#### Workshop on Knowledge-Intensive Agriculture

Session 2: Assessing the Investments and Applications of High-Level Technology for Food Security in Asia and the Pacific

**Keynote Presentation** 

# **Education for High Tech Agriculture**

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Source: FAO (2017) "The Future of Food and Agriculture – Trends and Challenges"

# **Emerging Challenges**



### Future of Agriculture in Asia and Pacific

### **Traditional Approach**

Increasing Productivity through

Labor Intensive Resource Intensive Input-Based Agriculture

#### **Knowledge Intensive Agriculture**

### Accelerating Innovation through

Smart Farming Green Technology Commercial Farming Entrepreneurship Support (e.g., potential in precision agriculture)

## **Opportunities and Challenges in Agri Education**

### Challenges

### **Opportunities**

- Agriculture market is fragmented and conservative.
- Majority of farmers are smallholders in Asia and Pacific
- Traditional agricultural education does not attract youth.
- Traditional agricultural extension services do not fit for latest tech.

- Emerging new high technologies for agriculture
- More youth seeking for the higher education in DMCs



Need for Revamping the Agriculture Education!

### Proposal: Supporting High Tech Agriculture Universities

Objective	Amount
<ul> <li>Prepare future leaders in high tech agriculture</li> <li>Promote agriculture innovation</li> <li>Re-establish production system for sustainable development</li> </ul>	<ul> <li>\$400 million in total</li> <li>\$100 million in South Asia</li> <li>\$100 million in Southeast Asia</li> <li>\$100 million in East Asia</li> <li>\$100 million in Central and West Asia</li> </ul>
Focus	Scope
<ul> <li>Harnessing the best of scientific knowledge and technical breakthrough</li> <li>Diffusing technologies and practices</li> <li>Strongthoning academic industry partnership</li> </ul>	<ul> <li>Curriculum development</li> <li>Laboratory development</li> <li>Faculty development</li> <li>Strengthening Academic-industry linkages</li> </ul>

# High Technologies for Precision Agriculture

High Technologies			Knowledge and Skills		
Remote Sensing	GIS/GPS Drone	Fertigation	Biotech	Management and Finance	Logistics
LED	Big Data Data Analytics	Green House	Robotics	Experiential Learning	Storage

Spraying operation on wheat field in China using Drone

Source: http://news.agropages.com/News/NewsDetail---21970.htm



Source: https://www.facebook.com/MANNACEA/

Graduates of Korea Advanced Institute of Science and Technology (KAIST) started MANNA CEA with aquaponics. **Aquaponics** - Combination of aquaculture and hydroponics that grows fish and plants in one integrated system.

Picture Source: https://aquaponics.com/methods-of-aquaponics/



### Vertical Farming (example of Toshiba)



Source: https://qz.com/295936/toshibas-high-tech-grow-rooms-are-churning-out-lettuce-that-never-needs-washing/

### Questions

How can we facilitate deep collaboration across disciplines, universities and agri-industries?

Which high technologies should we target in developing countries?

Do we have teachers available for high tech agriculture in developing countries? How should ADB approach development of education for high tech agriculture? (nature and duration)