

## A MONTHLY PUBLICATION OF THE TROPICAL LEGUMES II PROJECT

### About the Bulletin

The Bulletin of Tropical Legumes is a monthly publication of the Tropical Legumes II (TL II) project, funded by the Bill and Melinda Gates Foundation, and jointly implemented by the International Crops Research Institute in the Semi-Arid Tropics (ICRISAT), the International Center for Tropical Agriculture (CIAT) and the International Institute of Tropical Agriculture (IITA) in close collaboration with partners in the National Agricultural Research Systems of target countries in Sub-Saharan Africa and in India. TL II aims to improve the livelihoods of smallholder farmers in drought-prone areas of the two regions through enhanced grain legumes productivity and production.



### Accelerated Seed Production to Help Spread of Tropical Legumes

The Tropical Legumes II (TL II) Project, funded by the Bill and Melinda Gates Foundation, aims to improve the livelihoods of smallholder farmers through improved productivity and production of tropical grain legumes in Sub-Saharan Africa and South Asia. TL II is currently winding up its first phase and moving toward a possible second phase. Establishing the production and delivery of sustainable seed systems is one of the eight major objectives of the project, accounting for approximately 28% of the total funding of its total budget. Progress made in this objective during the first phase (September 2007- February 2010) is highlighted here.

#### Seed production

The quantity of seed produced varied from country to country and from crop to crop. In total, nearly 93000 metric tons (MT) of various classes of seed was produced across the target countries and six crops (Table 1). The largest amounts of seed were produced in India, followed by Ethiopia, Malawi, Kenya, Nigeria, Tanzania, Mozambique, Mali, and Niger. The quantity of seed production appeared to be positively related to the number of private companies available in the country, the strength of the research system, and the

importance of the crop to the country. For example, India has a large number of private seed companies, very strong research system (including agricultural universities as well as the presence of ICRISAT). Ethiopia and Kenya also have among the strongest agricultural research and development systems in the region, and the strong presence of ICRISAT and IITA in Malawi, coupled with the emphasis given to legumes in that country have helped the increased production of seed during the first phase. Table 2 summarizes the total amounts of seed of the six crops across target countries.

Chickpea had the highest share, followed by groundnut, common bean, soybean, pigeonpea and cowpea (Table 1 & 2). The total quantity of seed produced was nearly 93000 MT. That is, approximately 21000 MT, 32000 MT and 40000 MT of seed was produced in Year 1, Year 2, and Year 3, respectively. Considering the average plot size of about 0.2 ha for all the legumes here, and seeding rates of roughly 7 kg/ha for pigeonpea; 20 kg/ha for cowpea; 40 kg/ha for chickpea; 60 kg/ha for soybean; 90 kg/ha for groundnut; and 100 kg/ha for common bean, this would translate into a total area of close to 2 million ha of land planted to the improved varieties (equivalent to nearly 9.6 million smallholder households) over the three years period. The common bean seed systems team estimate that they have reached approximately 1.3 million smallholder households in Ethiopia and Kenya over this period.

## Institutions involved

A large number of institutions were involved in seed production, including departments of ministries of agriculture (MOA), community-based organizations (CBOs), private and public seed agencies, individual farmers, research institutions, and agricultural universities. In general, the involvement of different institutions varied according to countries, as shown in Fig. 1. For example, the largest amounts of common bean seed in Kenya were produced by private companies whereas in Ethiopia MOA, followed by CBOs, was the largest producer; CBOs were most important for cowpea in Nigeria and pigeonpea in India (Fig. 1). This suggests that different models of seed production and delivery systems need to be developed according to the objective conditions of the countries.

Table 1: Different classes of seed of tropical legumes produced (MT) during the first phase of TL II

Country	Seed Class				Total
	Basic	Foundation	Certified	Others <sup>1</sup>	
<b>Country totals</b>					
India	276	5,345	68,853	143	74,617
Ethiopia	22	7,813	3,351	178	11,365
Malawi	47	158	3,188	0	3,393
Kenya	16	953	13	314	1,296
Nigeria	0	59	513	68	640
Tanzania	22	194	263	82	561
Mozambique	0	53	495	0	548
Mali	8	54	145	44	251
Niger	1	47	172	0	220
<b>Total</b>	<b>392</b>	<b>14,676</b>	<b>76,993</b>	<b>829</b>	<b>92,890</b>
<b>Crop totals</b>					
Chickpea	188	3,279	52,289	0	55,756
Groundnut	99	2,562	23,066	241	25,968
Common bean <sup>2</sup>	0	8,537	0	492	9,030
Soybean	7	87	776	0	871
Pigeonpea	98	109	395	96	698
Cowpea	0	101	467	0	568
<b>Total</b>	<b>392</b>	<b>14,676</b>	<b>76,993</b>	<b>829</b>	<b>92,890</b>

Table 2: Total seed production (MT) by country and crop during Phase 1

Country	Crop						Total
	Chick-pea	Common bean	Cow-pea	Ground-nut	Pigeon-pea	Soy-bean	
India	52,124	- <sup>3</sup>	-	22,256	237	-	<b>74,617</b>
Ethiopia	3,585	7,780	-	-	-	-	<b>11,365</b>
Malawi	-	-	-	3,071	183	139	<b>3,393</b>
Kenya	7	1,250	-	-	8	31	<b>1,296</b>
Nigeria	-	-	294	98	-	247	<b>640</b>
Tanzania	39	-	-	251	270	-	<b>561</b>
Mozambique	-	-	95	-	-	454	<b>548</b>
Mali	-	-	57	194	-	-	<b>251</b>
Niger	-	-	122	98	-	-	<b>220</b>
<b>Total</b>	<b>55,756</b>	<b>9,030</b>	<b>568</b>	<b>25,968</b>	<b>698</b>	<b>871</b>	<b>92,890</b>

1 Includes quality declared seed and seed from small packs

2 Estimates based on multiplication ratio of the crop and percentage of harvest sold as seed each year

3 -= Crop not included in the seed systems for the country

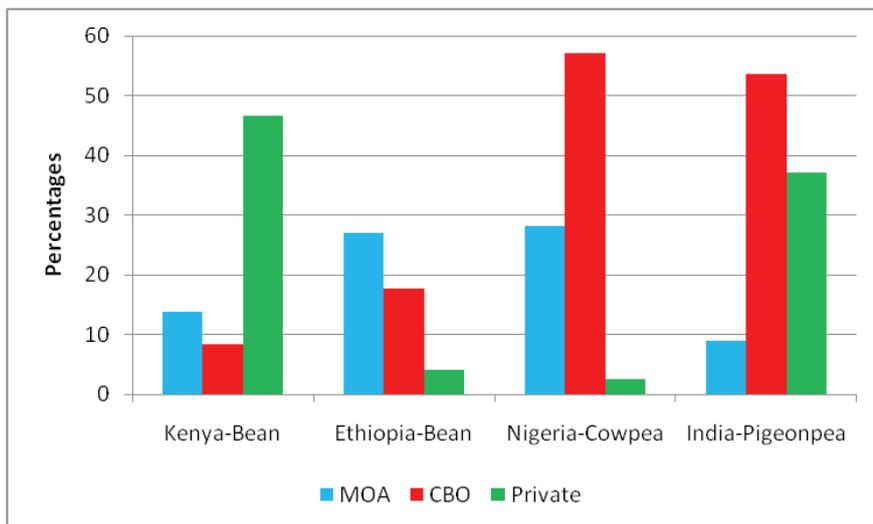


Fig. 1: Percentages of seed production by different institutions in selected countries

## Crop varieties multiplied

A total of 176 varieties were multiplied across the countries during the three years. This varied from three varieties of pigeonpea in Tanzania to 24 varieties of groundnut in Mali. Table 3 shows

up to five most important varieties multiplied for each of the crops. Six of the 176 varieties were multiplied at two locations each. These included the pigeonpea variety ICEAP 00040 (or locally

known as Mali) in Malawi and Tanzania; the soybean variety TGx 1740-2F in Malawi and Mozambique; the soybean variety TGx 1904-6F in Nigeria and Mozambique; the groundnut variety Fleur 11 in Mali and Niger; another groundnut variety JL 24 in Mali and Malawi; and the cowpea variety IT98K-205-8 in Nigeria and Mozambique. This indicates that some varieties are more widely adapted than others.

Another interesting observation here was that, with the exceptions of the pigeonpea variety Maruti in India and the groundnut variety 55-437 in Niger, dated varieties have not made it to the list of up to top five varieties. This is a good indication that the so called “ruling varieties” are on their way out of the seed systems in many countries and being replaced by new, farmer- and market-preferred ones.

Table 3: Top five varieties (in descending order of quantity) multiplied in target countries

	India	Ethiopia		India	Malawi	Tanzania
	Chickpea	JG 11		Arerti	Pigeonpea	PKV-TARA
JAKI 9218		Shasho	PRG-158	ICP 9145		Kombo
KAK 2		Ejere	Maruti	ICEAP 00557		Tumia
BGD 103		Habru	BSMR-736	ICP 9145		
JG 130		Marye	C-11			
Common bean	Ethiopia	Kenya	Soybean	Malawi	Mozambique	Nigeria
	Awash 1	KAT B1		Nasoko	TGx 1740-2F	TGx 1835-10E
	Awash Melka	KATB9		Makwacha	TGx 1904-6F	TGx 1951-3F
	Nasser	KATX56		Ocepara-4	TGx 1908-8F	TGx 1904-6F
	Ibbado	KATX69		Magoye	TGx 1485-1D	TGx 1935-3F
	Hawssa Dume			TGx 1740-2F	TGx 1937-1F	TGx 1955-4F (7)
Groundnut	India	Mali	Niger	Nigeria	Malawi	
	ICGV 91114	ICGV 86124	55-437	SAMNUT 22	CG7	
	GPBD 4	Fleur 11	RRB	SAMNUT 21	ICGV-SM 90704	
	ICGV 00350	JL 24	Fleur 11	SAMNUT 23	Chalimbana	
	CoGn 4	ICGV 86015	J11	SAMNUT 10	ICGV-SM 99568	
	TMV Gn 13	ICG 7878	T181-83		JL 24	
Cowpea	Mali	Niger	Nigeria	Mozambique		
	IT89KD-374	IT90K-372-1-2	IT97K-499-35	IT-18		
	IT93K-876-30	IT98K-205-8	IT89KD-288	IT-16		
	Korobalen	KVX30-309-6G	IT90K-277-2	IT00K-126-3		
	IT90K-372-1-2	IT97K-499-35	IT89KD-391	IT97K-1096-6		
	Sangaraka	TN 578	IT98K-205-8	IT98K-205-8		

## Factors for success

Commitments of scientists and effective partnerships among stakeholders could be cited as the major factors for the success of seed production in TL II. For example, the first year of the project was not conducive to carry out research in Kenya, following the 2007 postelection violence. KARI scientists worked hard and fulfilled their commitments to produce common bean seed in spite of the adverse environment. Scientists in Sussundenga Research Station and Ruace Research Station in Mozambique did not have storage but the office of the scientist in the former was used to store cowpea seed and soybean seed was stored in makeshift facilities in the latter (Figs. 2 and 3).



Figure 2: Mr. Domingos Dias of IIAM with cowpea seed stored in his office at Sussundenga Research Station, Mozambique (May 2008)



Figure 3: Dr Manual Amane (center) of IIAM with Mr. Carlos Pedro (right) and their field assistant in their makeshift seed store for newly produced soybean seed at Ruace, Mozambique (May 2008)

---

## Upcoming TL II Events

---

### 9-11 May 2011

National Review and Planning Meeting for India  
(groundnut and pigeonpea)  
ICRISAT-Patancheru

---

### 16-19 May 2011

Regional Review and Planning Meeting for  
Western and Central Africa  
IITA, Ibadan, Nigeria

---

### 22-25 May 2011

Regional Review and Planning Meeting for Eastern  
and Southern Africa  
Lilongwe, Malawi

---

### July/August 2011

National Review and Planning Meeting for India  
(chickpea)  
ICRISAT-Patancheru

---

Progress made during Phase 1 will be reviewed and work for the coming year will be drawn up. The meetings will also feature developing tropical legumes R&D strategies in target countries. Phase 2. Participation includes the TL II Team (CG and NARS scientists), development partners (including NGOs, private sector, and community-based organizations), representatives of other projects, Deputy Directors General of the three centers (CIAT, ICRISAT and IITA), TL II Advisory Board, and invited guests.

---