Chapter Eight
General Council of the Food and Agriculture Organization

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Purview of the General Council of the Food and Agriculture Organization

The Food and Agriculture Organization (FAO) is a specialized agency and addresses issues relating to agriculture, forestry, fisheries and rural development. The FAO's mandate includes supporting sustainable agriculture and rural development, addressing food scarcity and the environmental sustainability of agricultural systems.

Website: www.fao.org/home/en

Sustainable use of plant genetic resources for food and agriculture

An expanding global population increases the importance of sustainable plant genetic resources for food and agriculture (PGRFA). Homogeneity among PGRFA threatens worldwide consumption patterns and agricultural practices. According to The State of the World's Plant Genetic Resources for Food and Agriculture report, genetic vulnerability results "when a widely-planted crop is uniformly susceptible to a pest, pathogen or environmental hazard as a result of genetic constitution." New crops able to withstand climate change and other threats are essential for combating poverty and reducing food insecurity. Maintaining a variety of genetically diverse plants and genetic resources is key to preventing food loss and developing new crops. Genetically modified organisms (GMOs) offer opportunities to maximize efficiency in food production systems that contribute to ending hunger, but they could put delicate ecosystems at risk if improperly used.The FAO must balance these needs.

The United Nations Environment Programme (UNEP) created the Ad Hoc Working Group of Experts on Biological Diversity in November 1988, which later became an independent organization. The Convention on Biological Diversity still represents the main international instrument for addressing biodiversity issues. The Conference of Parties negotiated the Nairobi Final Act, which solidified the conservation of biodiversity, including all ecosystems and living species, as a common concern of humankind. In 2000, the Conference of Parties adopted the Cartagena Protocol on Biosafety. The Protocol provides an international regulatory framework for protecting both the agricultural industry and its advances as well as the environment. The protocol defines a "living modified organism" as any living organism that possesses a novel combination of genetic material that can be obtained through the use of modern biotechnology; these are more commonly known as GMOs.

The FAO has expanded on these actions. After almost a decade of debate, the Commission on Genetic Resources for Food and Agriculture mandate was expanded in 1995 to include biodiversity as a major issue, and, in 2001, the FAO adopted the International Treaty on Plant Genetic Resources for Food and Agriculture. The treaty ensured farmers have access to a variety of genetic strains for their crops and formalized the right of Member States to access genetic information sourced from or developed within the State's borders. This information has helped create drought-resistant crops that can be grown in food scarce areas like Africa. Protecting rights to genetic research has created a better financial incentive for countries like the United States and China to contribute to seed banks. The treaty came into effect in 2004.

Intellectual property rights are a key barriers to sharing genetic resources. Currently, States disagree about whether the genetic blueprints resulting from PGRFA and physical specimens are separate forms of legal property. In one country, a corporation may own the genetic information while an agricultural seed company pays it rights. While in other places, production companies and researchers function independently from one another, and development rights are only paid when new technology is created using research. These different systems create international trade barriers. In 2010, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization was established. The protocol guarantees that innovations in new genetic resources must be shared, while also

addressing sovereignty and information sharing issues. The protocol came into effect in 2014. The Convention on Biological Diversity has 196 States Parties. Its one subsidiary body, the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), recommends specific actions and regulations for protecting biodiversity. The protocol has helped establish some standards, but has not fully resolved the intellectual property issues.

Currently, the FAO is developing the Global Information System (GLIS) on PGRFA. Once completed the system will provide warnings of threats to genetic resources, provide access to genetic information, encourage data collection and support the main uses of genetic resources. The information technology infrastructures required in GLIS are currently being developed. Options are being explored to expand the accessibility of GLIS in developing countries. The development of GLIS still requires a solid definition of user rights and obligations. Guidelines must cover intellectual property laws, private law instruments and confidentially.

Moreover, PGRFA's failsafe, the Svalbard Global Seed Vault, opened in 2008 and designed for long-term storage of physical seed specimens, may be threatened. Its protection, a thick barrier of permafrost, is melting, and the bank flooded in May 2017. No samples were lost and the structure is sound, but the vault is the only one of its kind. The vault protects existing samples of genetically diverse plants important to crop production and development. It maintains a comprehensive set of samples from across the world's plant banks meant to help researchers and plant developers in the case of widespread sample loss, massive crop failure or natural disasters. Without it, the backup system for the world's agricultural reserves may be lost.

PGRFA has promising implications for agriculture, environmental preservation and nutrition worldwide. Sharing plant genomes has helped create drought-resistant crops and protect endangered plant species. In the event of mass plant illness or infestation, genetic differences between plants that survive and those that die can reveal ways to protect crops from widespread failure. Plant genetic resources are one of the brightest hopes we have for preventing worldwide starvation and for protecting our environment from climate change and species loss. High-risk crops like the California orange are dependent upon genetic preservation methods; without sampling and study, there is little hope they will survive our volatile climate.

The United Nations needs to decide legal limitations on information shared through GLIS, including use restrictions. Non-normative incentives for research and collaboration, such as monetary gain from genetically modified plants and trade agreements that incorporate modern intellectual property protections, will also need to be considered. The FAO has a number of frameworks to use in addressing PGRFA. To ensure that these frameworks are effective, the FAO needs to address concerns about legal mandates and information sharing and to create standards for domestic laws that will facilitate information sharing. The FAO must also consider how the organization can continue to encourage growth in research of PGRFA to ensure the technology is used to meet international development goals.

Questions to consider from your government's perspective on this issue include the following:

- What role do intellectual property laws, private law instruments and confidentially play PGRFA development and how must those laws change in order to support wider research and economic growth?
- How can the FAO incentivize the development of plant genetic resource systems and their use?
- What current information systems are most important to PGRFA and its growth? How can countries better use these information systems and how can they be protected?

Bibliography

BBC Bitesize. Evolution, extinction and biodiversity. BBC.

Carrington, Damian (2017). Arctic stronghold of world's seeds flooded after permafrost melts. The Guardian. 19 May.

Gewin, Virginia (2017). To Protect Fruit Crops, Scientists Are Putting Them Into A Deep Freeze. National Public Radio. 14 June.

Pollack, Andrew (2015). By 'Editing' Plant Genes, Companies Avoid Regulations. New York Times. 1 January.

Global Forum on Agriculture Research (2006). Spreading the word on farmers rights around the world. 02 March.

Sullivan, Shawn N (2004). Plant Genetic Resources and the Law: Past, Present, and Future. Plant Physiology, vol. 135, no. 1. 24 March. pp. 10-15.

United Nations, Food and Agriculture Organization. CAPFITOGEN Programme for the Strengthening of Capabilities in National Plant Genetic Resources Programmes.

United Nations, Food and Agriculture Organization (2017). Global Information System of PGRFA.

United Nations, Food and Agriculture Organization (2015). Making genetic diversity part of climate change adaptation. 24 November.

United Nations Documents:

International Treaty on Plant Genetic Resources for Food and Agriculture. (2009).

United Nations, Food and Agriculture Organization (2015). Genetic Resources for Food Security and Nutrition.

United Nations, Food and Agriculture Organization (2011). Second Global Plan of Action for Plant and Genetic Resources for Food and Agriculture. 29 November.

United Nations, Food and Agriculture Organization (2010). The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture.

United Nation, Food and Agriculture Organization of the United Nations (2016). Transparency of Rights and Obligations of Users of the Global Information System. 24 November. IT/GB-7/SAC-1/16/4.

United Nations, Food and Agriculture Organization of the United Nations (2015). Vision paper on the development of the Global Information System. 5-9 October. IT/GB-6/15/7.

Antimicrobial Resistance

Antimicrobial resistant strains of fungi, bacteria, viruses and parasites are microorganisms that have become partially or completely resistant to treatment by antimicrobials, also referred to as "superbugs." They are a growing global threat that directly impacts public health and global economic stability. It is estimated that antimicrobial resistance contributes to 10 million human fatalities and has the potential to cause an economic collapse more extreme than the 2008 recession. While experts have long understood that antimicrobial resistance is the predictable

result of the long-term use or overuse of antimicrobial drugs in the agriculture and health industries, the ability to develop new antimicrobial drugs has not kept up with demand and has been more difficult in practice than anticipated. Antibiotics in particular have become more and more difficult to develop. Increasing human populations, urbanization and the intense use of antimicrobials in agriculture are linked to increased antimicrobial resistance. The Food and Agriculture Organization (FAO) and its Member States are working to establish best practices for combating the rise of antimicrobial resistance in both the developed and developing world.

A major cause of the emergence of new strains of antimicrobial resistant bacteria, fungi, viruses and parasites is the extensive use of antimicrobial drugs in agriculture. More than 63,000 tons of antimicrobials are used in livestock production alone, but only 42 States worldwide have systems in place to collect data on the usage of antimicrobials in livestock. Antimicrobial drugs are almost universally used in everyday livestock feed, fisheries and other agricultural production. While large agricultural facilities are responsible for the bulk of antimicrobial drug use, small-scale farmers often do so unregulated or without adhering to regulations. Large and small-scale operations alike often use antimicrobial drugs in lieu of proper hygiene practices. Large amounts of antimicrobials are leached into waste and groundwater from aquaculture; lack of reporting means that the exact amount being leached is unknown, but antimicrobial drugs have been found in the bodies of shrimp gathered miles offshore in the Gulf of Mexico. Antimicrobial resistance has been a topic in the United Nations since the Biological Weapons Convention was established in 1972, but it stayed largely in the realm of weapons talks for the first two decades.

In 1963, the Codex Alimentarius Commission, a joint group of the FAO and the World Health Organization (WHO), was formed. This marked the first significant recognition of the link between industrial agriculture and world health. Prior to 2000, international efforts to combat antimicrobial resistance were focused on drug-resistant HIV/AIDS and similar highly-adaptive viruses like malaria, tuberculosis and hepatitis with a consistent focus on drug development and outbreak management. The United Nations and WHO were focused on reactive policies rather than sourcing the problem. It wasn't until 2007 that the Codex Alimentarius Commission convened the Task Force on Antimicrobial Resistance. Even then, its primary mission was to evaluate agricultural and aquacultural impacts on antimicrobial resistance and was not a prescriptive meeting.

In 2007 and 2008, the FAO hosted a number of stakeholder meetings. The first meetings outlined potential actions for the FAO, WHO and World Organisation for Animal Health (OIE) and compiled the organizations' previous research and antimicrobial practices. This coordination allowed the FAO, WHO and OIE to identify areas where information was lacking, especially noting the overuse and underreporting of antimicrobial drugs in livestock and aquaculture, which contributes to high levels of antimicrobial drugs in water runoff, feed storage and general misuse of the drugs that can lead to the creation of superbugs.

In both 2015 and 2016 annual reports, the FAO has promoted public awareness and animal husbandry best practices. It has also created regional action plans for Member States struggling to increase compliance with those best practices and helps to fund them, in collaboration with WHO. In 2016, the FAO announced its Action Plan on Antimicrobial Resistance (AMR). Starting by recognizing that the health of humans, animals and the ecosystem are interdependent, the FAO identified four areas within which to focus work. Those focus areas are: raising awareness, developing monitoring capacity, strengthening governance and promoting good practices within agricultural systems. The FAO's Action Plan complements the World Health Organization's Global Action Plan on AMR, which focuses on medical and health systems.

The FAO still suffers from a lack of proper reporting, poor public awareness and noncompliance with best practices. Health organizations agree that actions taken need to be immediate, innovative and with cooperation between States. Such actions can include: governmental regulations, subsidies and aid for rural farmers, improving farm hygiene and cleanliness, focusing on preventing the spread of infections, increased veterinary oversight, accurate and affordable disease diagnostics and AMR education programs. Most importantly, filling the knowledge gap on antimicrobial drug use and environmental contamination is one of the FAO's highest priorities. Many countries still do not have concrete numbers on the amount of antimicrobials used in agriculture and lack the regulations to appropriately monitor and gather that information. The stakes are high. Without action now, antimicrobial resistance may increase rapidly, leading to a scenario where there is no effective antimicrobial treatments for malaria, tuberculosis, staphylococcus aureus and other common infections.

Questions to consider from your government's perspective on this issue include the following:

- What role do antimicrobials play in your country's food and agriculture production? How does antimicrobial resistance impact the public food supply and international trade?
- What level of monitoring of antimicrobial use is appropriate?
- What domestic and international regulations on antimicrobial use need to be made?
- How does AMR affect research allocations? Does the international community have the economic and regulatory tools to combat AMR and how can those tools be used most effectively?

BIBLIOGRAPHY

Bagley, Nicholas and Kevin Outterson (2017). We Will Miss Antibiotics When They're Gone. New York Times. 18 January.

Dancer, Stephanie J. (2015). Focusing on infection prevention to slow antimicrobial resistance rates. BMJ. 14 April.

McNeil, Jr., Donald G. (2017). Deadly, Drug-Resistant 'Superbugs' Pose Huge Threat, W.H.O. Says. New York Times. 27 February.

New York Times Editorial Board (2014). The Rise of Antibiotic Resistance. New York Times. 10 May.

Paccaud, Jean-Pierre (2012). Antibiotic drug research and development. BMJ. 11 April.

Tavernise, Sabrina (2016). World Leaders Agree at U.N. on Steps to Curb Rising Drug Resistance. New York Times. 21 September.

United Nations, Food and Agriculture Organization (2017). Antimicrobial Resistance in Food and Agriculture. 04 April.

United Nations, Food and Agriculture Organization (2017). Antimicrobial Resistance: What is It?

United Nations, Food and Agriculture Organization (2016). Reducing the spread of antimicrobial resistance on our farms and in our food. 14 September.

World Bank (2016). By 2050, drug-resistant infections could cause global economic damage on par with 2008 financial crisis. 20 September.

World Health Organization (2015). WHO multi-country survey reveals widespread public misunderstanding about antibiotic resistance. 16 November.

UN DOCUMENTS

United Nations, Codex Alimentarius Commission (2010). Report of the Fourth Session of the Codex Ad Hoc Intergovernmental Task Force on Antimicrobial Resistance. 22 October. REP 11/AMR.

United Nations, Food and Agriculture Organization (2016). The FAO Action Plan on Antimicrobial Resistance 2016-2020.

United Nations, Food and Agriculture Organization (2015). Adjustments to the Programme of Work and Budget 2016-17. November. CL 153/3.

United Nations, Food and Agriculture Organization (2015). Report of the Conference of FAO. 6-13 June.

United Nations, Food and Agriculture Organization (2015). Status Report on Antimicrobial Resistance. 13 June. C 2015/28.

United Nations, Food and Agriculture Organization (2014). Antimicrobial Resistance. 3 October. Resolution 4/2015.

United Nations, General Assembly (2016). Political declaration of the high-level meeting of the General Assembly on antimicrobial resistance. 5 October. A/RES/71/3.

World Health Organization (2014). Antimicrobial Resistance: Global Report on Surveillance.

Report on the Fourth Session of the Codex Ad Hoc Intergovernmental Task Force on Antimicrobial Resistance. 22 October 2010.