



Consultative Group on International Agricultural Research

International Institute of Tropical Agriculture (IITA)

Ibadan, Nigeria

www.iita.org

Background Information on IITA Shipment to Svalbard Global Seed Vault

Germplasm for Svalbard in 2008:

Cowpea: 4,778 accessions

Wild vigna (related to cowpea): 294

Soybean: 673

Maize: 499

Bambara: 269

Total: 6,513 accessions

Table 1: IITA deposit in the next 13 years will total 20,947 accessions

Crop	Total ±50	Jan-08	Apr-09	Apr-10	Apr-11	Apr-12	Apr-13	TOTAL
Cowpea	15,003	5,000	3,000	3,000	1,500	1,500	1,003	15,003
Bambara ground nut	1,815	300	300	300	300	300	315	1,815
Cowpea relative	1,507	300	300	300	300	307	0	1,507
Maize	880	500	200	180	0	0	0	880
Soybean	1742	700	500	542	0	0	0	1,742
TOTAL	20,947	6,800	4,300	4,322	2,100	2,107	1,318	20,947

For the 2008 shipment, germplasm was packed in 21 boxes with a total weight of 330 kg. Each box contains accessions in bulk by species and by germination rate at the time of packaging. The packaging of seeds in individual laminated foil was carried out over several months in 2007. Box packaging was done in three days with 10 people checking the accession list, reporting errors, and adjusting the inventory.

IITA challenge: We are dealing with several seed species of different important crops which makes the conservation more complicated, in addition to the challenges posed by our location.

IITA main collection: Cowpea (Niebe in French) (*Vigna unguiculata* L.)

Our seed collection of cowpea is the largest in the world with 15,122 accessions collected/acquired from 88 countries (see appendix 1). We estimate that the IITA genebank holds close to half of global cowpea diversity. While our collection contains about 70% landraces from Africa, we do not hold a substantial collection from outside Africa and have significant gaps from within Africa. Cowpea originates from Africa, from which 11,500 accessions are in trust in IITA's genebank, which constitutes 76% of our global collection. IITA's collection of cowpea started in the early 1970s with seed samples stored since 1978 (still viable). Cowpea seeds are true orthodox seeds. This means that their lifespan is considerably increased when they are dehydrated to the optimal value of 7% water content on fresh weight basis and stored at low temperatures between 5 to -20 degrees celcius (lower temperature is better). Vacuum packaging further increases their storability. We can expect to store the cowpea seeds for at least 20 years in such conditions. We maintain a 'library' with seed samples of the original sample to check conformity for most of our accessions.

COWPEA

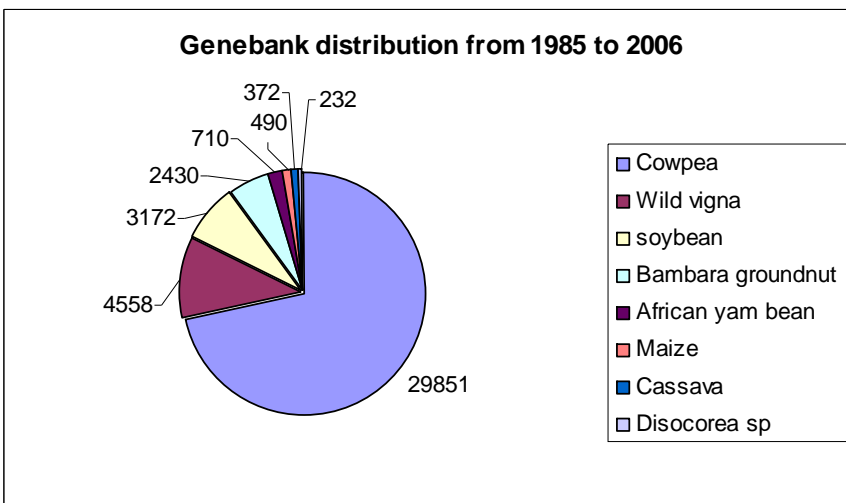
Characteristics

- One of the most ancient crops known to man
- Major staple crop in Africa
- Also significant production in Brazil, Haiti, India, Myanmar, Sri Lanka, Australia, and the USA
- Broadly adapted and highly variable crop, cultivated around the world mainly for seeds, but also as leafy vegetable, cover crop and fodder
- Also known as black eye pea (in the USA)
- Considered more tolerant to drought than soybean and better adapted to sandy soils

A very important trait in cowpeas is the number of days necessary to produce the first mature pods. The range of diversity amongst our collection for this trait varies from 49 to 129 days. The earlier the variety, the higher the chance for the farmer to harvest cowpea when facing short duration of rainfall or when located in drier cowpea growing regions. This characteristic is becoming even more important with the impacts of climate change and the greater unpredictability of the rainy season. Early maturing is not the only trait that counts if the field is infested with various pathogens, etc. This is the reason why our breeding program is so important. Cowpeas have many significant biotic constraints to production as well.

Distribution

IITA distributed the following cowpea accessions in the last 21 years:



Svalbard can unfortunately only accommodate crops producing orthodox seeds, so it does not work for our important cassava, yam and musa collections. Conservation of germplasm still requires much more research, and funding is needed for many other species.

Germplasm Use

Most of our germplasm has been placed under the auspices of FAO since 1994 (held in trust for the benefit of the global community). That means that our germplasm is freely available to anyone interested to use it for research for food and agriculture. All IITA's accessions are International Public Goods (IPGs) which provide unrestricted and free access to the germplasm now and in the future. Although the germplasm is free, we are considering charging a fee to meet requests from developed countries to recover funds for our work on regeneration, administration and shipment. We decided not to charge any fees when the request comes from a developing country.

IITA Obligations Regarding Germplasm Maintenance

1. To make germplasm available for use in research for food and agriculture
2. To maintain the germplasm at international standards
3. To use MTA/SMTA depending on crop (MLS)
4. To provide all information associated with the germplasm when distributed
5. To report to the governing body of the distributions made
6. To repatriate germplasm from country of origin without an MTA
7. To accept policy guidance of the governing body
8. To give access to the governing body secretary to inspect the facilities
9. To get assistance from the governing body secretary to evacuate or transfer the collection if threatened by whatever event

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Captions of attached pictures

306: Svalbard boxes ready for shipment. Each shipment/storage box contains the list of accessions it contains with minimum germplasm data (institute code, accessions number, scientific and common name, number of seeds per pack, year of regeneration, country of origin).

305: Seed samples are vacuum-packed in laminated foil prior to being packed in shipment box.

298: Genebank staff checking accession number as they are packed in shipment box .

296: Svalbard boxes ready for shipment. Each shipment/storage box contains the list of accessions it contains with minimum germplasm data (institute code, accessions number, scientific and common name, number of seeds per pack, year of regeneration, country of origin).

293: Genebank staff checking accession numbers as they are packed in shipment box.

289: Genebank staff checking accession numbers as they are packed in shipment box.

287: Genebank staff checking accession numbers as they are packed in shipment box.

297: Svalbard shipment boxes

122: Pre-sorting accessions for Svalbard shipment. Seeds samples are temporarily stored at 5 degrees celsius.

Appendix 1

Origin Geographic Code Field	Number of sample collected in each country (may be slightly higer than the reality)
Nigeria	4,200
India	2,276
Niger	1312 + 13 (recorded under United states of America)
United State of America	892
Cameroon	620
Zambia	530
Botswana	514
Tanzania	435
Malawi	401
Benin	357
Egypt	343
Ghana	321
Senegal	293
Mali	292
Burkina Faso	291
Central African Rep	183
Brazil	179
Kenya	159
Italy	150
Uganda	146
Cote d Ivoire	136
Chad	134
South Africa	130
Not Available	128
Zimbabwe	121
Philippines	114
Guinea	113
Togo	103
Afghanistan	75
Oman	72
Somalia	71
Puerto Rico	56
Sudan	52
Turkey	49
Congo	46

Origin Geographic Code Field	Number of sample collected in each country (may be slightly higer than the reality)
Union of Soviet Socialist	42
Lesotho	41
Hungary	39
Iran	35
Madagascar	34
China	31
Australia	30
Yemen Republic of	27
Mexico	24
Mozambique	24
Surinam	20
Swaziland	18
Zaire	15
United Kingdom	14
Paraguay	13
Sierra Leone	13
United States of America	13
Papua New Guinea	12
Guatemala	11
Liberia	9
Argentina	8
Ethiopia	8
Israel	8
Pakistan	8
Colombia	6
Gabon	6
Portugal	6
Syrian Arab Republic	6
Gambia	4
Indonesia	4
Sri Lanka	4
United Arab Emirates	4
Algeria	3
Dominican Republic	3
Japan	3
Nepal	3
Venezuela	3
Cuba	2

Origin Geographic Code Field	Number of sample collected in each country (may be slightly higer than the reality)
Guyana	2
Mauritania	2
Nicaragua	2
Palau	2
Spain	2