Proposal for a Three-year Coordinating Committee

NUMBER: WCC-

TITLE: Animal Utilization of Products from Processing Agricultural Commodities

DURATION: October 1, 1998 to September 30, 2001

DESCRIPTION AND JUSTIFICATION:

An agricultural by-product feedstuff, referred to as by-products in this proposal, is a secondary product obtained during the harvesting or processing of a principal commodity and has value as an animal feed. Examples of by-products include meat and bone meal, feather meal, wheat mill run, oil cakes, molasses, brewers grains, and bakery waste. Nine by-products generated in California in 1992 provided sufficient energy or protein to support over 31% of the milk produced in California in 1992 (Grasser et al., 1995, *J. Dairy Sci.* 78:962-971). The number and amount of plant by-products produced in the United States will increase in the future regardless of the rate of population growth. This increase in plant by-products is due in part to a projected decrease in per capita consumption of meat products and to more types of plant by-products entering the market. The number of by-products will also increase as a consequence of more stringent regulations on disposal of plant by-products. Total plant by-products available per animal will increase if meat product per capita consumption decreases or remains constant. Animal by-products available per animal will remain relatively constant over time. Historically, by-products were considered a waste product and processing industries paid to dispose of them. Over time, processing industries realized that by-products had economic value and would compete with other feed ingredients in livestock rations. The processing industries concluded that an efficient and economical method to dispose of by-products was to sell these by-products to the animal industries. Recently, more concern for the environment, through increased regulations, has prompted plant industries to assess if any waste produced through processing can be classified as a by-product suitable as an animal feed. Most plant by-products are fed to ruminants because of their ability to digest the by-products and to produce human edible products. Animal by-products are fed not only to ruminants but also to all livestock. Disposal of by-products would be a burden on society without consumption by livestock. It is important for the public to understand the integral role of livestock animals in the food and fiber system. Scientists need to understand how livestock animals digest and metabolize by-products to adequately advise processing industries and practicing animal nutritionists to better utilize by-products.

Private, state, and federal funding for by-product research is low compared to funding for primary feedstuffs research. This low funding is partly due to how much a single by-product is used in the ration. For example, alfalfa may comprise 50% of a lactating cow's diet on a dry matter basis, but an individual by-product may comprise less than 10%. Therefore, the importance of a single by-product may not be considered sufficient to warrant funding at the private, state, or federal level. However, by-products may comprise 30 to 50% of the diet, especially in the western states where by-product production from the harvest or processing of

fruits, vegetables, and other plant commodities far exceeds the rest of the country. Limited personnel and resources are dedicated to research and dissemination of information on by-products because of the lack of funding directed towards this very important area. Efficient utilization of personnel and limited resources requires a mechanism for cooperative interaction of a wide variety of researchers, extension personnel, and industry representatives. This cooperative interaction will allow generation and dissemination of information and technology to address problems associated with by-products. A coordinating committee will provide a forum to exchange ideas, identify critical problem areas, and develop programs that will address these critical areas.

OBJECTIVES:

(1) Quantify the production, use, environmental impacts, and economic value of products from the processing of agricultural commodities,

(2) Improve the assessment of the nutritional value of by-products, and

(3) Disseminate information on the use of by-products.

EXPECTED OUTCOMES:

The most important outcome of the development of a coordinating committee will be the establishment of a forum for exchanging ideas and data in the area of by-product utilization and production. This forum for exchange of ideas is critical in this very important area where resources are limited. The expected outcomes rely on the coordination of variety of personnel who are willing to cooperate and share information and ideas. The expected outcomes include:

Objective (1):

- The total production of selected by-product feedstuffs in the US over several years will be established.

- The use of these selected by-product feedstuffs in the feeding of animals will be calculated and the environmental impact will be determined by using animal numbers and total by-product feedstuff production. An example of the outcome would be an estimate of decreased phosphorus contamination through animal feeding compared to disposal of by-product feedstuffs into landfills.

- The economic consequences of using by-product feedstuffs will be evaluated on either a national level or through regional studies. Each by-product feedstuff may have unique alternatives.

- Case studies will be used to better characterize the use of by-product feedstuffs at a regional level where data can be more accurately collected.

Objective (2):

- A publication on appropriate and inappropriate by-product analysis methods.
- A publication on experimental protocols for animal trials.
- Publication could occur on a web site and in paper copy.

Objective (3):

- Organize another national symposium to disseminate information on by-product feeds (publish a for-sale proceedings)
- Develop a web site to provide a list researchers who work with specific by-products, provide pictures and brief descriptions of by-products, linkages to other sites with information on by-products, and information about the national symposium (registration form, copy of abstracts, etc).
- Joint author papers in lay and industry magazines.

EDUCATIONAL PLAN:

The importance of livestock animals in the food and fiber system because of their use of by-products is a very important message that should be disseminated to the general public and legislators. This committee will provide information that quantifies the use of by-products through publications in popular press articles and other publications available to legislators and the general public. Members of this potential committee currently have published or are currently of publishing articles quantifying the production of by-products and the role ruminants and non-ruminants play in the food cycle. This committee will solidify these efforts by providing a forum where integration of information is possible. Dissemination of information would occur through regional workshops and national symposia.

PARTICIPATION:

Researchers and extension personnel from land grant institutions across the US and industry representatives will be invited to participate, and participation is likely to be high. Two (1991 and 1995) very successful National Symposia on Alternative Feeds have been held in St. Louis, MO, demonstrating growing national interest in this area. A preliminary national survey about two years ago identified that 110 scientists from 39 institutions in 35 states were interested in this topic. At least 58 scientists from across the US have responded by way of electronic mail

this year with interest in the topic and potential participation in the efforts of a coordinating committee (see attached list). Fifteen scientists and two project administrators met on May 5-6, 1999 in Reno, NV to discuss the potential of organizing a coordinating committee, and this meeting lead to the content of this proposal.

USDA-CREES:	Henry F. Tyrrell, Washington DC
Administrative Advisor:	Jim Males, Department Head, Animal Sciences Department, Oregon State University

Those interested in the effort and who attended (in addition to the administrators listed above) the first planning meeting:

J. Fadel (UC Davis)	M. Eastridge (OH State U.)	M.B. Hall (U. of FL)
D. Mertens (ARSDFRC)	B. Harmon (Purdue U.)	J. Harrison (WA State U)
T. Klopfenstein (U. of NE)	V. Anderson (ND State U)	M. Poore (NC State U.)
B. Lewis (Cornell U.)	W. Weiss (OH State U.)	H. Harpster (PA State U.)
D. Hinman (U. of ID)	M. Nelson (WA State U.)	G. Lardy (ND State U.)

The organizing group proposes the following initial officers for the Coordinating Committee:

Co-chairs: Jim Fadel, University of California, Davis
Maurice Eastridge, The Ohio State University

Secretary: Mary Beth Hall, University of Florida

After the first year, the coordinating committee will annually elect a chair and a secretary. The chair will coordinate communication, set the agenda for the annual meeting, and preside at the annual meeting. The chair will appoint sub-committees if necessary. The secretary will record and distribute the minutes from the annual meeting.

Project Number: WCC-203
Project Title: Animal Utilization of Products from Processing Agricultural Commodities

SIGNATURES:

Administrative Advisor	Date
Chair, Western Directors Association	8-15-00 Date

Principal Investigator Contribution Forms Received

	Percentage				
Scientist	**Research**	**Extension**	**Teaching**	**Admin.**	**Station**
Edward J. DePeters	60		40		California
James G. Fadel	60		40		California
Donald E. Johnson	60		40		Colorado
Mary Beth Hall	40	60			Florida
James R. Carpenter	55	20	25		Hawaii
George C. Fahey, Jr.	50			50	Illinois
Donald G. Ely	57		43		Kentucky
Steven Rust	50	50			Michigan
Matthew H. Poore	30	70			North Carolina
Marc L. Bauer	70		30		North Dakota
Maurice L. Eastridge	20	80			Ohio
David Lalman	30	70			Oklahoma
Harold W. Harpster	25				Penn State
Rick Grant	70	30			Univ. of Nebraska
Todd Milton	50	40	10		Univ. of Nebraska
Ronald L. Kincaid	60		40		Washington
M. L. Nelson	50		50		Washington
W. H. Hoover	70		30		West Virginia
T. K. Miller Webster	100				West Virginia
Louis Armentano	60	11	29		Wisconsin