



Report of the IPPC ePhyto hub pilot

16 April 2018

Rev. 4

Summary

1. The pilot of the hub was successfully completed on 31 March 2018.
2. The concept of single point exchange was proven at completion. The hub has facilitated the exchange of ePhytos between 10 NPPOs, based upon the harmonized message schema, including standardized codes and lists and a standardized communication protocol.
3. The pilot identified a number of technical issues including the need for a tool to support countries in implementing the schema. The ePhyto Steering Group (ESG) and United Nations International Computing Centre (UNICC) are addressing these issues before further on-boarding of countries commences.
4. The ESG will be finalizing procedures for new countries to join the hub at their May 2018 meeting

A background describing the [ePhyto Solution](#) is provided below.

The pilot of the hub

For NPPOs to participate on the [hub](#), they require a system to produce/send/receive ePhytos. NPPOs can connect to the hub by modifying their national systems to conform to the [schema](#).

The United Nations International Computing Centre (UNICC) completed development of the hub in September 2017. The IPPC Secretariat established a contract with the UNICC to develop and host the hub earlier in 2017.

[A pilot](#) consisting of 10 countries commenced in October 2017 to validate the operation of the hub (proof of concept), validate the design, review the use of the harmonized message schema and define the costs of operation.

Hub pilot countries

Argentina	The Peoples Republic of China	The Kingdom of the Netherlands	The United States of America
Australia	Ecuador	New Zealand	
Chile	Kenya	The Republic of Korea	

The hub pilot closed on March 31, 2018

Process of connecting to the hub is described in the following diagram:



Methodology for evaluation

The hub pilot closed once countries had exchanged certificates confirming the reliability of exchange. By the close of the pilot, countries had exchanged ePhytos in both the test and production environments validating the single point exchange mechanism, the utility of the schema, and certain codes and lists.

The hub interface also includes an open blog where NPPO administrators can post issues and raise questions. The UNICC and IPPC Secretariat monitor the blog and issues are addressed immediately or consulted upon with the members of the ESG as appropriate.

In January 2018, the ESG also prepared and circulated a questionnaire to obtain feedback from the pilot countries regarding the operation of the hub interface, the progress of countries in adapting to the schema and the status of certificate exchanges. Country representatives also



participated in a meeting on 21st January 2018 where further input was solicited by the ESG. Countries provided comments on:

- The registration process
- Web service testing
- Functionalities of the admin interface
- Adaption of systems to the harmonized XML schema and mapping
- The extent of exchanging of messages
- The quality and readability of supporting technical documents
- The process of technical support

The UNICC and the IPPC Secretariat have also developed a report on costing.

Results

In general, all pilot countries except one have successfully connected to the hub. Many have been actively exchanging test ePhytos. A few countries have adopted the harmonization schema and are exchanging certificates in the production environment. Several countries are still adapting systems to comply with the web service or to adapt to the harmonized schema. Many of the countries reported that the registration process was very easy and that the technical on-boarding documents were very helpful.

Summary of the Status of Pilot Countries as at March 2018

Pilot country	Registration	Connection	Exchange
Argentina	Yes	Yes	Yes
Australia	Yes	Yes	Yes
Chile	Yes	Yes	Yes
China	Yes	Testing the connection	No
Kenya	Yes	Yes	Yes (sending only)
Ecuador	No	No	No
the Netherlands	Yes	Yes	Yes
New Zealand	Yes	Yes	Yes
Republic of Korea	Yes	Yes	Yes
United States	Yes	Yes	Yes



Certificates Exchanged

Month	Total certificates sent to hub in test environment	Total certificates sent to hub in production environment
October 2017	5	
November 2017	1493	
December 2017	3899	2971
January 2018	2443	966
February 2018	1067	1819
March 2018	1271	1414
Total	10178	7170

Feedback received from pilot countries

During the pilot, continuous feedback was obtained from the countries through various channels (i.e. country surveys; through the hub administration blogs, emails and a meeting of the countries in mid-January). The ESG has compiled a list of action items and ways to address them as follows:

Challenge	Action	Expected Delivery
A number of countries had difficulties adopting the ePhyto schema. A few had difficulties identifying mandatory fields or in adjusting existing schemas to the ePhyto schema. One country noted some schema errors. The United States of America and Argentina, which adapted their messages to the schema initially, have assisted other pilot countries with identifying and rectifying issues with the message schema. The UNICC is proposing to develop a schema validation tool that would allow countries to test messages in the user test environment. The ESG will also further review the schema to address any errors;	The HUB will be enhanced to provide automatic tools to registered countries to verify the schema and the use of the correct codes in the ePhyto XML they produce. Such feature will be developed with the GeNS and exposed through the HUB web service too	July 2018



Challenge	Action	Expected Delivery
Several countries noted that the hub administrative console could have greater functionality in allowing countries to sort and group messages for delivery;	The grouping and sorting functionalities of the views have been implemented with the Release of March 2018.	Completed
A few countries reported that they were unclear on documents versions.	The UNICC has begun to include version control numbers and dates on documents. The IPPC Secretariat is posting all versions in the repository of documents with a clear indication of the current version.	Completed
A few countries noted some gaps in the harmonization and schema mapping documents. The ESG will address these issues at its next face-to-face meeting.	With the validation tool the HUB will expose the currently harmonized codes	July 2018
A few countries reported that they felt communication of information about the pilot was limited. Currently the UNICC and Secretariat have been relying on the hub blog tool and IPPC Secretariat notifications and letters to contact points to provide information to countries.	The Secretariat is proposing to enhance communication by sending out a quarterly newsletter to countries and by providing letters directly to ePhyto contact points on status and updates.	In progress expected to be implemented by June 2018
The hub requires that clients connecting to it have a client security certificate. Some countries expressed difficulties in obtaining or authenticating the certificate. The UNICC is proposing to develop automated system for the generation of client certificates to support NPPOs.	The generation of the client certificate as self-signed can be implemented in the HUB admin console with a wizard that can guide the NPPO users to create and configure a client certificate for their applications. Such scenario is also in the scope	July 2018



Challenge	Action	Expected Delivery
	of GeNS implementation automation.	
The on-boarding documents will be updated and improved based upon feedback received by countries	It is a constant process that ongoing with each new release or change	Ongoing, but existing issues completed
One country had difficulties connecting to the hub because the official country contact point did not validate the NPPO requesting registration.	The IPPC Secretariat is proposing to develop a simplified implementation guide to ensure that countries fully understand the on-boarding process. The guide will be posted to the International Phytosanitary Portal and provided to official country contact points.	July 2018
A number of comments suggested that the message schema should include validation or received messages returned to the sender. The ESG has previously considered the addition of return messages and is proposing to review the need during future enhancements.	We have included in the March 2018 Release an advanced acknowledge operation that provide the ability to mark non conformities while receiving the certificate. It is not a return of the certificate to the exporting country, only a warning message to improve the production of the ePhyto mapping and schema matching, we expect to have additional feedback and enhancements in the future once the feature is utilized by countries	Completed March 2018
A number of other technical modifications were identified during the pilot including delivering certificates as a batch to the NPPO system. Some of these	With the March 2018 release the HUB was enhanced to provide additional ways of pulling the envelopes	Completed March 2018



Challenge	Action	Expected Delivery
modifications were completed prior to the close of the pilot. Others will be completed over the next several weeks.		
The test performed to receive Envelopes via PUSH method highlighted several issues that need to be resolved to make it functional and feasible to implement	Several issues have been fixed on the overall process with few additional modifications and documentation enhancements that will be delivered with the April 2018 release	April 2018

Operation costs

The contract between the UNICC and FAO caps the cost of operation at U.S. \$13,758/month. The table below indicates the actual monthly costs incurred on Hub operations from the start until the end of the pilot.

Month	Real cost of monthly operation (U.S. \$)
July 2017	506
August 2017	408
September 2017	19,430 ¹
October 2017	2,581
November 2017	2,858
December 2017	2,592
January 2018	2,593
February 2018	5,642
March 2018	9,158

Other observations

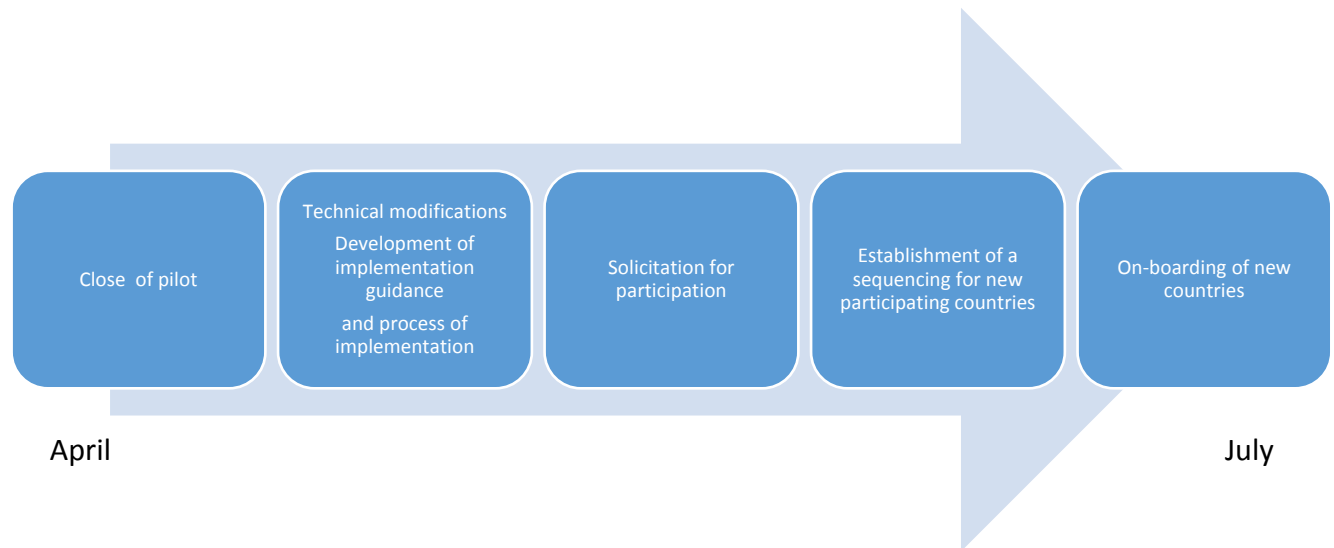
The results from the activities and tests performed so far indicates that the selected capacity for the HUB likely exceeds the demands of potential users.

¹ Increased costs associated with obtaining software licenses.



Conclusion and next steps

The pilot has proven the full success of a single point of exchanging electronic phytosanitary certificates. Six of ten countries are exchanging certificates (both sending and receiving) and many are moving to exchange these in normal phytosanitary business. The pilot also highlighted a number of technical and information changes (as identified in the section “Challenges” above) that would further facilitate its use. Some modifications are complete and others expected to be complete by early July. Guidance supporting the implementation is in development to support the on boarding of new countries by July 2018. A timeline is presented below:



Background

In 2012, The Commission on Phytosanitary Measures (CPM) of the International Plant Protection Convention adopted Appendix 1 to International Standard on Phytosanitary Measures (ISPM) 12 Phytosanitary Certificates. This Appendix describes the format, content and exchange of electronic phytosanitary certificates. In recent years, some Contracting Parties to the IPPC, predominantly developed countries, have made significant advances in developing systems for electronic certification. These have often required considerable resources to develop the electronic tools necessary for producing and receiving electronic certificates and in negotiating agreements with trading partners to allow for exchange. To support this increasing use of electronic certificates (ePhytos), the 8th session of the Commission of Phytosanitary Measures (CPM) established ePhyto Steering Group (ESG) to provide oversight, guidance and advice on IPPC efforts to facilitate the international exchange of electronic phytosanitary information among contracting parties. The CPM requested the ESG and the IPPC Secretariat to explore the development of a technology solution to support increased adoption of electronic certificate exchange. With support of donor funding from contracting parties and from the Standards and Trade Development Facility, the Secretariat and ESG is developing the ePhyto



الاتفاقية الدولية
لوقاية النباتات

国际植物
保护公约

International Plant
Protection Convention
Convention Internationale
pour la Protection des Végétaux

Международная Конвенция по
Карантину и защите Растений
Convención Internacional
de Protección Fitosanitaria



Solution. The ePhyto Solution consists of a hub (server) that facilitates the exchange of phytosanitary certificates between countries and a “[generic ePhyto national system \(GeNS\)](#)” that provides a web-based tool to countries without technological infrastructure to produce, send and receive electronic certificates.