A Review of 25 Years of Educational Exchanges and Cooperation between Huazhong Agricultural University and Canadian Institutions

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Outline

Part 1-Achievements from the educational exchange program supported by CIDA (1986-1999)

Part 2-Expanding exchanges and cooperation in new era (2000-present)
Huazhong Agricultural University (HZAU)

- Strong background in agriculture and bioscience
- 12 colleges, 1,400 faculty members, 17,000 undergraduate students, 6,000 graduate students.
Part 1

Achievements from the educational exchange program supported by CIDA
CIDA project initiative
Canadian delegation visited HAU in June 1986

A delegation of five members led by Prof. M.V. Genser, the vice president of the University of Manitoba, visited HZAU to discuss the application for CIDA-supported educational exchange program.

President Sun Jizhong met with Prof. M.V. Genser
Canadian delegate visited HZAU

visit to departments of agronomy, agricultural economics and soil chemistry as well as the related laboratories
Canadian delegate visited HZAU
Meeting with professors at HZAU

Prof. M.V. Genser and President Sun Jizhong

Meeting with Prof. Liu HouLi

Meeting with Prof. Chen Huakui at Dept. of soil chemistry

Prof. Willan and Dr. Sun
Outcomes of the visit

• A bilateral agreement was signed to establish the intercollegiate exchanges and cooperation
• Apply jointly for educational exchange program to the Canada International Development Agency (CIDA)
Educational exchange program between Huazhong Agricultural University and University of Manitoba was approved in September 1988

- CIDA provided 746,000 Canadian dollars
- Both Universities input matching funds
- Personnel exchange
  - 4 Ph. D candidates for joint training
  - 12 scholars for advanced study and research at postdoctoral level
  - 8 senior short-term visiting professors
  - 12 senior visiting professors from U of M visit Huazhong Agricultural University
HZAU delegation visited U of Manitoba in December 1988

Prof. Sun Jizhong, the then president of Huazhong Agricultural University,
Lin Shimin, the director of the department of foreign affairs,
Prof. Zhang Qifa, the dean of the Life Science College,
Chen Fengyun, the project official from the Ministry of Agriculture.

At University of Manitoba
HZAU delegation at University of Manitoba

Laboratory

Greenhouse

Laboratory

Campus
Further discussions on the project execution
Educational exchange program between Huazhong Agricultural University and University of Manitoba was approved in September 1988

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Implementation and achievements of the CIDA project
- 2-week scientific exchange visit between two universities
  - 4 renowned experts visited U of M and gave lectures
  - 18 professors from U of M visited HZAU, giving lectures, holding training courses etc
- 2 Ph.D. student training (3-4 years)
- 21 young scholars for one-year visiting research at U of M
- Funding for equipment's and chemicals
- Promoting scientific research in HZAU
21 young teachers as visiting scholars to Canada for one-year cooperative research

- Molecular Biology
- Plant Physiology
- Animal Nutrition
- Soil Biochemistry
- Economics
- Agronomy
- Plant Protection
- Food Science and Technology
- Animal husbandry and veterinary
Majority of the visitors returned to their positions and they have played important roles in teaching and research as well as management, and achieved a series of high-level research results.

Some examples:
• Zhang Duanpin: former president
• Zhang Xianlong: vice president
• Huang Qiaoyun: Changjiang Scholar
• Zheng Yonglian: former director of graduate school
• Chen Baoyuan, Wu Chunren: senior scientists at international companies
• Most of the visiting scholars became professional leaders in respective fields
Example 1: Zheng Yongliian, former Director of graduate study of HZAU (Maize Breeding)

In Walter Dick's Farm

With Dr. G. Murrary Ballance,

Visit Walter Dick's Chicken coop
Zheng Yonglian

- **Joint publications**


Example 2: Huang Qiaoyun
(Changjiang scholar, Soil biochemistry)

In the library, U of Manitoba

With Faculties and students of Depart. of Soil chemistry,

In the Lab of Department of Soil chemistry,
主要从事土壤生物/非生物界面过程及其环境效应、重金属污染土壤化学与生物修复等方面的研究。实验室现有教授2人（长江学者、杰青1人），副教授3人，讲师1人。在读研究生32人。近5年来，实验室主持国家及省部委课题20余项，获省部级科技奖励3项，发表SCI论文50余篇。
Funding for equipments and materials
• Promoting scientific researches in HZAU
  - Canola research as an example
Rapeseed breeding initiated by Professor Liu Houli; breeding in B.napus

Combination of double low breeding and heterosis utilization

Professor Fu Tingdong discover the pol CMS, Professor Liu Houli started yellow-seeded breeding in B.napus

Rapeseed breeding initiated by Professor Liu Houli; breeding in B.napus

Development of molecular markers and other biotechniques; extension of double low hybrids

Genomics, stress resistance, genetic diversity; breeding cultivars for changing cultivation practice

2000s

1990s

1980s

1970s

1950s-1960s
The cooperation of rapeseed/canola research between China and Canada started from the mutual visits of Prof. Liu Houli at HZAU and Prof. Stefansson at U of M.
Rapeseed researches in HAU

In 1991, Prof. Fu Tingdong went to Canada to attend the 8th International Rapeseed Congress and was presented “GCIRC Superior Scientist Award” for his outstanding contributions to rapeseed/Canola hybrid research.
Professor Fu was issued an award in Agriculture by Academy of Developing Countries in 2003

Waheeb Heneen (瑞典):

“……这是一个将遗传学上的科学发现成功应用于植物育种和栽培种生产的突出例子……他对科学研究、育种应用以及发展中国家、发达国家人民幸福做出了贡献。”
Professor Fu was awarded “life-time achievement” honour by Indian Association of Rapeseed Research and Development

“在发现Pol CMS、育成甘蓝型油菜自交不亲和系及油菜杂交种选育方面作出了卓越贡献。”
Development of rapeseed cultivars with Pol CMS

- 40 hybrids developed at HZAU using the system or its derivatives
- Huaza 4: a double low hybrid with the largest growing area in China across 1999-2001
- Huaza 9: a high yield cultivars in Hubei province
- Huaza62: registered in Hubei, National trial in middle and lower Yangtze River Valley, and spring rapeseed zone in 2009, 2011 and 2012, respectively
Cultivars bred at HZAU have been grown in major rapeseed regions in China

Huaza series spring hybrids

Huaza series winter hybrids & OP cultivars
China-Canada symposium on Rapeseed Science (April 20-21, 1999)
China-Canada symposium on Rapeseed Science (April 20-21, 1999)
Part 2

Expanding exchanges and cooperation in new era (2000-present)

- High level exchange activities between Sino-Canada agricultural universities
- Program exchanges and cooperation
- Cultivation of talents
Attended Sino-Canada Agricultural University Presidents Forum

1. October 2005, Xie Conghua (vice president),

2. September 2007, a delegation consisting of Zhang Duanpin (president of our university), Wang Guoping (the dean of Plant Science College), Chen Xingrong (the director of Science and Technology Department) and Yuan Youliang (the project manager from the International Cooperation Department)

**Activities:** Delivered keynote speeches on the protection of agriculture ecological environment, biodiversity and the education of postgraduates and undergraduates in agricultural universities.
Host the 4th Sino-Canada Agricultural University Presidents Forum

Participating institutes:
University of Manitoba,
McGill University,
University of Saskatchewan,
University of Guelph,
University of Toronto,
University of Prince Edward Island, and
Nova Scotia Agricultural College
Canadian Faculties of Agriculture and Veterinary Medicine (CFAVM)
Agriculture and Agri-Food Canada (AAFC)

Activities: in-depth discussions about new ideas in education of agricultural universities and colleges as well as how to further promote international exchanges and cooperation.
Active international exchanges
The 12th International Rapeseed Congress
March 27-April 1, 2007
The 12th International Rapeseed Congress

傅廷栋发表主席欢迎词

农业部颁发“国际油菜杰出科学家”奖
The 12th International Rapeseed Congress
China-Canada Workshop on Brassica Genomics and Genetic Improvement-2007
China-Canada Workshop on Brassica Genomics and Genetic Improvement-2007
China-Canada Workshop on Brassica Genomics and Genetic Improvement
The 19th Crucifer Genetics Workshop and Brassica 2014 (March 30-April 2, 2004)
The 19th Crucifer Genetics Workshop and Brassica 2014
Sino-Canada potato Forum
Cooperative researches
Program exchanges and cooperation

Faculties visited Canada Since 2006

• **Zhou Yongming**, University of Manitoba, University of Saskatchewan (2005-2007)
• **Liu Kede**, Southern Crop Protection and Food Research Centre (AAFC) (2005)
• **Tu Jinxing**, University of Saskatchewan (2005-2008)
• **Shen Jinxiong**, Plant Biotechnology Institute (2010)
• **Sun Zhida**, University of Saskatchewan (2011)
• **Xu Xiaoyun**, University of Manitoba (2008, 2012)
Example 1: Song Botao, Liu Xun and Nie Bihua in Canada
Example 2: cooperation with U of Saskatchewan led by Zhou Yongming

• Attend the international conference on genetic modification of \textit{Brassica napus}.

• Visited universities and research institutes.

• Discussed program cooperation and personnel exchanges with the University of Saskatchewan and the Plant Biotechnology Institute.

\textbf{Pan Gang}: The expression of plant cell cycle genes in B.napus

\textbf{Cheng Yan}: The expression of plant cell cycle genes in Arabidopsis
Cheng Yan at U of S (2008-2010)

(2013) Down-regulation of multiple CDK inhibitor ICK/KRP genes up-regulates E2F pathway and increases cell proliferation, organ and seed sizes in Arabidopsis. *Plant J* 75, 642–655
Example 3:

- 2009年4月至10月，沈金雄博士在PBI（现NRC-Saskatoon）Jiato Zou实验室从事合作研究
Dr. Jerome R. Konecsni (General Director of PBI, Dr. Suzanne R. Abrams (vice director for research) and Dr. Jitao Zou visited HZAU in December of 2010.
Example 4: Dr. Xu Xiaoyun (徐晓云) continues the cooperation with University of Manitoba in food science
Joint publications through visiting research

Xiaoyun Xu, Wende Li.; Zhanhui Lu.; Trust Beta.; Arnie W. Hydamaka,
Phenolic content, composition, antioxidant activity and their changes

张建辉, 徐晓云*, 王克勤, 胡羽翔, 钟思琼, 潘思轶, 油炸马铃薯条

胡羽翔, 钟思琼, 邵晋辉, 张建辉, 徐晓云*正交试验优化高抗性淀粉速
冻马铃薯薯条, 食品科学, 2013, Vol.34, 86-90
Example 5: Joint publications from Professor Wang Guoping (王国平) and AAFC research station on plant pathology

- Genomic segments RNA1 and RNA2 of Prunus necrotic ringspot virus codetermine viral pathogenicity to adapt to alternating natural Prunus hosts. Molecular Plant-Microbe Interactions 2013, 26:515-527
- The use of a combination of computer-assisted structure prediction and SHAPE probing to elucidate the secondary structures of five viroids, MOLECULAR PLANT PATHOLOGY, 16 16:56:04 2011
- Molecular characterization of two isolates of Prunus necrotic ringspot virus from Canada. Archives of Virology, 2012, 157, 999-1001
- Pome fruit viruses at the Canadian Clonal Genebank and molecular characterization of Apple chlorotic leaf spot virus isolates, SCIENTIA HORTICULTURAE, 2011, 130 (3): 665-671
Joint training of Junior researchers and Ph.D. students

• Nine young researches went to 7 canadian universities or institutes for training and joint researches
• More than 10 jointly supervised Ph.D. students since 2007
• “2+2” joint undergraduate students program
• “3+1+1” bachelors-masters program
Dr. Hydamaka from U of M gave lecture of “Functional food” at HZAU in May of 2011
Yang Long at University of Saskatchewan

Dr. Wei Yangdou’s Lab, Dept. of biology, University of Saskatchewan (2013)
From left to right: Yang Long, Professor Wei Yangdou, Professor Fu Yanping, Yang Dan, Tu Jiangying, Zhou Tengsheng, and Professor Zhou Zhuqing
2010年6月-2011年8月：徐文兴在加拿大舍布鲁克（Sherbrooke）大学生物化学系Jean-Pierre Perreault教授实验室进行为期一年以上的合作研究
• Jointly supervised Ph.D. students

- 王利平：2007-2008，加拿大农业部温室与作物研究中心 Michelutti Roberto 实验室

- 崔红光：2010-2013，加拿大农业部南方作物保护和食品研究中心 Aiming Wang 实验室

- 马小方：2012-2014，University of Sherbrooke，生物系 Peter Moffett 教授实验室
President Deng Xiuxin visited U of M in 2012 and met with students under “2+2” program
Summary

• The implementation of CIDA program has promoted the discipline construction, scientific research at HZAU

• Majority of visiting scholars the program have become academic leaders and backbones for teaching and scientific research at HZAU

• Long-term, multi-level and comprehensive cooperation have been maintained and remarkable achievements have been obtained between HZAU and Canadian institutions
Thank you for your attention!