Baltic Basin Subject of New Report Series

For the past three years, CARD has been participating in a series of projects with Polish, Lithuanian, and Russian scientists in the Baltic Basin. These projects have targeted agriculture and the environment. The primary goal of these efforts has been to identify problems and provide sustainable solutions within a research, education, and policy development framework.

In order to make the large volume of research and related information available to others with an interest in the Baltic Region, CARD is launching a new series of reports, the “Baltic Basin Agriculture and Environment Series.” Titles in the series are authored by CARD experts and/or cooperating scientists and focus on a variety of issues related to agriculture and the environment within the Baltic Basin.

Environmental Issues

The Baltic Sea is the largest brackish water body in the world. Over the past few decades, it has developed severe problems from water contamination and environmental degradation in its catchment. Despite recent protective efforts, the Baltic continues to be threatened by nutrient and other sources of contamination. Continued contamination would cause irreversible damage to its diverse ecosystem, which is an important

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CARD Opens Research Efforts in China

The foundation has been laid for collaborative research efforts between CARD and the China Center for Agricultural Policy (CCAP) in the Institute of Agricultural Economics (IAE) of the Chinese Academy of Agricultural Sciences (CAAS) in Beijing, People’s Republic of China.

A visit by CARD administrators and researchers -- William H. Meyers, associate director, and Ian Shaw, visiting scientist -- in March 1996 opened discussions regarding areas in which CARD’s research interests and capabilities, and China’s priorities for agricultural policy analysis and resources, intersect.

Meyers and Shaw attended the First Annual Meeting on Chinese International Agricultural Science and Technology in Beijing March 17-23, 1996. They also met with staff members of the IAE and its Center for Chinese Agricultural Policy where Meyers presented the Food and Agricultural Policy Research Institute (FAPRI) Outlook and emphasized the value of adapting this for China.

Meyers and Shaw were informed that as the personal incomes of Chinese citizens continue to grow rapidly, the country’s leaders are looking for ways to meet higher food demand with production increases and

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specifically and help to form a knowledge base for policy, education, and other private and public initiatives. Publication of titles in this series will be announced on CARD’s homepage (www.ag.iastate.edu/card) and a cumulative listing will appear in CARD’s publications catalog.

Content editors for the series are Walt Foster of CARD, Vilija Budvytiene of the Lithuanian Rural Sociology Association, and Barbara Ostrowska of the Polish Institute of Land Reclamation and Grassland Farming.

Baltic Basin Reports


From the CARD Director

Those of you who are regular readers of our CARD report will have noticed that this issue has been delayed. The reason is in part due to a change that has occurred in the directorship of CARD and in my responsibilities at Iowa State University. On September 15, I became the Vice Provost for Extension of Iowa State University. I will continue as the CARD Director on a limited basis, through the end of the current academic year, and/or until a new director is hired.

I wish to take this occasion to express deep appreciation to all of those who have contributed to our CARD programs, beginning with the initiation of CARD in 1958 by Professor Earl Heady, and continuing since I became director in 1985. I have been fortunate to have had a strong and dedicated staff. Also, CARD has always been a highly financially leveraged organization. Accordingly, I express appreciation to those who have seen fit to support the CARD public policy research program with grants, contracts, and other means. Our research and related programs at CARD have always had to pass the “market” test. I hope that those on the other side of the equation have found good value in the work that we have accomplished, many times under cooperative agreements.

Finally, I express my appreciation to my colleagues in the Economics, Statistics, and other departments. It would not be possible to sustain a successful public policy research institute like CARD without strong supporting disciplinary departments.

Stanley R. Johnson

I will always be indebted to those who inducted me as Director and supported CARD during the time I had opportunity to lead it. We’ve had a great run together. Of course, I will keep my hand in the programs of CARD, in one way or another, as an Economics faculty member. I hope I will be able to join with you in contributing to a bright future for this organization and the development of research and related programs that contribute to more enlightened policies for agriculture, trade, food and nutrition, resources and environment, and rural and economic development.

National Forum Theme: Technology’s Impact on Agriculture

The 1996 National Forum for Agriculture, organized by CARD and the Food and Agriculture Committee of the Greater Des Moines Chamber of Commerce Federation, was convened March 4 by Iowa Governor Terry Branstad and Pioneer Hi-Bred International President Charles Johnson.

The two-day forum, held at the Des Moines Marriott Hotel, had the theme: “Friend or Foe? Technology and the Structure of Agriculture.”

The conference focused on the complex and sometimes highly charged issue of how scientific and technological developments are changing the structure of agriculture (the size and number of farms, the number of people employed in agriculture, integration from production to retail, and the degree of specialization involved in contemporary agriculture).

In the opening speech of the Forum, Fred Buttel, director, Technology and Family Farm Institute, University of Wisconsin, cited the example of the development of hybrid seed corn to illustrate the impact of science on the structure of agriculture: “Hybrid seed corn was the first big breakthrough for the land-grant system.” Agriculturists, Buttel said, have been unwilling to recognize that there was a down side to this development and that a social cost was paid for the benefit.

After its introduction, hybrid seed was available to all farmers. However, it produced maximum yields and greatest economic benefit to the farmers who could afford to apply nitrogen fertilizer and use more technically advanced corn picking equipment. This reality eventually contributed to a decline in the number of farmers.

In the years since the introduction of hybrid seed corn, agricultural research and development has continued into an era of genetic engineering, Geographic Information Systems (GIS) technology, and confinement hog operations. The argument over whether the return is worth the social and environmental cost has become even more complex, according to Buttel.

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At the same time, the demand for increasing agricultural productivity has never been more pressing. The world’s population is growing and the per capita incomes of densely populated nations in East Asia are increasing, with a corresponding demand for dietary improvement.

New developments in agricultural science and technology affect the structure of agriculture across a spectrum of issues. In a series of panel discussions, the Forum presented experts in a variety of agricultural fields who examined specific problems in a debate session titled, “Technology: Empowerment or Entrapment.”

The increasing size of farming operations has had the effect of a decline in the number of people making their livelihoods in rural America. The quality of rural life has been affected as well. Lou Swanson, sociologist, University of Kentucky; Bill Krause, president, Kum & Go Convenience Stores; and Kevin Bortz, Iowa farmer and independent confinement hog producer, discussed these changes in “How Is Technology Changing the Neighborhood?”

Margaret Mellon, of the Union of Concerned Scientists, and Marty Strange, program director, Center for Rural Affairs, took the side of policy restraints and restrictions on applications of agricultural technology, while Cooper Evans, farmer and former U.S. Congressman, took a more lenient position in “How Is Public Policy Shaping Technology Use and Ag Structure?”

In “How Is Technology Affecting the Globalization of Agriculture?”, Jim Stoddart, vice president, Case Corporation; Caroline Jackson, member, European Parliament; and G. Edward Schuh, dean, Humphrey Institute for Public Affairs, discussed the global availability of agricultural technology. Jackson pointed out that while the knowledge and technology may be available, acceptance may be an entirely different matter.

For instance, in some European nations the concept of genetically modified organisms produces a good deal of nervousness. U.S. products are often at a disadvantage in such cultures. Schuh emphasized the need for adequate education to achieve maximum benefit in the nations to which the technology is transferred.

Whether agricultural R&D belongs in the public realm of the land-grant college system, or in the private realm of industry, was discussed by panelists Steve Anderson, director, Specialty Plant Products, Cargill, Inc.; Marlyn Jorgenson, farmer and a member of a National Science Foundation committee on the future of land-grant colleges of agriculture; and Grant Mangold, editor, ag/INNOVATOR. These speakers weighed the advantages of private industry’s innovation and quick response time investigating the development of new technology against the integrated paths to scientific discovery that may develop over a longer time frame within public academic institutions.

The 1996 National Forum was attended by 550 agricultural producers, researchers, educators, federal and state government officials, and media representatives. For more information contact CARD, Iowa State University, 578 Heady Hall, Ames IA 50011; phone 515-294-6257; or Web site www.ag.iastate.edu./card, or e-mail jpm@card.iastate.edu. Audio tapes of the program sessions are available from Nationwide Recording Services, Inc. at 214-638-8273 (phone) or 214-638-0954 (fax).

Next year’s National Forum for Agriculture will be held March 3-4 at the Des Moines Marriott Hotel.
CARD Research Finds Reduced Nitrogen Loss in Soils

JunJie Wu, P. G. Lakshminarayan, and Bruce Babcock of CARD’s Resource and Environmental Policy Division have published a CARD Working Paper (96-WP 148) examining how soils, climate, crops, and management practices affect nitrogen loss. They constructed an empirical model to evaluate two scenarios: reduction of N fertilizer application rates by 25 percent and replacement of continuous cropping with crop rotations.

The report, “Impacts of Agricultural Practices and Policies on Potential Nitrate Water Pollution in the Midwest and Northern Plains of the United States,” addresses the public concern that fertilizer use, especially nitrogen, is contributing to ground and surface water contamination in these areas. The research team used data from the 1992 National Resources Inventory (NRI), which measured potential nitrogen runoff and leaching in 128,591 sites across the Midwest and Northern Plains.

“The effects of alternative cropping systems on nitrogen losses depend on soil, climate, and hydrologic properties.”

Using the data and the CARD analytical system, specific attributes of each NRI site, including land use and cover, cropping history, irrigation type, tillage practices, conservation practices, topography, hydrology, and soil type were incorporated. The analysis showed that the effects of alternative cropping systems on nitrogen losses depend on soil, climate, and hydrologic properties.

For the entire study region, the average annual runoff and leaching were estimated to be 3.99 pounds per acre and 4.07 pounds per acre, which accounted for about 5.5 percent and 5.6 percent of total nitrogen applied.

After results were generated and tabulated for the report, Geographic Information Systems (GIS) maps were generated to provide detailed and accurate data on the variations in nitrogen runoff for all portions of the study area.

The team concludes there will be a significant reduction in nitrogen losses, if current trends of reduced agricultural subsidies continue and producers rely more on precision farming techniques. Because policy analysis is now possible on a disaggregated basis, researchers can provide timely and specific information for particular locations.

FAPRI Baseline Update

The unusually lengthy Congressional deliberations on the 1995 Farm Bill necessitated significant schedule changes for the Food and Agricultural Policy Research Institute (FAPRI) at CARD.

Traditionally, the Iowa State University and University of Missouri-Columbia FAPRI groups meet in late January for their computer modeling “meltdown” of all the variables and assumptions that shape their annual baseline projections for domestic and international commodity models.

This past January, FAPRI analysts found themselves providing scenarios for Congressional agriculture committee members detailing numerous legislative options: the House and Senate versions of the Farm Bill, freedom to farm, CRP renewal, extension of the 1990 farm program, revenue assurance, revenue insurance, and other options. Until something was decided about U.S. farm policy, FAPRI could not make a final determination of the impacts on commodity markets worldwide.

When it appeared that Congress would reach a compromise agreement in late March that would be signed by President Clinton, FAPRI staffers moved into action. Meltdown was held at FAPRI-Missouri headquarters during the first week in April.

Briefing books were prepared for the congressional agriculture committee meetings; FAPRI personnel met with the Senate and House staff and U.S. Department of Agriculture personnel in May. Preliminary data from the briefing books are available on the CARD Web site. (See www.ag.iastate.edu/card for more information.) The June issue of FAPRI’s quarterly newsletter, the Iowa Ag Review, contained several articles analyzing the 1996 Farm Bill and the recent baseline run.

FAPRI’s two baseline publications, U.S. Agricultural Outlook and International Agricultural Outlook, were released recently.

The format is slightly different this year, with all the explanatory material appearing only in the U.S. Outlook book while the International Outlook contains mostly tables and appendices relating to world agriculture.
An idea from CARD division head Dermot J. Hayes spurred an economics graduate student to produce a unique snapshot of Iowa: a three-dimensional map showing corn prices as topographical elevations. The map of Iowa for January 30, 1996, aroused media and professional interest when it appeared in “Pork Production in Iowa: An Industry at a Crossroads,” CARD Briefing Paper 96-BP10.

It all began when Attila Konkoly was looking for an original topic for his thesis. Hayes, who is head of CARD’s Trade and Agricultural Policy Division, suggested combining the technology of Geographic Information Systems (GIS) with economic measures, such as Iowa corn prices. Since this had not been done before, Konkoly had to develop the process from scratch. He enrolled in a graduate-level agricultural engineering course on GIS operations, applications, and decision making, where he learned to use the tools of GIS and a GIS software program called ARC/INFO.

Konkoly wanted a sound database of corn prices before he started developing the actual GIS maps. Information on cash bids for corn is collected by two companies, Data Transmission Network (DTN) and FarmDayta, and broadcast to their users daily via satellite. However, no one records them, so Konkoly set out to collect cash bids from the grain terminals for 250 towns from July 1995 to the present. He edited the bids from a much larger file and stored them in a software file compatible with the GIS mapping system.

Next he obtained the town coordinates from the World Wide Web GIS database of the Iowa Department of Natural Resources maintained at the University of Iowa. He selected 240 towns for which he had cash bid information. These prices were to be depicted as topographical elevations on the surface relief map.

An inverse distance weighting surface interpolator was used, though other more complex surface interpolators are also available. From these digital elevations, the program generates a 3-D surface map. Vertical height represents the local price of corn. The higher the peak, the higher the price. (Konkoly plans to present a much more technical and detailed description of his map making process in his thesis.)

Hayes notes that the first maps Konkoly generated for July 1995 showed the state as a relatively flat surface. In more recent maps, higher points have risen in two north central Iowa counties, Wright and Emmet. These two counties are also the sites of sizable livestock feeding operations.

He stresses that each map captures one moment in the price cycle; and therefore, the maps must be viewed in a series in order to confirm (or reject) long-term changes in marketing patterns.

Future Plans for Mapping

Konkoly has made improvements to his mapping process since doing the original corn price maps. He plans to include grain elevator capacities, railroads, highway access, and crop yields as components of the maps, to more precisely analyze the “mountains and valleys” of corn prices in certain parts of the state.

If digitized city maps and cash bids are available for other states as well, he hopes to extend the mapping process across the Corn Belt. There are also tentative plans for making a video which would show how the changing prices alters the maps over time.

Constructing the Maps

Don't miss our homepage at www.ag.iastate.edu/card
CARD faculty member E. Kwan Choi is managing editor of the Review of Development Economics (RDE), a new scholarly journal to be published by Blackwell Publishers. (Blackwell also publishes Review of International Economics, a three-year-old journal edited by Choi.)

Development economists face many research challenges as some developing nations are experiencing economic growth while others are suffering from crippling wars or economic disintegration due to institutional failure.

Choi describes the Review of Development Economics as a refereed journal seeking high-quality manuscripts on growth theory, natural resources, technological change, productivity, country studies, agricultural development, migration, income distribution, commercial policy, population, and the environment, as well as emerging problems of transition economies. Choi says that the journal will help meet “the need for scholarly dialogue in the area of development economics...It will publish rigorous analytical papers, theoretical as well as empirical, which deal with contemporary development problems faced by national, regional, and global economies.”

The inaugural issue of Review of Development Economics will appear in Spring 1997, and the editorial board is currently soliciting submissions. Joining Choi as associate editors of RDE are Sugata Marjit of the Indian Statistical Institute, India; Xiaokai Yang of Monash University, Australia; Sajal Lahiri of the University of Essex, UK; and Ira Gang of Rutgers University, Camden, New Jersey.

To submit unpublished, original papers for publication consideration by RDE, send four copies of the manuscript, along with e-mail and telephone/fax numbers to E. Kwan Choi, Managing Editor, RDE, Department of Economics, Iowa State University, Ames, Iowa 50011. Choi may also be reached via telephone: 515-294-5999, fax: 515/294-9913, or by e-mail: echoi@iastate.edu. Submission fee is $30 for assistant professors and $40 for others, but the submission fee is waived if all authors reside in developing countries.

For more information about the new journal, see the RDE World Wide Web site at www.ag.iastate.edu/journals/rde.

CARD Graduate Student Wins International Award

Lyubov Kurkalova, a CARD graduate student from Ukraine, received the ISU Faculty Women’s Club International Award for 1995.

Kurkalova was granted the honor based on her excellent grades and on “qualities of leadership, character, and personality enabling her to foster international understanding and to interpret the American way of life to the people of her country.”

She was recommended for the award by Stanley R. Johnson, director of CARD; Helen H. Jensen, head of the Food and Nutrition Policy Division; and C. W. Wetzler, president of the Spirit Lake (Iowa) State Bank. (Kurkalova met Wetzler when she interpreted for a group of Russians visiting his bank.)

In addition to her performance as an interpreter for Russian and Eastern European visitors, Kurkalova has done community presentations about the Former Soviet Union. One memorable presentation was given to her daughter's first-grade class at an Ames, Iowa, elementary school. Kurkalova told the children about Russian life and showed them pictures and Russian dolls. She noted that the class was very enthusiastic and had many questions for her.

Kurkalova, who works on CARD’s international programs with Helen Jensen, is studying for her Ph.D. in agricultural economics. Currently she and Jensen are producing an evaluation of agricultural productivity in Ukraine.
Will Freedom to Farm Harm the Environment?

While the impacts of the new farm program vary dramatically by location, overall environmental effects from the new legislation are small (primarily because key environmental provisions were continued in the new farm bill). This conclusion appeared in a recent study (RAPS 1996: Agricultural and Environmental Outlook) conducted by researchers at the Center for Agricultural and Rural Development (CARD), Iowa State University.

Researchers who examined the likely environmental impacts of the new farm legislation believe their conclusions will help dispel concerns that increased farmer freedom might lead to increased environmental degradation.

The new set of farm programs passed in spring 1996 brings an end to a 60-year era of planting restrictions and farmer subsidies based on market prices. The new programs allow farmers to plant almost any crop (other than fruits and vegetables) on all their land while remaining eligible for fixed government payments. Farmers benefit from the new legislation through increased flexibility to plant what is most profitable and best suited to their land, and through the continued government subsidies.

The first task for researchers was to predict how farming practices will change with the new farm legislation. Farming practices, including how farmers till their land, rotate their crops, and use soil conservation practices, have a large impact on indicators of environmental quality.

The CARD environmental outlook examines the likely effects of the new farm program on five indicators of environmental quality in a 12-state region of the Upper Midwest, ranging from Kansas in the Southwest to North Dakota in the North, and Ohio in the East. The five indicators are: wind and water erosion rates, nitrate-nitrogen lost to surface runoff and leaching, and the level of soil organic carbon, which serves as a broad indicator of soil health.

Results from the CARD study indicate large regional and intra-regional differences in the net environmental impact of the new farm legislation. For example, water erosion rates are projected to increase modestly by an average of about four percent over 1992 rates in the 12-state region. But in the Corn Belt states of Illinois, Indiana, Iowa and Missouri (which contain most of the highly erodible land), erosion rates are projected to increase by an average of less than 2 percent.

Changes in the other environmental indicators also show large regional and intra-regional differences. Average wind erosion rates are projected to decrease by more than 3 percent across the 12-state region. But, much of the decrease in average rates is a result of increased adoption of conservation practices and greater use of high-residue management in the Corn Belt and Lake States, two regions that are not susceptible to wind erosion.

Nitrogen fertilizer use is projected to increase by 15 percent in the 12-state region because of additional corn and wheat acreage. The CARD study projects a small decrease in per acre loads even with the increase in nitrogen fertilizer applications. Meanwhile, average nitrate runoff rates are projected to decrease by about 14 percent below the 1992 level.

CARD’s findings support the idea that agriculture’s impact on the environment depends upon complex interactions between government policy, farmer decisions, and land and climate characteristics. Good estimates of the environmental effects of the major change in agricultural policy that occurred this past spring can only be obtained by carefully tracking farmer decisions and the resulting environmental changes at many locations in the region.

RAPS 1996: Agricultural and Environmental Outlook, which includes many full-color maps showing the location of environmental changes, can be viewed on the Web at this address: www.ag.iastate.edu/card/RAPS. Contact Bruce Babcock, head of CARD’s Resource and Environmental Policy Division, for information on the ongoing RAPS research; call 515-294-5764 or e-mail babcock@iastate.edu.
The culmination of the Poland Agriculture and Water Quality Protection Project (PAWQPP) was a conference scheduled for October 8-10 in Warsaw. “Shaping Poland’s Future: A Conference on Sustainable Agriculture and Rural Development” attracted an international audience.

As Poland’s agricultural sector grows in response to free market force, as well as policy and institutional reforms, there is a rising national concern for economic and environmental sustainability in rural communities. The rural area of Poland, which comprises about 65 percent of the country’s land area, is inhabited by approximately 38 percent of the total population. Twenty-five percent of the national workforce is employed in the agricultural sector.

Over the past decades, inefficient agricultural and rural waste management practices have contributed significantly to the degradation of surface and groundwater quality. The effects of these practices extend beyond Poland’s borders, affecting much of northern Europe through contamination of the Baltic Sea.

In fact, agriculture may contribute as much as 50 percent of the nutrient contaminants in the Baltic Sea. The HELCOM Baltic Sea clean-up is an example of how Poland has taken the leadership for reducing sources of contamination from agriculture.

An important issue for Poland’s leaders is how to shape policies and institutions for agriculture that will contribute to improved farm income while reducing environmental contamination. This working conference brought together national and voivodeship officials from Poland, international policy researchers, and leaders in environmental and agricultural policy from neighboring and other nations.

There were discussions on a broad range of issues on the development of agriculture and rural communities and their influence on environmental protection. A harvest of ideas was brought forth at the conference. These ideas represented possibilities for new approaches, techniques, policies, and processes that can contribute to accelerated rural development, improved environmental protection, and more rapid growth of agriculture in Poland.

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**CONFERENCE AT A GLANCE**

**Tuesday, October 8**
10:00 am - 1:00 pm, Opening Session, “Opportunities for Poland in Agriculture, Rural Development, and Environment.” Presenters included Roman Jagielinski, deputy prime minister and minister of Agriculture and Food Economy; Stanislaw Zelichowski, minister of Environmental Protection, Natural Resources and Forestry; and Nicholas Rey, U.S. ambassador to Poland

2:30 - 3:30 pm, Keynote with Paul W. Johnson, chief, Natural Resources Conservation Service, U.S. Department of Agriculture and Robert Wayland, assistant administrator, Water, Wetlands and Oceans, U.S. Environmental Protection Agency

3:30 - 4:45 pm, General Session, “Water Quality, Agriculture, and Rural Infrastructure in Poland”

5:00 - 6:00 pm, General Session, “Sustainable Development of Agriculture and Environmental Protection in the West”

**Wednesday, October 9**
9:00 am - 10:30 am, General Session, “Regional Initiative for Agricultural and Environmental Protection”

10:45 am - 1:00 pm, Concurrent Working Sessions
1. “Alternatives for Environmental Policy in Agricultural and Rural Areas”
2. “Financing Environmental and Other Services for Rural Communities: The Experience in Poland and Other Nations”
3. “Developing and Stimulating the Adoption of Environmentally Friendly Agricultural Production Technologies”

2:30 - 5:00 pm, Concurrent Working Sessions (repeat earlier sessions)

**Thursday, October 10**
9:00 - 11:00 am, General Session, “Implementing New Initiatives for Agriculture, Rural Development, and Environmental Protection”
11:30 am - 1:00 pm, Wrap-up Session.
Recent CARD Publications

The following publications are available through CARD. Contact Betty Hempe for price information or a current catalog: CARD Publications, Iowa State University, 578 Heady Hall, Ames, IA 50011-1070; phone (515) 294-7519; fax (515) 294-6336; e-mail card@card.iastate.edu.

Briefing Papers

GATT Papers

MATRIC Working Papers

Working Papers

Baltic Basin Reports

Staff Report
Note: Because the following publications were not originally published by CARD, they are not available through the publications secretary unless designated as a CARD Journal Reprint (RP).

Books


Journal Articles


Book Chapters


Efforts in China (continued)

The government plans to stabilize the grain-growing area, increase the cultivated land area by increasing irrigation and crop intensity, and increase crop yields. At the same time, the government is concerned about chemical pollution and the erosion of agricultural land. Estimates of grain requirements and targets for the animal agriculture industry are complicated by the difficulties of measuring Chinese feed grain use with the changing structure of production systems.

Tentative proposals for cooperative research projects have been developed. Collaboration efforts will concentrate on production and an agricultural outlook for China similar to what FAPRI generates each spring for the U.S. and global markets and on the changing nature of the animal agriculture industry.

Elements of the collaborative research program include estimation of the supply response for crops and animal agriculture, demand systems estimation for crops and animal products, enhancement of an existing policy simulation system, and the production of a baseline for Chinese agriculture. The joint activity on the changing structure of the animal agriculture industry will concentrate on swine.

Stanley Johnson, director of CARD, and Dermot Hayes, head of CARD’s Trade and Agricultural Policy division, visited China in July to formalize the joint research agreement with the CAAS.