Food and Agriculture Organization of the United Nations

29 May 2020

Information and tools for young agricultural workers during COVID-19 crisis

OVERVIEW

The COVID-19 pandemic is a global crisis which is already affecting the food and agriculture sector. Countries with existing humanitarian crises are particularly exposed to the effects of the COVID-19 pandemic. Support to ensure sustainable agriculture production and maintaining the critical supply chain linkages are extremely important during this crisis and in the context of associated lockdown measures implemented by countries.

The Food and Agriculture Organization of the United Nations (FAO) is playing a key role in assessing and responding to the impacts of COVID-19 pandemic on people's life and livelihoods, global food trade, markets, food supply chains and livestock. To mitigate the pandemic's impacts on food and agriculture, FAO urges countries to meet the immediate food needs of their vulnerable populations, boost their social protection programmes, keep global food trade going, keep the domestic supply chain gears moving, and support smallholder farmers' ability to increase food production. There are multiple challenges that needs immediate attention to safeguard the livelihoods of the smallholders. Some of these challenges include maintaining the linkages with input suppliers, access to markets, provision of knowledge on innovative technologies and practices, and above all maintaining the employment opportunities for rural agricultural workers and youth.

Addressing these challenges requires tools, methods and training resources that young agricultural development professionals and rural youth as the critical agents can apply to facilitate use of innovative solutions and practices by farmers to be able to face these challenges posed. This brief offers a package of tools, training materials and best practices that are immediately available to support youth in responding to the challenges of the pandemic from a food and agriculture point of view.

KEY MESSAGES

- Young rural workers are critical agents in the response to the COVID-19 pandemic due to their literacy in using digital tools that offer a comparative advantage to access information on inputs, markets and also innovative practices and technologies.
- Innovative tools and learning approaches can help motivate young agricultural workers by stimulating entrepreneurship and facilitating access to innovative technologies and best practices.
- Training for the adoption of new technologies and sharing good practices are key elements to empower youth and prepare them for the challenges brought to the field in times of the pandemic.
- There are number of online platforms with technologies and best practices available to facilitate exchange of information and keeps young agricultural development practitioners up to date in the field.

- The networks created from these communication channels make youth more informed, in addition to contributing to the development of agricultural innovations to address the crisis.
- The e-learning tools on specific technical areas can be promoted to train young workers. However, it is necessary to ensure connectivity, digital literacy and equipment that can connect youth to e-learning platforms.
- Once the connectivity is guaranteed, different courses in technical areas, such as soil and land management, water management, climate-smart agriculture, control of livestock diseases, among others, can be brought to young people.
- Digital Solutions for information sharing and service provision in the field provokes the engagement of young workers with new technologies and attractive employment opportunities.
- Adjustment of the digital tools to different member countries can also generate the demand for qualified labour, improving the skills of young people and facilitating the development of start-ups with an emphasis on agri-preneurship.

INNOVATIVE LEARNING APPROACHES FOR RURAL YOUTH

Junior farmer field and life school

The junior farmer field and life school (JFFLS) is a joint programme of FAO and the International Labour Organization (ILO) on youth decent and rural employment. The goal of the JFFLS is to empower vulnerable youth, and provide them with the livelihood options and gender-sensitive skills needed for long-term food security while reducing their vulnerability to destitution and risk coping strategies. FAO developed several manuals for trainers and training modules, allowing for capacitation of rural youth on agriculture sectors: http://www.fao.org/rural-employment/work-areas/youth- employment/skills-development/jfflsmanuals/en/. Particularly relevant the module titled “Water for Life” providing information and basic skills on sustainable use of water in agriculture, as well as on water in hygiene practices. The tools are complemented by e-learning, and targeted mostly to trainers, expected to run capacity development activities in the field.

Contact: FAO Social Policies and Rural Institutions Division (ESP-Director@fao.org) and FAO’s Strategic Programme 3 (SPL3@fao.org)

Farm business school

In order to be competitive and take advantage of the new opportunities that are arising from the dramatically changing environment, technical know-how is not enough. Farmers increasingly have to adapt their farm business to changes in the market and to improve efficiency, profitability and income. The farm business school (FBS) initiative aims at enhancing the business skills of advisory service providers and strengthening the capacity of small-scale farmers by helping them acquire the knowledge and skills needed to engage in profitable farming.

https://www.youtube.com/watch?v=t1atcrbkfQU&feature=youtu.be

Contact: FAO Lebanon (fao-lb@fao.org); FAO Social Policies and Rural Institutions Division (ESP-Director@fao.org)

GLOBAL ONLINE PLATFORMS

Technologies and practices for small agricultural producers

A selection of agricultural technical practices, and technologies were shared from the Technologies and Practices for mall agricultural producers (TECA) platform, which is an online FAO Research and Extension Unit's platform rich in proven practices and technologies across eleven categories (such as crop production, livestock production, fishery and aquaculture, forestry, post-harvest and marketing, agricultural mechanization, natural resource management, nutrition and food security, capacity development, climate change and disaster risk reduction) with over 900 practices available to a global audience. The TECA platform responds to the need for a systematic and user-friendly online digital resources of cross-cutting thematic agricultural practices, technologies and innovations, success stories on family farming. It also includes a forum to share ideas, learn new practices and connect with other experts. These technologies and practices have descriptive visuals and detailed specifications on how to implement them making it suitable for smallholder farmers, producers, and others such as youth. The platform aims to fill the gap in the dissemination process and to provide practices and technologies to reach a global audience through providing content in four languages (English, French, Spanish, and Portuguese).

Contact: FAO Research and Extension Unit (AGDR) (AGDR-Chief@fao.org; teca@fao.org)

TAPipedia

Innovative practices, technical documents and manuals are shared from TAPipedia, which is a platform developed within the context of Tropical Agriculture Platform (TAP). It is an information sharing system designed to enhance knowledge exchange in support of Capacity Development for Agricultural Innovation Systems. A key resource in TAPipedia is the TAP Common Framework: 3 volumes providing concepts, methodologies and tools to assess capacity development needs and to plan, implement, monitor and evaluate capacity development interventions. In addition, TAPipedia has also a specific section dedicated to capacity development tools, particularly focused on the soft skills in relation to agricultural innovation. Other resources include good capacity development practices, innovation outputs, success stories and lesson learned, and they mainly target researchers and development practitioners but also other interested individuals.

Contact: FAO's Research and Extension Unit (AGDR) (AGDR-Chief@fao.org; info@tapipedia.org)

E-LEARNING ON SPECIFIC TECHNICAL AREAS

Climate smart soil and land management

This course focuses on sustainable soil and land management for climate-smart agriculture. It provides technical knowledge and examines how wide-scale implementation of climate-smart soil and land management practices can enhance mitigation of climate change and adaptation to its impacts.

Contact: FAO's Land and Water Division (CBL) (cbl-director@fao.org)

Water management for climate-smart agriculture

This course focuses on water management and its critical role in climate-smart agriculture. It analyses the impacts of climate change on the availability of freshwater resources for agriculture and considers possible water management options for adaptation to climate change and for climate change mitigation.

Contact: FAO's Land and Water Division (CBL) (cbl-director@fao.org)

Foot-and-mouth disease – Training using social messaging services

Project aims to assist with training on foot-and-mouth disease (FMD) and other diseases in areas with low bandwidth. Create e-learning modules and which are usually accessed on laptops as well as training material and have the participants pass their final assessment via management systems. Trained veterinarians and paravets in areas with low bandwidth.

Contact: EuFMD-training@fao.org

Global Initiative on Decent Jobs for Youth

Global Initiative on Decent Jobs for Youth is the catalyst for globally harmonized action on youth employment, in line and at scale with the 2030 Agenda for Sustainable Development. It is a platform for promoting evidence-based strategies and interventions, a space for highlighting progress and sharing knowledge, and a hub for cooperation and collaboration. The International Telecommunications Union (ITU) is developing this program including the development of digital skills for 5 million young people and FAO and member states can participate of this effort through the existing Memorandum of Understanding between ITU and FAO is proposing specific courses related to COVID-19, with immediately available tools targeted to youth.

Brochures: https://www.decentjobsforyouth.org/communications-material

Contact: FAO's Information Technology Division (CIO) (cio-director@fao.org)

Access Agriculture

Access Agriculture is a non-profit organization that showcases agricultural training videos in local languages. The group aims at promoting a transition towards agroecological practices and to make available to farmers training and capacity development online tools on agriculture practices, techniques, as well as to promote farmers peer exchange and mutual support. The website provides information and videos organized by crops, and agriculture sectors, immediately accessible and ready to use. It also facilitates peer learning, with activities facilitated online, such as a monthly quiz on agriculture techniques, which award the winner with their profile and *curriculum* featured on the website. Videos are available in many languages, including local ones.

Contact: free registration and interaction with members through the website.

DIGITAL SOLUTIONS FOR INFORMATION/SERVICE PROVISION

Agricultural services and digital inclusion in Africa

Using a new technology called progressive web app, FAO has developed four apps to scale up agricultural services, and provide timely and comprehensive information and key services to farmers, agriculture stakeholders, and rural people. Apps provide information on:

- Weather and crop calendar combines information on weather forecasts and crop calendars. It provides early warning services to highlight potential risks and help increase resilience.
- Cure and feed your livestock provides real-time information on animal disease control and animal feeding strategies. It helps reduce losses in assets and optimize productivity using local resources. Through the app farmers can also exchange information.
- AgriMarketplace connects producers and traders. It enables farmers to obtain better information about suppliers for raw material purchases, marketplaces to sell their products, and market price.
- E-Nutrifood provides inhabitants of rural areas with information and technical recommendations concerning the production, conservation and consumption of nutritious foods.

With small adjustments can be implemented immediately for member countries training young workers to prepare the content for the apps using alert messages on Corona Virus. The apps are available for download here: https://fao-digital-services-portfolio.firebaseapp.com/.

Contact: FAO Information Technology Division (CIO) (cio-director@fao.org)

Diagnosis and assessment tools – Aquacrop tool

Aquacrop tool is a crop growth model developed to address food security and to assess the effect of management and use of natural resources, particularly water and soils, on crop production, and improve environmental sustainability in agriculture practices. AquaCrop simulates yield response to water of herbaceous crops, and is particularly suited to address conditions where water is a key limiting factor in crop production. To be widely applicable Aquacrop uses only a relatively small number of explicit parameters and mostly-intuitive input-variables requiring simple methods for their determination. On the other hand, the calculation procedures is grounded on basic and often complex biophysical processes to guarantee an accurate simulation of the response of the crop in the plant-soil system. The tool, composed by a downloadable open source software and several training materials and modules, has been widely used in FAO projects in different parts of the world.

Contact: FAO's Land and Water Division (CBL) (cbl-director@fao.org)

FAO Water Productivity Open-access Portal

FAO Water Productivity Open-access Portal (WaPOR) is a portal to monitor water productivity through open access to Remotely sensed derived data. Particularly relevant for farmers, as it provides information not only on global, and national, but also subnational level.

Contact: FAO's Land and Water Division (CBL) (cbl-director@fao.org)

Event Mobile Application

Event Mobile Application (EMA-i) is an early warning app developed by FAO to facilitate quality and real time livestock disease reporting captured by animal health workers in the field. EMA-i is integrated in the FAO's Global Animal Disease Information System (EMPRES-i) where data are safely stored and used by countries. EMA-i is easily adaptable to countries existing livestock disease reporting system. By supporting surveillance and real time reporting capacities at country level and improving communication between stakeholders, EMA-i contributes to enhance early warning and response to animal disease occurrence with high impact to food security and livelihood.

Countries: Cote d'Ivoire, Ghana, Guinea, Lesotho, Tanzania and Zimbabwe.

Contact: FAO Food Chain Crisis team (empres-i@fao.org; food-chain-crisis@fao.org)

Fall armyworm mobile application

Fall Armyworm Monitoring and Early Warning System (FAMEWS) mobile app is an application for Android v6 or higher smartphones. The app should be used every time a field is scouted and pheromone traps are checked for fall armyworm. The app has Data entry to collect, record and transmit; scouting data, including basic farm data, manual or scouting data and immediate advice, and trap data; Integrated pest management (IPM) education; Digital library; Chat to share experiences; Expert resources.
Data are entered by making selections from drop-down lists. Each item provides a useful explanation that, in some cases, includes photos – for example, of different pests and natural enemies to help the user enter accurate data. The app is extremely intuitive, easy and fast to use. It is currently available in 29 languages and can include further languages upon demand. FAMEWS can be downloaded for free from the Google Play Store. To ensure the accurate collection of high-quality and reliable data, standardized protocols have been developed as Guidance Notes for scouting and checking pheromone traps and these are available in the application.

The FAMEWS mobile application is available for download here: https://play.google.com/store/apps/details?id=org.fao.famews&hl=en_US (to be used with adjustments).

Countries: 29 languages in Africa, Near East and Asia-Pacific.

Contact: Fall-armyworm@fao.org

Training resources and online forum on mechanization and hire services capacitation and management

This training of trainers (ToT) manual is intended for prospective trainers of hire service providers. It provides trainers at country level with materials covering the basic principles of the use and management of mechanization for smallholder farmers. Trainers may be ministry of agriculture personnel, staff of non-governmental organizations (NGOs) or people attached to the private sector. Hire service providers may lack formal training in the selection and maintenance of small-scale mechanization technologies and the management of their businesses. This ToT programme is designed to provide hire service providers – whether already in the business or intending to start their own hire service business – with skills and competencies in both the technical and the management aspects of the small-scale mechanization business.

In addition, online Forum on Farm and exchange group on farm mechanization is to create a space for the exchange of information on mechanization and related practices, technologies and innovations - ranging from the use of simple hand-held tools to the implementation of sophisticated agrobots. This group brings together farmers, institutions, and organizations involved in farming to discuss mechanization solutions in line with the save and grow approach. The aim is to address misconceptions on the proper use of machinery in sustainable agriculture and to facilitate the adoption of environmentally friendly mechanization.

Training Manual: http://www.fao.org/3/I9207EN/i9207en.pdf

Contact: Online Forum and Exchange Group in http://www.fao.org/teca/forum/mechanization/en/

Innovative adaptation solutions to climate change in agriculture/just-in-time communication platform

The main objective was to create and operationalize an informational system that will support farmers in obtaining relevant information on agriculture data including hydro meteorological, trade, plant and animal protection and impact in the agriculture sector. At the same time, it was necessary that the system is accessible to a larger number of farmers, including smallholders. Also, it was needed to ensure the sustainability of the system concerning the main costs and its maintenance.

More than 1 000 farmers became subscribers of the system and received timely information according to the selected package tailored to their needs. In terms of provided information, there were a dispatch to 1 150 subscribers of 101.5 thousand SMS with weather forecast, 35.9 thousand SMS with prices, 66,2 thousand SMS with hydrological alerts, 95.9 thousand SMS with weather alerts and 11.3 thousand SMS with environmental quality alerts.

Contact: FAO Republic of Moldova (fao-md@fao.org)

EXTENSION AND ADVISORY SERVICES

Pluralistic extension services

A growing variety of public and private rural advisory services are available today, leading to increasingly pluralistic service systems (PSS), in which advisory services are provided by different actors and funded from different sources. However, these PSS and the way they operate are still poorly understood. In particular, how PSS can effectively respond to demands of heterogeneous farmers in contexts where small-scale agriculture increasingly needs to exploit value addition and adapt to market requirements. In this context, FAO has produced a series of online resources to support national agricultural extension and rural advisory services on Promoting Inclusive Pluralistic Service Systems focusing on the role of rural advisory services for inclusive Agripreneurship. The resources aimed to explore current thinking on PSS and facilitate a debate around the main themes of inclusiveness, coordination, accountability and scaling up pluralistic rural advisory services.

Link to online resources is here: http://www.fao.org/nr/research-extension-systems/informres/extension/en/

Contact: FAO's Research and Extension Unit (AGDR) (AGDR-Chief@fao.org)

One Health risk communication strategy for animal health

The strategy aims at i) improved risk perception and practices through a risk communication network; ii) increased accessibility and availability of risk communication resources; iii) increased political attention and support for zoonoses control and iv) fostered One Health cooperation among stakeholders. The outcomes are: better application of good practices for zoonoses outbreak preparedness and responses; strengthened effective coordination of sectoral risk communication plans for prevention, response and control of animal originated public health threats.

Contact: FAO Viet Nam (fao-vn@fao.org)

Use of community-based videos for the promotion of nutrition-sensitive agricultural practices among particularly vulnerable tribal groups in Odisha

The approach of using community videos is to identify and promote locally relevant and feasible nutrition-sensitive agriculture and nutrition practices among particularly vulnerable tribal group (PVTG) women through community videos. The project leveraged the information and communication (ICT) platform and existing government platforms (self-help groups and frontline workers) to communicate the messages to the community.

Contact: FAO India (fao-in@fao.org)

INNOVATIVE PRACTICES (SOME EXAMPLES)

Food for life project

The Food for life (FFL) project is the result of the Youth UN Global Alliance (YUNGA) in particular a partnership between FAO and the World Organization of Scout Movement (WOSM). The project aims at providing youth with basic skills to grow their own food for themselves and their family with the limited resources that they have. It teaches them not only how to grow crops, but also about the importance of nutrition and how to start and manage a business. Initiated by the South African Scout Association (SASA) in 2006, the FFL project and has since expanded to Kenya, Burundi, Uganda, Benin, Niger and Lesoto. FAO and WOSM are discussing further promotion of the project in additional countries, as to provide skills to youth during the COVID-19 emergency.

Contact: FAO's Youth focal point (YUNGA@fao.org)

Hydroponics simplified for vulnerable women and unemployed youth

Introduce hydroponics techniques adapted to arid climate, simplified and low cost, targeting vulnerable women and unemployed youth as a strategy to contribute to food security and reduce poverty. The methodology proposed by the donor and governmental partner implied some conditions such as: hydroponics technology must be simplified and adapted to end users' education level; adapted to the environmental conditions of Djibouti, preference to use locally available materials for the construction of the hydroponics site; training cycles, theoretical and practical, inclusive and participatory, adapted to end users' education level.

The outcomes are:

- Simplified hydroponics is technically feasible in Djibouti for 5-6 months (from October to March), under the protection of a shade-net, and using water that meets the salinity criteria.
- The experience has shown a better economic potential for short cycle productions over long cycle ones.
- Hydroponics makes agriculture appealing to youth, and farming operations are not tiring for women and men.
- The technical training over a period of four months has made beneficiaries autonomous in the management of a hydroponic module, on the basis of a simplified protocol of operations.

Contact: FAO Djibouti (fao-dj@fao.org)

Water efficiency cotton production pilot – SMART AGRO 4.0

This project is a complete system for monitoring, controlling and predicting agronomic variables. Using remote sensors and artificial intelligence from a mathematical model, it predicts how much water resource needs to replenish in the fields to optimize water use, improving the quality and quantity of farm's final production. The pilot was developed in Peru, specifically in Ica and Lambayeque, within the cooperation framework between the Telefonica Foundation and the Food and Agriculture Organization of the United Nations, through the Trilateral South-South Cooperation +Cotton Project (Brazilian Cooperation Agency – FAO – Countries), contributing to FAO's Strategic Objective 2 and the scope of Sustainable Development Goal 6.

The innovation consists of 5 main components: field sensors (tensiometers and weather station); mobile connectivity (3G and 4G data plan for sending and receiving data to the cloud); web platform (graph analysis, irrigation booklet and monitoring); analysis and accompaniment of the agronomist expert (analysis, monitoring, and recommendations); and irrigation report (a report that gathers the information collected).

In the context of COVID-19, the current dynamic of quarantine and social distancing puts at risk and hinders the fieldwork of farmers and the thousands of daily cotton workers. This type of technology, innovative in the Latin American and Caribbean region, contributes to improving the efficiency and competitiveness of the cotton and agricultural sector in an integrated manner.

Remote monitoring, since telephone networks are operational, provides farmers with sufficient information to know when and how much to irrigate, so that they can manage their irrigation, without having to be in the field constantly, thus reducing their virus exposure and that of their field workers and their families. This is a technology appropriate to work with associations and cooperatives, to improve their efficiency and resource usage and make their fields more productive and sustainable. It is a technology with great potential for rural youth adoption.

Contact: FAO Brazil and Perú (fao-br@fao.org; fao-pe@fao.org)

Water-saving technology innovations for small-scale rural farmers in Africa

In most developing countries especially Sub Sahara Africa (SSA), small-scale agriculture is one of the main sources of food and supplementary income. Climate change, water scarcity and poor or non-existence of irrigation structure and management have impacted crop yield of these

rural small-scale farmers. Helping these peoples to improve livelihood through small-scale drip irrigation system and its management with simple and inexpensive decision-making tools will increase their yields and conserve the potentialities of the soil and strengthen their resilience facing climate change. The Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (AGE) assisted sixteen African Member Countries to: 1) identify and apply inexpensive small-scale drip irrigation systems, 2) providing training to scientists on soil water sensors and its monitoring and 3) assisting small-scale rural farmers with simple decision-making tools and irrigation systems.

The project is helping small-holder farmers in African countries to improve food security and livelihood by using small-scale drip irrigation for high-value crops. In Kenya Maasai community, we developed an ICT on mobile phone combining crop (type, planting date), weather and soil to send the Maasai farmers simple SMS messages on when and how much water is needed to irrigate the crops. The information was calibrated using nuclear techniques (soil moisture neutron probe was used to verify the irrigation amount needed to irrigate generated from the soil water balance in the ICT).

See videos and additional information here: https://www.iaea.org/sites/default/files/publications/magazines/bulletin/bull53-1/53105912325.pdf;

https://www.iaea.org/newscenter/multimedia/videos/more-crop-drop-coping-water-scarcity-kenya

Contact: Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (age-director@fao.org)

Innovative soil erosion and sedimentation assessment technology for conservation of soil and water resources

Fallout radionuclide (FRN) and compound specific stable isotope (CSSI) techniques are used for the assessment of soil erosion, especially erosion rates and spatial distribution of soil erosion hot spots and sediment sources. The method requires only one soil sampling of reference and disturbed sites, which decreases the time and labour required in traditional methods. FRN techniques were developed in the 80s and 90s and were mainly tested in temperate, grassland environments. The Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (AGE) contributed to the testing of the FRN technique in a wide range of geographical conditions including tropical climates, and in the development and testing of its associated conversion models.

The project has the following objectives: to provide overall characterization of soil redistribution status (mainly erosion and deposition rates and spatial distribution of erosion and sedimentation); to determine the efficiency of specific African soil conservation measures; to link soil redistribution processes to land use and land management.

Contact: Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture (age-director@fao.org)

Comprehensive training package on good management practices and biosecurity for hatchery and poultry parent – Flock, Production farms (Chicken and Duck)

Improve hatchery and poultry farm biosecurity and management leading to increase farmer income and contribute to risk reduction along value chains from farms to chopsticks. The main outcomes are: improved livelihoods of smallholder farming communities and protecting the health of poultry and farmers; improved capacity of national extension services at central and local level.

Contact: FAO Viet Nam (fao-vn@fao.org)

Rome-based Agencies' programme to strengthen the resilience of livelihoods in protected crisis contexts

The project aims to create entrepreneurial and employment opportunities for women and youth through efficient management of Prosopis pods and the processing of them into animal livestock feed supplements. In addition, the project aims to establish and foster livestock feed processing cooperatives by creating market linkages.

Contact: FAO Somalia (fao-so@fao.org)

Poultry hatchery biosecurity-auditing checklist for small and medium-scale household hatcheries

The project improves poultry farmers understanding on good husbandry and biosecurity practices supporting registration, auditing and certification system of hatcheries. The outcome is improve the auditing system for hatchery certification on veterinary hygiene conditions and contribute to improve risk management along the market chain.

Contact: FAO Viet Nam (fao-vn@fao.org)

ACKNOWLEDGMENTS

This brief was compiled by James Azevedo Gorgen, Anna Rappazzo and Selvaraju Ramasamy based on the available tools, methods and approaches from various FAO sources suitable for young agricultural development workers.

Recommended citation: **FAO**. 2020. *Information and tools for young agricultural workers during COVID-19 crisis*. Rome. https://doi.org/10.4060/ca9328en