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Cowpea Seed Systems and Dissemination of Seed of Improved Varieties in West Africa

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Modern Cowpea Breeding to Overcome Critical Production Constraints in Africa



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Why is a Certified Seed system important?

- A good crop starts with good seed
- Provides a pathway for delivery of pure and high quality seed to farmers
- For new and existing varieties
- Ensures 'trueness-to-type'
 - Seed stocks get mixed over time
 - mechanical mixing
 - outcrossing
- High germination and vigor
- Freedom from seed borne diseases

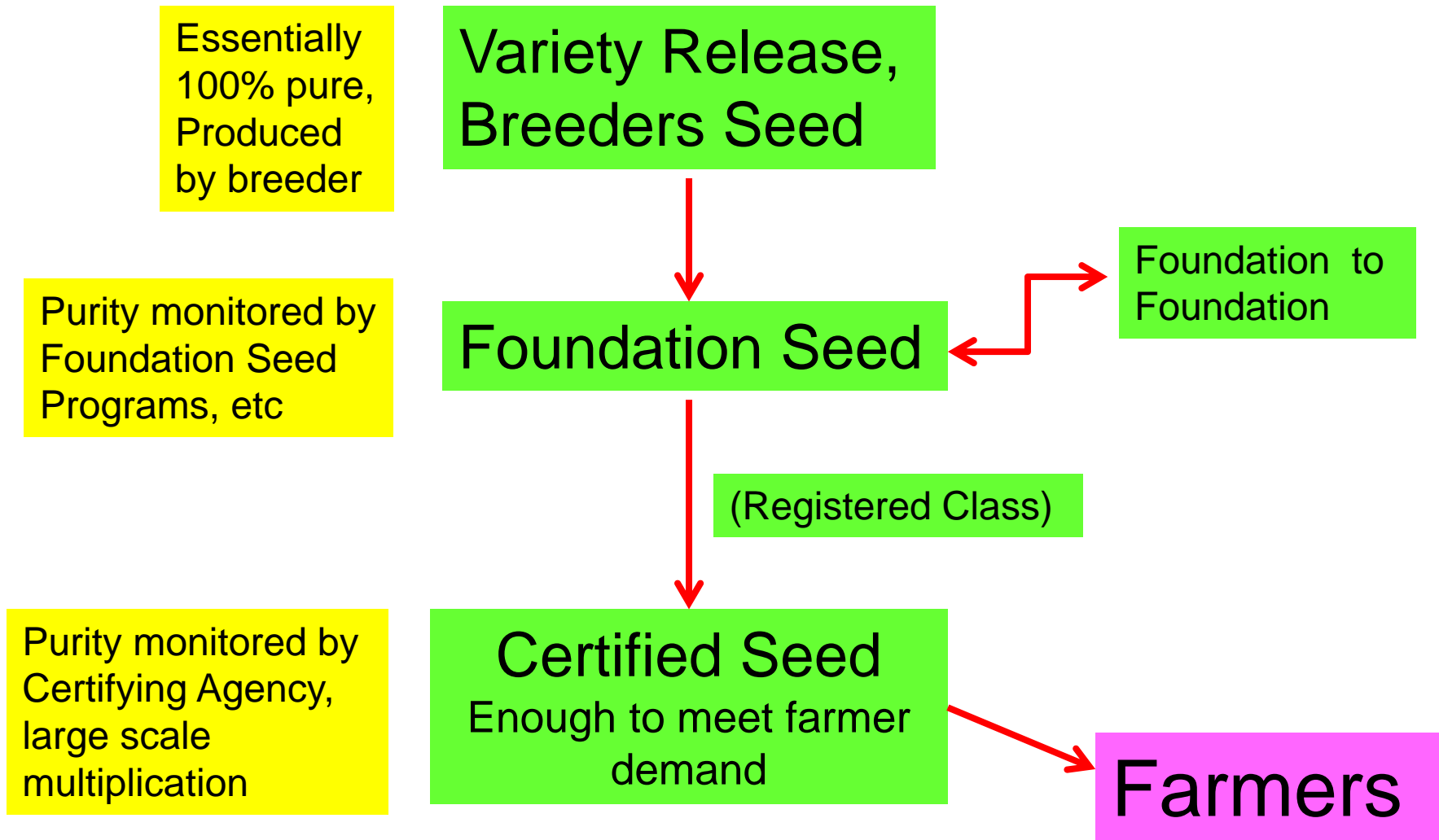


Seeds are different than most other products

- Appearance says little about what you are getting
 - Germination, vigor, physical and trait characteristics
- Farmer saved seed
 - Little control of genetic purity and freedom from seed-borne diseases
 - Storage conditions variable
- Market bought seed
 - Even worse
 - Low germination, vigor
 - Wrong/mixed variety
 - Seed-borne diseases



Certified Seed Pathway to Farmers



Seed Systems in Selected Countries

- Diverse models can work
 - as long as it delivers seed to farmers
- Angola
 - No formal system for cowpea yet
- Senegal and Burkina Faso
 - Breeders seed produced by ISRA and INERA
 - Issa Drabo – INERA Burkina Faso
 - Phil Roberts for Ndiaga Cisse of ISRA, Senegal





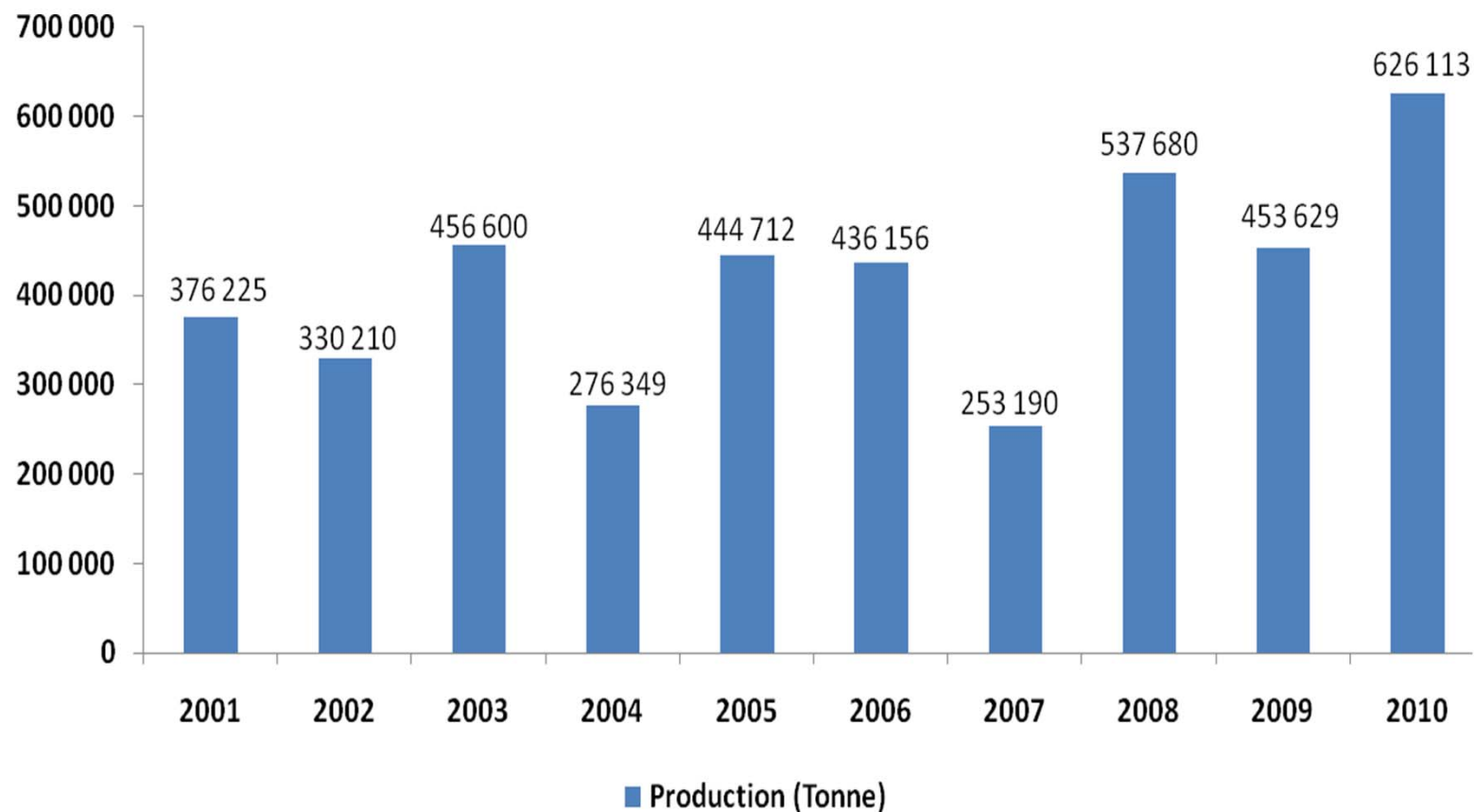
Overview of
cowpea seed supply
system in Burkina
Faso

Some of the important people of the Burkina Cowpea Team



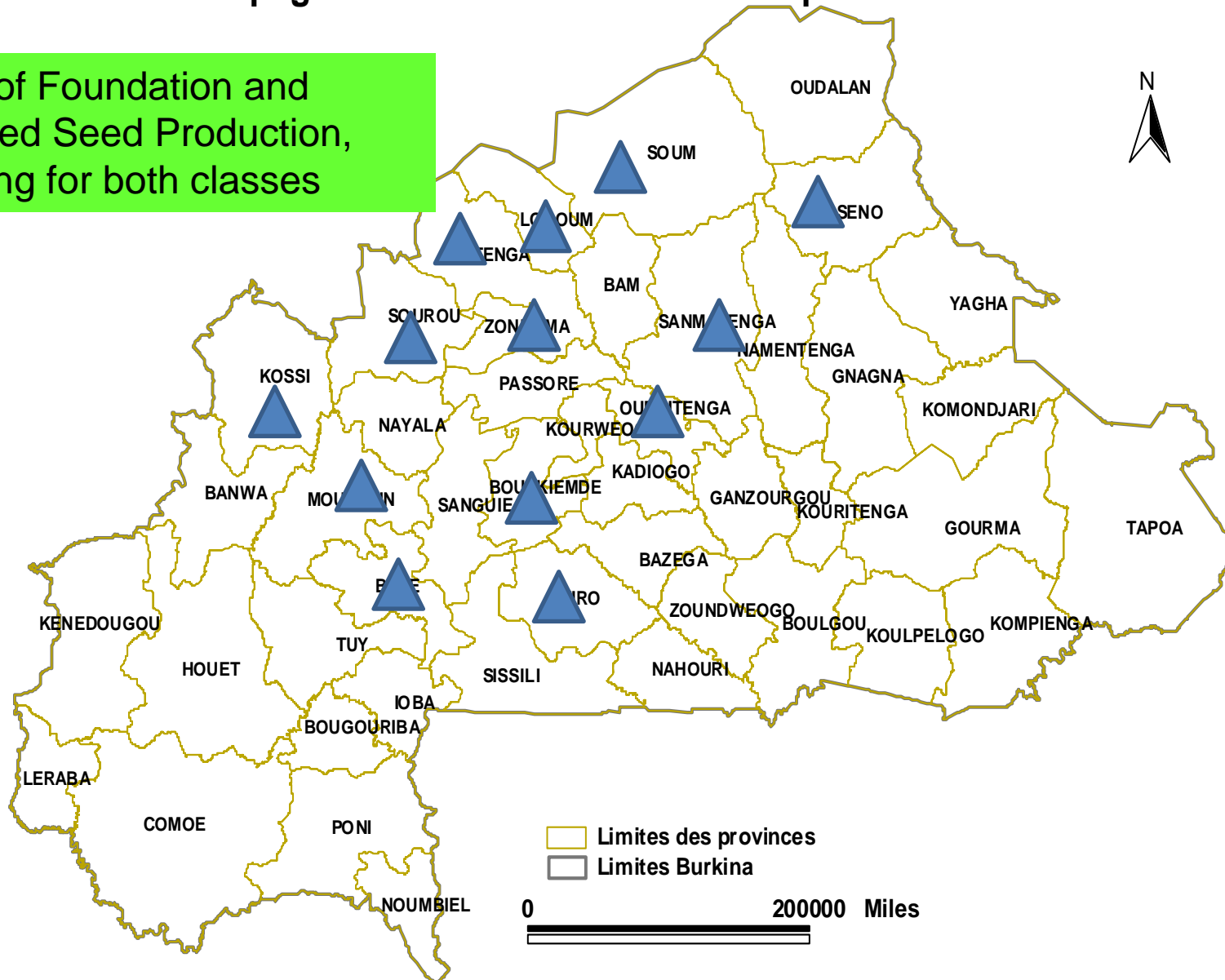
Cowpea production increasing

EVOLUTION OF COWPEA PRODUCTION IN BURKINA FASO 2001 to 2010



Découpage administratif du Burkina en province

Sites of Foundation and Certified Seed Production, Training for both classes



Breeders Seed

Varieties	2005	2006	2007	2008	2009	2010
KVX 396-4-5-2-D	0,189	0,481	0,328	0,279	0,844	1,408
KVX 396-4-4			0,045	0,317	0,060	0,115
KVX 414-22-2	0,088	0,260	0,148	0,180	0,080	0,395
KVX 61-1	0,167	0,556	0,321	0,500	0,597	1,028
KVX 745-11P		0,335	0,078	0,443	0,516	1,142
KVX 421-2J			0,044	0,175	0,100	0,280
IT 98K-205-8			0,275	0,125	0,109	0,449
Mélakh			0,128	0,150	0,282	0,150
KVX442-3-25				0,058	0,033	0,614
KVX775-33-2				0,105	0,065	0,042
KVX775-3-10				0,040	0,026	
TOTAL	0,509	1,870	1,442	2,763	2,858	6,136

SOURCE: INERA, 2011



09/26/2009



09/26/2009



09/26/2009

Foundation Seed Production

- **INERA**
 - On-station
 - Contracts
 - Farmers Groups
 - Individual Farmers
 - Minimum 3 ha
 - Private companies
 - e.g. Faso Agricultural Neema (NAFASO)

Foundation Seed, off-season – Bagre



Foundation Seed, new KVx 421-2J – Pobe



Foundation Seed Production

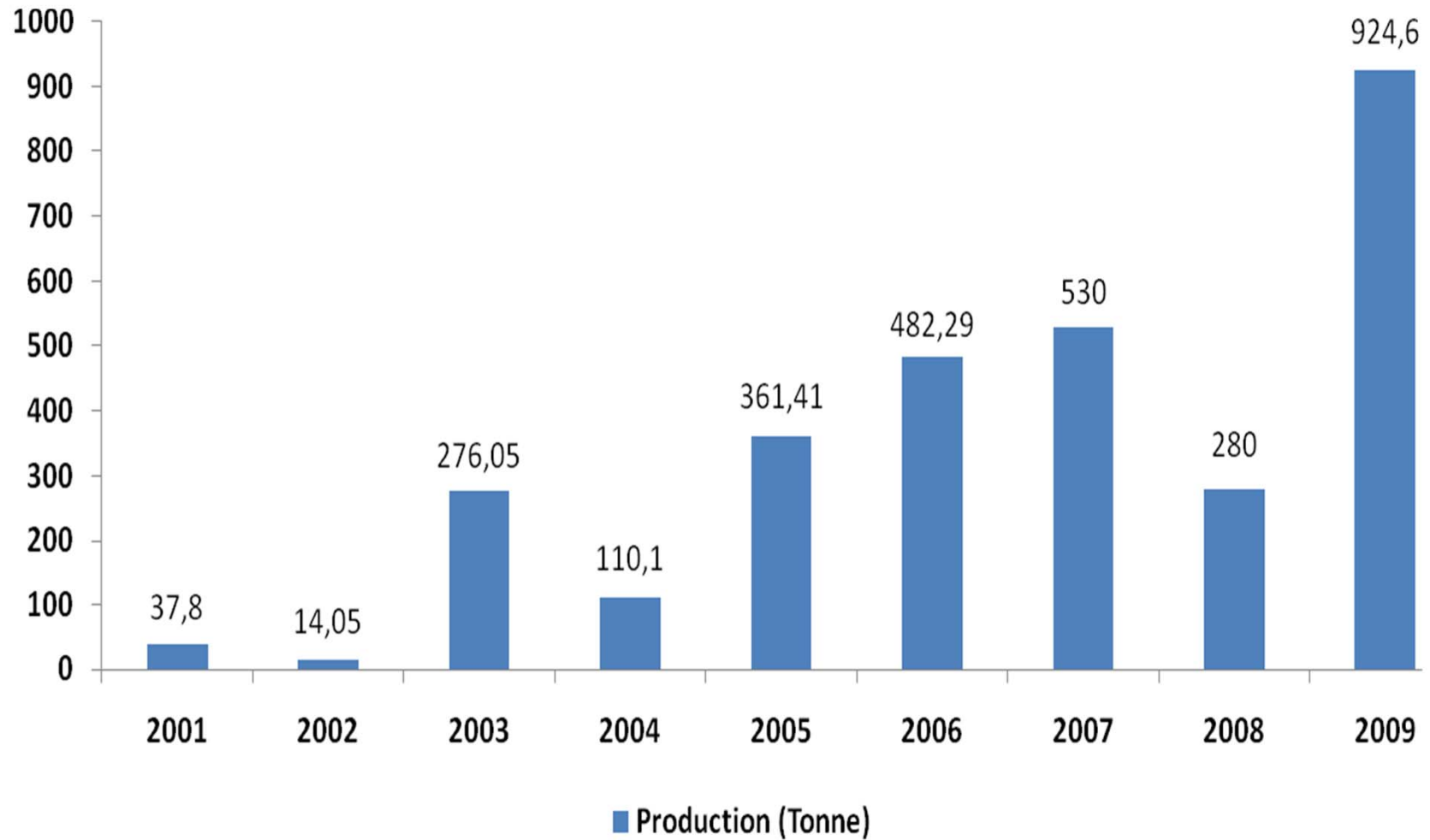
Years	2003	2004	2005	2006	2007	2008	2009	2010
Varieties								
KVX 396-4-5-2-D	921	800	2761	2086	1857	4182	7650	14227
KVX 396-4-4					585	669	1596	4376
KVX 414-22-2	1626	625	1505	317	510	220		
KVX 61-1	1411	570	2534	3420	1598	5986	14681	27247
KVX 745-11P	1100	400	1678	7340	2434	2222	3297	11910
KVX 421-2J						130	380	950
Gorom local			210	522	85	270	488	1150
IT 98K-205-8					225	180	182	1766
Mélakh					187	110		1871
KVX775-33-2							80	375

Certified Seeds Production

- Seed certification
 - conducted by SNS (Foundation and Certified)
 - quality controls on the farm and in the laboratory.
- Producers of Certified Seed
 - > 50 Farmers organizations
 - Womens' Groups
 - Individual farmers
- Buyers
 - Government
 - FAO
 - Individuals
 - Burkina Faso Union of Seeds Farmers (UNPS-BF)
 - NGOs



Production of Certified Cowpea Seed in Burkina Faso



SOURCE: NATIONAL SERVICE OF SEED
(SNS), 2011

Training

- Farmers

- >1/3 women

- Technicians

- NGO's
- National Institutions
- Farmer's organization
- Individual farmers



Certified Seed Producer training, Farako-Ba



Certified Seed Producer training, Pobe

Senegal

Yacine Breeder Seed Production Field - Bambey



Cowpea Production and Seed Needs

- Cowpea area: 200,000 ha (sole cropped)
- Total annual need:
 - 3200 T Certified
 - 1066 T Foundation
- Availability of Foundation Seed identified as a bottleneck for adequate supply of seed
- Certified Seed production by diverse actors

Strategies

- Foundation from Breeder seeds:
 - 1st generation: ISRA seed unit, complemented by breeding program
 - 2nd generation: Farmer organizations
- Work with the national Extension Service (ANCAR) and farmers organizations
- Farmers trained in seed production, harvest and post-harvest

**'Melakh' Foundation Seed Field
ISRA/CNRA Bambey**



Organizations involved in Certified and Foundation Seed Production

- Farmers organizations:
 - UGPM
 - 5000 members
 - 61% of women and 49% men.
 - RESOPP: Farmers cooperatives organized by the NGO EWA
 - 6000 members
 - Millenium village projects: 1343 members
 - Touba Toul 'coperative': 3056 members
 - 55% women

Seed Producer Training

- Training of farmers for seed production
 - ✓ Field selection, culling
 - Removing off-types and diseased plants,
 - ✓ Harvest and post-harvest handling
 - Double bags provided to farmers for storage

2011 Foundation Se

- ISRA: 7.2 T
- NGO-RESOPP: 2.1 T
- Moustapha Diop: 3.4 T
- ARSM : 2.1 T
- UGPM: 1.7 T



Foundation Seed Production

- 2009: 11.254 T
 - 32 % of annual need
- 2010: 23.5 T
 - 67% of annual need
- 2011: 16.5 T
 - 47 % of annual need

Regionalization into Mali and Niger

From Senegal and Burkina
Faso

Mali, 2 year means (low Striga emergence)

Genotypes	50% Maturity	Striga emerged	Grain yield
MOURIDE	69	1	979
BJIGUIYA	67	0	864
KOROBALLEN	72	0	1187
KVX-421-25	74	0	1292
YACINE	66	0	708

KVx-421-25 from Burkina Faso Program produced the highest yields

Data courtesy Mamadou Toure, Mali, 2010 and 2011

Yield of CRSP varieties in Niger 2010 and 2011 (no-spray)

Variety	Origin	Yield (T/ha)	
		2010	2011
KVX 912-2P2 (INERA)	Burkina	1624 ef	510 ab
KVX 907-2P2 (INERA)	Burkina	1749 ef	765 b
KVX 912-1P1 (INERA)	Burkina	249 a	270 ab
Melakh (ISRA)	Senegal	1208 b-f	495 ab
KVX 404-8-1 (INERA)	Burkina	1562 d-f	497 ab
KVX 414-22-2 (INERA)	Burkina	1604 ef	575 ab
KVX 421-25 (INERA)	Burkina	791a-c	62 a
IT98K-1111-1 (IITA)	IITA	333 a	210 a
Pakau (new from ISRA)	Senegal	1854 f	462 ab
Mouride (ISRA)	Senegal	1479 c-f	265 ab
TN 5-78 (INRAN)	Niger	1020b-e	232 ab
IT97K-499-35 (IITA)	IITA	1104 b-f	387 ab
IT98K-205-8 (IITA)	IITA	1166 b-f	90 a
TN 256-87 (INRAN)	Niger	499 ab	310 ab

Data courtesy Ibrahim Baoua, INRAN

Cowpea Seed Production and Delivery in Senegal

- Focus on CRSP varieties 'Melakh' and 'Yacine'
- Breeder seed 0.5 ha each to support.
- Foundation seed 1,378 and 1,113 Kg by ISRA
- Certified Seed >16,000 Kg produced in 2009 at 3 locations by NGO-EWA, farmers' union UGPM, and Producers Professional Training Center (CPFP).
- Groups include men and women farmers.
- Phase II expansion with Supplemental Funds

