and presentation and to pre-and post-training examination and evaluation of trainees

I VETERINARY MEDICINE (ANIMAL HEALTH)

A Diagnostics

1 Pathology

a Gross (macro)

(1) Necropsy techniques - Interpretations

(2) Sample collection and submission

b Micro (Histologic)

c Clinical Pathology

2 Physiology - Physiopathology

a Enzyme and organ function

3 Microbiology

a Bacteriology

d Mycology

b Virology

e Hemoparasites

c Protozoology

4 Serology - Immunology

5 Parasitology

6 Toxicology, non-infectious diseases

7 Epidemiology (outbreak investigation)

B Preventive Medicine and Herd Health (Prophylaxis)

C Therapeutics and Surgery

D Pharmacology

E Nutrition and Deficiency Diseases

F Fertility and Reproduction

- G Veterinary Economics and Record Keeping
 - H Epidemiology, Disease Surveillance, and Zoonoses, Disease Control and Eradication
 - I Data acquisition, Storage, Retrieval, Data Analysis, Statistical Concepts
 - J Reporting Systems
 - K Literature, Use of Library, Bibliographies, Scientific Reporting
 - L Means and Need for Orienting Profession to Needs of Society (Professional Responsibility and Ethics)
 - M Food Hygiene, Processing, Meat Inspection
- II LIVESTOCK MANAGEMENT (ANIMAL HUSBANDRY)
- A Species and breed selection (including feral species)
 - B Nutritional regimes, feeds and feeding
 - C Fertility, breeding, reproduction
 - D Genetic selection, production testing
 - E Animal identification and record keeping
 - F Animal health and preventive medicine
 - G Animal Physiology as a determinant in
 - 1 Nutritional regime
 - 2 Management system
 - 3 Capital investment

- H Animal psychology and behaviour
 - 1 Moving, handling
 - 2 Physical restraint
- I Growth curves, rates of gain, production efficiency
- J Live and carcass grading

III RANCH MANAGEMENT

- A Evaluation of environmental factors and resources
 - 1 Agroclimatic (Physical)
 - 2 Economic, marketing
 - 3 Sociopolitical, labor supply
 - 4 Technologic, inputs, infrastructure
 - 5 Ecologic
- B Record keeping systems
- C Production system selection, efficiency analysis
 - 1 Single crop vs mixed farming
 - 2 Degree of finish (quality) of product marketed
- D Labor needs, selection, capacitation
- E Mechanization, automation (cost-benefit)
- F Utilization of secondary or non-agricultural resources
- G Capital investment, depreciation, operating costs
 - 1 Physical facilities, layout, materials
 - 2 Production units (livestock, etc)

H Land evaluation and real estate appraisal, water and resources rights

I Taxes and taxation

IV PERSONNEL MANAGEMENT

A Salaries and perquisites

B Housing and living conditions

C Educational facilities

D Literacy incentives, capacitation, job description

E Performance incentives (production incentives)

F Psychology of interpersonal relationships and personnel guidance and discipline, communication

G Health and nutrition, sanitation

H Recreational, cultural, and social aspects

I Work force hierarchy and organization, cohesiveness

J Advancement opportunities and independence of action, realization of potential and aspirations

K Sense of unity and common goal, esprit 'de corps'

L Industrial and farm safety

M Labor laws, unionism

V ANIMAL NUTRITION, FEEDS AND FEEDING

A Age - sex nutritional requirements

B Nutritional requirements for optimal reproductive performance
growth performance

- C Trace element requirements, biochemical functions
 - D Heat increment and specific heat of digestion of various feed stuffs as related to animal performance in the tropics
 - E Optimal nutritional states for life-time productivity
 - F Salt and minerals, urea
 - G Taste, palatability, digestibility as a function in feed selection
 - H Ruminant physiology as it influences ruminant nutrition and production, ruminant microbiology
 - I Influence of disease and parasitism on nutritional efficiency
 - J Feedstuffs and by-products (local supply and cost)
 - K Balancing and formulation of rations
 - L Feeds and forage analysis
- VI CROPS, PASTURES, AND FORAGES
- A Logical and profitable mixed farming combinations
 - B Adapted and native plant species (tropics), selection
 - C Ecologically sound cropping patterns in the tropics
 - D Vertically differentiated cropping patterns and energy capture and utilization in the humid tropics (mixed farming, species selection)
 - E Pasture species, their characteristics requirements, and management

- F Stocking rates and dry matter/animal production
 - G Pasture rotation systems - their effect on forage production, animal nutrition and production, and on parasite control
 - H Fertilizer and fertilization, cost-benefit
 - I Green chop, silage and hay production, harvesting, preparation, storage and utilization
 - J Forage - soil relationships
 - K Seed production-alternative
 - L Poisonous plants
 - M Phytopathology
 - 1 Virus
 - 2 Fungus and molds
 - 3 Parasites
- VII SOILS ANALYSES, PREPARATION UTILIZATION, MANAGEMENT AND CONSERVATION
- A Soil chemistry in interpreting analyses
 - B Soil sampling techniques
 - C Soil analyses, influence of method on results
 - D Climatic and geologic influences, soil origins
 - E Plant response as clue to soil condition or deficiency
 - F Methods, techniques and machines for seedbed preparation, relation to crop, climate and season
 - G Fertilizers and fertilization, protecting fertility

- 1 Cost/benefit, plant utilization, oxidation and leaching loss
- 2 System of application (especially for N₂)
- 3 Sources

- H Crop rotation
- I Wind and water erosion control
- J Role of microorganisms in soil condition and fertility, commensalism, symbiosis
- K Levelling, draining, irrigating, contours
- L Microelement cycling and preservation
- M Soil-borne plant pathogens and parasites, nematodes
- N Soils classification, mapping
- O Water storage and conservation in soils

VIII AGRICULTURAL ENGINEERING

- A Motorized equipment and vehicles
 - 1 Maintenance
 - 2 Operation
- B Agricultural implements and machinery
 - 1 Maintenance
 - 2 Operation
- C Physical facilities construction methods
 - 1 Carpentry

- 2 Cement and concrete
- 3 Electrical installations
- 4 Mechanics and physics
- 5 Plumbing, water, sanitation
- 6 Metal working, welding

D Materials

- 1 Sources
- 2 Handling
- 3 Preservation
- 4 Durability
- 5 Stress and load factors

E Road building and stabilization

F Land levelling, contouring, drainage, irrigation

G Structure design, layout, use flow patterns

H Aerial photography

(Black and White, infrared)

- 1 Potential uses
- 2 Interpretation

I Topography, surveying, contour maps

J meteorology and equipment used

- 1 Altimeter
- 2 Barometer
- 3 Min-max thermometer
- 4 Rain gauges
- 5 Wind meters
- 6 Solar energy measure
(Light intensity)

IX AGRICULTURAL ECONOMICS, MARKETING, CREDIT UTILIZATION

A Economic environment

- 1 Demand for and market price of commodity
- 2 Subsidies and price supports
- 3 Commodity quality and price, suitability to market
- 4 Marketing system and market stability, protection
- 5 Credit availability and benefit to returns
- 6 Internal vs export market factors, trade barriers

B Production efficiency

- 1 Single or multiple commodity system
- 2 Stage of product development when marketed
- 3 Labor deployment and mechanization
- 4 Returns to capital investment

C Input availability and costs (cost/benefit ratio), infrastructure

D Credit, national policies and institutions

- 1 Cost (Interest, restrictions on use, apportionment)
- 2 Utilization priorities
- 3 Benefits to alternative uses

E Methods in economics

F Cooperativism and cooperatives

X AGRICULTURAL DEVELOPMENT (FOOD AND FEED PRODUCTION) - SHORT
TERM BENEFITS VS LONG-TERM IMPLICATIONS

A Commodity selection based on (long and short-term)

- 1 International market, trade barriers
- 2 Local market, present or potential
- 3 Appropriateness of commodity and its required
production system to
 - a Local ecosystem or environment
 - b Local infrastructure, input availability
 - c Social, cultural, political, economic factors
 - d Technology, local and foreign
 - e Human need
- 4 Capital input requirements and return to investment
- 5 Economic geography and ecology

B Dissemination of technology (Extension and communication
methods) adapted to local conditions

- 1 Rural sociology
 - a Identification of
 - (1) Community and sub-group leaders
 - (2) Early-adapters
 - (3) Cooperators-collaborators
 - b Interviews and data acquisition
 - c Measurement of change and its impact
 - (1) Social
 - (2) Economic

- 2 Supplanting old systems with new systems and technology
 - a Extension methods appropriate to environment
 - b Teaching techniques
 - (1) Informal, on the job training methods
 - (2) Short courses, lectures, seminars
 - (3) Field days and demonstrations
 - (4) Visual aids, preparation and use
 - c Institutional (policy) reforms (National level)
 - d Producer incentives
- c Performance of systems (operational, economic, etc) analyses
- D Integration of agricultural producers and supporting industries (symbiosis) and services
- E Markets and marketing - assisting producer in realizing maximum return (producer incentive)
- F Cultural benefits to producer - valid use of increased income
- G Demography and its implications, agrarian reform

XI ECOLOGY AND NATURAL RESOURCE UTILIZATION

- A Agricultural
 - 1 Selection, adaptation and improvement of native species
 - 2 Harvest of virgin ecosystem produce
 - a Detritus - fermentation, conversion, etc
 - b Lumber
 - c Fruit and vegetable produce
 - d Fiber

- 3 Management systems for native ecosystem
 - a Hydroponics
 - b Caged fish culture
 - c Vegetable matter production
 - d Wildlife management

B Non-Agricultural

- 1 Mineral resources
 - a Construction materials (sand, gravel rock)
- 2 Hydrologic resources
 - a Hydroelectric power (REA)
 - b Water conservation

C Holdridge system - Implications in tropical agriculture and tropical urban development

D Basic principles of ecology, organizational concepts, energy-material flow, stability

XII SCIENTIFIC METHOD AND RESEARCH

- A Formulation of hypotheses
- B Scientific method for testing hypotheses
- C Scientific objectivity
- D Research design and control (flexibility)
 - 1 Basic
 - 2 Applied
- E Data acquisition, storage, and retrieval, valid data

- F Data analysis, statistical method
- G Selecting pertinent research topics
- H Evaluation of research data and reports, assimilation and integration into production systems (technology)
- I Applied research in
 - 1 Problem identification
 - 2 Problem definition
 - 3 Problem resolution
 - 4 Application of technology
- J Development of powers of observation, serendipity
 - 1 Subjective error in interpretation
 - 2 Tunnel vision
- K Role of imagination in research
- L The importance of detail and detailed record keeping, how to keep records
- M Mechanical systems and computers
- N Library research, technical report writing, bibliography preparation



A A 6713

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CALI - COLOMBIA

April 24, 1969

PROJECT DESCRIPTION

LIVESTOCK PRODUCTION SPECIALIST TRAINING PROJECT

INTRODUCTION Described herein is a two year project to develop and test an intensive learn-by-doing approach for preparing livestock production specialists to work effectively in the lowland tropics. The project design provides for the development of a core staff, materials, and guidelines for continuing such a program beyond the initial project period by one or more relevant national institutions or agencies if such action is indicated.

JU ²⁻STIFICATION Projections of food needs for the immediate future dramatically illustrate the tremendous increases needed in cereals, pulses, and animal products to supply rather modest daily food intakes for the anticipated population. For instance, meeting the estimated food needs in the year 2000 will require increases in food production, over 1960, of animal products 485 percent, of pulses 275 percent, and of cereals 130 percent. Obviously, the premium will be on protein production (1)

Equally important will be concerted efforts, national and international, to stimulate economic growth, to generate foreign exchange, and in other ways to increase the income and the purchasing power of the millions of hungry people.

Fortunately, there are in the lowland tropics vast areas of land either poorly used for livestock production or presently unused. These areas, if properly managed by competent technicians and farmers, could contribute significantly to the world protein supply and the national economies of the developing nations.

Less than 40 percent of the area potentially suitable for raising food crops in Latin America is presently under cultivation. The remaining 60 percent (which represents approximately 8 percent of the total land area) is principally in livestock production. At least 30 percent of the productive or potentially productive land in Latin America is suitable only for pasture. Thus, the lands actually in use or potentially suitable only for livestock production represent about

40 percent of the total land area. The utilization rate of this land is low with idle or under utilized land reaching 60 percent of the total in some countries (2)

It is estimated that the application of improved technology to existing livestock enterprises would, in the short term, increase production by 300 percent. The long term potential, realized in part by bringing idle lands into use, is estimated at 10 to 20 times above present production levels (3)

The principal factors which limit livestock production in Latin America today are poor management, malnutrition, parasitism and, to a lesser extent, infectious diseases, or in a word, the failure to adapt and use available technology

It has been demonstrated, on a small scale, that the majority of the livestock production problems can be resolved economically by adapting and applying existing technology and management techniques. This process requires capable generalists (Livestock Production Specialists) working in the field directly with producers (4). The generalist, as envisioned here and as contrasted to the usual extension worker, is an individual capable of applying production packages and conducting practical research (problem definition and resolution) on subject matter not sufficiently advanced to be included in the production package. The generalist is a bridge between the specialist and the producer, but today there are few such generalists

Those working most intimately in the field recognize the urgent need for a soundly oriented and practical training program for "people concerned with total agricultural development as a profession" (5)

OBJECTIVES

A Project Objectives

- 1 To develop and test, through an "on-the-job" approach, an efficient system for preparing generalist-specialists in livestock production and management in the lowland tropics, with particular consideration to the transferability and adaptability of the format and approach to a variety of conditions and locations

- 2 To train a limited number of generalists, plus others capable of training generalists, so that progress may be accelerated toward meeting the needs in Latin America for persons with such capabilities
- 3 To design and implement production improvement programs on specific cooperating farms where the training activities are based, and, at the same time, to help the owners and employees on these farms learn the techniques necessary to sustain the improved production levels By so doing, these farms will demonstrate the potential for increasing production on other farms in the area and provide an effective base for field days and short courses
- 4 To collaborate with specialists in other programs, i e , animal sciences and health, plant sciences, economics, engineering, etc , in the evaluation of comprehensive livestock production and marketing packages
- 5 To assess the feasibility of incorporating such production improvement programs into regional trial or development projects in cooperation with other agencies
- 6 To determine the cost-benefit ratio (or return to investment) on intensive technical assistance at the producer level, such as contemplated in this project, and, by extrapolation, at the national level

B Training Objectives

Broad communication and application gaps exist between research, planning, and production groups with respect to the livestock industry in Latin America There are serious technical, economic, and social problems, all of these compounded by deficiencies in the quality and quantity of available educational opportunities The situation demands a generalist in livestock production and management who can identify and integrate the various factors influencing production and make production packages readily available to farmers and ranchers

Such a generalist-specialist must have or acquire through training

and experience a set of complementary competencies

- 1 Technical competency, or the level of the knowledge and understanding, relevant to the crops or livestock the farmer produces, the production practices involved, and the physical environment in which the production takes place. This includes, but is not limited to, the ability to diagnose typical problems and abnormalities correctly, plus knowledge and understanding of the application of proper treatments
- 2 Economics competency, or the ability to weigh (e.g. calculate cost-benefit ratios, interest, etc.) alternative farm production management and product commercialization strategies. This includes, but is not limited to, determination of that strategy which
 - a Minimizes costs in the production of crop and/or livestock yields that are significantly greater than those obtained by the farmer using his present practice and its associated input costs, and
 - b Maximizes production commercialization profits sufficiently that net return (balance to the farmer after payment of input costs) are significantly larger than those obtained by the farmer using his present practice and its associated input costs
- 3 Scientific competency, or the ability to conduct a simple, replicable field experiment which objectively tests (in a micro-environment similar, if not identical, to the farmer's micro-environment) that employment of the innovation has as its reward (points 2a and b, listed above) and identifies factors which may require adaptation to the environment
- 4 Farming competency, or the willingness and skill to perform the range of physical tasks involved in producing a specific crop or animal. This includes, but is not limited to, the ability to perform the range of physical tasks within the existing competency of the farmer. Also, as mechanization advances, he must have the relevant knowledge, understanding, and skill in the operation and maintenance of various kinds of motor-driven machines and processes

- 5 Communication competency, or the ability to specify specific behavioural objectives for various audiences, for example, farmers or trainees. This includes, but is not limited to, understanding of the value of feedback and ability to obtain it, and the ability to plan, prepare, and present appropriate messages considering the cultural, social, economic, and performance status of the audience.

If he is to be successful in his work with farmers or future trainees, the generalist must be confident in his own abilities, be dedicated to and objective in the pursuit of development objectives, and possess a sense of urgency. It is expected that he will develop or acquire these attitudes and orientations as a by-product of the training and through interaction with senior staff members involved in his training.

MATERIALS AND METHODS

A Program Sites

At least two distinct types of sites (geographic locations) deserve consideration.

The first type is areas already important as centers of livestock production where, with a minimum of technical assistance, impressive gains in production might be realized. In these areas, because of the population density, cooperating ranches could be expected to influence positively neighboring ranches (multiplier effect). In addition, such areas are most likely to have the basic necessities such as market accessibility, communication, and inputs. Such an area would also offer an opportunity to study the effect of increased productivity on the socio-economic status of an area. The north coast of Colombia is an example of such an area.

The second type, which might be considered as a later project is an area just being brought into production. Such an area challenges trainers (building from the ground up) and requires abundant technical assistance to avoid errors in development and to assist in the study and resolution of unique problems.

Products of this type of training environment would be valuable in the development of large land areas in the tropics now idle.

The Llanos of Colombia offer precisely this opportunity

Such practical considerations as logistics and the possibility of rather immediate results dictate selection of the first site. In this project, the applied field training will be located in the north coastal region of Colombia, the basic training and orientation will be carried out at the CIAT farm near Palmira, using the old 'hacienda' on the property as a combination living quarters-classroom. This farm, the nearby ICA Station at Palmira, and surrounding ranches will serve as preliminary field laboratories.

B Selection of Collaborators

1 Official Entities

A number of agencies (both national and international) including lending agencies, research institutions, producer organizations, and development agencies are likely partners in this project. Such entities must be depended upon for continuation of the project should it prove useful.

In the initial phases of the program it is considered that collaboration with ICA is most indicated and, as the first step, would involve a cooperative program centered at Montería and the Centro Nacional de Investigaciones Agropecuarias "Turipaná".

2 Producers

Based on a limited survey of both the North Coast and the Llanos, approximately 50 percent of the ranchers are expected to be receptive to participation in the program. From this group, selection would be made on the basis of

- a Potential multiplier effect of the ranch and rancher, how much the rancher could influence his neighbors
- b Presence of production and disease problems representative of the area
- c Need for and willingness to receive technical assistance
- d Ability to provide the inputs necessary for adequate utilization of technical assistance

- e Size of operation (Although it is estimated that the basic unit for economic beef production is 500 cows, it would be desirable to work under local conditions with at least three different sized operations in order to gain more reliable information. These are 50 to 250 head, 250 to 750 head, and 750 or more head)

In agreement with present official policy regarding remuneration for technical assistance, cooperating ranchers may be expected to contribute a percentage of any increase in net profits resulting from assistance received through the project to an indicated national agency

C Personnel

1 Field Supervisors (Trainers)

To the present time, persons adequately prepared to serve as trainers have not been identified locally. Thus, it will be necessary to assist or train those selected to serve in this capacity. It is proposed that field supervisors be provided as follows:

Four Colombians, consisting of two animal husbandrymen and two veterinarians, plus two veterinarians or animal husbandrymen from the United States. From such a group at least three, if not all, might be expected to serve the second year of the program as trainers. Two of the Colombians might be provided by a collaborating agency, such as ICA, in order that such agency have a nucleus for continuing this or a similar program if such should prove feasible.

The two North Americans could provide guidance on some of latest technical advances, and special disciplines (e.g., epidemiology), they could bring fresh ideas and a different orientation to bear on local problems. The Colombian counterparts, in turn, would orient the North Americans to local conditions and problems.

Criteria for selecting these people would include practical experience, special training pertinent to the program goals, desire to work in the field, ability to teach and get along with people, and their understanding of and agreement with the project goals.

2 Trainees

A group of five to ten trainees is anticipated, depending on the capabilities of the field supervisors. These would be selected from recent animal husbandry or veterinary graduates, (ideally with rural backgrounds) desiring further training in applied field techniques including administration, management, production and livestock health. In addition, they would be screened on the basis of college grades, personality, and to the extent possible, on their philosophy concerning development of the livestock industry.

At the completion of their training, a significant percentage of the trainees would be capable of serving in a continuation of the program as trainers, either under the auspices of CIAT or some other agency.

D Plan of the work

Phase one of the training project would be a six-month period devoted to these activities:

- 1 Trainee evaluation and orientation
- 2 Provision of lectures, seminars and practical training utilizing CIAT or collaborator facilities to overcome deficiencies in basic preparation and current technological concepts in such areas as:
 - a Disease control and health programs
 - b Animal nutrition
 - c Forage and feed production, soils
 - d Livestock selection, breeding and production
 - e Agricultural economics and development
 - f Ranch management, personnel management
 - g Agricultural engineering
 - h Essentials of human health and nutrition
 - i Communication principles and practices, and related concepts in social science
 - j The war on hunger

- 3 Selection of cooperating ranchers, performance of comprehensive analysis of the operation of the ranches selected, and development of a production improvement program (PIP) for each ranch in conference with the rancher and based on social, economic and production considerations

During the second phase of the program, a period of 12 to 18 months, each trainee will be assigned to one or more of the ranches selected, depending on ranch size and trainee ability, where, under the close guidance of the supervisors, he will undertake to implement the PIP. It is anticipated that trainees will live on the ranch or ranches assigned them and will participate intimately in the daily routine in order to appreciate fully all aspects of the operation, to be able to pinpoint the less obvious problems, to ensure compliance with the PIP, and to train ranch personnel.

When the PIP begins to show results, the trainee will organize field days, meetings and/or short courses for the benefit of neighboring ranches. As his program becomes self sustaining on a given ranch, and he has time available, the trainee might assist neighboring ranches.

Each trainee will maintain complete and accurate records of the operation and operational changes on the ranch or ranches he serves as well as cost/benefit figures. In addition, he will be expected to provide data concerning production and disease problems in his area along with estimates of their economic significance.

Weekly or bi-weekly seminars and discussions will be held (with all trainees and supervisors of a given area attending) at a central location to be provided by CIAT. Individual presentations and group discussions are considered essential to broadening and refining the capabilities of the trainees (shared experiences). The same center will serve for purposes of "rest and rehabilitation" as well as providing office, record storage, and data analysis facilities, and secretarial services.

E Program Evaluation

For the present, supervisors and trainees will be evaluated before, during, and after the training period on the basis of

- 1 Standard testing procedures covering the critical competencies to be acquired (as listed in the training objectives)
- 2 Performance or success in
 - a Conferences and seminars
 - b Applying PIP's on assigned ranches
 - c Organizing and conducting field days, short courses, producer conferences, etc
 - d Collecting, organizing, evaluating and presenting data
- 3 Demonstration of initiative, resourcefulness, ingenuity, imagination, and responsibility
- 4 Personal rapport with co-workers and collaborators

The overall project will be evaluated on the basis of

- 1 Measured improvement of trainees
- 2 Impact and acceptance of trainees and PIP by ranchers
- 3 Measured improvement in production and net profits of cooperating ranches
- 4 Total cost of technical assistance phase of the project as compared with real or potential return applied on large scale
- 5 Rate of diffusion and application of improved technology on neighboring ranches
- 6 Demand by cooperators and prospective employers for services of trainees upon completion of the training period
- 7 Degree to and duration for which ranchers spontaneously continue to use improved methods after termination of direct participation of the project on their ranches
- 8 Degree and duration of retention and application of techniques and methods acquired by ranch personnel after termination of project participation on a given ranch

F Schedule of Project Activities

- 1 May 1 - August 31, 1969 Recruitment and preliminary orientation of supervisors and trainees, preparation of training base for first period, development and production of plans and initial materials, coordination conferences with collaborating agencies
- 2 September 1 - December 31, 1969 Basic preparation period, at CIAT site near Palmira Initial testing and evaluation of trainees Identification of cooperating ranch sites Move to home and support base in north coastal region of Colombia
- 3 January 1, 1970 to April 30, 1971 Supervised training and applied field work on cooperating ranches Periodic seminars, plus testing and evaluation of trainees Conferences with collaborating agencies for coordination, evaluation and development of future plans Use of cooperating ranches or sites for field days and short courses
- 4 May 1 - June 30, 1971 Final evaluation Assist cooperating agencies with continuation of program, if indicated Prepare reports and documentation to circulate to other countries and agencies

G Project Administration

This project will function as a training activity of the Animal Sciences Division, CIAT, in cooperation with appropriate collaborating agencies The Animal Sciences Division will be responsible for technical content and direct supervision, with the Office of Training and Communication, CIAT, providing logistic support and assistance on training and evaluation methods and materials

The project officer will be

Dr Charles H Mullenax, D V M

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