

Food security amid the COVID-19 pandemic: research and development priorities for Higher Education Institutions in the Philippines and Southeast Asia

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Food security has long been a major development priority of all countries and will remain to be in the future. This has become all the more important in this time of COVID19 pandemic. It is achieved when there is the availability of and adequate access to sufficient, safe, and nutritious food at all times for individuals to maintain a healthy and active life. The United Nations has identified four pillars of food security: food availability, food access, food utilization and food stability. Through the years, all our efforts are expected to contribute to the pillars of food security, and a country's ability to consolidate its resources towards defining and achieving their aspired food security targets across relevant scales has become a major hallmark of development success.

Just as conceptual definitions of what food security is may vary from culture to culture, so do the mechanisms and the strategies to achieve it. What is easy to understand however is the opposite of being food secure---people and communities being hungry and malnourished, or a situation of severe climatic events resulting in significant production and income losses, or a situation of market and government failures resulting in production constraints as well as volatile political institutions affecting access. Surely, food security is a complex development goal requiring equally far more complex solutions to define and achieve.

Where we are in our food security targets has been brought to the fore by our recent experience with CoViD-19 pandemic. The pandemic has created supply and demand shocks resulting in 3.11 percent or 17.03 million tons reduction in the aggregate volume of agriculture production in Southeast Asia due to decline in agricultural farm labor affecting 100.77 million individuals (Gregorio and Ancog, 2020). This crisis was estimated to translate to a 1.4 percent decrease in the GDP of the Southeast Asian region equivalent to USD 3.76 billion thereby limiting the region's capacity to achieve its Sustainable Development Goals (SDGs). Achieving food security has been a continuing challenge, and it remains an elusive goal in many areas in the Philippines and Southeast Asia. Clearly, the on-set of COVID-19 pandemic reminded us once again that food security is simply not just a ratio between supply and demand of food. Timing matters-- food must always be available to all. And, the universal standard of living is already clear: being hungry and malnourished is unacceptable, with or without pandemic.

Agriculture has long been our ally, but much more must be done for us to maximize what it can offer to achieve food security targets. On the production side, we need to produce more with less---more in terms of yield, income and social inclusivity; and less in terms of unnecessary inputs, energy consumption, and environmental impacts. On the supply side, we need massive behavioral adjustments in terms of responsible consumption both at the individual and collective levels. With CoViD-19, we are compelled to see connections between the supply chains and our consumption patterns, and the urgent need to redefine agricultural systems as food systems. A systemic view on the agricultural food systems is a prerequisite for the needed transformation.

The needed transformative change in the agricultural food systems would stem right at the hallowed halls of the universities and colleges. Through the years, the higher education institutions (HEIs) have been in a strategic position to pursue projects and initiatives related to food security. Even prior to COVID-19 pandemic, the research agenda of the HEIs must clearly be towards public good generation especially in food security. In fact, the agility of the HEIs in designing their curricular and extension programs to produce professionals who can actively engage in achieving food security goals has been very instrumental. This important role of the HEIs have been once again made more evident by COVID-19 crisis, as we need more individuals who imbibe the transformative mindset and are adept in understanding the growing complex social concerns and in affecting actions both in the present and even more in the future.

Considering the COVID-19 pandemic, the following overarching questions are for the HEIs as an organization and the researchers/faculty members as individual to reflect upon:

1. What are the major priority areas for research in agriculture and allied fields to accelerate transformation towards sustainable agricultural food systems?

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- How can the human capital of the HEIs, particularly through its research and academic initiatives, be strategically wielded so it can be fully maximized towards contributing to the solving of pressing societal concern, particularly COVID-19?
- As research funding and other resources will be limited, what innovative solutions could be put forward for HEIs to continue to enhance its capability in knowledge generation?

Priority areas for research in agriculture and allied fields to accelerate transformation towards sustainable agriculture food systems

For most of the countries in Southeast Asia, agriculture remains a major engine of economic development. Hence, agricultural universities and colleges are expected to pursue academic and research programs that must accelerate the science and art of agriculture towards economic development. The architecture of agricultural research themes and modalities have been in place, but its reorientation as seen from business perspective is crucial to afford systemic change of the agriculture sector.

Shown below (Figure 1) are the proposed key priority areas for research in agriculture and allied fields to accelerate transformation of the agriculture sector and strengthen its contribution to socio-economic development particularly towards resilience against pandemic.

the individual researcher has been trained to pursue specific research questions and conduct research work that yield on specific answers. While this is important, a re-orientation towards strengthening multi- and interdisciplinary studies must be given more emphasis. Equally critical is the ability of an individual researcher to place its specific research efforts in the context of the larger societal problems. Also, there is a need for more researchers who are not just good in doing basic science but also navigating the development dimension of his or her work. A country like the Philippines needs an adequate cadre of researchers who appreciate the need to shorten the gap between research productivity and its translation to economic development.

The following are the major priorities towards this front:

- Providing the enabling environment for faculty members and researchers to be encouraged in mutual-learning and co-learning through the establishment of multi-and interdisciplinary research laboratories, centers, and institutes.
- Incentivize scientific productivity that do not favor just publication articles generation but also other Ps namely, People, Partnerships, Patents, Product and Profit.
- Retooling faculty members and researchers to be more conversant and engaged in applications for intellectual property rights, patents, technology transfer system, technology-based incubation, and entrepreneurship.

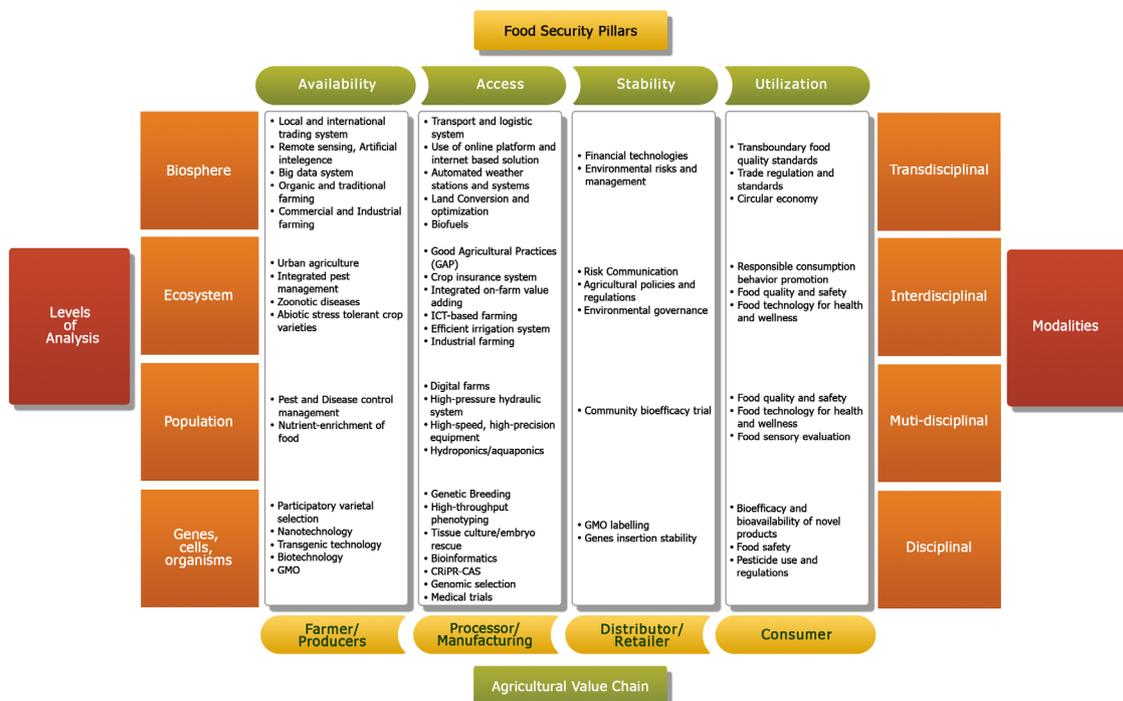


Figure 1. Examples of proposed key priority areas for research in agriculture and allied fields for HEIs in the Philippines and Southeast Asia.

Maximizing the human capital of the Higher Education Institutions (HEIs) in areas of research and extension initiatives

The HEIs enjoy high concentration of knowledge capital that must be handy and put to good use. For years,

- Provision of more faculty and researchers grants and extension awards that enable them to engage with the industry, private companies, community beneficiaries, and other stakeholders across the agricultural supply chain.

5. Clear rearticulating in terms of its direct and indirect value in response to a country's COVID-19 response efforts for on-going projects already under implementation even prior to COVID-19.
6. Creative crafting of research proposals related to COVID-19 by faculty members and researchers.

Innovations in the fiscal and research implementation

Any government's allocation of its financial resources on HEIs is a good investment but whether it has been fully maximized for public value creating is another matter. As CoViD-19 pushed governments to revisit its fiscal allocation, universities and colleges would benefit from exploring complementary alternative sources of income that are likewise instrumental to its academic and extension activities. The Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA) in its 11th Five Year Plan (2020-2025) has touted for more universities and colleges actively engaging in Academe-Industry-Government (AIG) interconnectivity models as a framework for research collaboration and financial resources co-sharing, while ensuring a shortened gap between research and utilization. This modality would also ensure the proper contextualization of research projects to the larger value chains.

The following are the suggested major initiatives that the universities and colleges could pursue under the AIG interconnectivity model:

1. Strengthened collaboration for research priority identification and implementation embarked through design thinking approach
2. Resource sharing both in terms of human and financial capital to facilitate strengthened linkage between basic and applied researches with the industry needs
3. Designing and implementing digital agriculture infrastructure and open-systems innovation systems across the agricultural supply chains.
4. Knowledge generation co-sharing through joint publications, patenting, and technology transfer systems, and business incubation.
5. Support for publications of research products including new crop varieties and livestock breeds.
6. Encouraging and supporting researchers to be innovative whenever possible in their research implementation and data generation, and must always be directed towards public value contribution
7. Continued encouragement to and support for faculty members and researchers in active journal publication. One support that can be maximized by young researchers in the Philippines is the scientific journal training provided by the National Academy of Science and Technology (NAST) Philippines. It must be emphasized that a research work is not

complete unless results are published (Publication), as well as Patents and income (Profits). At the individual level, researchers need to be reminded that there is no such thing as a good writer, but only a good rewriter. Scientists ability to tell the individual stories learned from their researches are invaluable for the general public to appreciate the value of science-based decision making.

8. For universities and research organizations managing scientific journals, investment towards real-time online publications or advanced online publication is a must to be relevant in this time where researchers need to publish their research results as early as possible and make it readily accessible to all.

Overall, higher education institutions in the Philippines and Southeast Asia are expected to up the ante in knowledge generation and scientific productivity. However, the need to ensure that research efforts would have significant societal impacts is a philosophy that must be widely upheld. With our experience with CoVID-19, a revisiting of the priority areas for research in agriculture and allied fields is necessary and must be done given the urgent need of transforming agricultural systems to sustainable food systems. Challenges in terms of research funding due to CoVID-19 is already imminent but innovations in fiscal and research implementation abound. At the current scenario, various modalities of Academe-Industry-Government interconnectivity models need to be explored so it can be customized to their specific needs. Higher education institutions are key players in the society's overall ability to achieve the aspired food security and economic development. But HEIs can do aspire to contribute beyond---toward an economic development that is sustainable, inclusive, environment-friendly, and most importantly resilient to current and future pandemics.

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