Delaware students can go to Panama for classes

NEWARK, Del. — Students from the University of Delaware will have a chance next January to see at first-hand how the leaders and people of Panama are dealing with the problems of economic development-especially as these problems relate to agriculture. The vehicle? A three-week, three-credit study trip to the country for a winterim course on Problems of Agricultural Development.

The class, which will be held January 5 to 29, is being offered through the University's College of Agricultural Sciences.

Harry Brautigam, a specialist in agricultural development, will be teaching the course. Its purpose is to study the role of agriculture and how it can help solve the economic problems of a less developed country.

Panama faces serious development problems which depend in part on improving agricultural production. The question is how best to provide the country's rural inhabitants (half the total population) with the knowledge of technical skills needed to achieve a satisfactory standard of living in order to half the migration of the poor and unskilled to the cities.

"During our visit we'll hear from observers in different sectors of the country's leadership, to see what they think needs to be done. And then we'll see what the people themselves think," says Brautigam. "People often perceive their problems differently than outsiders do."

Panama's problems are typical of all less developed countries, he says. Because agriculture is limited, there is a similar pattern of migration to urban areas and large-scale unemployment.

One of the big difficulties in solving Panama's problems is lack of communication. Research at the University is not used as an input in the decision-making process the way it is in more developed nations like the U.S.

"In Panama," explains the economist, "there's no extension service to provide a link between research and the farmer, or between research and government actions."

Changes now under way in the training of agricultural students there-including an exchange of ideas and personnel with the University of Delaware's agricultural college-may help to improve the spread of ideas.

Members of the class will attend brief seminars in Panama City with key representatives of government, business and the University of Panama, as well as officials from international agencies. Students will also meet with anthropologists familiar with local traditions and life styles in rural parts of the country which the class will visit.

Besides metropolitan Panama City, the group will visit Chiriqui-the prosperous agricultural region responsible for most of the country's food production.

They will spend time in Santiago-a very poor rural area where the bulk of the country's land reform efforts are concentrated.

The Delaware group will also visit Darien, a large undeveloped province recently made more accessible by the construction of a highway. The challenge there is how to control development so as to protect the fragile tropical ecology.

Brautigam wants his class to become aware of Panama's potential in other areas besides agriculture, too. A crossroads of international shipping because of the canal, the country has one of the largest banking communities in the world, as well as one of largest free-trade areas.

Members of the class will have an opportunity to do some weekend travel on their own to places such as the San Blas Islands (home of the Cuna Indians, famous for their colorful appliqued molas), and Contadora Island (a beautiful resort center). They'll be able to visit Colon, a free-trade area at the Atlantic end of the Panama Canal.

The three-credit course is open to anyone enrolled in the University of Delaware It is also open to other interested individuals through the Division of Continuing Education. Cost for the 24 days will be around $900 including transportation, breakfast and hotel accommodations. For further information contact Harry Brautigam at 302/738-2511.

Plant tissue used to study pesticides

UNIVERSITY PARK — Plant tissue cultures in test tubes are enabling scientists at Penn State to determine the effects of pesticides and their breakdown products on the environment.

"It is much easier to isolate and identify pesticide breakdown products in tissue cultures than in whole plants," declared Ralph O. Mumma, professor of chemical pesticides at Penn State.

He said it is important to know how much of a pesticide and its converted remants are present in plants at any one time. Such information, he claimed, is vital for proper timing of crop harvest, for safety of humans and other species, and to understand the possible effects of pesticide breakdown on the environment.

He indicated tissue cultures contain only very small amounts of substances such as pigments and starches which, in whole plants, interfere with the identification of products left over when pesticides deteriorate.

Such cultures can be made from almost any part of a plant — roots, leaves, or stems. As grown in bottles or special vials, plant tissues get their energy from sugars in the culture medium, not from sunlight This asexual growth of plant tissue can result in new plants with superior qualities, it was noted

"It is much easier to isolate and identify pesticide breakdown products from tissue cultures than from whole plants," he said. "Such cultures contain only very small amounts of substances such as pigments and starches which, in whole plants, interfere with the identification of products left over when pesticides deteriorate.

He claimed many scientists at universities and in government and industrial laboratories are rapidly adopting tissue culture in their research. By carefully selecting plant hormone levels, it is often possible to stimulate the growth of roots and/or leafy buds — thus producing new plants.

Such cloned tissue cultures grow rapidly, have moderate cost and space needs, are easy to duplicate, take up pesticides rapidly, and quickly produce chemical breakdown products. In addition, laboratory conditions and comparison of data with other labs can be standardized, increasing the reliability of results.

Plant tissue culture can be carried out in two major ways. First, the tissue can be cultured rapidly in a solution consisting of single cells or small clumps of cells from the original plant. Or tissue can be cultured more slowly as clumps of tissue growing on agar gels.

The growth medium contains salts, a few vitamins, hormones, and sugar needed for growth.

Cultures usually can be grown for six to eight weeks and may increase 10 to 100-fold in weight.

To verify the significance of findings, corresponding experiments are carried out with whole plants for comparison. These experiments have led to the discovery of many new breakdown products.

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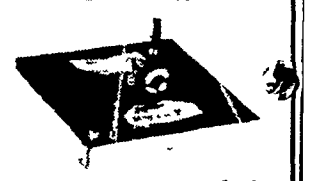

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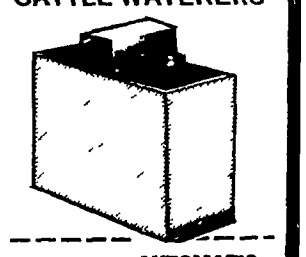

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