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NRCS International Programs Division

FY–2020 Annual Report

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About this Report

This annual report was prepared by the International Programs Division (IPD) of the Natural Resources Conservation Service (NRCS), which is an agency of the U.S. Department of Agriculture (USDA). The report covers the period from October 1, 2019, to September 30, 2020 (fiscal year 2020).

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Executive Summary

NRCS IPD facilitated activities in support of U.S. agricultural and foreign policy interests that promote the advancement of science and technology, address food security, strengthen developing economies, and encourage the sustainable management of natural resources.

In fiscal year (FY) 2020, NRCS participated in **15 international engagements** (compared to 28 in FY–2019) and strengthened the bilateral relationship with **12 individual countries**. Activities were impacted by the COVID-19 global pandemic, which restricted domestic and international travel starting at the end of March 2020.

NRCS staff undertook **15 international travel assignments** to explore and improve conservation efforts in support of USDA and agency priorities. Scientific engagement and collaboration remained strong both online and in-person and accounted for most trips. Activities included the CocoaSoils Forum, which strengthened cocoa research to develop sustainable soil health management programs and improve cacao quality and yield per unit area. Participation in another exchange program provided an employee opportunity to participate in the development of a vision for a tri-national North American Pollinator Conservation Framework and future collaboration among Mexico, Canada, and the United States.

Agency experts also provided technical assistance by serving as instructors building capacity in digital soil mapping in Columbia.

IPD also facilitated **9 foreign delegation visits** that enabled NRCS technical experts and senior executives to meet and engage with **68 foreign visitors**—government officials, scientists, and academics—at headquarters, online, and at field locations. IPD assisted 6 agency employees to participate in 3 international workshops that, due to pandemic's worldwide impact on international travel, were held virtually. Topics included the impacts of desert locust and COVID-19 in Africa and Asia, agricultural production, water management systems, and conservation practices. Additionally, NRCS staff led an online workshop for Pakistani candidates for the U.S. Department of State International Visitor Leadership Program (IVLP). The workshop focused on using area-wide planning for watershed management, reducing sedimentation in the barrage-and-canal water delivery system, addressing watershed treatment needs, and increasing on-farm irrigation efficiency.

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Acronyms and Initialisms

ARS	Agricultural Research Service
CfP	Cacao for Peace
CIAT	International Center for Tropical Agriculture
EPA	Environmental Protection Agency
ESD	Ecological Site Description
FAO	Food and Agricultural Organization
FAS	Foreign Agricultural Service
FY	Fiscal Year
G-20	Group of 20
GIS	Geographic Information Systems
GSP	Global Soil Partnership
IPD	International Programs Division
IVLP	International Visitor Leadership Program
NDCSMC	National Design, Construction, and Soil Mechanics Center
NRCS	Natural Resources Conservation Service
NSSC	National Soil Survey Center
NRI	National Resources Inventory
OCS	Office of Chief Scientist
KSSL	Kellogg Soil Survey Laboratory
SPSD	Soil and Plant Science Division
USAID	U.S. Agency for International Development
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

Introduction

NRCS has had an international presence and involvement since the 1930s. NRCS provides a wide range of activities that help foreign governments develop, use, and protect their natural resources, contributing to U.S. foreign policy by promoting economic stability, reducing poverty, and solving world food problems. Furthermore, U.S. domestic agriculture and the agency benefit from gaining access to new technologies, learning best practices, and developing contacts with global stakeholders. NRCS staff regularly participate in international meetings, present findings at conferences, support scientific and technical exchanges, engage in post-disaster recovery assistance, and provide short-term and long-term technical assistance.

Some of the activities of IPD during FY–20 included contributing to the USDA Office of the Chief Economist's presentation at the G-20 online conference hosted by Saudi Arabia; participating at international conferences, including the Commission for Environmental Cooperation North American Pollinator Conservation Workshop in Oaxaca, Mexico; and presenting at the Regional Workshop of Agronomy and Sustainable Development in Alençon, France.

Additionally, agency experts regularly seek out volunteer assignments offered through nongovernmental organizations. These activities are not captured in the IPD Annual Report but do provide agency staff with additional opportunities to participate in international development projects and gain new experiences.

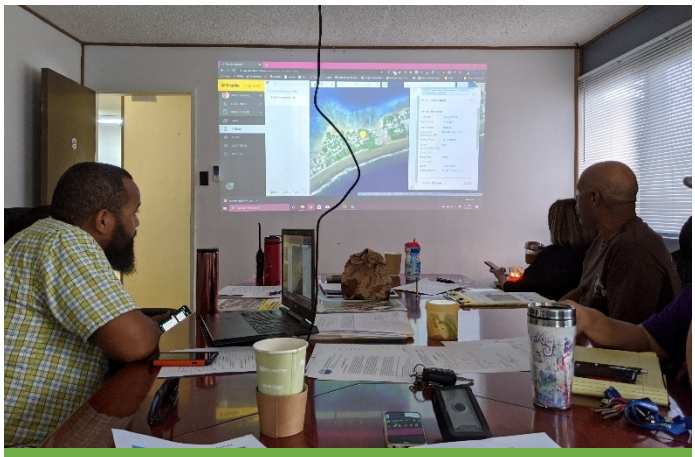
Program Highlights

Embassy Science Fellowship Program

Marshall Islands

Brian Baskerville, geographer/ Geographic Information Systems (GIS) specialist, from Lincoln, Nebraska, was selected as an Embassy Science Fellow by the Department of State for 2019 to implement his research in the Republic of the Marshall Islands (RMI). His fellowship was designed to consist of 46 days and include two separate field visits to the country. It was, however, ended earlier due to COVID travel restrictions. His objective was to work with the Environmental Protection Agency (EPA) to implement better tools, methods, and techniques using GIS and thereby help address coastal erosion and illegal solid waste dumping and assist in monitoring of water quantity and quality.

Brian's initial trip took place February 3–27, 2020, during which time he was assigned to the U.S. Embassy in Majuro, RMI. He provided training on the use of Trimble's Terraflex, which is a mobile platform that the EPA teams could use in the field and could access from the cloud environment in the office. Initially, the EPA used four licenses provided by the NRCS office in Nebraska. After reviewing the platform and analyzing its benefits, the EPA purchased four licenses of their own. As of this writing, however, the new licenses had not been activated due to complications resulting from COVID-19.



Marshallese EPA staff meeting and Terraflex Training.

Brian also developed a procedure for the EPA field teams to better capture much of their work by using cell phones to upload forms, pictures, and GPS locations to a central cloud database accessible in the office. He then developed Microsoft Excel-based forms to automatically import the collected data into forms. The improved record keeping from these improved practices will result in better conservation decision making through data.

Brian was originally scheduled to return to RMI in March to fulfill the second component of his fellowship. This trip has been delayed due to the COVID-19 travel restrictions. Brian hopes to return and train the RMI team once the Terraflex licenses are activated. For the time being, he continues to aid the EPA on technical issues in a limited manner by email.

Palau

Nels Liljedahl, district conservationist from Conway, New Hampshire, was selected as an Embassy Science Fellow by the Department of State for 2019 to implement his research in the Republic of Palau. The fellowship was for 90 days in March, April, and May 2020. Nels' main objective was to assist The Ebiil Society in implementing their reforestation efforts and provide technical assistance to improve their processes. The Ebiil Society is a non-profit organization dedicated to promoting the proper management of natural resources through traditional cultural practices. The society focuses largely on education and grassroots community involvement to accomplish their conservation objectives. The group integrates indigenous cultural practices with modern science to solve ecological problems.

Measuring tree growth.

In Palau, reforestation is important for reducing the hazard of erosion on exposed lands. Erosion contributes to sedimentation in streams that drain into the ocean and causes harm to the ecosystems of mangrove forests, seagrass beds, and coral reefs. Many of the exposed lands are abandoned bauxite mines. Located on steep slopes, these former mines have never been revegetated due to a lack of organic matter in the soil and high aluminum toxicity. Also, the savanna areas suffer from wildfires, leading to exposed soil and erosion. Problems associated with wildfires make fire monitoring, prevention, and education integral to mitigating this process.

Nels observed the reforestation process and assisted with harvesting seeds, seedlings, and cuttings from the surrounding native forest. He advised on improving nursery operation, site selection for plantings, and tree planting events. He helped incorporate mulching into The Ebiil Society's existing deforestation program. As a result, large quantities of mulch were procured for five tree-planting events. These events planted 6 acres on abandoned mines and another 5 acres on burnt land. Staff and volunteers from many parts of the country, including high level government officials, foreign ambassadors, and traditional chiefs, were involved. On Earth Day, the group set a record in Palau with the participation of 120 volunteers to plant trees at one site.

Nels took on added responsibilities by teaching school groups about the natural environment of Palau, monitoring sea turtle nesting, monitoring manta rays, helping with fire suppression strategies, and assisting with eradication efforts for invasive plants and animals. All these activities were on a 28-acre island managed by The Ebiil Society. Further, he assisted the society in

Applying wood mulch, coconut shells, and fronds around a seedling to help add organic matter and reduce erosion.

procuring additional grants from the U.S. Forest Service. The grants will be used to fund future projects to further the society's mission. Additionally, he wrote a proposal on behalf of The Ebiil Society and the Ngardok Lake Conservation Area for future Embassy Science Fellows to assist with conservation goals.

As a result of travel restrictions due to COVID-19, Nels was not able to return to the U.S. as scheduled in May. While he was stranded, he took on a short-term detail as the Acting NRCS Resource Conservationist for the Pacific Islands Area. In this capacity, he addressed environmental issues in Palau until he departed for New Hampshire on July 24, 2020.

Cacao for Peace

Colombia

The USDA NRCS Soil and Plant Science Division (SPSD) - Soils Information Branch and the USDA Foreign Agriculture Service (FAS) conducted a virtual brownbag luncheon presentation on August 20. The presentation was titled "Cacao for Peace: Geographical Information System Mapping for Optimized Cacao Production in the Republic of Colombia." Approximately 29 NRCS employees participated in this online meeting. FAS presented the joint effort to collect comprehensive soil properties and cacao genomics. The effort improved understanding of the variability of soils and cacao varieties and delineated suitable areas for optimal cacao production. Cacao for Peace (CfP) is a collaborative effort among the International Center for Tropical Agriculture; NRCS, SPSD; and Pennsylvania State University.

CfP is sponsored by the U.S. Agency for International Development (USAID) through FAS. The initiative seeks to improve rural well-being through agricultural development that improves economic opportunity of cacao farmers and to improve stability by supporting Colombia's recovery from civil war and social unrest.

Screenshot of CfP Web platform.

Andres Romero is CfP team lead and program manager in the Agricultural Economic Development Division of Global Program in FAS. He explained that CfP is a 5-year, $5 million initiative. It is funded by USAID and runs through January 2021. CfP is a collaborative effort to collect and analyze soil and cacao tree samples and thereby determine favorable conditions for growing cacao in the Sierra Nevada de Santa Marta Region of Colombia.

Cacao pods

The CfP project seeks to increase yields and improve the quality of cacao from Colombia and thereby benefit U.S. fine chocolate makers and provide Colombian farmers with alternatives to illicit crop cultivation. One output of the project is a GIS web application. The application displays the collected soils data and genetic data. It also provides interpretations and other information that enable policy makers, farmers, and investors to make informed decisions and optimize cacao production in the region.

Paul Reich, geographer at the SPSD, developed the GIS tool. He provided an overview of the web application and of the value and utility of the soils

and cocoa genomics information. Paul explained the icons on the web tool and demonstrated how to use the cocoa web map application to retrieve information for the pilot project area.

Although incomplete, the application is operational for use on computers or smart phones and is accessible by local farmers and policy makers. The team is fine tuning the digital soil map components. The link to the Web platform for CfP is https://arcg.is/1HmGrL. Once completed, project deliverables will be available for use by stakeholders, researchers, and the general public in Colombia and around the world.

Supporting State Agriculture and Rural Leadership Programs

Cambodia & Vietnam

Tanse Herrmann, district conservationist from Sturgis, South Dakota, traveled to the Kingdom of Cambodia (Cambodia) and the Socialist Republic of Vietnam (Vietnam) from February 14–29, 2020 as an international-experience participant with the South Dakota Agricultural and Rural Leadership Foundation (SDARL). The program exposes South Dakotan agricultural services and banking representatives, producers, and government officials to agriculture production methods, commodities, culture, and public and private leaders in foreign countries. The program provides participants with an opportunity to bring ideas and lessons home for sharing and implementation. Tanse used this opportunity to share his expertise on natural resources, soil, and soil health with his 27 classmates.

Rice harvested into bags and dropped off on the fly in Vietnam

In Vietnam, the participants visited the Agricultural Management Centre for Research and Development, where innovative production methods are tested and shared with the public and investors in the Centre. Products grown at the Centre include orchids, mushrooms, and several varieties of vegetables. The Centre uses high tunnel structures and subsurface irrigation methods to maximize efficiencies related to natural resource consumption. Other learning opportunities included a visit to a worm farm. Unprocessed water buffalo dung is collected off-site, aged at the farm with sun and water, and then placed in long, shaded, bed structures where native earthworms process the manure. Ultimately, compost material from the farm is bagged and sold to area farmers as a soil amendment. The participants also learned about the critical importance of the Mekong River for irrigation and shipping.

In Cambodia, the group learned about the shared importance of rice production in Cambodia and Vietnam. Cambodian agriculture includes sugar from the sugar palm tree, rubber tree plantations, cashew nuts, and black peppercorn production.

Program blog available online at http://sdarl.blogspot.com/.

Harvesting palm in Cambodia.

Cambodia & Taiwan

Melanie Dickman, district conservationist from Willmar, Minnesota, traveled to the Kingdom of Cambodia and the Republic of China (Taiwan) from February 20–March 1, 2020. She traveled as a participant in the Minnesota Agriculture and Rural Leadership (MARL) Program. MARL develops the skills of Minnesota's agricultural and rural leaders so they may maximize their impact and effectiveness in local, state, national, and international arenas. The purpose of the international trip was to tour agriculture and rural communities, see the world from a new viewpoint, and thereby become a better leader and person.

Cashew-farm owner in Cambodia.

In Cambodia, the group met with the Cambodian Deputy Prime Minister H.E. Dr. Yim Chhay Ly and with other government officials. The group also had a second meeting with the Minister of Agriculture, Forestry, and Fisheries H.E. Veng Sokhonm and his staff. They then visited the U.S. embassy and attended a presentation about Cambodia from Economic and Commercial Officer David Sequeira and other staff. Field visits for the group included a cattle ranch, rural market, farms, and cultural programs and a tour of Dr. Noy's farm. He explained how he incorporated ideas from around the world to design his farm. The farm is 85 hectares and has alternated coconut and banana trees. It also has poultry and livestock. Next, the group met with the Run-Ta-Ek Coop, where member farmers and families produce crops together and host homestay experiences, a school, and a temple. The last

day in Cambodia, the group visited a cashew farm. Melanie expressed her appreciation for Dr. Noy, who hosted the group and shared his experience in Cambodia over the last four decades.

In Taiwan, the group toured a tea farm. The owner led a tea drinking workshop and demonstrated the tea brewing process. The group then visited a mushroom farm. The owner demonstrated mushroom cultivation processes and described the health benefits of mushrooms. The group also visited the Flying Cow Dairy farm, which is an agri-tourism facility. The population in Taiwan primarily lives in an urban environment. Therefore, the facility served a dual purpose, including the education of the public on agricultural issues. Next, the group toured a hydroponic lettuce farm. The lettuce farm manager informed the group about research on the impact of lighting and music on the growth of lettuce.

Mushroom farm in Taiwan.

On the last day of the tour, the group worked on developing a documentary on their Cambodian agriculture experience.

Melanie noted how history had impacted the agricultural and economical trajectory of the two countries. She plans to share her experience with two groups outside of work as well as with a local newspaper. She will also share her experience in the monthly NRCS newsletter and at an NRCS meeting.

Watershed Planning Workshop

Pakistan

On September 2, 2019 Brent Draper, state irrigation engineer in Utah, and Jon Fripp, civil engineer at the National Design, Construction, and Soil Mechanics Center (NDCSMC) in Texas, met online with ten Pakistanis as part of the Department of State's International Visitor Leadership Program (IVLP). The IVLP provides short-term visits to the U.S. by current and emerging foreign leaders in a variety of fields to cultivate lasting relationships with their American counterparts. NRCS discussed how the U.S addresses water management, distribution, and pricing in water-scarce environments. Brent presented on "Irrigation Programs in the Arid West" and discussed desalinization programs in Utah. Jon provided a

presentation on “Improved Water Management Distribution and Pricing in Water-Scarce Environments” in which he provided an overview of NRCS history, processes, and programs to serve the American people.

Selected Country Activity Reports

Moldova

Soil pit with poster and explanation of data.

Dr. Skye Wills, national leader for soil science research, National Soil Survey Center (NSSC), participated in the International Black Soils Network from October 2–5, 2019, in Chisinau, Moldova. While there, she also attended a symposium on Eastern European Chernozems.

The purposes of the network are to highlight the importance of black soils and thereby protect them and to share information about how best to manage them. Although current soil taxonomy and mapping efforts can identify areas of black soils, there is considerable disagreement about how narrow or wide to make the definition. Scientific exchange has noted that many of these soils behave very similarly, while others have unique management challenges. A plan was made to seek scientific guidance from the Global Soil Partnership (GSP) Intergovernmental Technical Panel about the best definition. Such guidance should facilitate future efforts in black soil mapping and information exchange.

Comparing and contrasting the landscapes of Moldova to those of the United States, Skye saw unfamiliar management operations; observed the applicability as well as the limitations of NRCS guidelines, definitions, and recommendations; and used the opportunity to discuss common practices with those from other regions. Her participation assisted cooperating institutions gain a better understanding of U.S. Soil Taxonomy and its application to questions of land use and management.

Cameroon

Charles Kome, soil scientist with the Soils Information Branch of the NRCS SPSD in Greensboro, North Carolina, traveled to the Republic of Cameroon from January 18–25, 2020 to represent NRCS at the CocoaSoils Conference. This conference was held to build a common understanding around the CocoaSoils program and to engage partners in further strengthening cocoa research. Research is needed to assist resource-poor cacao farmers around

the world in developing sustainable soil health management programs that improve cacao quality and yield per unit area.

The main objective of the conference was to develop ways of improving yields per unit area on existing farms rather than establishing new cocoa farms through deforestation. The agenda addressed challenges facing smallholder cocoa farmers globally as they improve cocoa yields while maintaining or improving soil health on current lands without further deforestation. The group also addressed the issues of child labor, ways to earn a living wage from farming cocoa, and gender issues in the operations of cocoa farms.

Cacao trees require specific ranges of soil types, temperature regimes, and moisture regimes. These requirements limit their geographic distribution. The optimum range for cocoa is between the 20° North and 20° South latitudes in humid tropical conditions. The range encompasses a land area of over 70 million hectares. Typical farms range from 2 to 3 hectares and are on a wide variety of soils that have marginal yields. Globally, cocoa is grown by approximately 5 million farmers. These farmers commonly lack resources and an understanding of desirable soil types or soil management.

Categories of Program Partners unified by the flavor, health benefits of cocoa and a passion for sustainability and environmental stewardship.

In West Africa, years of mismanagement have led to poor soil health and contributed to declines in cocoa productivity. The farmers simply do not have access to the information that would help them understand how to best apply inputs, control soil erosion, and protect against the high prevailing temperatures that lead to a loss of soil organic matter.

Declining yields of cocoa plantations in West Africa result in lower income for farmers. To compensate for low yields and improve their livelihoods, farmers see converting more forests into cocoa farms as their best choice, resulting in

massive deforestation. Among other factors, soil degradation and poor soil fertility are critical factors contributing to the decline in productivity in cocoa. A knowledge gap exists regarding good crop nutrition and proper management of cocoa trees. A lack of understanding exists regarding the necessary nutrition for the cocoa tree, such as nitrogen, phosphorus, and potassium.

Because of rising global demand for cocoa, sporadic price spikes due to declining yields, and other unpredictable forces, interest is growing for improving the quality and quantity of cocoa to satisfy the market. Increasing cocoa consumption, particularly in Asia, has increased the demand for the ingredient by $100 billion, one million tons, or roughly a quarter of world's current production by the end of 2020.

Cocoa husks from which the beans are extracted. If accumulated over time until fully decomposed, the husks can be used as a source of organic fertilizer.

The U.S. is the number one consumer of cocoa in the world. If confectionary businesses are to satisfy consumer demands, it is critical for American chocolate industries to have access to a reliable and consistent supply of high-quality and affordable cocoa. Although cacao is native to South America, 70% of the world's cocoa is produced by Cote d'Ivoire, Ghana, Nigeria, and Cameroon. Therefore, it is vital for the chocolate industry to safeguard the production potential of West African countries.

As the leading U.S. agency for improving soil health, NRCS has amassed vast knowledge and expertise in the development of guidelines for soil health, quality assessment, and monitoring crop management scenarios in diverse ecosystems. NRCS SPSD has a track record of providing technical assistance on soil health assessment and monitoring by deploying soil quality test kits in developing countries where soil laboratory services are lacking. The agency's understanding of the factors that favor or limit cocoa production in Africa can contribute towards improving production in South America and thereby help to meet the demand for cocoa beans by U.S. industries.

Canada

Jay Fuhrer, retired soil health specialist from NRCS North Dakota, spoke at the annual conference of the Manitoba Forage and Grassland Association (MFGA) on November 19–20, 2019. He addressed "Soil Health Principles" and served as a panelist at a question-and-answer session during the conference. MFGA is an agricultural-producer-based group focused on forages and grasslands, economic prosperity, and environmental opportunities that forage and grasslands provide and represent to Manitoba.

Attendees at the MFGA in Manitoba, Canada.

Japan

Dr. Adam Chambers, physical scientist, West National Technology Support Center, Portland, Oregon, was requested by the Office of the Chief Scientist (OCS) to represent USDA at the meeting "*Scaling Up and Out Climate-Smart Technologies*" in Tokyo, Japan, on November 2–9, 2019. Dr. Chambers presented on the role of USDA quantification tools and the benefits of NRCS voluntary conservation-practice implementation in the United States. Dr. Chambers and USDA partner Amy Swan (Colorado State University) presented on the CarbOn Management Evaluation Tool (COMET)-Farm and the COMET-Planner tools.

Biochar pyrolysis device.

Because of the event, the NRCS Conservation Innovation Grants program may have additional future opportunities. The program may provide U.S. based case studies to the G-20 meetings of agricultural chief scientists and at climate-smart discussions.

As evidenced by case studies and discussions with researchers and scientists from other G-20 countries, the U.S. is very much a leader in promoting climate-smart agriculture, voluntary conservation practices, quantification tools, and implementation of carbon farm planning. Dr. Chambers noted that the NRCS team and the research community in the U.S. are leading the world on these topics.

France

Jay Fuhrer, retired soil health specialist from NRCS North Dakota, spoke at an annual conference in Alencon, France, November 11–15, 2019. At the Regional Workshop of Agronomy and Sustainable Development, he addressed soil health principles. In addition to attending the conference, Jay spent a day touring the Gaec Saillard farm. This farm cooperates with McDonald's and uses cover crops extensively.

The conference demonstrated a strong interest in sustainable agriculture from France. The exchange of information, such as research data and on-the-ground practice application, will benefit the participants and will be shared with NRCS employees and clients.

Mexico

Christine Taliga, national ecologist from the Ecological Sciences Division in Washington D.C., traveled to the United Mexican States February 3–7, 2020 to attend the Commission for Environmental Cooperation North American Pollinator Conservation Workshop. The workshop was part of the North American Agreement on Environmental Cooperation (NAAEC) to strengthen regional pollinator conservation and thereby secure local benefits across

Small group break-out sessions were used in the development of the draft tri-national pollinator framework. Photo taken at Hotel Misión, in Oaxaca, Mexico.

Canada, Mexico, and the United States of America. The purpose of the workshop was to develop a tri-national vision for a North American Pollinator Conservation Framework and for future collaborations.

The workshop was attended by 11 Canadian, 15 Mexican, and 13 U.S. delegates. It was facilitated by Northern Arizona University through interactive small group sessions. The sessions enumerated key pollinator knowledge gaps, drivers of change, and tri-national collaborative opportunities. Regionally, the habitats most impacted by current drivers included grasslands; semi-natural habitats, such as farmland edges; wetlands; and forests. Brainstorming sessions were held to develop successful strategies for addressing pollinator declines related to land use drivers. The topics that were identified included peer certification programs driven by grassroots farmers; farm conservation planning; financial and technical assistance; and farmer-led initiatives. To advance the conservation framework, priority components were identified. This included information sharing and science coordination; mapping and monitoring coordination; tri-national identification of shared high-risk and high-value ecosystems and species; and annual progress reporting related to shared priorities.

One highlight of the workshop was a presentation by local honeybee farmers and mezcal producers.

For next steps, the workshop facilitators will follow up with development of the draft framework, including the following sections: (1) North American pollinators state of knowledge, (2) Summary of drivers of change impacting pollinators, (3) Specific pollinators of importance by country (Mexico, Canada, and the U.S.), (4) Pollinators in local communities, and (5) Key pollinator conservation initiatives.

The U.S. delegates attending the workshop included representatives from U.S. Forest Service, U.S. Geological Survey, Northern Arizona University, Penn State University, Pollinator Partnership, Monarch Joint Venture, Association of Fish and Wildlife Agencies, and Xerces Society. By participating at this workshop, NRCS was able to foster sustainable ecosystems; strengthen private lands pollinator conservation; provide information about USDA Farm Bill programs benefiting pollinators, agricultural operations, and wildlife habitat; and strengthen existing partnerships with U.S. Fish and Wildlife Service, USGS, Penn State University, and Northern Arizona University and with private non-profit partners such, as Monarch Joint Venture, Pollinator Partnerships, and Xerces Society. Participation at the workshop may lead to future collaborative opportunities to conserve pollinator habitats on private land.

Saudi Arabia

Kenneth Spaeth, rangeland management specialist, Central National Technology Support Center, Fort Worth Texas; Hong Wang, civil engineer, National Water Management Center, Little Rock, Arkansas; and Jon Fripp, hydraulic engineer, NDCSMC Fort Worth, Texas, participated in developing the U.S. Government's online presentation at a G-20 meeting. The International Virtual Experts Meeting on Promoting Sustainable Agriculture Development in Drylands meeting was chaired by the Kingdom of Saudi Arabia on August 10th. The team provided expertise at the planning meetings. The team also provided information or other presentations and reviewed

various draft versions of the presentation with the OCS. The meeting was divided into four sessions: (1) Key risks, opportunities, and system approach for sustainable agricultural development in drylands; (2) Enabling tools for sustainable agricultural development in drylands; (3) Biotic factors affecting sustainable agricultural development; and (4) Innovation, technology, and adoption to enhance resource use efficiency.

The half-day meeting included 30 presentations by 15 countries and 3 international organizations. Around 70 participants joined the meeting. Q&A sessions for presentations were limited to the chat box, but a brief discussion period was held at the end of the presentations. OCS delivered the presentation for the NRCS slides because the presentation was higher level, covered multiple agencies, and was limited to 7 minutes.

The USDA presentation "Collaborative US research highlights: Providing a range of tools and resources for sustainable agriculture in drylands" is available at the meeting website https://www.macs-g20.org/annual-meetings/current-meeting/saudi-arabia-2020/.

U.S. Department of Defense

Jon Fripp, hydraulic engineer, NDCSMC, Fort Worth, Texas; Michael Kucera, agronomist, NSSC, Lincoln, Nebraska; and colleagues from USDA Agricultural Research Service and Foreign Agricultural Service participated in and made a joint presentation on USDA population engagement activities at an online workshop on September 15–17, 2019. The workshop was hosted by the Joint Special Operations University under the U.S. Special Operations Command (USSOCOM). It addressed potential integrated opportunities resulting from COVID-19; the devastation by locusts across East Africa, the Middle East, and South Asia; and the likelihood of starvation due to the severe economic dislocation. Jon and Michael focused on the importance of soil and water in agricultural productivity. USSOCOM recognizes the potential in interagency engagement with USDA experts to develop relationships with local farmers and thereby further U.S. national security interests.

Egypt

Dr. Mahmoud Khairy, Ministry of Agriculture and Land Reclamation of the Arab Republic of Egypt completed an Arabic translation of the 1993 version of the "Soil Survey Manual" in September. This major USDA publication in the field of soil science is now available to a greater audience of non-English speaking scientists. Dr. Moustafa Elrashidi, research soil scientist, NSSC, Research Branch, provided a review prior to the release of the final version.

Image of "Soil Survey Manual" in Arabic.

The translation can be viewed or downloaded at https://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ref/?cid=nrcseprd1652414.

Food and Agricultural Organization

The UN Food and Agricultural Organization (FAO) GSP Global Soil Laboratory Network (GLOSOLAN) held its First Plenary Meeting on spectroscopy on September 23–25, 2020. The meeting had over 200 participants from nearly 70 countries. David Hoover, director, NSSC, and David Lindbo, director, SPSD, attended the event.

This meeting built on a 2019 meeting at the NSSC that had focused on standardizing mid-infrared (MIR) soil spectrometry analysis. While identifying activities to resolve key technical issues, GLOSOLAN conceived the idea of designating a single reference laboratory for the collection of data used to calibrate models. The NRCS Kellogg Soil Survey Laboratory (KSSL) was

selected as the world hub for collecting measured and spectral data that would serve global efforts to predict soil properties from MIR spectra.

The meeting in September developed five action plans to move the initiative forward. The initiative serves the interests of progressive science organized around emerging technologies that will be useful in the U.S. and abroad. David Hoover was impressed by the large number of countries that recognize the USDA as a leader in soil science and by the frequency with which the KSSL was said to represent the "gold standard" for soil laboratory data, procedures, and standards.

For information on the initiative, go to http://www.fao.org/global-soil-partnership/glosolan/soil-analysis/dry-chemistry-spectroscopy/en/.

For presentations at the meetings, go to http://www.fao.org/global-soil-partnership/glosolan/soil-analysis/dry-chemistry-spectroscopy/presentations-1st-spectroscopy-2020/en/.

For the original concept note, go to http://www.fao.org/3/ca8431en/ca8431en.pdf.

By the Numbers

International Travel

NRCS employees participated in **15 international travel assignments** in FY–2020, taking them to **12 different countries**. The trips were to Canada, France, Mexico, Italy, Moldova, Taiwan, Cambodia, Vietnam, Pakistan, Argentina, Japan, and Cameroon. In addition, two employees were selected for residential-assignment posts in the Federated States of Micronesia and the Republic of Palau. IPD assisted the employees in preparation for their new assignments. Due to COVID travel restrictions, however, the positions were delayed and ultimately cancelled.

The 15 assignments primarily provided NRCS employees the opportunity to engage in the exchange of scientific information. The employees participated in 13 conferences. Two NRCS employees led a 2-day workshop in Pakistan that focused on use of area-wide planning for watershed management, reducing sedimentation in the barrage-and-canal water delivery system, watershed treatment needs, and increasing on-farm irrigation efficiency. One employee attended the CocoaSoils Forum. The goal of the forum is to strengthen cocoa research around the world and thereby develop sustainable soil health management programs and improve cacao quality and yield per unit area. Another exchange program provided an employee opportunity to participate in the development of a vision for a tri-national North American Pollinator Conservation Framework and to promote future collaboration among Mexico, Canada, and the United States.

Foreign Visitors

In FY–2020, IPD supported **9 requests** for **19 staff members** to meet with **68 foreign visitors** from **8 countries**. These engagements were primarily for presentations and sharing of scientific and technical information as part of speaker requests or in support of specific programs.

The agency maintains an outstanding international reputation and is continually sought out by foreign officials for guidance and information. Requests for presentations and scientific cooperation were submitted on behalf of 8 foreign countries. Visitors came from China (33), Indonesia (10), Pakistan (9), Spain (6), Turkmenistan (5), Denmark (2), Japan (2), and New Zealand (1).

NRCS Employee Participation

In total, **12 employees** traveled to support the **15 international travel assignments**. In FY–2020, 9 employees traveled once and three employees traveled twice.

The **9 visits** from foreign visitors were supported by **19 NRCS employees** throughout the United States. These visits were for presentations or were

otherwise educational in nature. They allowed technical experts to serve as the presenters and reach 68 foreign visitors.

Due to worldwide impact of the pandemic on international travel, IPD assisted 6 agency employees to participate in 3 international virtual workshops. Topics included support for impacts due to desert locust and COVID-19 in Africa and Asia, agricultural production, water management systems, and conservation practices.

Division Operations

Program Management

Throughout FY–2020, IPD evaluated policies and procedures to improve the overall efficieny and management of the agency's international activities. Ongoing coordination was provided to synchronize operations with FAS, other sister agencies in USDA, and interagency partners. Additionally, IPD provided agency staff with new or updated guidance to further increase awareness about international activities.

International Travel Program

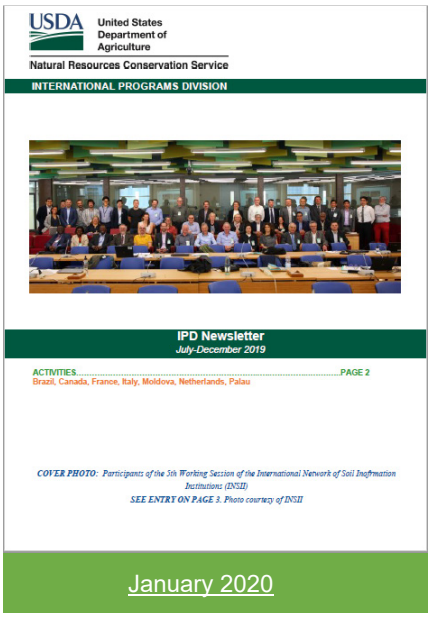
IPD's International Travel Program provides support functions that enable agency employees to conduct official U.S. Government business in foreign countries. This support includes obtaining official passports and visas to undertake travel, requesting country clearances from U.S. embassies, and providing guidance on additional topics, such as traveling with electronic devices, medical evacuation policy, mandatory security training, and inoculations. COVID-19 restricted travel for most of FY–2020. IPD awaits further instruction from the Department of State to resume normal operations.

Communication Products

Five national bulletins were prepared and released in FY–2020:

- Reminder of Information on International Travel Procedures NB_280_20_1-INC
- Departmental Procedures for Engagement with Cuba NB_280_20_2-INC
- Meeting with Foreign Visitors NB_280_20_3-INC
- International Assignment Candidates Database NB_280_20_4-INC
- International Programs Division FY-2019 Annual Report NB_280_20_6-INC
- Update on U.S. Department of State requirements impacted by COVID-19 NB_280_20_7-INC

Two editions of the biannual IPD Newsletter were distributed during FY–2020. The publications covered July-December 2019 and January-June 2020.



January 2020

June 2020

International Programs Division Staff

• Lillian Woods Shawver	Director
• Marita McCree	Program Analyst
• Linda Risden	Program Assistant
• Paul “Doug” Curtis	Program Analyst
• Chen-Lun “Jason” Chang	Program Analyst
• Nga Watts	Program Analyst Detailee
• Charles Kome	Program Analyst Detailee (August 19–December 17, 2019)

Front Cover

Top: Panelists at the CocoaSoils Conference, Yaoundé, Cameroon.
Center left: Co-op member driving tractor, Cambodia.
Center right: Bore hole monitoring with water quality team in Marshal Islands.
Lower left: Two-stroke gas powered auger to drill holes, Palau.
Lower right: Opened cacao pod.

Back Cover

Upper left: Compost fertilizer from earthworm farm, Vietnam.
Upper right: Drain and rubber collector on of a rubber tree, rubber factory, Cambodia.
Center: Tea farmer leaf picking technique, Taiwan.
Bottom: Black soil region, Moldova.

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