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Cultivating Solutions for a Sustainable Future

NORMAN BORLAUG COLLOQUY ON GLOBAL FOOD SECURITY AND SUSTAINABLE DEVELOPMENT

COLLOQUY REPORT

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Introduction

The Norman Borlaug Colloquy on Global Food Security and Sustainable Development brought together an esteemed panel of policymakers, researchers, and agricultural experts to address the growing challenges and opportunities shaping global agriculture and food security. The discussions revolved around climate change, technological innovation, socioeconomic inclusiveness, and the pursuit of sustainability to combat pressing global food security issues.

The colloquy offered comprehensive insights into the interconnected issues of climate change, technological adoption, climate-resilient strategies, food wastage, and socioeconomic inclusion, with experts emphasizing the importance of multi-sectoral partnerships to tackle these challenges.

Panelists & Their Key Contributions

The colloquy featured a diverse group of distinguished panelists. Each brought unique perspectives on global food security, technological advancements, climate adaptation, and sustainable agricultural development:

Panellists:

- Dr. Rudy Rabbinge, Chairman, WAF Board and former Senate Member, Netherlands and Science Council Chairman, CGIAR
- Dr. William Dar, Vice Chair, WAF Board and Former Secretary of Agriculture, Philippines, Ex DG, ICRISAT, Manila
- Dr. Duc Phat Cao, Board Chair, IRRI and former Minister of Agriculture and RD, Vietnam
- H.E. Dr. Manoj Nardeosing, Board Member, WAF and Secretary General, African-Asian Rural Development Organization, New Delhi, India
- Dr. P Chandra Shekara, Global Council Member, WAF, and Director General, Centre for Integrated Rural Development for Asia and Pacific, Dhaka
- Ms. Ramona Angelescu Naqvi, Council Member, WAF and Executive Leader, International Development, Romania
- Mr. Paul Bloemendal, Council Member, WAF and CEO Bloemendal Consults BV, The Netherlands
- Mr. CS Liew, Council Member, WAF and MD, Pacific Agriscience Pte. Ltd., Singapore
- H.E. Mr. Haymandoyal Dillum, High Commissioner of the Republic of Mauritius in India
- Mr. Shekhar Bhadsavle, Pune Farmer, Owner Saguna Baug
- Mr. Eknath Dawale, Pr. Secretary, Rural Development, Government of Maharashtra

Key messages from the Panelists

1. Dr. William Dar

Dr. William Dar highlighted the monumental challenge of feeding a global population of over 8 billion amidst the pressures of climate change, water scarcity, and declining soil health. He stressed the importance of adopting innovative, science-driven solutions to enhance agricultural productivity while mitigating the effects of climate change. Efficient water management and the rejuvenation of ecosystems to restore natural water cycles were also key priorities in his vision. Addressing soil fertility, he called for large-scale efforts to enrich degraded soils, emphasizing the role of agri-biodiversity in fostering diverse and resilient food systems. Sharing his experiences with ICRISAT in Hyderabad, Dr. Dar noted how India's advancements in dryland agriculture could serve as a model for addressing emerging agricultural challenges globally. He emphasized the critical role of farmers, particularly women and youth, in driving sustainable agricultural practices, urging their active involvement to create lasting solutions.

2. Dr. Duc Phat Cao

Dr. Duc Phat Cao reflected on Vietnam's remarkable transformation from a food-deficient nation to one of the world's leading rice exporters. He underlined the pivotal role of food security in maintaining social and political stability. However, he acknowledged ongoing challenges, including climate change, disruptions in global food systems, and declining interest in agriculture among younger generations. Dr. Phat emphasized the need for innovative strategies to attract youth back to agriculture by leveraging technology, enhancing agribusiness infrastructure, and improving rural living conditions. He stressed the importance of political commitment, increased investment in agricultural innovation, and stronger international collaboration. Platforms like the World Agriculture Forum, he noted, could play a vital role in mobilizing global efforts to combat hunger and promote sustainable development.

3. Prof. Rudy Rabbinge

Prof. Rudy Rabbinge paid tribute to the groundbreaking vision of Dr. Norman Borlaug and Dr. M.S. Swaminathan, pioneers of the Green Revolution. He emphasized the importance of bridging traditional agricultural practices with modern innovations to address current and future challenges. International organizations, he noted, must advocate for resource optimization and equity in agriculture to ensure sustainability. Prof. Rabbinge stressed the value of fostering global partnerships to share knowledge and resources, ultimately creating more resilient agricultural systems capable of meeting the demands of a growing population.

4. Dr. Manoj Nardeosingh

Dr. Manoj Nardeosingh focused on the necessity of achieving Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty) and SDG 2 (Zero Hunger). He underscored the importance of inclusive approaches, such as cooperatives, farmer-producer organizations (FPOs), and initiatives involving women and youth, to strengthen agricultural communities. Dr. Manoj also emphasized the role of international collaboration in tackling food insecurity and achieving nutrition security, particularly in underdeveloped regions. By aligning global efforts, he argued, the agricultural sector could address the pressing issues of hunger and poverty more effectively.

5. Dr. P. Chandra Shekara

Dr. P. Chandra Shekara addressed the challenges of integrating real-time data into agricultural planning and bridging the gaps between various departments to resolve farmers' issues. He highlighted the growing need for digital literacy among farmers to improve data management and market connectivity. Market-led agriculture, supported by secondary agricultural activities, could significantly enhance farmer incomes and encourage youth to remain in rural areas. Dr. Chandra Shekara also emphasized the role of green technology and rural development in achieving agricultural sustainability, calling for a holistic approach to address the sector's diverse challenges.

6. Mr. Chandrashekhar Bhadsavle

Mr. Chandrashekhar Bhadsavle discussed the importance of innovations aimed at enhancing both farmer and soil well-being. He emphasized the need to ensure farmer happiness by providing access to relevant technologies, institutional support, and affordable credit. Highlighting the role of collective action, he explained how smallholder farmers could improve market access and profitability by working together. His approach centered on empowering farmers to take control of their economic futures while adopting sustainable practices.

7. Ms. Ramona Angelescu Naqvi

Ramona Angelescu Naqvi highlighted the critical links between food security and sustainable development, addressing issues like rural poverty, gender, climate change, and biodiversity. She outlined key challenges in transforming agriculture:

- **Global food system dichotomy:** Millions face hunger and malnutrition, while obesity is rising and may affect 70% of the population by 2050. Over half the global population lacks essential nutrients like iron and calcium.

- **Climate change impact:** Agriculture contributes one-third of global greenhouse gas emissions and suffers from climate-related events like droughts, floods, and storms.
- **Food waste:** One-third of all food produced—1.3 billion tons annually—is wasted.

Ramona called for a systemic shift to sustainable agriculture through organic farming, reducing food waste, and promoting local, seasonal diets. Education for farmers and consumers, redirecting subsidies to small-scale farms, and investing in climate-resilient crops and digital tools were identified as vital. She emphasized that investing in farmers is both essential and profitable, with sustainable food systems projected to add $10 trillion annually, addressing hunger, poverty, and climate change while boosting biodiversity and rural economies.

8. Mr. Eknath Dawale

Mr. Eknath Dawale shared insights from Maharashtra's climate-resilient agriculture project, initiated in 2018. He explained how effective drought-proofing strategies and the mechanization of small-scale farming have positively impacted the region. The adoption of climate-resilient crop varieties and the integration of innovative technologies have further enhanced productivity. Addressing challenges in nutrient management, Mr. Dawale advocated for regenerative agricultural practices that prioritize long-term sustainability. His focus was on creating a robust framework to withstand the impacts of climate change while supporting farmer livelihoods.

9. Mr. Paul Bloemendaal

Mr. Paul Bloemendaal emphasized the significant impact of reducing food waste, noting that even a 20% reduction could feed 10% more people. He outlined four key principles to enhance agricultural systems: inclusiveness, yield improvement, digitization, and free trade. Inclusiveness involves training farmers, ensuring fair compensation, and making agriculture appealing to youth. Yield improvement requires adopting best practices and technologies, while digitization empowers farmers with data for better decision-making and pricing. Free trade, he noted, must balance global trade dynamics with safeguarding local agricultural interests.

10. H.E. Mr. Haymandoyal Dillum

H.E. Mr. Haymandoyal Dillum highlighted the shared global responsibility of ensuring food security, involving governments, NGOs, corporations, and youth. He emphasized the importance of capacity building and technology transfer to attract younger generations to agriculture. Addressing food waste and ensuring equitable food distribution, particularly in Africa, were key priorities in his vision. He advocated for the "5 A's" of food security—accessibility, availability, adequacy, acceptability, and agency—as guiding principles to create resilient food systems.

11. C.S. Liew

C.S. Liew discussed Singapore's reliance on imports for 90% of its food and how innovations such as rooftop and indoor farming have transformed its agricultural landscape. He highlighted India's impressive journey from food shortages in the 1950s to becoming a $50 billion food export powerhouse. Liew advocated for low-tech, high-impact solutions like drip irrigation and mulching to boost yields and conserve water. Empowering farmers with sustainable practices and better incomes, he argued, was essential to ensuring food security for a projected population of 10 billion by 2050.

Agenda & Discussion Highlights

The colloquy's agenda addressed the following core areas of focus:

1. Global Perspectives on Food Security:

- **Defining Food Security:** Food security is the ability of people to access sufficient, safe, and nutritious food that meets their dietary needs for an active and healthy life. It goes beyond just producing enough food—it includes distribution, accessibility, and sustainability.
- **Challenges Impacting Food Security:** Climate change, dwindling water resources, soil degradation, and population growth have become critical threats to achieving food security worldwide. By 2040-2050, the global population is expected to increase significantly, requiring innovative agricultural solutions to meet demand. The changing climate has disrupted traditional farming methods, making it essential to adopt practices that are both productive and sustainable. Strategies like innovative water management, diversified farming, and regenerative agriculture were identified as critical for long-term climate resilience. Importance of restoring degraded soils and adopting sustainable farming methods was emphasized.
- **Importance of Water Management:** With 70% of underground water used in agriculture, efficient water use and management are critical. Countries must focus on reforestation, restoring ecosystems, and developing technology-driven irrigation systems to conserve water.
- **Global Collaboration:** Addressing food security requires a collaborative approach. The recently re-established World Agricultural Forum aims to unite governments, NGOs, and stakeholders to bring forward innovative solutions to global food challenges. These solutions include increasing agricultural biodiversity, reducing food waste, and fostering sustainable farming practices.

2. Sustainability in Agriculture:

- **The Need for an "Evergreen Revolution":** Unlike the Green Revolution, which focused primarily on increasing production, the Evergreen Revolution emphasizes sustainable agriculture that balances productivity, environmental conservation, and farmer welfare. African and Asian countries are key regions where these practices must be implemented to achieve Sustainable Development Goals (SDGs).
- **Climate-Resilient Agriculture:** Adopting practices like Saguna Regenerative Farming (SRF), which originated in India, has shown promise in enhancing sustainability. This method reduces production costs by up to 70%, increases productivity, and ensures crops can survive extreme conditions, such as prolonged droughts.
- **Integrating Technology:** Precision farming, soil health monitoring, and climate-smart agriculture are modern tools that help reduce dependency on natural resources. For instance, advanced irrigation techniques and drought-resistant crop varieties ensure stable yields even in unpredictable climates.
- **Food Wastage:** A key area for improvement is reducing global food waste. By adopting better storage, processing, and distribution practices, countries can significantly impact food availability and affordability. Globally, 30% of food is wasted, exacerbating global food insecurity. Solutions were identified in improving logistics, supply chains, and addressing inefficiencies to mitigate this wastage.

3. Empowering Farmers : The Key to Food Security :

- **Challenges Faced by Farmers:** Farmers are at the heart of global food security, yet they face numerous challenges such as fluctuating market prices, limited access to technology, and the impact of climate change.
- **Youth Participation in Agriculture:** The average age of farmers globally is 60, but efforts like Saguna Regenerative Farming have successfully reduced this average to 35 in certain regions. Attracting younger generations to farming involves improving income stability and restoring dignity to the profession. Inclusivity in Agriculture is also very important to ensuring food security, and empowering women, youth, and marginalized groups through collective action, cooperatives, and access to affordable agricultural technologies. Advocated gender equity and inclusive participation to ensure fairness and opportunities in farming communities. Addressing disengagement of youth from agriculture by integrating education and technology into farming practices. Emphasized technology as a bridge to creating better incomes and sustainable farming models.
- **Agro-Tourism and Farmer Dignity:** Agro-tourism initiatives, such as those in Saguna Baug, offer urban populations the chance to experience rural life while providing recognition and additional income for farmers. Activities like buffalo rides and farm visits have successfully bridged the gap between urban and rural communities, showcasing the importance of farmers' contributions.
- **Farmer Cooperatives and Organizations:** Collaborative models such as farmer-producer organizations (FPOs) and cooperatives enable smallholders to access advanced technologies, secure better market prices, and gain financial stability. These initiatives are essential for creating economies of scale and empowering rural communities.

4. Policy and Global Actions :

- **Governmental Support and Mechanization:** Governments play a crucial role in promoting agricultural mechanization and supporting innovation in farming. For example, the Government of Maharashtra in India has initiated climate-smart agriculture projects with World Bank support. Policies must prioritize mechanization, technology adoption, and the financial well-being of farmers.
- **International Cooperation:** Developing countries, particularly in Sub-Saharan Africa and Southeast Asia, require global support to address food security challenges. Diplomacy and cross-border collaborations can help implement sustainable farming practices, mitigate climate impacts, and address global market dependencies. Pannelists stressed the role of multi-sectoral alliances involving governments, NGOs, and private players to build resilience against climate change and foster sustainable agricultural production.
- **Focus on Nutrition:** Food security isn't just about quantity but also quality. Policies should aim to improve nutritional standards by managing micronutrients and enhancing the biodiversity of food systems. Additionally, addressing global fertilizer price fluctuations and dependency trends is critical for stabilizing agricultural production.

5. Innovations and the Way Forward :

- **Embracing Mega-Trends:** Agriculture must adapt to mega-trends such as climate resilience, precision farming, and technological integration to meet future demands. These innovations not only enhance productivity but also make farming more sustainable. Adoption of precision farming technologies, climate-resilient innovations, and green solutions and emphasis on affordable credit, technological access, and agro-tourism as tools to strengthen farmer livelihoods is the need of the hour.
- **Saguna Regenerative Farming (SRF):** SRF exemplifies a groundbreaking innovation that reduces production costs and improves yields. It eliminates ploughing, weeding, and other labor-intensive practices, making farming easier and more efficient for both smallholders and large-scale farmers.
- **Focus on Biodiversity:** Diversifying agricultural ecosystems ensures resilience against climate shocks and improves food security. This includes integrating different crop varieties, promoting sustainable fisheries, and supporting agroforestry systems.
- **Holistic Solutions:** Combining traditional knowledge with modern technology can provide a holistic approach to food security. For instance, "Jugaad," a term for improvisation and innovation, can inspire cost-effective, locally adapted solutions for farmers worldwide.

The Magnitude of the World Food Security Problem

The global food system presents a paradox. While millions of individuals are malnourished or undernourished, millions simultaneously suffer from obesity. Malnutrition accounts for nearly half of all deaths among children under five, with conflict-affected regions such as Gaza, Sudan, and Yemen facing heightened vulnerabilities. A report by the Food System Economics Commission (2024) projects that, under current trajectories, 640 million individuals will be underweight, while obesity rates could reach 70% by 2050. This dichotomy stems from the predominance of calorie-dense but nutrient-deficient food, often processed and laden with pesticides.

A recent study published in The Lancet Global Health (2024) highlights the issue of “hidden hunger,” revealing that over five billion people lack essential nutrients such as iodine, iron, and calcium. Specifically, 68% of the global population does not consume adequate iodine, while deficiencies in vitamin E (67%) and calcium (66%) are similarly widespread. The burden of hidden hunger is a significant public health challenge that transcends geographical and socio-economic boundaries.

The situation is further exacerbated by climate change. Extreme weather events such as droughts, floods, and storms significantly disrupt agricultural productivity, leading to a decline in global food security. Compounding this are the staggering inefficiencies in the global food supply chain and losses from farm to table. An estimated one-third of food produced annually—approximately 1.3 billion tonnes—is wasted due to poor storage, transportation, and market practices, especially in hotter climates (The Guardian, 2024).

Links to Sustainable Development Goals (SDGs)

Food security is intrinsically tied to several SDGs, emphasizing its centrality to sustainable development:

- **SDG 2 : Zero Hunger -** Addressing hunger and food insecurity requires targeted investment in rural areas, which house 45% of the global population. Most of these individuals rely on smallholder farming for sustenance, yet they remain disproportionately affected by poverty and undernourishment.

- **SDG 5: Gender Equality -** Vulnerable populations, particularly women and children, face the brunt of food insecurity and the effects of climate change. Strengthening food systems through a gendered lens can alleviate these inequalities.

- **SDG 3: Good Health and Well-Being -** The dual challenge of obesity and undernutrition represents a pressing public health crisis. This strain on healthcare systems underscores the need for comprehensive interventions in diet and food quality.

- **SDG 12: Responsible Consumption and Production -** Reducing food waste and transitioning to sustainable production practices can significantly reduce environmental impacts and ensure equitable access to resources.

- **SDG 13: Climate Action -** With agriculture contributing to one-third of greenhouse gas emissions, transforming food systems is critical for achieving climate goals. Sustainable farming practices can simultaneously enhance productivity and resilience.

Proposed Solutions :

- **Transforming Agricultural Practices :** Transitioning to sustainable agricultural models is paramount. This includes shifting subsidies from large-scale monoculture farms reliant on fertilizers and pesticides to farms that integrate carbon sequestration and biodiversity conservation. Regenerative farming methods and reduced pesticide use should be incentivized to enhance ecological and human health.
- **Promoting Dietary Changes :** Dietary shifts toward less red meat and increased consumption of seasonal, locally-produced, and organic foods can reduce environmental impacts while improving nutritional outcomes. Such changes require robust public awareness campaigns and supportive policies.
- **Leveraging Technology and Innovation :** Investments in research and development are crucial for fostering climate-resilient and nutrient-rich crops. Digital technologies, including precision agriculture tools, can optimize irrigation, soil health, and pest management. These innovations have the potential to reduce inefficiencies and enhance crop yields sustainably.

- **Reducing Food Waste :** Addressing food waste necessitates interventions across the supply chain, from improving post-harvest storage to promoting consumer behavior changes. Policies that incentivize waste reduction, alongside education initiatives, can play a pivotal role in achieving these objectives.
- **Enhancing Rural Development :** Rural areas are home to 80% of individuals living in extreme poverty and represent a critical nexus for addressing food security. Investments in rural infrastructure, inclusive agricultural practices, and capacity-building initiatives can stimulate local economies and mitigate forced migration. According to the International Fund for Agricultural Development (IFAD), investing in agriculture is up to 11 times more effective in reducing poverty than other sectors, primarily because smallholder farms generate employment and drive rural economic activity.
- **Education and Awareness :** Education plays a vital role in transforming food systems. Children should be taught the importance of balanced nutrition and sustainable food production, while farmers need training in climate-resilient techniques and market access strategies. Public campaigns can bridge knowledge gaps among all stakeholders, fostering a collective commitment to food security.

Conclusion

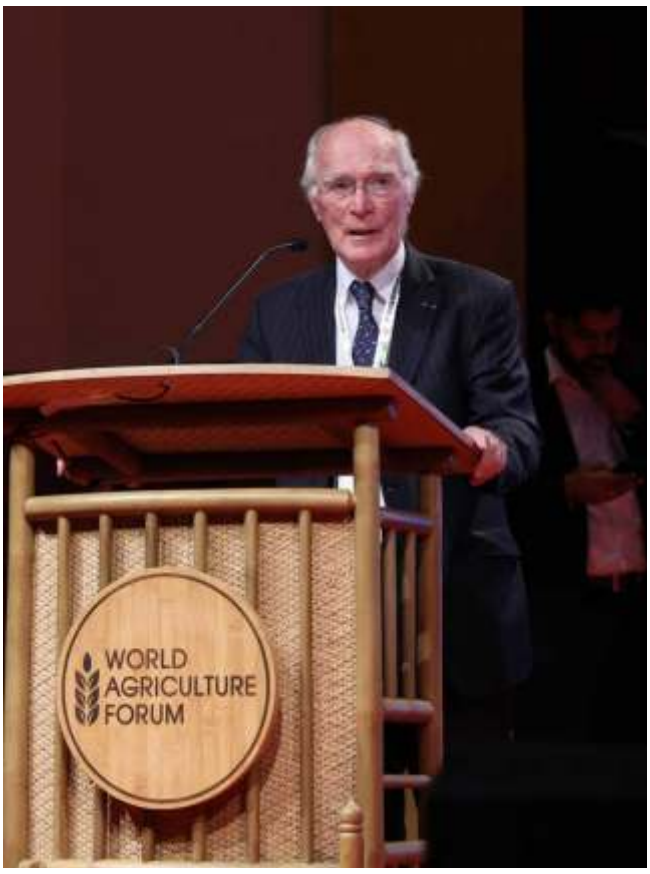
The Norman Borlaug Colloquy on Global Food Security and Sustainable Development brought forward innovative strategies, technological insights, and collaborative action as solutions to the global food crisis. The session fostered a collective call to action for governments, technology innovators, NGOs, and private sectors to innovate, collaborate, and integrate education and technological solutions.

The colloquy reiterated that **climate change, technological inequities, food waste, and inclusivity** are interconnected challenges requiring collective and multi-sector responses. Sustainable agriculture, climate adaptation, and technological advancement were highlighted as pathways to achieving food security for all, particularly in vulnerable communities.

The session closed with optimism and urgency: ***the time to act is now.***

Glimpses


Winner of the award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Address : SDG Room, Royal Institute of Tropics (KIT) Mauritskade 64 1092 AD Amsterdam, The Netherlands