

## **Summary of Session 1 TECHNOLOGY DEVELOPMENT FOR INCREASED PRODUCTION: ACCOMPLISHMENTS, NEEDS, AND POTENTIAL**

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Now I will summarize the outcome of Session 1. I will use these three overheads to summarize the main points. Session 1 focused on production aspects and it had three speakers. I will also include some points from the keynote speeches. Therefore, I will present a summary of the presentations of the three speakers from Session 1 and together also the three keynote speakers of yesterday.

The first point is the Green Revolution as a historical achievement of agricultural science and policy. As mentioned by Dr. Fagi, this was a major achievement. It had a clear focus on production and consequently the intensification of agriculture. The third point namely that some regions and sectors did not benefit from the Green Revolution, was made clear by the presentation of Dr. Cantrell who emphasized the importance of marginal areas, and the presentations of Dr. Takeda and Dr. Sanchez yesterday. Even in the productive areas where we benefit from the Green Revolution, we are observing a yield plateau and sustainability problems. The areas benefiting from this require further intensification as a backbone of global food security. Dr. Cantrell made a point about the great opportunity of biotechnology application.

The second overhead is about the challenges of the Green Revolution, a point emphasized by the keynote speeches and Session 1. If we classify these areas into two, though we run the risk of over-classification, we classify them into productive and marginal areas. Productive areas have the challenge of intensification in a sustainable way. Marginal areas have the challenge of accessibility and a supportive policy is needed. The third point, which applies to both productive and marginal areas, is globalization, and a rapidly changing world. These are major forces affecting the fate of productive and marginal areas. Another point is income generation. There is also the point of social acceptance, such as intellectual property rights and food safety. To solve these problems we have to look at trade-offs and find win-win solutions.

We had a successful Green Revolution and we are facing further challenges. Many people made the point about the need for a new paradigm. This new paradigm has multiple aspects: it is not only a technical aspect. It involves socio-economic policy and partnership. In technological areas, the new paradigm should address ecological principles, biodiversity-rich agriculture and the active use of biotechnology. Dr. Cantrell made these points yesterday. The third point under technical area is information communication technology and we are moving to a knowledge-intensive society. Knowledge and information are tools for socio-economic development. The question is, are we fairly benefiting from those innovations? What we call the digital divide, is that occurring? Sharing information is an important step for collaboration. Information is handled in two ways: as a tool for socio-economic development, and for collaboration. Information sharing among collaborators is important to move in the same direction.

Second in the socio-economic and policy context is concern for the equality of globalization benefits. Probably, no one is against the passive benefits of globalization, however we often ask if we are all equally benefiting from globalization. For example, socially disadvantaged people tend to receive little benefit from

globalization.

The next aspect is the demand or consumer-driven aspect. At the time of the Green Revolution, we placed emphasis on the production itself. Often, we agricultural scientists look at the farmers as the final beneficiaries. The question is, is that true or not? Some people make the point that the consumers are the target of agricultural products and hence research. If that is the case, we should have a clear consumer, demand-driven approach.

The third point is the partnership, placing people at the center and this point was made clear in the keynote speeches and by some of the speakers of Session 1. Also, we made it clear that we need an inter-sectorial approach to address sustainable agriculture that is not the subject of a traditional area of agriculture or forestry or fisheries individually. We have to work together. One production system may involve rice, maize, fish and cow, but we need to have an inter-sectorial approach.

The final point is the importance of multiple stakeholders. We need to have innovative collaboration. We are experimenting with different types of collaboration. We are getting some experience for the success of our new paradigm and a shift in the way we think and behave depends on the development of collaboration.