Suggestion to Facilitate the Horticultural Crop Database of UN FAO

2018. 10.

YeongJo Lim

Contents

1. FAO at a Glance

Food and Agriculture Organization of the United Nations – FIAT PANIS

- **194 Member Countries**, two associate members and one member Organization
- Headquarters in **Rome**, Italy
- Presence in more than **130 countries**

- FAO supports governments and their stakeholders in areas of development, in the design of adequate policies, programmes and legal frameworks to promote food security and nutrition

2. Brief History of FAO

- **1945:** First session of FAO Conference, Canada, establishes FAO as a specialized UN agency
- **1951:** FAO headquarters moved to Rome, Italy, from Washington, DC, the United States
- **1960:** Freedom from Hunger campaign launched to mobilize non-governmental support
- **1974:** UN World Food Conference recommends International Undertaking on World Food Security
- **1986:** AGROSTAT (now FAOSTAT) becomes operational
- **1992:** FAO and WHO convene the first global conference devoted solely to addressing the world's nutrition problems, the International Conference on Nutrition (ICN)
- **2008:** FAO holds a conference on the impact of climate change and the biofuel on food security and prices
- **2009:** FAO holds a World Summit on Food Security to inject new urgency into the fight against hunger
- **2014:** FAO members, parliamentarians, members from civil society and private sector endorsed the Rome Declaration on Nutrition and the Framework of Action

3. Organizational Structure

Category	Description
Conference	reviewing global governance policy issues and international frameworks, evaluating work carried out and approving the budget for the next biennium
Council	elected by Conference, serving three-year rotating terms to carry out executive oversight of programme and budgetary activities
Director General	a four year term of office, renewable once (José Graziano da Silva(2012 - 2019)
Department	Agriculture and Consumer Protection, Economic and Social Development, Fisheries and Aquaculture, Forestry, Corporate Services, Technical Cooperation and Programme Management
Worldwide Offices	five regional offices, nine subregional offices, 80 fully fledged country offices, 5 liaison offices, information offices in developed countries.

4. Mandate and Priorities

- Achieving food security for all is at the heart of FAO's efforts – to make sure people have regular access to enough high-quality food to lead active, healthy lives.

  ⇒ *Raise levels of nutrition, improve agricultural productivity, better the lives of rural populations and contribute to the growth of the world economy.*

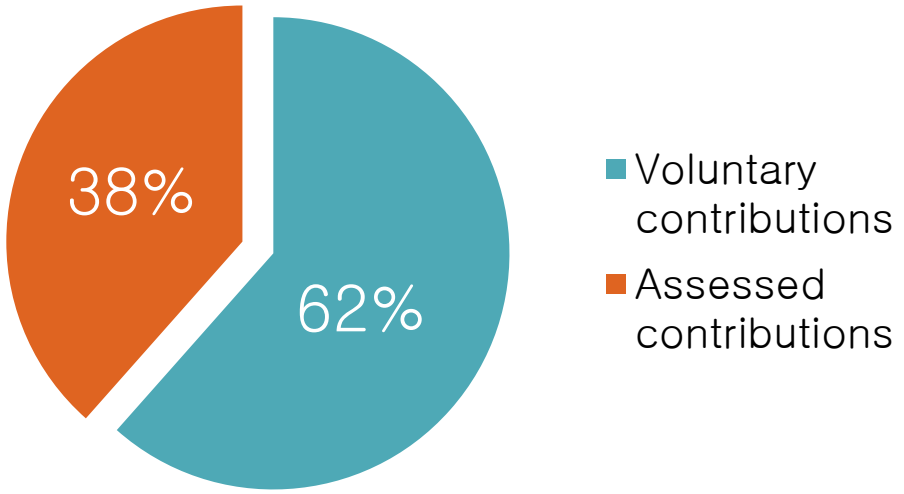
5. Funding and Expenditure

❖ **Assessed and Voluntary contributions**

The assessed contributions are member countries' contributions, set at the biennial FAO Conference. The voluntary contributions provided by Members and other partners support technical and emergency (including rehabilitation) assistance to governments for clearly defined purposes linked to the results framework, as well as direct support to FAO's core work.

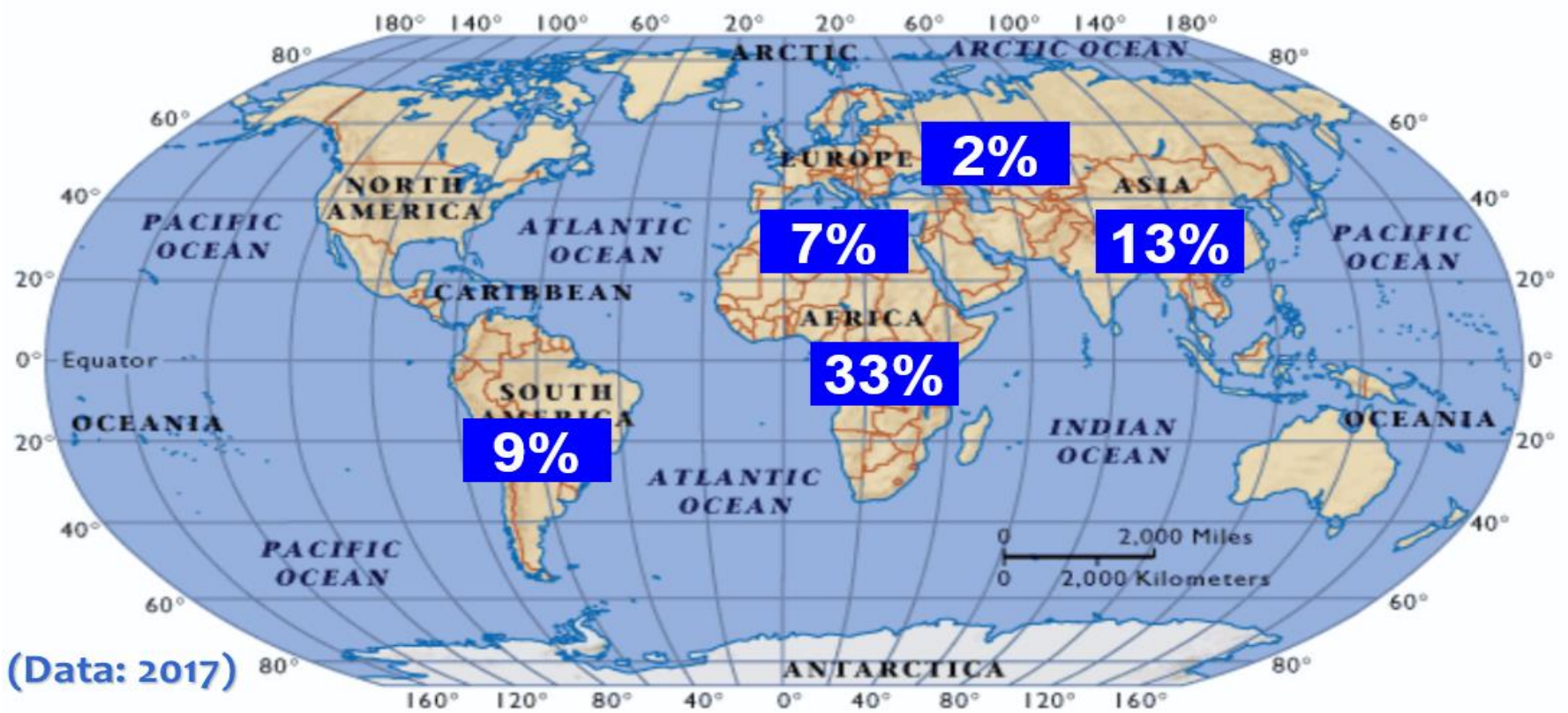
❖ **Budget**

The Budget planned for 2016-17 is USD 2.6 billion. Of this amount, 38% comes from assessed contributions paid by member countries, while 62% will be mobilized through voluntary contributions from Members and other partners.



6. Resource Allocation

- **40% of the total resource** is allocated to African countries, the most important beneficiaries.

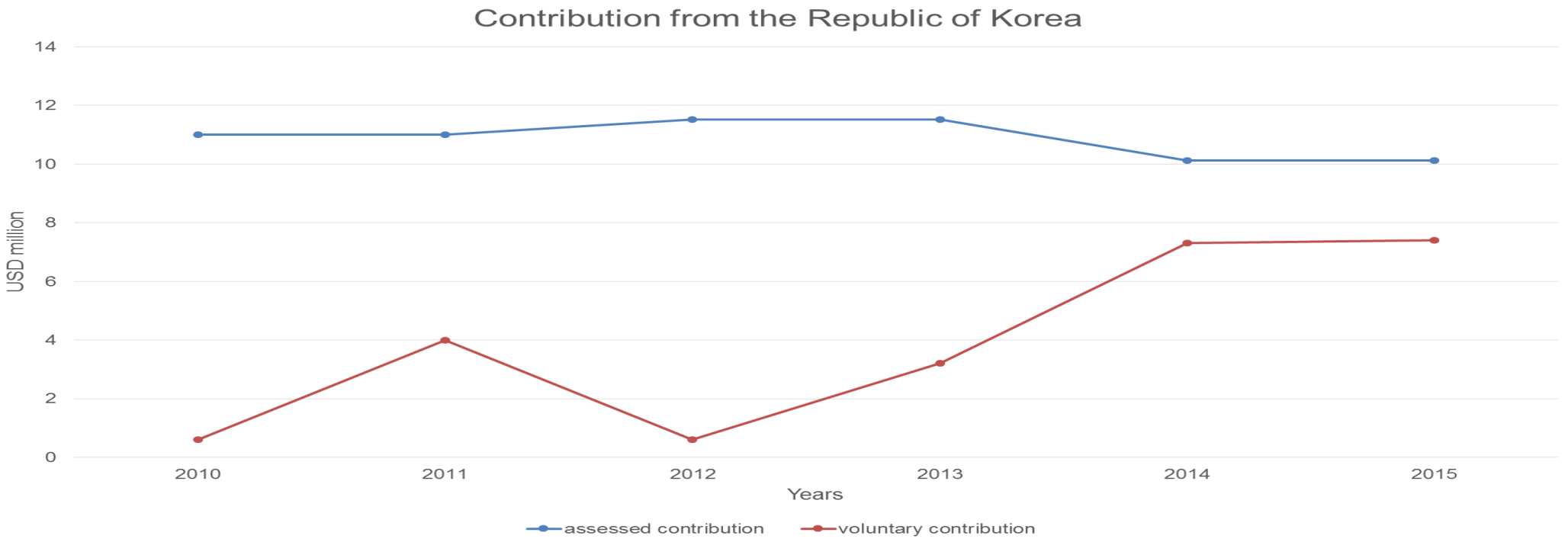


< 2017 Top 10 Resource Partners >

Biennial Rank	Resource Partners	Total Approvals (USD)
1	European Union	151,248,432
2	USA	129,217,329
3	GEF	96,747,626
4	UNOCHA	34,813,733
5	JAPAN	28,486,538
6	UNDP Administered Donor Joint Trust Fund	26,906,601
7	UK	23,985,678
8	Norway	22,546,159
9	Netherlands	13,105,653
10	Germany	12,136,287

7. Financial Contribution

❖ The total assessed contributions of the Republic of Korea for 2014 represent 1.99% of overall assessed contributions (ranking 13th). The voluntary contribution figures reflect the approvals' amount as shown on the contribution agreements between FAO and the Republic of Korea during a given year.



< Projects funded by Korea >

Project Title	Actual EOD	Actual NTE	Total Contribution (USD)
Support to address avian influenza and other high impact animal diseases in South Asia, Southeast Asia and Sub-Saharan Africa	01/12/2015	30/11/2019	2,495,838
Capacity Development and Experience Sharing for Sustainable Rice Value Chain Development in Africa through South-South Cooperation	01/11/2014	31/10/2017	1,897,533
Improvement of quinoa yields and capacity development of farmers in Bolivia	30/06/2014	29/06/2017	497,000
Support to Capacity Development in Implementation of Plant Pest Surveillance and Information Management in Southeast Asian Countries	01/09/2013	31/12/2016	1,796,642
Support for Horticulture Programme Development	14/04/2006	30/12/2017	2,015,138
Support to the Policy Assistance Branch (FAORAP)	04/01/2001	31/08/2017	2,421,815
Development of Mariculture Sector in Zanzibar	*30/11/2015*	*31/12/2018*	*3,228,103*
Review on aquaculture seed material requirements in the Democratic People's Republic of Korea and project formulation for the establishment of selected production facilities including long-term training and capacity building	*01/09/2015*	*30/11/2016*	*150,000*
Feasibility study for the establishment of the FAO World Fisheries University (WFU) in the Republic of Korea	*01/04/2015*	*31/10/2015*	*55,000*
A basic design survey to set up a mariculture hatchery in Zanzibar	*12/12/2014*	*15/11/2015*	*227,500*
Promotion of Responsible Fisheries Management	*01/01/2007*	*31/12/2016*	*1,948,710*
Support for the development of international food standards and related texts by the Codex Alimentarius Commission, in particular recommendations relating to chemicals in food	01/02/2004	30/09/2016	2,255,700
Implementation of the Forest and Landscape Restoration (FLR) Mechanism	01/11/2014	30/11/2020	3,254,433
Strengthening Forest Resources Management and Enhancing its Contribution to Sustainable Development, Land use and Livelihoods	26/11/2007	31/12/2017	3,078,626

8. Non-financial contribution

❖ **Human resources (HQ)**

- Seconded government official: (’16) 5명 → (‘17) 6
- Personally recruited staff: (’16) 3명 → (’17) 9
- Two Associate Professional Officers (APO): (’16) 2명 → (’17) 4

❖ **Policy support**

- Monitoring and evaluation through periodic progress and financial reporting;
- Annual consultations with representatives from the Republic of Korea to review projects and discuss pipeline (new project proposals)
- Expert meetings, exchange of information, and etc. with delegations and visitors from Korea

9. Global leadership

- 12th International Plant Protection Convention Congress, Inchon 2017

- 15th World Forestry Congress, 2021

10. Team Mission

Resilience

Crop agronomy and CA

Sustainable agricultural mechanization

SAVE AND GROW

Urban and peri-urban agriculture and city region food systems

High value crop production systems

PROFAV

Nutrition

Post ICN2
BETTER NUTRITION
better lives

SUSTAINABLE DEVELOPMENT GOALS

11. Mission assigned

Objectives	Activities
Intensifying contribution of Korea to **HORTIVAR**	1. Contacting potential organizations of Korea that produce or manage agricultural data 2. Acting as a contact point of FAO and potential partners of Korea 3. Setting up a project partnership to encourage contribution of Korea to HORTIVA system, e.g. providing data collected in Korea
Support for **PROFAV** initiative	1. Raising awareness of fruit and vegetable production and consumption for health among member countries including the Republic of Korea 2. Support for activities to organize regional workshop for promotion of fruit and vegetable for health and other events 3. Managing the FAO website for fruit and vegetable production and consumption project
Support for mechanization of agriculture	1. Contacting expert groups of agricultural machines and equipment of Korea to support agricultural mechanization of developing countries 2. Facilitating exchange of experts and information for agricultural mechanization
Organizing meetings for Korean Delegation to FAO	1. Acting as a contact point of FAO communicating with Korean Delegations to find out mutual interests and discussion topics 2. Encourage and respond to follow up activities

< Delegations and Visitors from Korea >

일 자	기 관	방 문 단	방 문 목 적
’16.4.28	한국농촌경제연구원	김창길 박사	기후 스마트 농업 전문가 회의
’16.6.6	FAO 한국협회	배종혁 외 8명	농업 전문기관 해외 연수
’16.9.6~7	한국농촌경제연구원	이대섭 박사	국제농업개발협력 추진전략 수립
’16.10.24	한국농촌경제연구원	김창길 원장 외 2명	세계 농업연구원 원장 회의
’16.11.14	FAO 한국협회	전종철 외 7명	국제농업협력 연수
’16.11.17	경상남도	25여명	지자체 공무원 해외 연수
’16.11.30	농진청	전승기 주무관 외 20여명	유럽 농업 기계화 정책 연수
’16.12.1	한경대학교	윤덕훈 교수	FAO-WHO 국제심포지움 농산물 안전 정책 주제 발표
’16.12.7	FAO 한국협회	김현정 외 1명	HORTIVAR 업무 협력 협의
’17.1.26	농식품부	배태현 사무관 외 1명	농식품부 ODA 추진전략 개선

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I. Introduction

II. HORTIVAR

III. New Project

1. What is HORTIVAR

- HORTIVAR is a geo-referenced database on the performances of horticulture cultivars in different agro-climatic environments.
- Platform for horticulture knowledge management and exchange.
- Standard methodology for data collection and record keeping on the performances of horticulture cultivars
- Powerful search engine for easy retrieval and comparison of information, e.g.: crop, cultivar, country, planting season, organic, soilless, greenhouse production
- Standard template for educational purpose - “A” to “Z” of a crop cycle including all field practices
- Gateway to horticulture knowledge and statistics, e.g.:

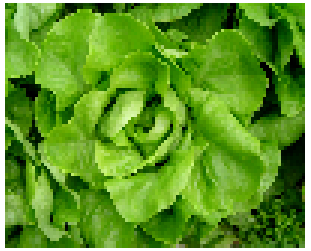
2. Information available

HORTIVAR relates to 6 groups of crops:

- **Vegetables**
- **Fruits**
- **Roots and tubers**
- **Mushrooms**
- **Herbs and condiments**
- **Ornamentals**

2. Information available

- production data
- seed sources
- standard cultivar descriptions
- photos of cultivars
- experts on specific crop, subject
- nutrient composition data
- climate data per location



White Boston

Bourlat

Czech Republic, Liberec
Latitude=50.75, Longitude=15.05 , Altitude=460 msal

Variables	Jan	Feb	Mar	Apr	May	Jun	Jul	Ago	Sep	Oct	Nov	Dec
Monthly average of daily MIN temperatures (deg C)	-9.83	-8.64	-4.60	-0.28	3.749	7.204	8.977	8.545	5.492	0.949	-2.95	-7.57
Monthly average of daily MAX temperatures (deg C)	3.062	4.582	10.55	15.73	19.66	23.08	24.66	24.57	21.58	15.90	9.134	5.001
Average temperature (deg C)	-2.90	-2.10	1.774	6.517	11.29	14.73	16.30	15.81	12.45	7.924	2.707	-0.92
PET (mm - liter/sqm)												
Precipitation (mm - liter/sqm)	78.96	64.46	65.94	87.88	115.5	110.9	98.74	96.61	56.91	46.74	54.27	76.38
Sunshine fraction (% of possible)												
Water vapor pressure (Hpa)	4.707	4.800	5.831	7.001	9.886	12.24	13.54	13.52	11.47	8.747	6.410	5.332
Wind speed (m/s)	3.528	3.293	3.550	3.279	3.062	2.810	2.867	2.707	2.863	3.117	3.442	3.702

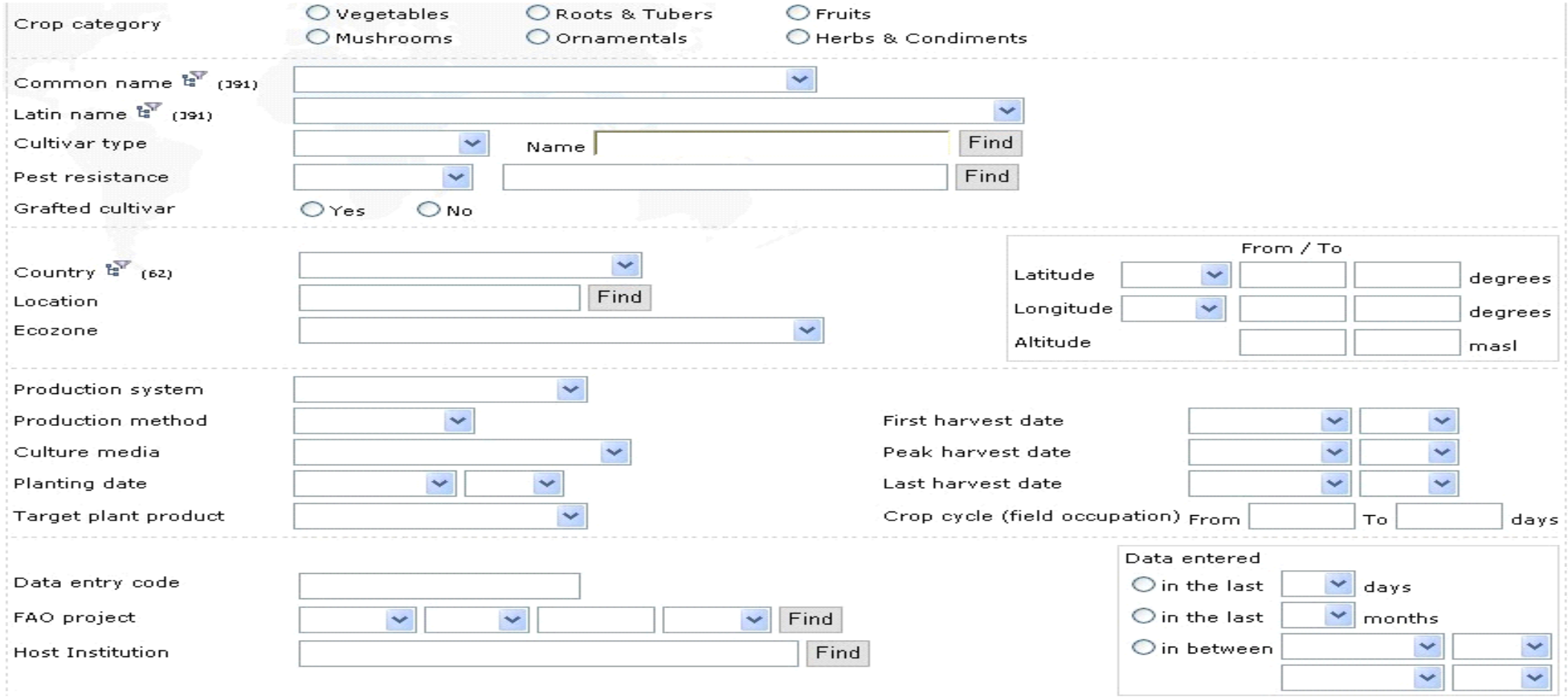
- Tomatoes, red, ripe, raw, year round average

Description	Units	Value (100gr)
Protein	g	0.88
Total lipid (fat)	g	0.20
Carbohydrate, by difference	g	3.92
Ash	g	0.50
Energy	kcal	18
Starch	g	0
Sucrose	g	0
Glucose (dextrose)	g	1.25
Fructose	g	1.37
Lactose	g	0
Maltose	g	0
Alcohol, ethyl	g	0
Water	g	94.50
Caffeine	mg	0
Theobromine	mg	0

3. How to use HORTIVAR (1)

http://www.fao.org/hortivar

3. How to use HORTIVAR



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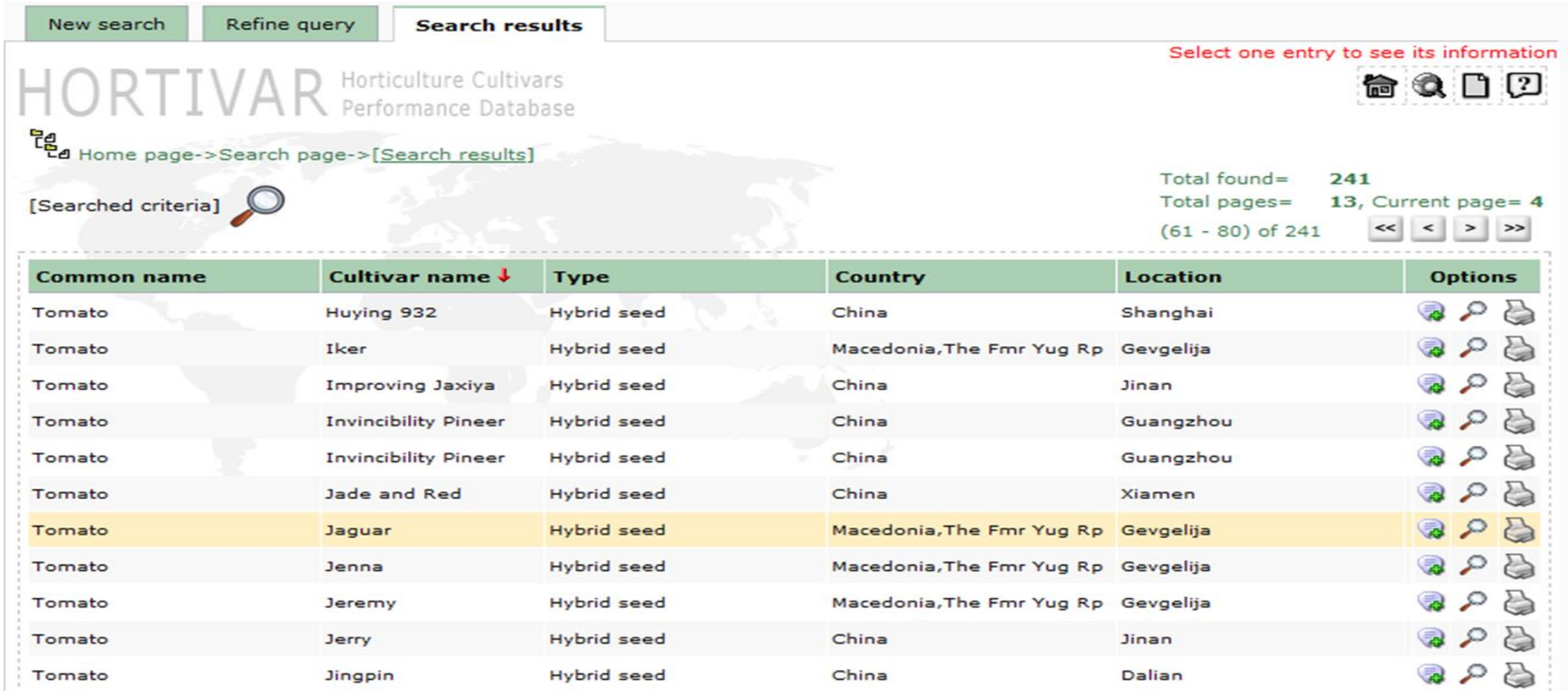

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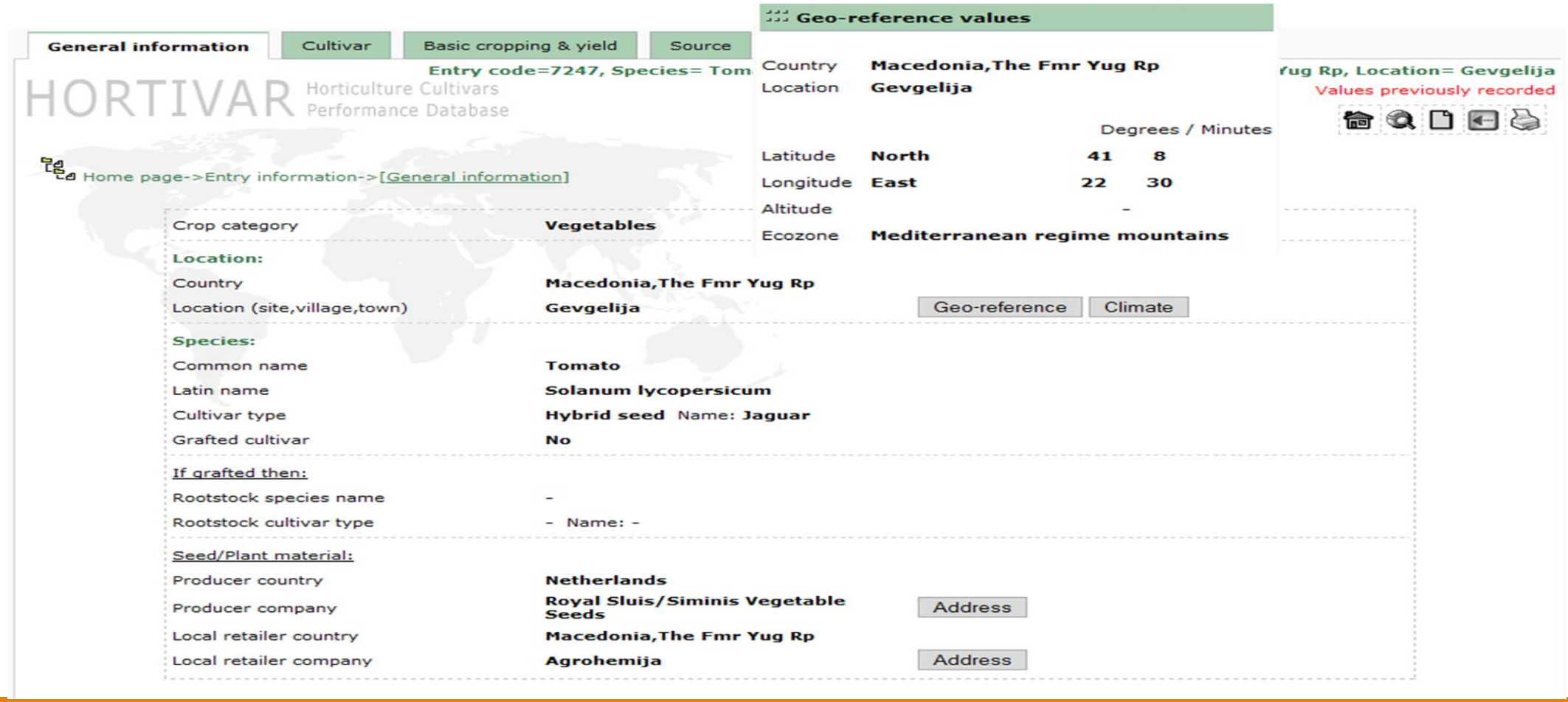

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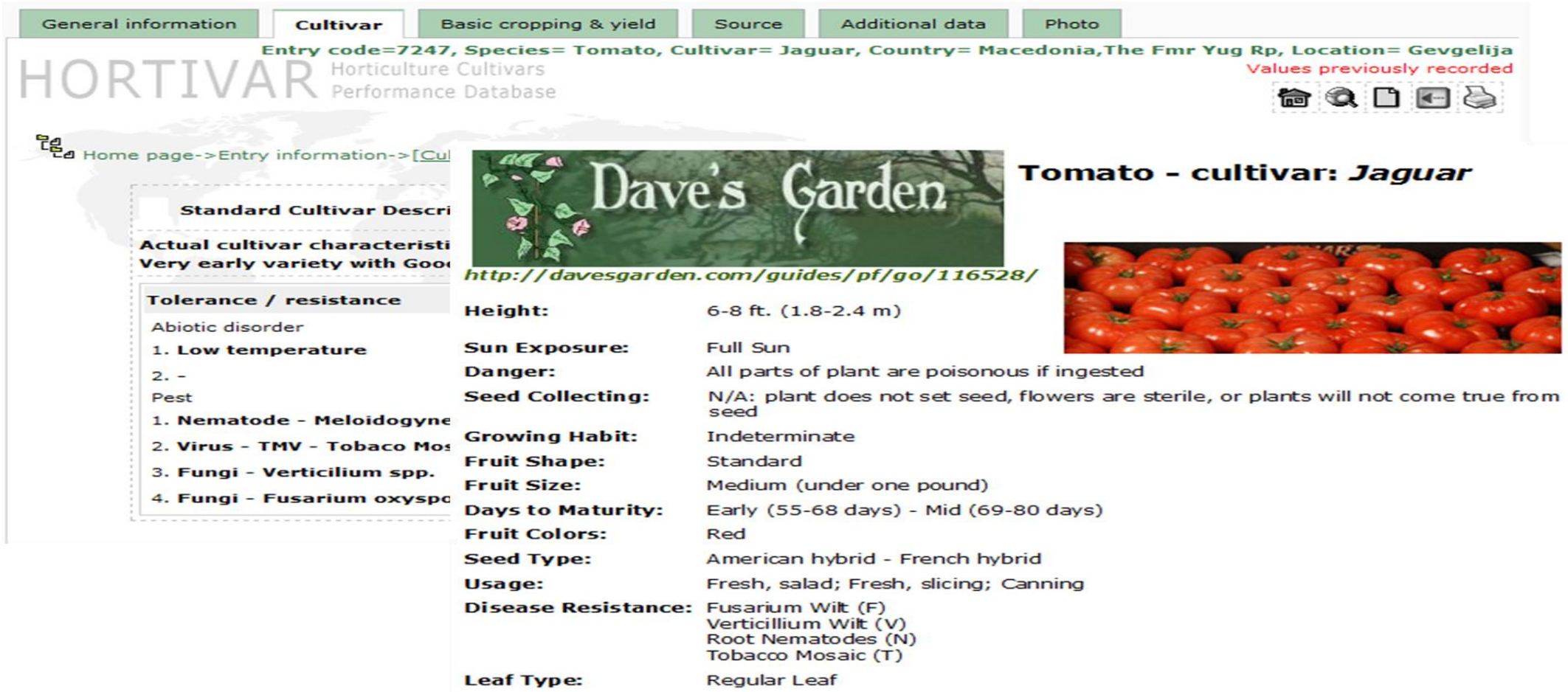

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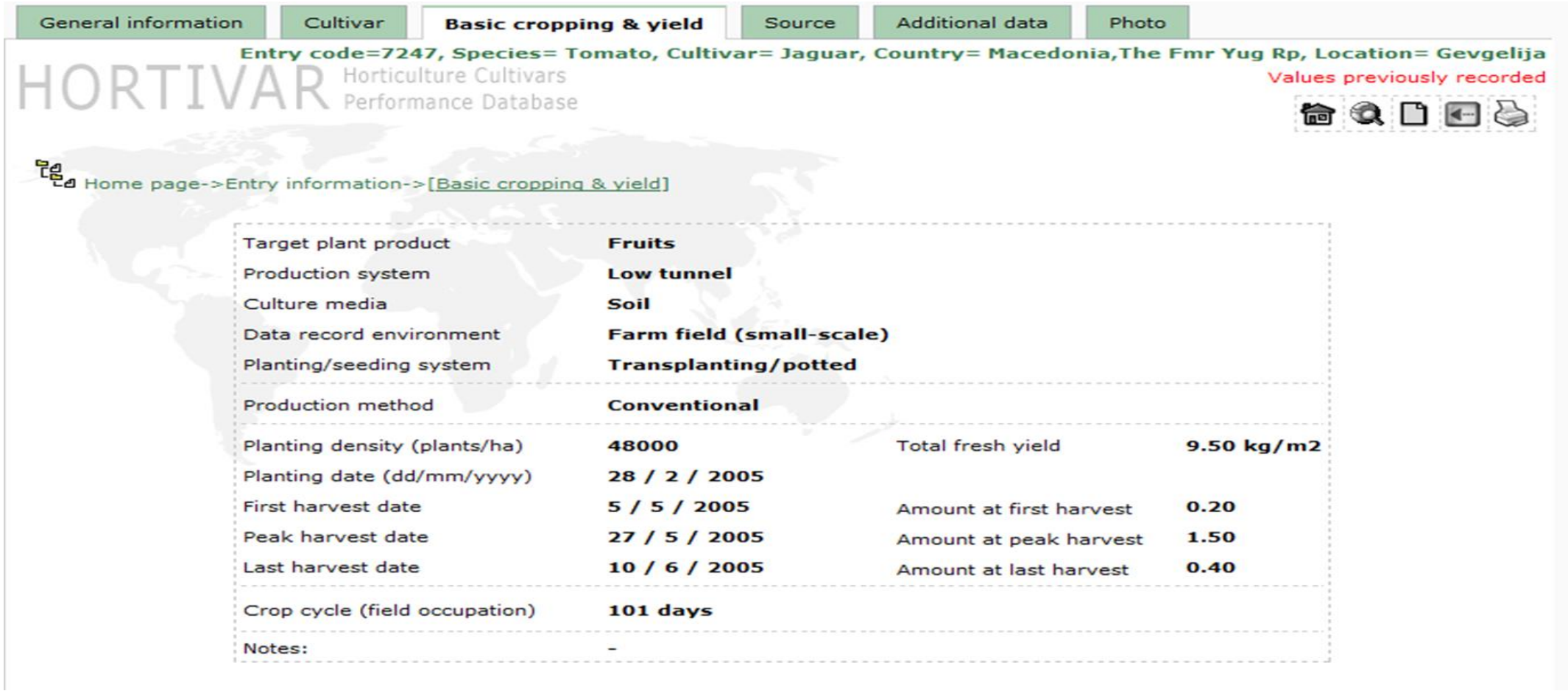

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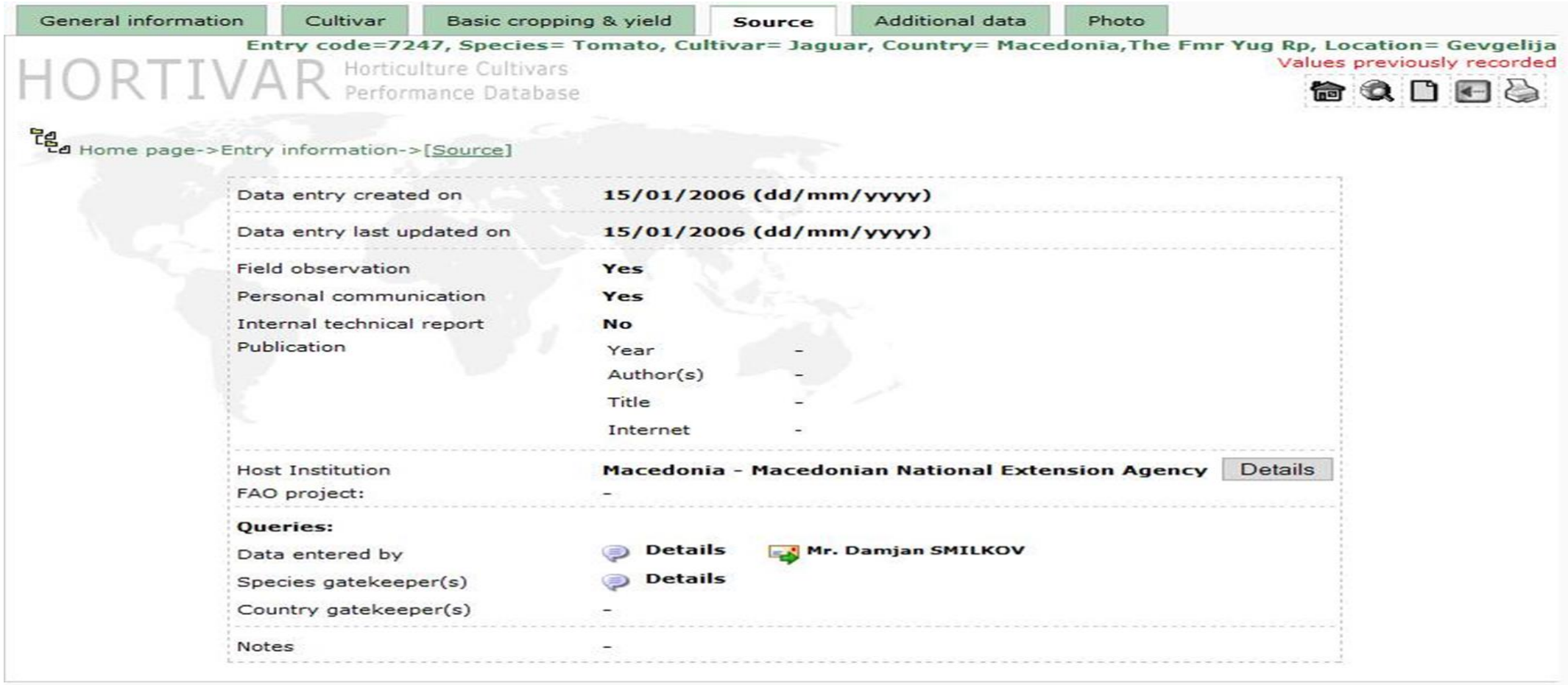

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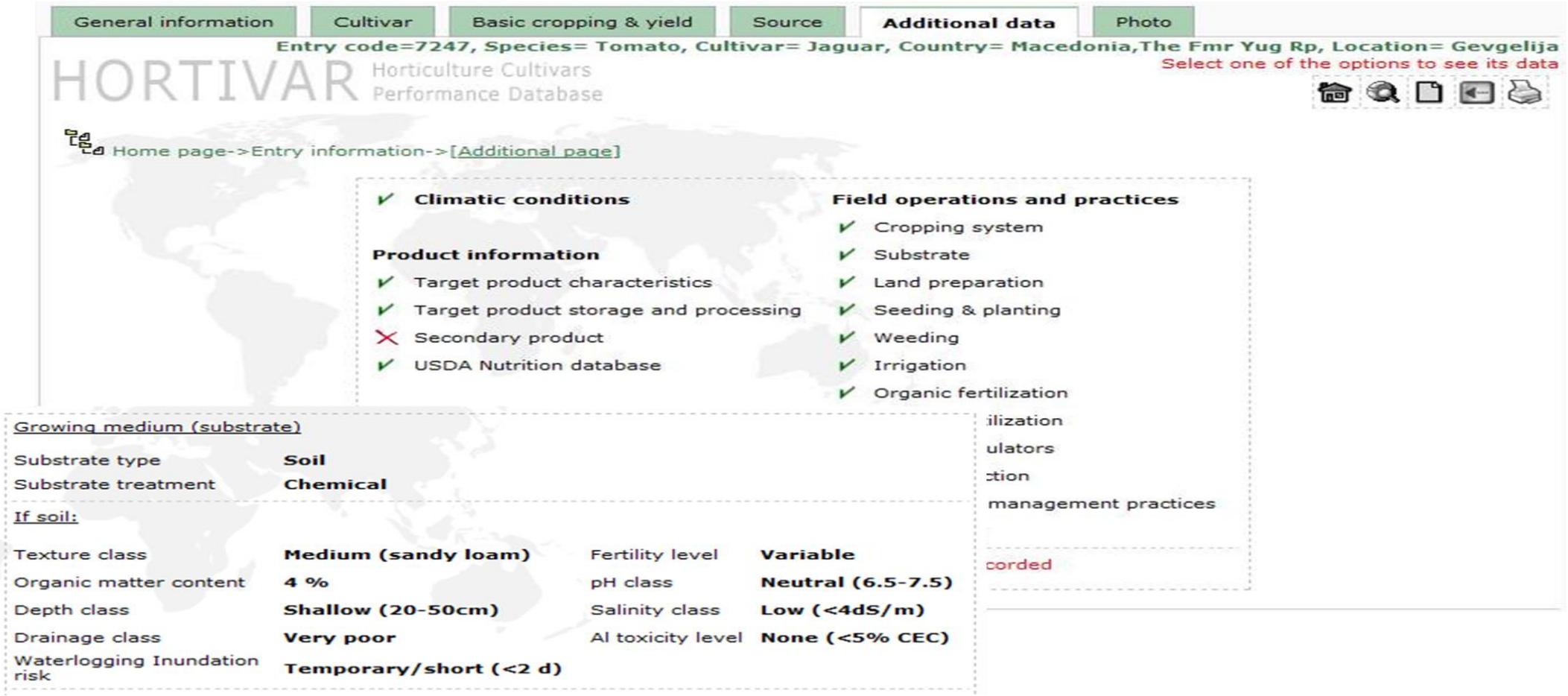
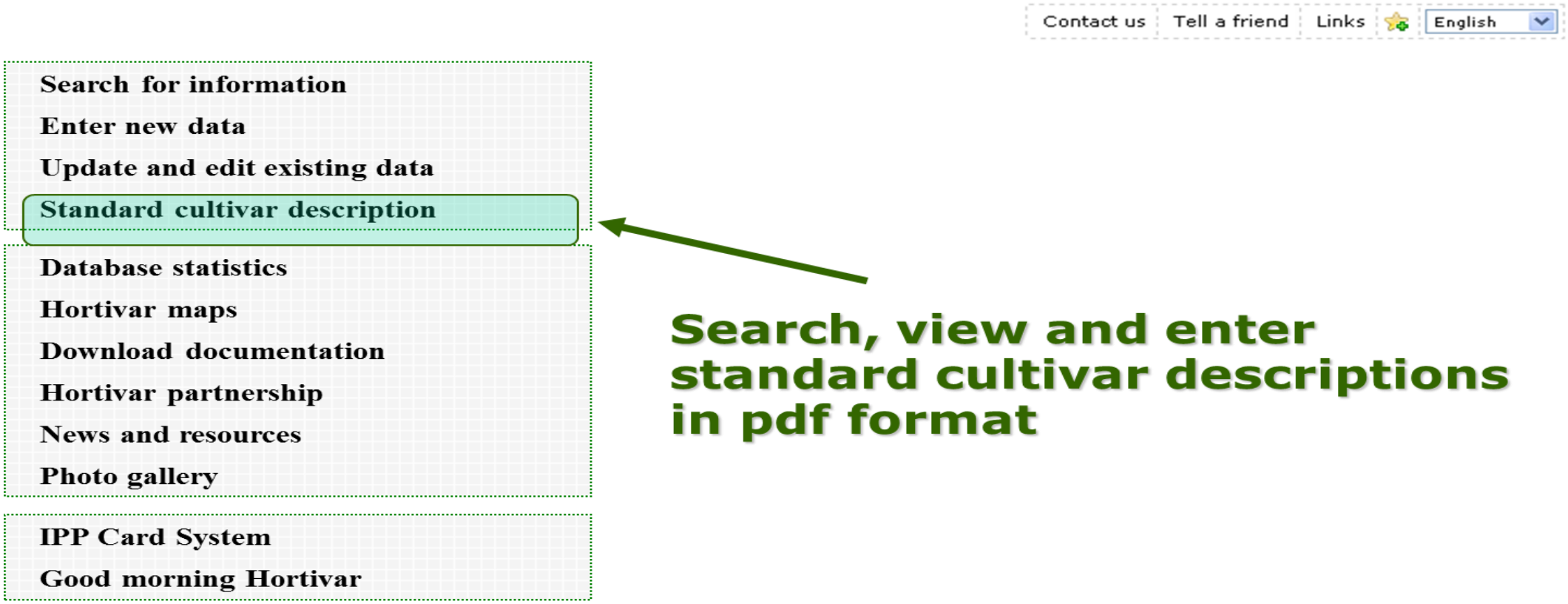


3. How to use HORTIVAR

Up to 3 photos can be included with each data entry.

3. How to use HORTIVAR

http://www.fao.org/hortivar



3. How to use HORTIVAR

SCD can then be searched and viewed by all Hortivar partners and visitors

Home page | Search Standard Descriptors | New standard cultivar descriptor (SCD)

HORTIVAR Horticulture Cultivars Performance Database

Select criteria to search

Home page->[Search Standard Descriptor

Source/Origin (1)

Reports | Search Standard Descriptors | Standard descriptor results

Species common name	Name	Type	Company name
Olive, European	Aitana	Clone	Dipartimento di Colture Arboree - U
Olive, European	Biancolilla di Caltabellotta	Clone	Dipartimento di Colture Arboree - U
Olive, European	Bottone di gallo	Clone	Dipartimento di Colture Arboree - U
Olive, European	Brandofino	Clone	Dipartimento di Colture Arboree - U
Olive, European	Calatina	Clone	Dipartimento di Colture Arboree - U
Olive, European	Cavalieri	Clone	Dipartimento di Colture Arboree - U
Olive, European	Crastu	Clone	Dipartimento di Colture Arboree - U
Olive, European	Erbano	Clone	Dipartimento di Colture Arboree - U
Olive, European	Giarraffa	Clone	Dipartimento di Colture Arboree - U
Olive, European	Lumiaru	Clone	Dipartimento di Colture Arboree - U
Olive, European	Minuta	Clone	Dipartimento di Colture Arboree - U

Brandofino

Informazioni generali

Piante della cultivar possono essere riscontrate presso oliveti del Messinese. Assume una certa consistenza in alcuni comuni dei Peloritani e dell'Etna. I frutti sono di grossa pezzatura.

Resa in olio *Basso*

Rapporto polpa/nocciolo *Ottimo (8,7 ± 2,13)*

Albero

Vigore *Elevato*

Portamento *Assurgente*

Densità Chioma *Compatta*

Lunghezza internodi *Medi*

3. How to use HORTIVAR

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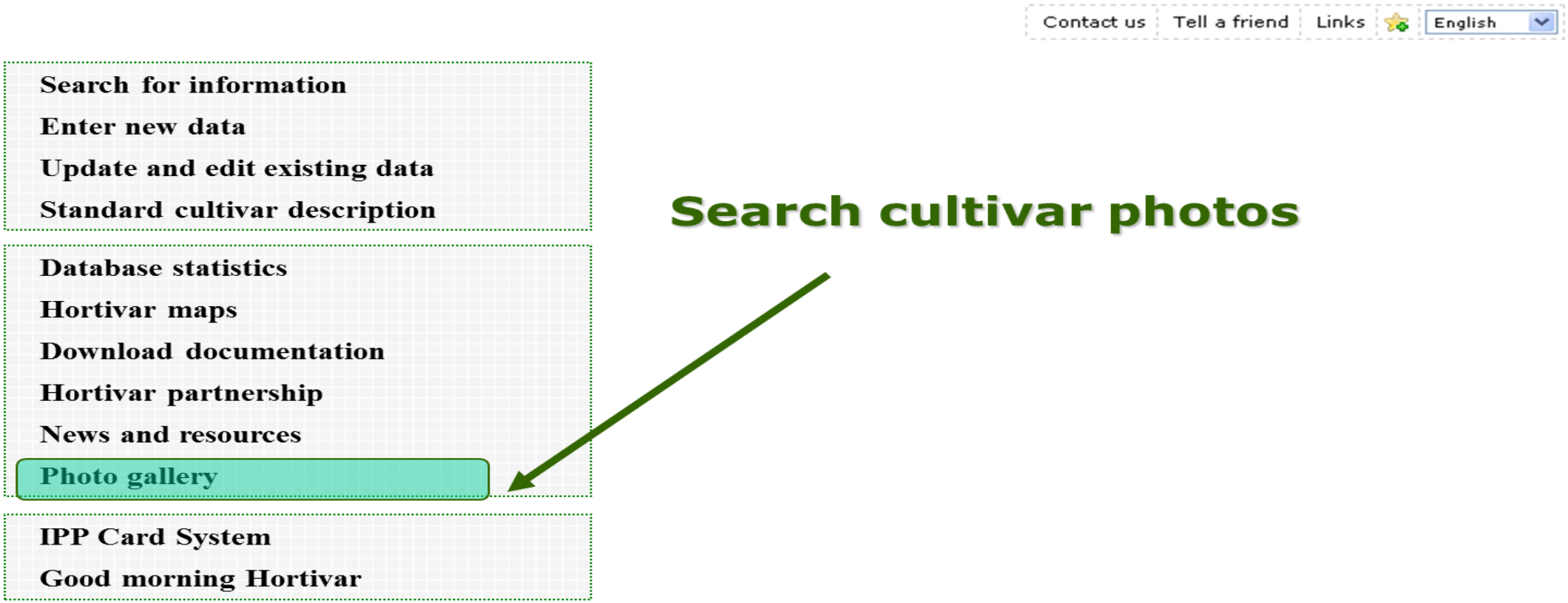

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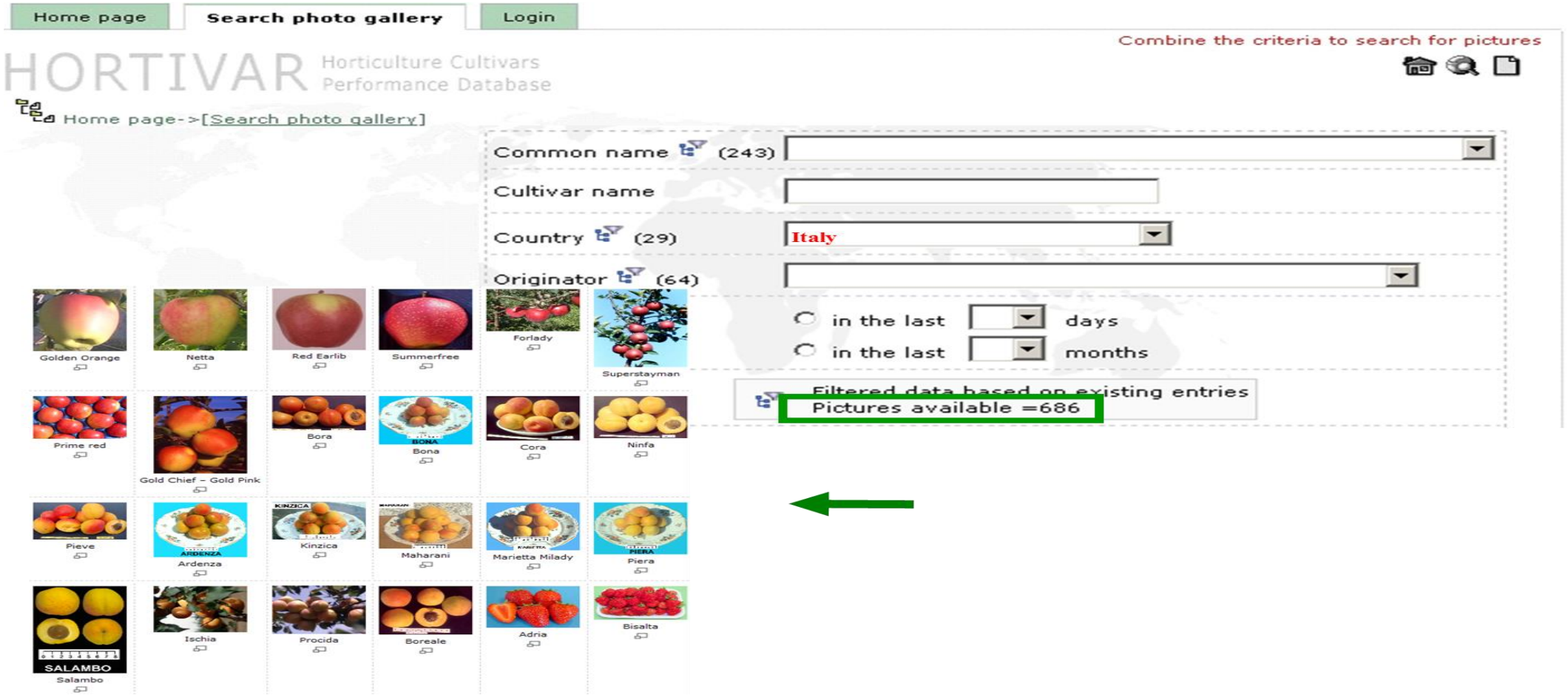

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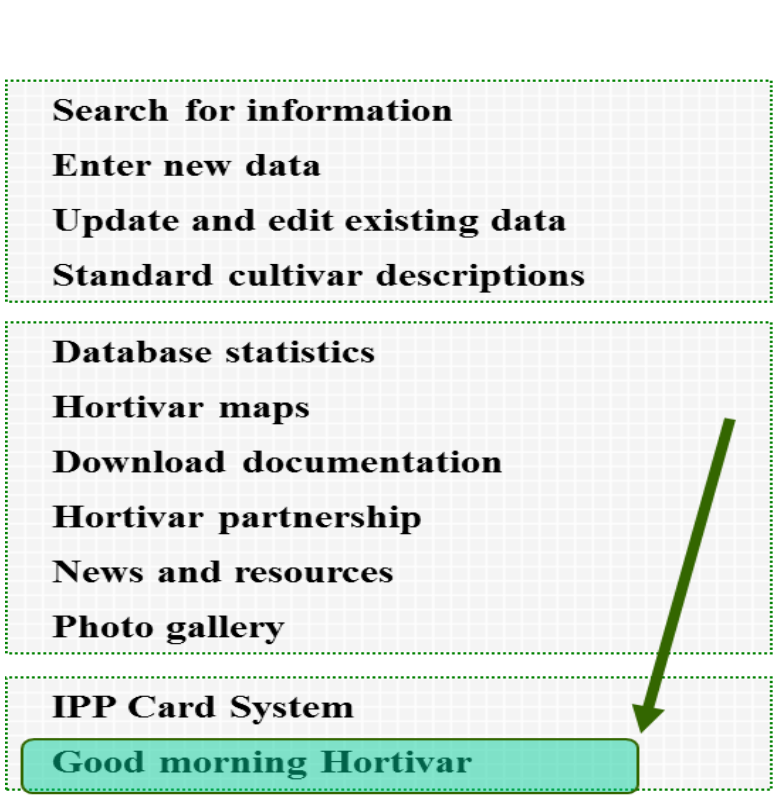


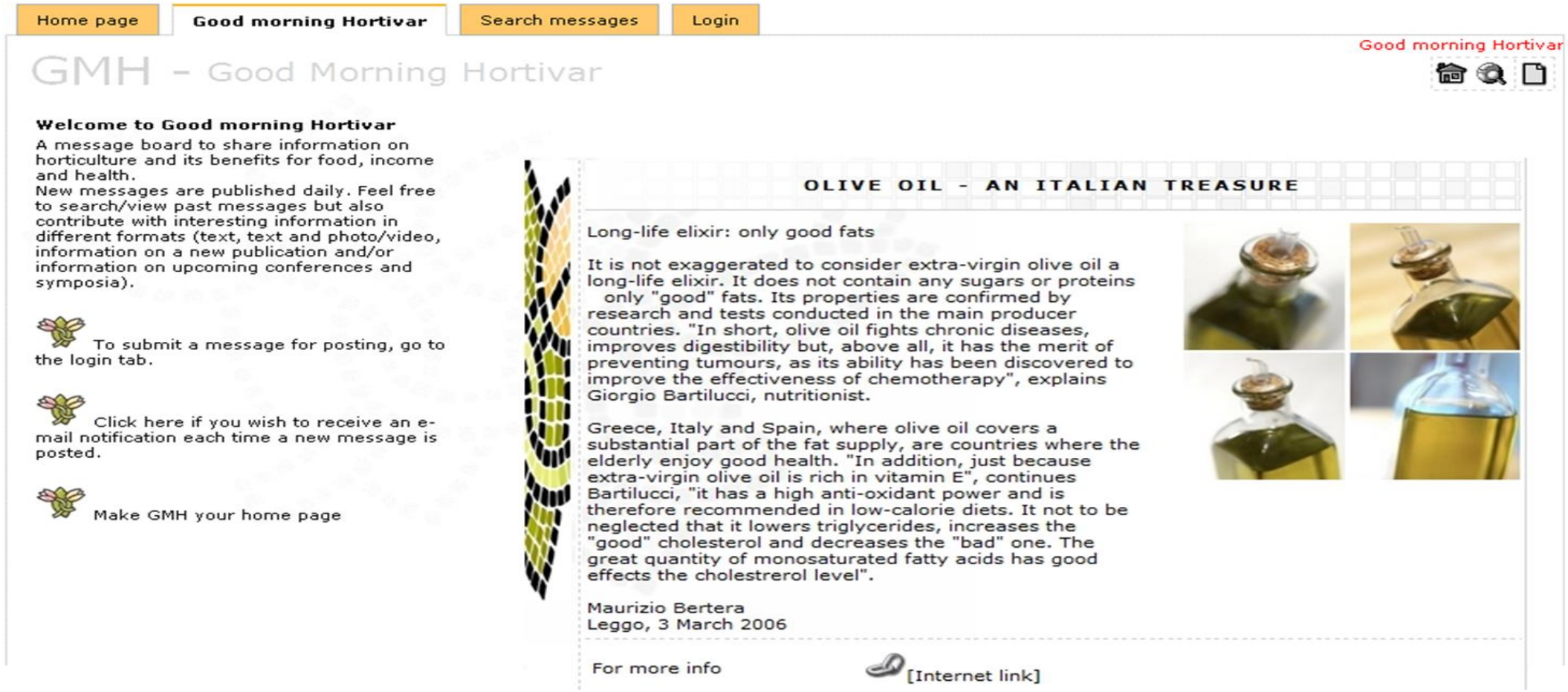
Good morning Hortivar is a message board to share information on horticulture and its benefits for food, income and health.

New messages are published daily.

Feel free to search past messages and contribute with information in different formats:

- text
- text and photo/video
- information on a new publication
- information on upcoming conferences

3. How to use HORTIVAR



3. How to use HORTIVAR

Good Morning HORTIVAR – Message from Korea

Korea's sweltering summer weather has taken a toll on the yields o f some crops, including fruits and vegetable. The country's summer was unexceptionably hot and dry this year, with temperature above over 40 degrees Celsius in some regions. Korea's average summer t emperature for the last ten years is 24.3 degrees Celsius.

According to the Prime Minister's Office, 2,909 hectares of crops a nd fruits failed as of mid-August. In the case of North Gyeongsang province, 1,143.5 hectares of crops were ruined by the heat wave th is summer. Of them, 734.4 hectares were fruit orchards and fields, and of those 510.1 hectares were apple-growing orchards.

Price hikes are already visible on the market. According to the Stati stics Korea, the wholesale price of agricultural products increased a round 7% compared to this time last year. In particular, chili powde r (44.2%), watermelon (31.1%), peach (29.0%), radish (24.4%) pri ces were the notable increases.

In efforts to relieve the damages, the central government establishe d agricultural aid packages worth 7.8 billion won (700 million doll ars) for watering crops; 2.4 billion won (215 million dollars) for tre e care in orchards and vineyards; and 6.9 billion won (615 million dollars) for installing cooling devices for livestock.

In addition, with one of the biggest national holiday, Chuseok, com ing up in a few weeks, the government has announced its plan to su pport supply of agricultural produces with high demands with a vie w to stabilize the market prices.

Fire Blight Disease in Korea

Fire blight disease caused by Erwinia amylovora is spreading further within Korea, posing threat to the co untry's fruit industry.

First detected in Korea back in 2015, the disease is a contagious disease affecting apples, pears, and some other members of the family Rosaceae. The causal pathogen is Erwinia amylovora, a gram-negative bacter ium in the family Enterobacteriaceae, believed to be indigenous to North America.

The bacterium is often transmitted by honeybees and other insects, birds, rain and wind to susceptible tissu e of plants. The disease spreads most quickly during hot, wet weather and is dormant in the winter when te mperatures drop. Infected plant tissue contains viable bacteria, however, and will resume production of ex udate upon the return of warm weather in the following spring. Visible symptoms include shriveled and bl ackened tissues, darkened and water-soaked branches among many others.

In Korea, the disease was first detected in 2015, around Gyeonggi-do and Chungcheong-do regions where majority of fruits such as apples and pears are grown. In 2016, the number of affected orchards decreased f rom the previous year, from 43 to 17, but nearly doubled by 2017 to 33. According to the Ministry of Agri culture, Food and Rural Affairs, at least 37ha of orchards around four provinces located at the central part of the peninsula have fallen victim to the disease as of mid-July this year, over 50% increase from 22.6% i n 2017.

Since the initial discovery of the disease, the government took various preventive and control measures an d kept monitoring the situation. Once the infected trees are identified, they are buried to stop the disease fr om spreading further. Moreover, it is implementing awareness increasing campaigns and training program mes to farmers while conducting periodic pre-screening and chemical control. Farmers are strongly encour aged to report to relevant authorities immediately when they detect any suspicious symptoms.

4. Who is using HORTIVAR

- Growers & consumers
- Horticulture scientists, institutions and nutrition specialists
- Extension officers, consultants
- Seed/plant material producers, traders and marketing business men
- Teachers and students

5. Why HORTIVAR

- Safeguard information on performances of horticulture cultivars and answer questions relating to cultivars
- Monitor production data season by season
- Compare data between ecozones, production systems and locations
- Use as a lively interface between scientists, growers and institutions – search pool of experts in horticulture
- Facilitate access to useful and selective links to sites and other horticulture related databases and expert systems

6. Global HORTIVAR Status

- HORTIVAR classifies horticultural products into six categories, vegetables, fruits, roots and tubers, mushrooms, herbs and condiments, and ornamentals.
  - The total number of data entries is 91,761 which is translated into 1,024 species and 28,473 cultivars as of September 2017.
  - These data have been collected in 119 member countries by 3,326 registered individual partners and 76 partner institutions.
  - The data collected by partners are recommended to be reviewed by gatekeepers before they are uploaded in the database. HORTIVAR has now 15 country gatekeepers and 44 species gatekeepers.

→ gatekeeper: registered person or institute that has an authority to check data entered into HORTIVAR, to assist in finding solutions to questions raised by users, and to make HORTIVAR known to public

7. HORTIVAR Now in Korea

- Taking a close look at the data collected in Korea, the total number of data entries is 26 for 5 species or 26 cultivars in just one location.
  - The five species are hot pepper, sweet pepper, peach, pear, and apple. There is no data about the other ones including garlic, onion, persimmon, and etc.
  - The last year when a data reported has corresponding identified harvested year was 2001 and there has been no data provided since then.
  - HORTIVAR has neither partners nor gatekeepers in Korea.
- However, Korea has great potential to become an outstanding contributor to HORTIVAR.
  - It produces not only fruits, vegetables but also other categories like mushrooms, herbs and condiments, especially traditional ones such as ginseng, green tea and etc.
  - It also has reliable and comprehensive data collecting systems covering government agencies, academic institutes, and producers associations.

< HORTIVAR Statistics >

Country	Data Entries	Species	Cultivars	Locations	Partners	Gatekeepers	Last Year Reported
Thailand	173	3	3	3	0	0	2003
Indonesia	15	3	3	3	1	0	2008
Philippines	2,102	500	1,517	118	7	0	2008
Vietnam	4,920	447	2,284	287	125	5	2013
China	5,599	44	3,177	104	54	0	2008
Republic of Korea	26	5	26	1	1	0	2001
World	91,761	1,024	28,473	-	3,402	59	-

8. The Challenges

- One of the problems to take note of is that it has been highly dependent on data providers. HORTIVAR data collection has been done by partners on the voluntary basis.
  - Now it needs to collect data proactively not by waiting for data to come to the system but by going out to the place where horticultural products are produced and by building partnership with the people there.
- It is realized that more efforts have to be invested to create visibility of HORTIVAR so that it can be used by more countries and institutions worldwide.
  - Belgium has been the traditional donor, who has helped FAO to develop this powerful database . It has recommended to attract multiple donors to consolidate HORTIVAR for use by FAO member countries and keep the data base up to date with new and more performant software applications.
  - Recently, the Republic of Korea has shown interest in providing funding for HORTIVAR. It proposed to provide assistance to build a sustainable system to conduct data collecting, screening and uploading for HORTIVAR in Korea. And proposed to collect and share more data from the Asia Pacific region.

9. The Way Forward

- HORTIVAR needs to set target products and their priority in order to obtain strong support and new resources by accommodating the information demand requested by stakeholders.
- HORTIVAR activities in Korea have already started since the 1st quarter of this year.
  - Information meeting with government officials
  - Advocacy meeting with horticultural producers
  - Training workshops for researchers, university students
  - Field trip to obtain data: Sejong city (Peach), Hadong county (Green Tea)
  - Identify potential partners: Korea FAO Association, Seoul National University, and etc.
  - Fund raising activities: Ministry of Agriculture, Food and Rural Affairs, Ministry of Finance
  - Building gatekeeper system: Ministry of Agricutlure, National Statistics, National Seed

9. The Way Forward

- Now, HORTIVAR needs to expand its activities to other areas.
- There is a need to hold advocacy meetings with government officials and scientific staff in Thailand in order to promote HORTIVAR knowledge and use in Thailand and in the Asia Pacific Region.
  - As the first step, a consultation meeting between the HORTIVAR officer and FAORAP staff, in charge of plant production and protection, natural resources, statistics, etc., should take place.

    → The objective would be to discuss an activity plan to promote HORTIVAR in Thailand and other Asia Pacific countries including Indonesia, Malaysia, Viet Nam etc.
  - After building common understanding, HORTIVAR advocacy meetings with government officials and horticultural experts of Thailand are needed to move forward.

    → Relevant government officials from the Ministry of Agriculture and Cooperatives (MOAC) and horticultural experts from universities and research institutes should be invited to the meeting.

Contents

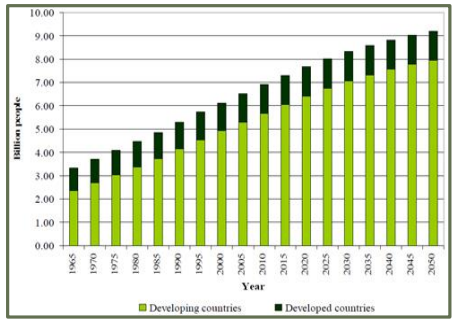
Smart Farming for the Next Generation

Gateway to the 4th Industrial Revolution in Agriculture





Horticulture is unique



Biodiversity

Nutrition

Income

Job creation

Efficient land / water / nutrient use

Sustainable intensification – rural / peri-urban / urban

High value fresh and processed products

Technology intervention

Efficient and sustainable production

Adapted varieties
(including seedling systems, tissue culture and grafting)
Natural resource management
(including soil-free and fertigation systems)
Pest/disease management
(including diagnostics and biocontrol)
Climate control
(Protected cultivation, extended seasons)

ICT - remote sensing – apps - drones




Outputs:

Smart Greenhouses established
Functional laboratory created
Training centers developed
Crop management modules created
Participatory feedback mechanisms active
Capacity of emerging farmers increased

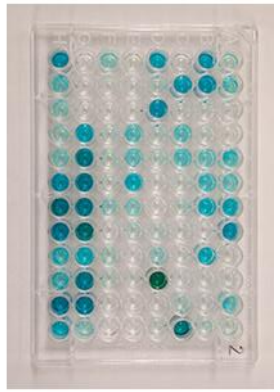
Post-harvest, food safety and market access

Washing, grading, packing, storage, transport
(cold chain, modified atmosphere)

Drying and processing
(value added juices/soups/sauces/pickles)

Food safety
(detection of pesticides and human diseases)

Marketing systems
(Quality standards and traceability schemes)



Outputs:

- Functional laboratory created
- Training programs developed
- Guide book for best practices / policy recommendations developed
- International workshops held
- Capacity of agro-processors increased

Big data to optimize value chain profitability

ICT value chain connectivity

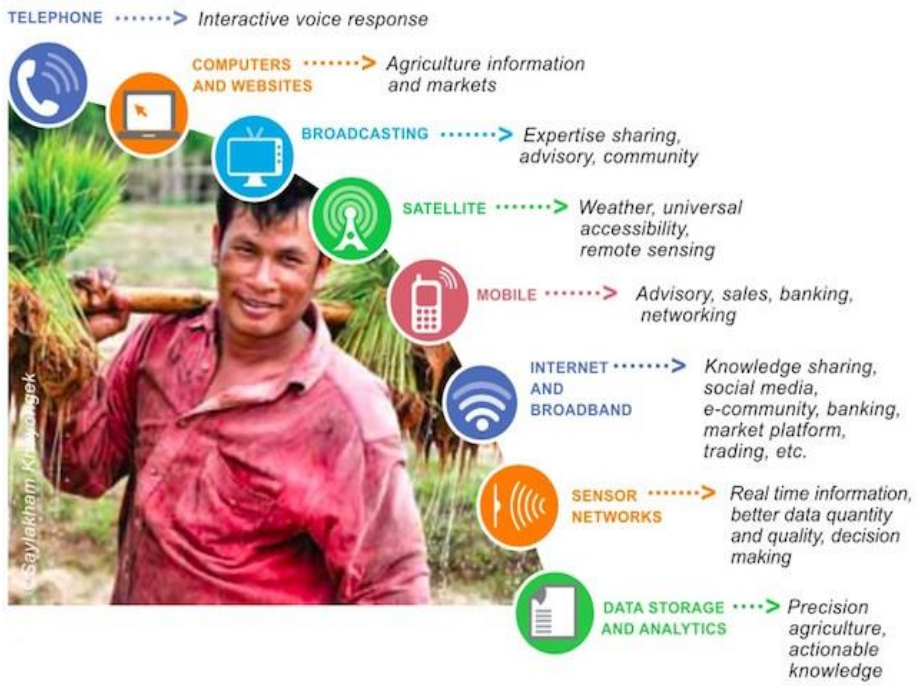
(Mobile phone, internet, bar codes, apps, production sensor data)

Production efficiency (inputs and labour)

Market efficiency (products and access)

Big data management and analysis

System recommendations



Outputs:

Input supply systems refined

Market information systems established

Price estimation models and algorithms created

Recommendation on stable value chain calendars

Capacity of ICT companies increased

Business skills of value chain actors increased

Implementation structure

for cooperative and long term prospective development

Where: South East Asia; Vietnam

Central Asia; Uzbekistan

How: FAO provides coordination and government linkages, technical assistance and monitoring with
Specialized agencies invited to provide advanced, innovative, scalable and affordable technologies and services.
Target countries adapt and adopt smart farming options through creating public / private partnerships.

Cost: 4.5 million US $ for 4 years

Thank you

for your attention