

# Documentation of Plant Germplasm at the International Potato Center

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Lima, Peru

- Background information
- Documentation
  - Acquisition, Evaluation and Distribution
  - PGRFA information in the Standard Material Transfer Agreement (SMTA)
  - Reporting
  - Information kept by communities and CIP

# Background information

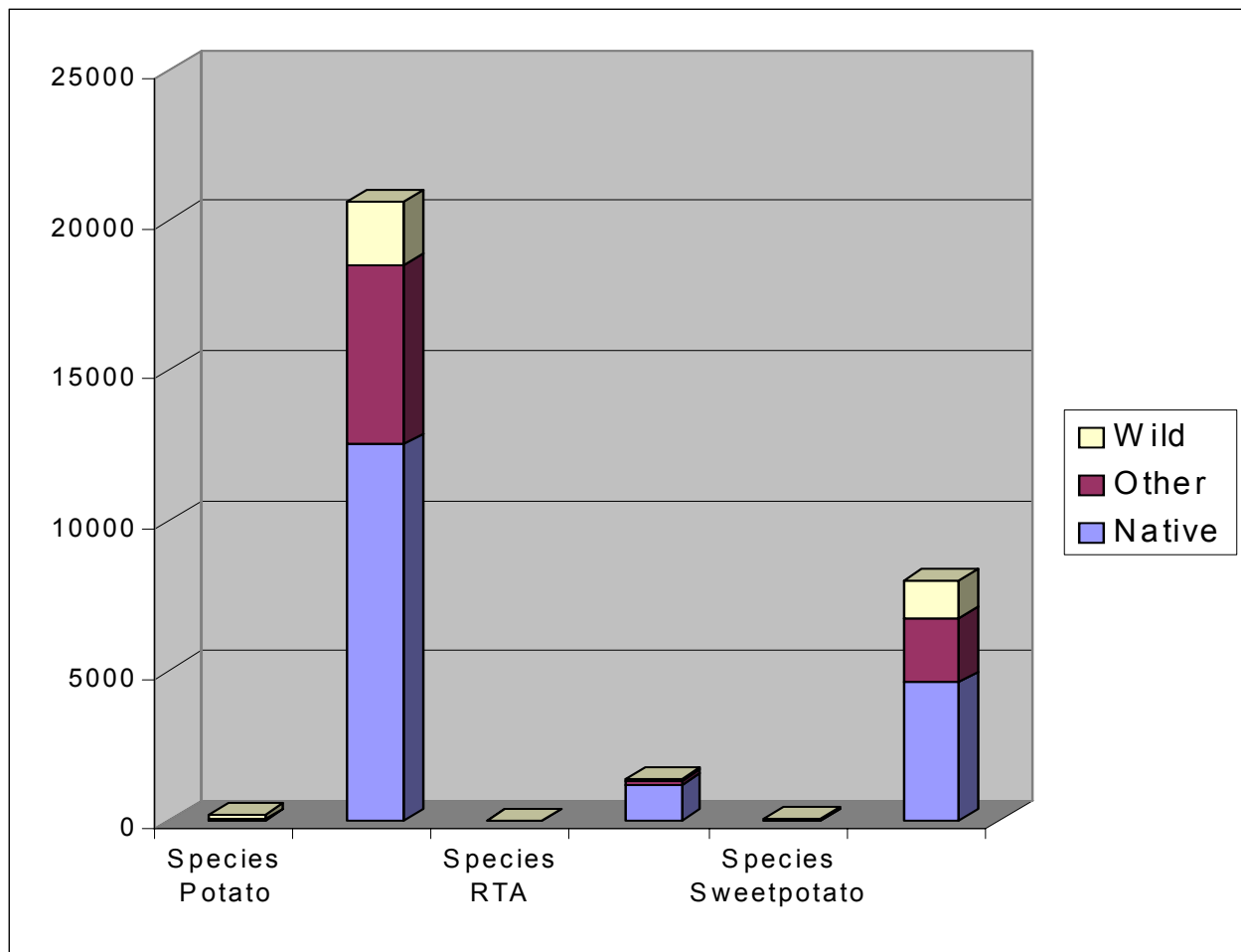
- Nearly 600,000 germplasm accessions in a network of 11 Centers of the CGIAR
- Collections are under the purview of the International Treaty on Plant Genetic Resources for Food and Agriculture
  - In trust on behalf of all humanity
  - Managed and administered – International Standards
- CGIAR's System-wide Genetic Resources Programme (SGRP)
  - Bioversity International

- CIP's mandate crops:

- Potato (*Solanum tuberosum*)
- Sweetpotato (*Ipomoea batatas*)
- Andean Root and Tubers crops (achira, ahipa, arracacha, maca, mashua, mauka, oca, ulluco, and yacón)



# Germplasm holdings at CIP



# Documentation

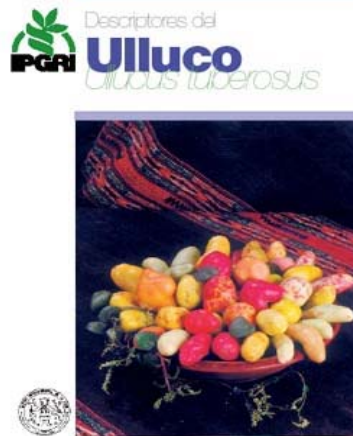
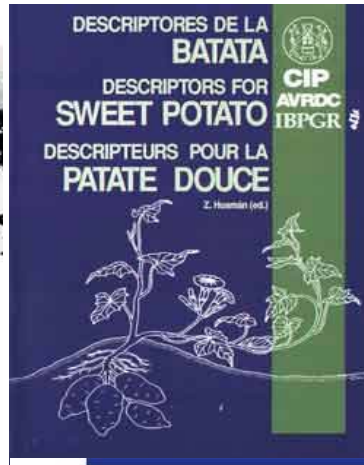
- Collecting & acquisition
  - Germplasm collecting permits
  - Material Transfer Agreement
  - Importation documents
    - Phytosanitary Import Permits
    - Phytosanitary Export Permits
  - Others
    - Accessory Contract
    - Contract to access indigenous knowledge from communities

# Germplasm documentation at CIP

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Descriptors  
for the  
Cultivated Potato



- Standard documentation
  - Passport data
  - Characterization
  - Evaluation
  - Germplasm distribution
- Information stored in digital database
- Accessible through a Genetic Resources Information System that allows data input, retrieval, search and reporting

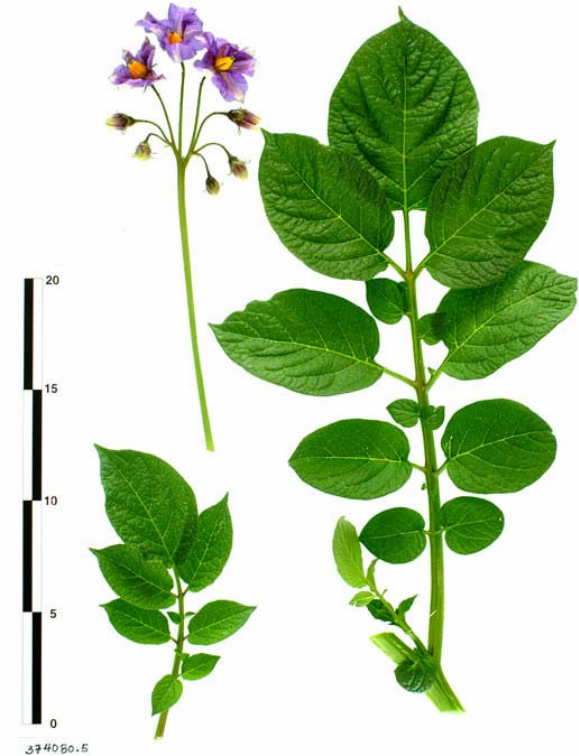
# Passport data

# Multicrop Passport Descriptors

1. Institute code
2. Accession number
3. Collecting number
4. Collecting institute code
5. Genus
6. Species
7. Species authority
8. Subtaxa
9. Subtaxa authority
10. Common cropname
11. Accession name
12. Acquisition date
13. Country of origin
14. Location of collecting site
15. Latitude of collecting site
16. Longitude of collecting site
17. Elevation of collecting site
18. Collecting date of sample
19. Breeding institute code
20. Biological status of accession
21. Ancestral data
22. Collecting/acquisition source
23. Donor institute code
24. Donor accession number
25. Other identification (numbers) associated with the accession
26. Location of safety duplicates
27. Type of germplasm storage
28. Remarks

# Characterization

- Crop specific
  - Heritable
  - Low Gx E interaction
  - Observable
- Morphological characterization
  - Plant
  - Leaf
  - Flower
  - Fruit
  - Seed or propagules
- Standardized methodology
- In database
  - Potato (28)
  - Sweetpotato (29)



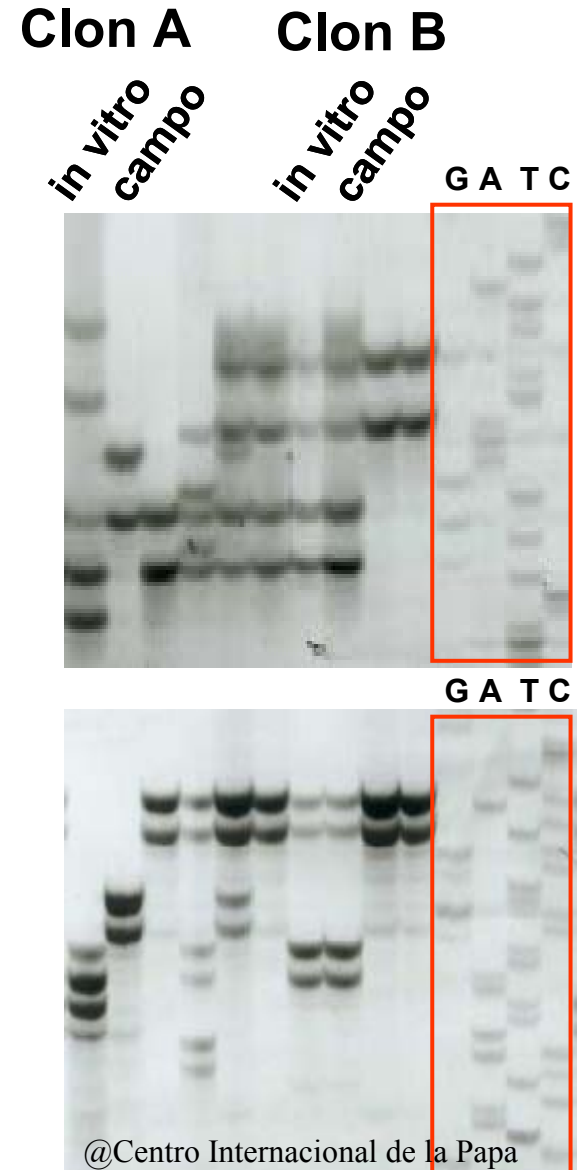
# Evaluation

- Crop specific
- G x E interaction
- Agronomic characteristics (i.e. yield, maturity, disease resistance)
- Biochemical characteristics (i.e. protein, glycoalkaloid content)
- Standard field and lab methods



Field evaluation, foliage reaction to late blight

- Molecular profiles
  - Complement identity verification
  - isozymes: 1970s-1990s
  - DNA: 24 markers for potato
  - SSR, AFLP, RAPD, RFLP



# Traditional knowledge

- Lacking in CIP's database
  - Collected but not placed in database
- Access to traditional knowledge kept by communities may require a permit

# Distribution

- Documents
  - MTA
  - CIP's Phytosanitary Statement
  - SENASA Phytosanitary Certificate
  - Acceptance letter of the terms and conditions of MTA for designated materials
- Information in database
  - Name of recipient
  - Position
  - Institution
  - Address
  - Phone, fax
  - Email address
  - Purpose of the research

# Germplasm information in the Standard Material Transfer Agreement (SMTA)

- All available passport data
- Any other associated, available, non-confidential descriptive information

Material provided					For PGRFA under Development only: Ancestral MLS germplasm[1]	
ID	Origin	PGRFA under development[2]?	Variety or other designation	Pedigree	ID	Origin
		Yes/No				

# CIP's Genetic Resources Information System (intranet)

- Modules
  - Germplasm Transfer Requests
  - Passport & Attributes Search
  - Dynamic Reports
- New module
  - To identify all ancestral MLS germplasm of every PGRFA under Development as required in the SMTA



## Germplasm Acquisition, Distribution, Conservation and Pathogen Testing System (CIPGADC)

Maintenance ▶ Register a Request ▶ Search & Reports ▶ Utils ▶ Help ▶

- Search Distributions
- Search Acquisitions
- Search Conservation & Pathogen elimination
- Reports GADC

### *Welcome!*



CIPGADC is an informatic tool for Testing, Cleaning, Maintenance and Distribution of Germplasm in CIP.

Germplasm data provided by 3 Service Units (**ADU**, **IVU** and **PHQU**) are integrated into a system that allows users to place their germplasm request online. Follow up status of material acquired or placed under quarantine; pathogen tested; cleaned up; maintained as invitro or seed; multiplied; or distributed. CIPGADC has a data search capability and can provide printouts of preset reports.

CIPGADC evolved from the Workflow System designed by the Germplasm Acquisition and Distribution Committee (**GADC**). GADC oversees importations, exportations, standards for handling plants, quarantine, in-vitro maintenance and use, and regulations concerning plant movement between CIP fields.

We welcome any comments and/or suggestions. Please mail to [cip-RIU@cgiar.org](mailto:cip-RIU@cgiar.org)

# Acquisition

SEARCH AN ACQUISITION OF GENETIC MATERIAL

Year Request:

Name of Sender:

Country:

Institution:

Crop:

Scientist:

Country of origin:

Where Search:  Ciplumber  Collector Number  Cultivar Name

Type Search:  By Equal  Contains

-

Items: 11

		Adquisition Number	Country	Sender Name	Institution	Scientist	Crop	Samples
Acquisition	Cleaning	2004-1(001-04)	Germany	Lieselotte Schilde	Institut für Pflanzenbiochemie - Universität Tübingen	Bonierbale, Merideth	Potato	61
Acquisition	Cleaning	2004-2(002-04)	Barbados	Michael James	The Plant Pathology Dept. the Ministry of Agriculture and Rural Development	Fuentes Delgado, Segundo Saul	SweetPotato	4
Acquisition	Cleaning	2004-3(003-04)	Barbados	Yvan	Potato Research	Yvan	Potato	5

# Acquisition

<input type="button" value="New"/>	<input type="button" value="Save"/>	<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	<input type="button" value="Cancel"/>	<input type="button" value="Files"/>	<input type="button" value="Return"/>	<div style="border: 1px solid yellow; padding: 2px; color: red;">Search found</div>
<input type="button" value="Search"/>		<input type="text" value="001-04"/>	<input type="text" value=""/>	<input checked="" type="radio"/> By Old Code			
Acquisition Old code				<input type="radio"/> By Number			
Acquisition Number	<input type="text" value="2004"/>	<input type="text" value="1"/>					
Peru Import Permit No.	<input type="text" value="758-2004"/>						
Name or Requesting Scientist :	<input type="text" value="Bonierbale, Merideth"/>	<input type="button" value="v"/>	*	Date of request :	<input type="text" value="2/17/2004"/>	(mm/dd/yy)	
Country of Sender :	<input type="text" value="Germany"/>	<input type="button" value="v"/>	*				
Name of Sender :	<input type="text" value="Lieselotte Schilde"/>						
Institution of Sender :	<input type="text" value="Institut für Pflanzenbiochemie -"/>	Telephone :	<input type="text" value=""/>	Email :	<input type="text" value="schilder"/>		
Address :	<input type="text" value="Corrensstr.41,D-74076 Tubinge"/>	Fax :	<input type="text" value=""/>				
Carrier :	<input type="text" value="Air Mail"/>	<input type="button" value="v"/>					
Anticipated Arrival Date:	<input type="text" value=""/>	(mm/dd/yyyy)					
Crop :	<input type="text" value="Potato"/>	<input type="button" value="v"/>	*	Date GADC approval :	<input type="text" value=""/>		
Justification For the Introduction :	<input type="text" value="genetic stocks from backcross of the somatic hybrid with S. circaefolium ssp. Quimense, which are"/>			Date of arrival :	<input type="text" value="3/29/2004"/>		
	<input type="button" value="v"/>			Observations:	<input type="text" value=""/>		

# Acquisition

Archivo Edición Ver Favoritos Herramientas Ayuda

Hybrid with *S. chacoense* ssp. Quimense, which are

Registered by: Grande Romo, Enrique Al

Date registered: (mm/dd/yyyy)

Observations:

**Add single material** **Add list of materials** **Export to Excel**

Items: 61

Cipnumber	Colnumber	Cultvname	Pedigree	FormName	Specie	Comment	Units
CIP 763885	crc			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 801117	Irmgard			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.1	A-1			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.10	A-10			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.13	A-13			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.14	A-14			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.16	A-16			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.17	A-17			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.18	A-18			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.19	A-19			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.21	A-21			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.22	A-22			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.23	A-23			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.24	A-24			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.27	A-27			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.28	A-28			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2
CIP 814001.34	A-34			In-vitro	<i>S. tuberosum</i> , <i>S. circ</i>		2

# Passport, Characterization and Evaluation data

Select Tables

Potato Morphological Data

- Potato Morphological Data
- Potato Evaluation Data
- Potato Passport Data**

Select Fields

- Anther pigmentation
- Calyx color
- Electrophoresis
- Flower color intensity
- Flower predominant color
- Flower secondary color
- Flower secondary color distrib
- Flower shape
- Flowering degree
- Fruit color
- Fruit shape
- Leaf shape 1 Type of leaf dise



Remove All

- Administrative subdivision 1
- Administrative subdivision 2
- Administrative subdivision 3
- Administrative subdivision 4
- Alternate Identifier
- Altitude
- Biological Status
- Breeder/Curator In Charge
- CIPNUMBER
- Cleaning Stage
- Collection date
- Collection source

Up

Down

Outputs

Screen

[New Search](#) [\[Home\]](#) [\[Help\]](#)

# Passport, Characterization and Evaluation data

cocode	core	country	crop	cultvrname	status	daterecvd	distribution_status	dccode	dctry	donor	faoyear	fao	sggrp	hea
		PNG	SWEET	Ma'alua	Act	19891103	Inter/Nat	CIP-AUS-ACIAR	AUS	A.C.I.A.R.-Australia	Y	1999		HS2
		PNG	SWEET	Munduena	Act	19891103	Inter/Nat	CIP-AUS-ACIAR	AUS	A.C.I.A.R.-Australia	Y	1999		HS2
		PNG	SWEET	Naveto	Act	19891103	Inter/Nat	CIP-AUS-ACIAR	AUS	A.C.I.A.R.-Australia	Y	1999		HS2
		PHL	SWEET	Philippine	Act	19931202	Inter/Nat	CIP-PHL-PCARRD	PHL	Kannondai-JPN	Y	1999		HS2
		PNG	SWEET	Unknown	Act	19910927	Inter/Nat	CIP-AVRDC	TWN	A.V.R.D.C. - TWN	Y	1999		HS2
		PNG	SWEET	Unknown	Act	19910927	Inter/Nat	CIP-AVRDC	TWN	A.V.R.D.C. - TWN	Y	1999		HS2
		PNG	SWEET	Amasonbo	Act	19891103	Inter/Nat	CIP-AUS-ACIAR	AUS	A.C.I.A.R.-Australia	Y	1999		HS2
		PNG	SWEET	Manmun Small	Act	19891103	Inter/Nat	CIP-AUS-ACIAR	AUS	A.C.I.A.R.-Australia	Y	1999		HS2
		PNG	SWEET	Serenta	Act	19891103	Inter/Nat	CIP-AUS-ACIAR	AUS	A.C.I.A.R.-Australia	Y	1999		HS2
		PNG	SWEET	Manmun Kabiufa	Act	19891103	Inter/Nat	CIP-AUS-ACIAR	AUS	A.C.I.A.R.-Australia	Y	1999		HS2
		PNG	SWEET	Markham	Act	19891103	Inter/Nat	CIP-AUS-ACIAR	AUS	A.C.I.A.R.-Australia	Y	1999		HS2

# Distribution

Search a distribution of genetic material

Year of request:

Crop:  Year of distribution:

Country:  Destination:

Consignee:  Status:

Form material:  Scientist:

Institution:  ARTC Crops:

-

Results: 76

	Distribution Number	Date of ADU Request	Date Expected Delivered	Date Distribution	Crop	Consignee	Institution	Country	Scientist
ect	2001-002			01/30/2001	Potato	Lieselotte Schilde	Universitat Tubingen	Germany	Enri Chu
ect	2001-003			04/06/2001	Potato	Upali Jayasinghe	CIP - Indonesia	Indonesia	Upa Jaya
ect	2001-004		06/22/2001	06/22/2001	Potato	Abbas Saidi	SPII	Iran	Enri Chu
ect	2001-005			02/02/2001	Potato	Amjad Hussain	National Agricultural	Pakistan	Enri Chu

# Distribution

Consignee Information			
Name	Amjad Hussain		
Institution	National Agricultural Research Council		
Category	Natural Agnic. Research (NARS)		
Address	Park Road, Islamabad		
City	Islamabad	P.O. BOX	-
Country	Pakistan	Region	SWA
Phone	92-51-925-5067		
Fax	-		
E-mail	-		
Point of entry	Islamabad		
Crop:			

# Distribution

Print All Materials List

Print List Invitro

Print List Senasa

Add Description

Add Description from Excel

Phytosanitary Statement

Items: 7

Date of expected delivered:

(mm/dd/yyyy)

-->

Cip Number	Cultivar Name	Fao Des	Female Parent	Male Parent	Form	Number Materials	Vessels	Genus	Health Status	Dist Status	Date Begin Propagation	Cost (\$)
<a href="#">720045</a>	Atzimba	No	(LEONA x PEN3PD-23)	USDA-133.3	In-vitro	2 plantules		Solanum	HS2	Inter/Nat		
<a href="#">379706.27</a>	LT-8 (Costanera)	No	LT-1	(PVY + PVX BULK)	In-vitro	2 plantules		Solanum	HS2	Inter/Nat		
<a href="#">370116</a>	MF-I	No	KUFRI ALANKAR	KUFRI JYOTI	In-vitro	2 plantules		Solanum	HS2	Inter/Nat		
<a href="#">370120</a>	MF-II	No	JH-222 [(TPS-7 x EARLAINE-II x KUFRI KUND)]	PS-4904	In-vitro	2 plantules		Solanum	HS2	Inter/Nat		
<a href="#">720087</a>	Serrana-INTA	No	DF-664	B-2.63	In-vitro	2 plantules		Solanum	HS2	Inter/Nat		
<a href="#">370123</a>	TPS-13	No	EXP.A-680.16-SELF	-	In-vitro	2 plantules		Solanum	HS2	Inter/Nat		
<a href="#">370122</a>	TPS-67	No	EXP.A-680.16	(EXP.A-723)	In-vitro	2 plantules		Solanum	HS2	Inter/Nat		

<

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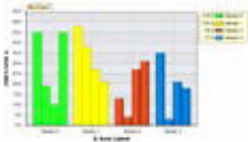
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Page : 1 of 1

# Reports

Explore the Dynamic Reports on the following entry points:



## You can look for Dynamics Reports on the following main entry points:

You can look for Dynamics Reports on the following main entry points:	Description
1. <a href="#">Holdings by Biological Status</a>	Totals of accesions by biological status.
2. <a href="#">Holdings by Health Status</a>	Totals of accesions by health status.
3. <a href="#">Holdings by Continent-Country</a>	Totals of accesions by administrations (continent and country).
4. <a href="#">Distribution by Accession</a>	Specific information about accesions by region and country of distributed materials from CIP-Lima.
5. <a href="#">Distribution by Institution Type</a>	Distribution materials by accesions, crop, type institution (CGIAR centers, NARS, NGO, etc).
6. <a href="#">Distribution by Country</a>	Number of consignments by country and crop distributed by CIP-Lima.
7. <a href="#">Distribution by Biological Status</a>	Distribution materials by accesions, crop, type form and biological status.
8. <a href="#">Distribution in Invitro Form</a>	<b>Invitro</b> distributions from internal (CIP), national and international distributed materials.
9. <a href="#">Distribution by Region</a>	Distribution materials by region. It includes the number of approved requests by region and crop.
10. <a href="#">Morphology</a>	Morphology of native potato with status active.

# Distribution

G10							
	A	B	C	D	E	F	G
1	BiologicalStatus	All BiologicalStatus					
2	CIPGeneral	CIP Lima					
3	Crop_Genus	All Crop_Genus					
4	Destination	All Destination					
5	FAO	All FAO					
6	Form_Material	All Form_Material					
7	Status_Country	All Status_Country					
8	IsBlackBox	All IsBlackBox					
9	Country_of_Origin	All Country_of_Origin					
10	Type of Institution	All Type of Institution					
11							
12	Accs A	Decade					
13	Region	1970-1979	1980-1989	1990-1999	2000-2009		
14	CAC			18	222		
15	ESEAP		5819	8411	1795		
16	LAC	49	19272	21910	23281		
17	MENA		2751	1595	228		
18	Other		4911	4223	3161		
19	SSA	25	7037	11296	623		
20	SWA	43	2959	4111	1269		
21							
22							
23							
24							

**SINGER** Knowledge makes the difference



- ▼ **Search**
- > **Your selection**
- > **Summary**
- > **Passport**
- > **Characteristics**
- > **Download**
- > **Reset**

## List of accession in your selection

*Holding institute equals to CIP  
Genus equals to Solanum*

Accession number	Collection name	Genus	Species	Country source
CIP-760017	CIP - Potato collection	solanum		Peru
CIP-762316	CIP - Potato collection	solanum		Bolivia
CIP-763298	CIP - Potato collection	solanum		Peru
CIP-763554	CIP - Potato collection	solanum		Unknown
CIP-760008	CIP - Potato collection	solanum	acaule	Peru
CIP-760013	CIP - Potato collection	solanum	acaule	Peru
CIP-760212	CIP - Potato collection	solanum	acaule	Bolivia
CIP-760213	CIP - Potato collection	solanum		

**CIP signed a landmark Agreement with the Potato Park communities and the Andes Association on the Repatriation, Restoration and Monitoring of Agro-biodiversity of Native Potatoes and Associated Community Knowledge Systems. So far, more than 400 varieties of native potatoes have been repatriated from CIP genebank to the Park communities. These varieties are being used for local food security, medicines and ceremonies.**



# Catalogue of native potatoes of Huancavelica

**78** CATÁLOGO DE VARIEDADES DE PATATA NATIVA DE HUANCABELICA

**Allqa Imilla**

KAY BIRCHUO SURAGA LAQSAMMI KULLI WAYTAYO QUMIR TULLIYA...  
 PAMU QIRICHAMMI KIRI PIMAMA PERCA FIMPIVOCCHI FIMIRAO MURAO...  
 PACHURUMI SURAGA CHIKO BIRUNA. ALLCA IMILLA QUMIR...  
 RANCO LATAWANKHAN BASA MAGNATASHI TUNWAKELAYUC YANUM...  
 FROKILQAP, CHEPKORAFONALINE NISI ASIRAPITISI MALCHA...  
 PAPAUNALI CHEVNI WANRA WILKACA QATIKUNAPIDA LLUMWITA...  
 MASERRI.

**INFORMACIÓN ADICIONAL**

Es una variedad muy apreciada con demanda comercial en los mercados regionales de Huancavelica, sus tubérculos tienen buen sabor y son muy harinosos.

**NOMENCLATURA**

Nombre común: Allqa Imilla (VI, PI)  
 sinónimos: Imilla Peruana (A), Trajin Peruana (PI)  
 Significado: Señorita de Dos Colores.

**INFORMACIÓN GENERAL**

Especie: *Solanum tuberosum* subesp. *andigena*  
 Abundancia: Intermedia  
 Placidia: 2n=4x=48

**USOS CULINARIOS**

Hervido, frito, sopas  
 tiempo de cocción: Corta

**DESCRIPCIÓN MORFOLÓGICA**

Hábito de crecimiento	Decumbente
Color primario de la flor	Morado (intenso)
Color secundario de la flor	Blanco
Distribución color secundario de la flor	Acumen (baz y en)
Grado de floración	Moderado
Color del tallo	Verde
Forma del tubérculo	Ficcionario
Color primario de la piel del tubérculo	Blanco crema (intermedio)
Color secundario de la piel del tubérculo	Rosado (en áreas irregulares)
Color primario de la carne del tubérculo	Blanco
Color secundario de la carne del tubérculo	Ausente
Color predominante del brote	Blanco

**CARACTERES AGRONÓMICOS**

Rendimiento (Kg por planta)	0.7 - 1.8
No. tubérculos por planta	18 - 29
Rancho	Mediamente suco
Hielada	Mediamente toler
Almacenamiento	Mayor a 5 meses
Rango de Adaptación	3300 - 4.600

DNA data in Khipu code

Photos of morphological characteristics

Characterization data

Passport data

Evaluation data