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EASTERN ILLINOIS UNIVERSITY
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news

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FOR IMMEDIATE RELEASE (August 17, 1987)

CHARLESTON, ILL.--Dr. Stan Kalembasa will return to Poland next month with his research project strengthened and with pleasant memories of Eastern Illinois University.

Kalembasa is an exchange professor from the Agricultural and Teacher's University in Siedlce. He is wrapping up a year in Eastern's Chemistry Department, where he worked closely with Dr. Russ Carlson in researching nitrogen fixation in legume plants.

"Fixing" nitrogen means to convert nitrogen gas from the air into a form such as ammonia that plants use for growth. Both men are internationally-known in the field. Ultimate goal of the study is to increase the yield and quality of legume crops.

Legumes other than soybeans, such as clover and alfalfa, are Kalembasa's particular interest because a short growing season prohibits soybean production in Poland. Twenty-five percent of Poland's crop rotation is in other legumes.

Kalembasa, who has worked with researchers on nitrogen fixation in a number of countries, also focuses on organic fertilization for the benefit of Polish farmers and their sandy soil.

He believes the work he has done with Carlson this academic year will eventually translate into "very beneficial help for farmers in my country."

Carlson is quick in his praise of Kalembasa's research efforts: "Stan has worked hard and I'm grateful. It is difficult to find someone who has been trained in this area and Stan has certainly had the training."

Legume plants, as explained by Carlson and Kalembasa, fix nitrogen through a symbiotic process (mutually beneficial interaction) with bacteria called rhizobia. In rhizobia-legume symbiosis the rhizobia infects the roots of the plant causing nodules, or lumps.

Bacteria grow and live inside the nodules and produce an enzyme which can convert nitrogen gas into ammonia. The plant uses the ammonia for growth and in turn provides sugar to the bacteria for their growth.

The current research is directed toward understanding the chemistry of the rhizobia-legume relationship. The aim is to develop a more efficient relationship which will produce more ammonia than now possible.

This not only promises a higher yield and quality; ammonia will remain in the soil which would decrease the nitrogen requirement of subsequent crops such as corn, which cannot fix nitrogen.

Carlson, who in seven years has had supporting grants of approximately \$400,000, believes that "the research which has already been done indicates that the development of these more efficient symbiotic systems will be possible."

Kalembassa, who holds doctoral degrees in both chemistry and biology, was a primary participant in the development of the exchange

agreement between Eastern and his institution.

In July Dr. Mieczyslaw Forys, Rector (president) of the Polish university, visited Eastern for a week. He conducted a seminar on graduate education in Poland and visited Kalembasa.

Next spring Carlson is scheduled to speak at the International Nitrogen Fixation Conference in Cologne, Germany. He will also lecture in Poland and will visit with Kalembasa.