

*Creating new opportunities for the swine industry amid the global livestock revolution*

## Improving total farm efficiency in swine production

**THE GLOBALIZATION** of the swine industry has caused major changes to national and international swine production over the past decade, and these changes are likely to continue. Trade liberalization has dramatically brought about structural changes in the industry, such that less competitive countries are under increasing pressure from imports by more efficient countries with lower costs of production. The real possibility is that, highly efficient countries may soon dominate the world swine market, and that small inefficient swine operations will disappear at an increasing rate.

Given this scenario, what will cushion our small swine producers in less competitive countries within the region from the impact of this structural changes? While swine production in many developed countries has increasingly become dominated by corporate operations, what then is the future for small swine farming operations, which are still prevalent in many rural economies in the Asian region?

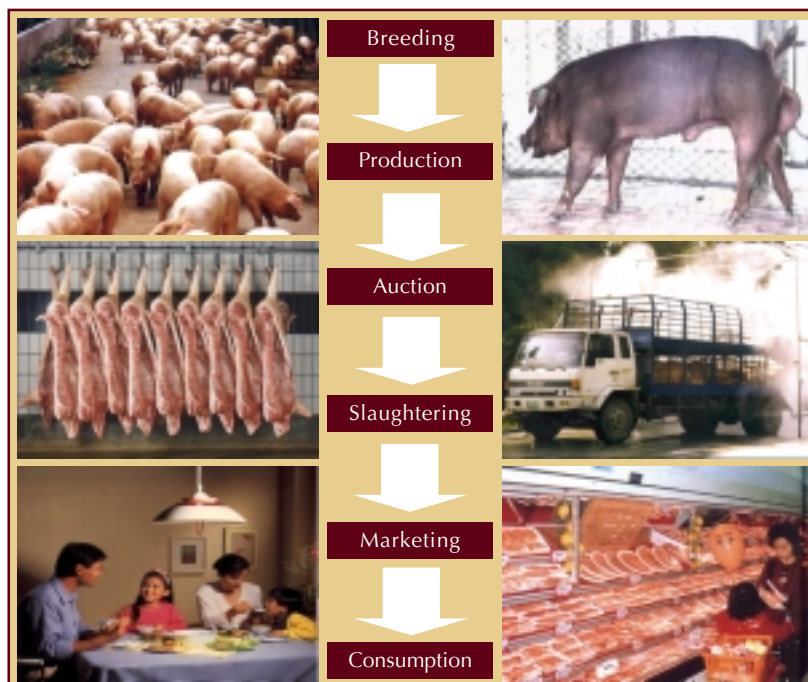
Meanwhile, more pork is now consumed than any other meat in the world. World population expansion undoubtedly contributes to increasing pork consumption, but average per capita intake also increased in recent years, especially in many parts of the world where it is the preferred animal protein source. It is now projected that as pork production becomes more efficient with a continuing decrease in the cost of production, and through the promotion of high quality and specialized products that meet the needs of specific markets, pork consumption on a worldwide basis would continue to increase.

All these point to the need to achieve improved efficiency in swine production. Hence, this international workshop was organized to provide a venue for the sharing and exchange of technological information, knowledge and experiences among countries in Asia, toward the overall farm efficiency in swine production amid these global trends and developments. Primarily, the workshop aimed to collect and disseminate information on innovative technologies, approaches or strategies to: improve swine reproductive efficiency; improve nutrient utilization; minimize the impact of the production system on the environment; improve the well-being and reduce animal stress; reduce the prevalence of pre- and post-food safety pathogens in meat; improve disease prevention and control; and meet consumer satisfaction and preferences for value-added pork products.

### **Need for scientific and technological advances**

Every nation must be ready with dramatic scientific and technological advances to cope with the structural changes in the swine industry, as an array of technological developments will accompany the projected increase in pork consumption and the need to maximize the capacity of existing production and distribution systems. With the increase in pork demand comes also a major global emphasis on the production of leaner, more efficient pigs that meet the market demand for less fat and more healthy meat. Intense genetic selection for fast growing, lean animals will therefore be vital in increasing growth rate and feed efficiency.

But even with genetic improvement, there are many other factors to consider like sustainability of swine production through optimal nutrition and feed efficiency, animal health and welfare, environmental management, and other related concerns such as public health and food safety issues. Market considerations such as product demand relative to quantity produced, quality demanded in specific markets, tariff arrangements, environmental restrictions, etc., must also be given due attention.



**Flow of swine industry and pork market in Taiwan ROC.**

Source: H.C. Wang, National Animal Industry Foundation, Taiwan ROC

for breeding pig with high genetic ability and uniformity. Traits such as daily gain, backfat thickness and loin eye area, have been the main target traits in the past. However, meat quality has now become a priority trait in strain development. Given the rapid progress in molecular genetics, its application to animal breeding is expected to revolutionize the industry in the near future.

Substantial increases in production efficiency have also been the focus of technological initiatives. Formulation of high-quality, efficient and hygienic feed ingredients to achieve improved animal health and welfare, as well as, pork quality and safety has been given priority. Waste management practices have also become a big concern,

focusing on the social responsibility of pig farms.

Among the major topics and concerns addressed by the speakers and participants during the workshop in order to address the above technological needs and concerns are as follows:

- Genetic approaches to improving efficiency and quality of swine production;
- Sustainability of livestock production through optimal nutrition;
- Animal health and welfare in sustainable systems;
- Environmental management of livestock systems;
- Public health issues specifically food safety concerns; and
- Policy-related issues.

In Taiwan, advances in molecular genomic analysis has revolutionized how geneticists and breeders evaluate the production differences that exist within the domesticated animals. The swine industry is actively using genome information to improve swine production by marker-assisted selection. Over the past decade, tremendous progress has been made in mapping and characterizing the swine genome. The tools and information have been developed to permit application of genomics in improving the health and performance of pigs.

In Japan, swine breeding can be derived by the open nucleus breeding system and closed nucleus breeding system. The latter one is suitable

### Challenges and opportunities for the swine industry

There are enormous challenges that the swine sector in Asian countries must face. The workshop proved to be very timely and relevant in the light of global trends that threaten the hope, especially of the region's small-scale producers whose income and economic alternatives depend heavily on the swine industry.

The primary accomplishment of this workshop was getting the commitment of all participating countries to a common cause, and that is to continuously share and exchange technology, knowledge, and information to improve the region's swine industry. The participants believed that there is significant opportunity in the region to improve the competitiveness of pork relative to other forms of meat protein, and thereby make positive contributions in attaining food security and sustainable development within the region.

Among the many challenges and concerns of the swine industry in Asia as identified by the participants, include:

- Sharing and exchange of technology in view of the dominance of small and medium holders among participating countries. Advanced countries can share the benefits of their

technological advancements with other, less developed countries in the region

- Mechanisms for the transfer of technologies must be a priority, especially in terms of:
  - Provision of extension services such as delivery of information on swine technologies through training courses, information materials, demonstrations;
  - Marketing through cooperatives; and
  - Patents and IPR.
- Identifying research directions and priorities through consultations with the stakeholders (farmers, industries, scientists, researchers).
- Strategies for the sharing of new technologies on improving total farm efficiency in swine production developed in each country.

### Conclusion

In conclusion, the participants agreed that a mechanism toward an international collaboration on improving total farm efficiency in swine production in the Asian and Pacific region must be set up. There is a critical need for countries within the region to forge international collaboration and harmonization, especially among research, development and extension systems, to complement each other's technological advancements for improving total farm efficiency in swine production.

Exchange and sharing of information among scientists, distributors, traders, retailers, consumers and farmers must also be sustained and enhanced toward the attainment of economic, social, and environmental sustainability of the swine sector in particular, and in providing safe food supply and gaining consumer confidence in the region's agricultural produce, in general.

### International Workshop on Improving Total Farm Efficiency in Swine Production

Held at the Livestock Research Institute (LRI), Tainan, Taiwan ROC on November 07-11  
 Countries represented: 8 (Indonesia, Japan, Korea, Malaysia, Philippines, Taiwan ROC, Thailand, and Vietnam)

Papers presented: 16

Participants: 60

Cosponsors: Livestock Research Institute (LRI), Council of Agriculture (COA), Taiwan ROC

#### List of papers

##### Resource papers

1. Genomic pig breeding for growth and meat quality

- Ming-Che Wu, LRI, Taiwan ROC
- 2. The development of pig breeding system in Japan
  - Ishii Kazuo, National Institute of Livestock and Grassland Science, Japan
- 3. Nutrient requirement of pigs for eco-friendly feeding in Taiwan
  - Yueh-Tsu King, Animal Technology Institute of Taiwan, Taiwan ROC
- 4. Livestock production and marketing in Korea
  - Seung-Chul Choi, Konkuk University, Korea
- 5. Towards healthy swine production in Taiwan: current situation and prospectives
  - Tien-Lai Hsu, Animal Health Research Institute, COA, Taiwan ROC
- 6. Issues and strategies in postweaning management to reduce nursery mortality
  - Oscar M. Gatmaitan, Private Practitioner and Consultant, Philippines
- 7. The production system of weaning pig: emphasis on climatic requirement
  - Chung-Wen Liao, LRI, Taiwan ROC
- 8. Litter-bed pig house: a system both caring for the animal and the environment
  - Shao-Yi Sheen, LRI, Taiwan ROC

##### Country reports

9. Use of industrial by-products in pig farming as a business survival strategy in Indonesia
  - Pius P. Ketaren, Balitnak, Indonesia
10. Use of co-products for animal feeding in Japan
  - Tomoyuki Kawashima, National Institute of Livestock and Grassland Science, Japan
11. Pig manure management and recycling in Korea
  - Jung-Hoon Kwag, National Livestock Research Institute, RDA, Korea
12. Current status and the future of pig industry in Malaysia
  - Nookaya Krishnan, Department of Veterinary Services, Malaysia
13. Improving swine farm efficiency in the Philippines
  - Synan S. Baguio, PCARRD, Philippines
14. Pig production and waste management in Thailand
  - Somchai Chantsavango, Kasetsart University, Thailand
15. General pig production in Vietnam: overview, breeding, and policies
  - Phung Thi Van, National Institute of Animal Husbandry, Vietnam
16. Current status of pig to plate in Taiwan
  - Hsu-Chang Wang, National Animal Industry Foundation, Taiwan ROC

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