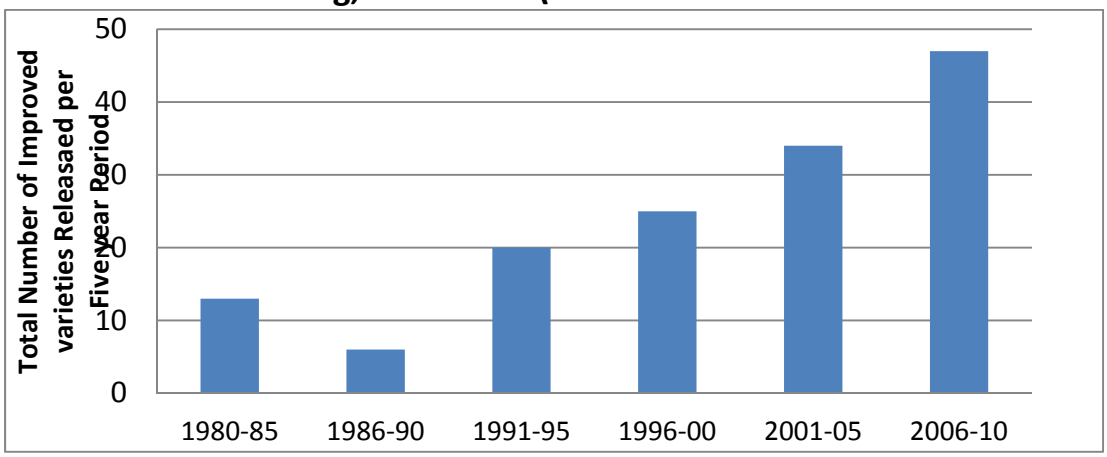
At a glance: Scientific outputs of Bean/Cowpea and Dry Grain Pulses CRSP

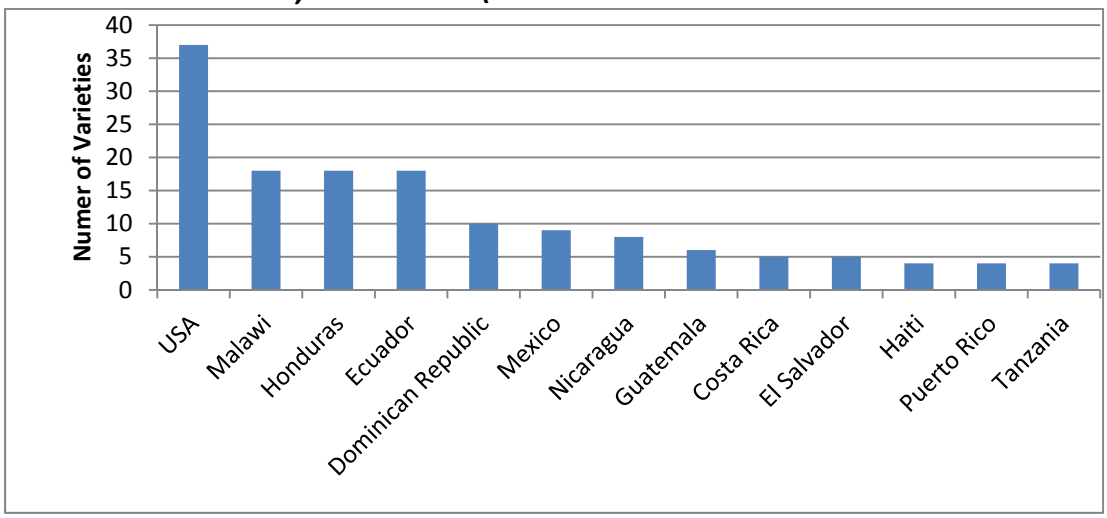
Improved Bean Varieties

Trend in the number of improved bean varieties released in CRSP partner countries (including USA) by breeding programs that received CRSP funding, 1980-2010\a



\a includes 3 bean varieties released in 2011 (in Guatemala).

Number of CRSP supported improved bean varieties released in different countries, 1980-2010\a



\a includes 3 bean varieties released in 2011 (in Guatemala).

Inventory of Bean Varietal Releases in Developing Countries Made Possible Through Support from the Bean/Cowpea or Pulse CRSP, 1980-2010

Source: Compiled by Jamora and Maredia with input from bean breeders and researchers from CRSP, NARS and CIAT.

Proper Citation: Jamora, N. and M. Maredia (2010). Database of improved beans and cowpea varietal releases in major bean and cowpea producing countries in Africa, Latin America and the U.S., 1980-2010.

Note: The list is organized first by country (in alphabetical order) and then by year released.

country	market class	Variety	Year released	parental line	characteristics
Costa Rica	Small red	**Bribri**	2000	MD 2324 | (RAB 310 x XAN 155) x (DOR 391 x Pompadour G)	Good yielding, well adapted to low soil fertility, and disease resistant cultivar; BGYMV, anthracnose, web blight resistance, and heat tolerance; Phaseolus vulgaris cv. Its agronomic potential is mainly attributed to its good productivity under low soil fertility, as well as its tolerance to angular leaf spot (caused by Phaeoisariopsis griseola) and web blight (caused by Thanatephorus cucumeris). Bibri is recommended for the Brunca and North Huetar bean production regions of Costa Rica.
Costa Rica	Small red	**Cabécar**	2003	(Amadeus 77, 2003, from Honduras) EAP 9510-77 | MD 3075 / DICTA 105	No description
Costa Rica	Small red	**Telire**	2004	(Carrizalito, 2003, from Honduras) EAP 9510-1 | MD 3075 / DICTA 105	No description
Costa Rica	Small red	**Tonjibe**	2007		No description
Costa Rica	White	**Suru**	2009	MEB 2232-29 | PAN 68 x MD 2324	No description
Costa Rica Count	5				
Dominican Republic	White	**Anacaona**	1983	L227-1///B-190/XR235//L183-1	common bacterial blight and web blight resistance; derived from multiple crosses of L227-1///B-190/XR235//L183-1, has an indeterminate habit (Type II) with a short vine (75 cm). .
Dominican Republic	White	**Arrollo Loro**	1983	derived from a single backcross with Bonita as the recurrent parent and La Vega as the non-recurrent parent, followed by recurrent selection and population bulking	I gene for BCMV resistance and rust resistance; Phaseolus vulgaris cv. Arroyo Loro (PI536019), released as breeding line
Dominican Republic	Black	**Negro Sureno**	1987		Developed by Jkelly; black seed adapted to Dominican Rep
Dominican Republic	Red mottled	**PC 50**	1987	derived from a single plant selection in the Pompadour Checa landrace for earliness, bright red mottled seed coat colour and rust (caused by Uromyces appendiculatus) resistance	Ur-4 and Ur-9 rust resistance genes and cooking quality;. It is susceptible to Type II bean golden mosaic geminivirus [bean golden mosaic virus], Xanthomonas axonopodis pv. phaseoli, to isolates of AG-1-1B and AG-2-2 of Thanatephorus cucumeris and to bean common mosaic potyvirus [bean common mosaic virus]..
Dominican Republic	Black	**Arrollo Loro Negro**	1998	tested as MUS-N-4-II, was derived from the cross H-270/XAN223 made at CIAS	web blight and rust resistance and heat tolerance; Type II high yielding black bean obtained from Michigan State University, East Lansing, MI.
Dominican Republic	Red mottled	**CIAS 95**	1998	derived from the cross PC 50/BAT 1274 via selection for erect plant	rust and common bacterial blight resistance; resistant to NY-15 race of BCMV but susceptible to bean common mosaic necrotic virus-NL3 strain

country	market class	Variety	Year released	parental line	characteristics
				architecture and acceptable seed type	and bean golden mosaic geminivirus [bean golden mosaic virus]. Its morphology, habit and mean yield, which exceeded that of the standard PC-50, are briefly described.
Dominican Republic	Red mottled	**JB 178**	1998	derived from the cross Jose Beta/C1308. The F1 was grown in the field, and F2 and F3 plants were selected for agronomic traits and acceptable seed type	resistance to rust, common bacterial blight, and the NY-15 race of BCMV.. It is susceptible to bean golden mosaic geminivirus [bean golden mosaic virus] and bean common mosaic necrosis virus-NL3 strain. JB-178 is well adapted to altitudes of 100-1000 m and yields 1091-2131 kg seeds/ha. Its morphology and habit are briefly described.
Dominican Republic	Red mottled	**Saladin 97**	1998	derived from the cross PC-50/BAT 1274	resistance to common bacterial blight and the NY-15 race of BCMV; It is susceptible to Type II of the bean golden mosaic geminivirus [bean golden mosaic virus], resistant to bean common mosaic potyvirus [bean common mosaic virus] NY-15 strain. Saladin-97 exhibited partial resistance to rust in the field and greenhouse tests. Yields ranged from 1309-2073 kg/ha and exceeded that of PC-50. The morphology and agronomic characteristics are briefly described.
Dominican Republic	Pink	**Rosada Nativa**	1999	derived from the cross DOR483/BelNeb Rust Resistant-1	bgm-I gene for BGYMV, I gene for BCMV, rust resistance, and heat tolerance; This is indeterminate type.. It carries the recessive bgm1 allele for resistance to bean golden mosaic bigeminivirus and the I gene for resistance to bean common mosaic potyvirus. It is moderately resistant to Rhizoctonia solani. In field trials conducted in Puerto Rico during 1995-97,.
Dominican Republic	Black	**DPC-40**	2009		This black bean cultivar, which combines resistance to BGYMV, BCMNV and BCMV, is produced for local consumption and export
Dominican Republic Count	10				
Ecuador	Red mottled	**Je'Ma**	1996	INIAP-418 | G 12722 x G 21720	Rust resistance and enhanced biological nitrogen fixation; resistant to bean rust; resistant to anthracnose; altitudinal adaptation: 1800-2500; yield: 1200-2300
Ecuador	Red	**Bolívar**	1999	INIAP-421 | G 12670 x G 12488	No description
Ecuador	White	**Blanco Belen**	2003	INIAP-422 | WAF 82 x INIAP 417	No description
Ecuador	Red kidney	**Boliche**	2003	INIAP-473 | AFR 298	No description
Ecuador	Yellow	**Canario**	2003	INIAP-423 | CAP 9 x Canario Bola	No description
Ecuador	Red mottled	**Doralisa**	2003	INIAP-474 | AFR 722	No description
Ecuador	White	**Blanco Fanesquero**	2004	INIAP-425 | SUG 55 x INIAP 417	Intermediate resistance to bean rust; resistant to anthracnose; altitudinal adaptation: 1400-2400; yield: 1090-2000
Ecuador	Yellow	**Canario Siete Colinas**	2004	INIAP-426 | TIB 3042 X G 11732	No description
Ecuador	Purple mottled	**La Concepción**	2004	INIAP-424 | Selection of local variety Mil Uno	intermediate resistance to bean rust; susceptible to anthracnose; altitudinal adaptation: 1400-2400; yield: 700-1800
Ecuador	Red mottled	**Yunguilla**	2004	INIAP-414 | G 13922 x (G 21721 x G 6474)	Intermediate resistance to bean rust; resistant to anthracnose; altitudinal adaptation: 1400-2400; yield: 500-2000
Ecuador	Yellow	**Canario del Chota**	2005	INIAP-420 | CAP 9 x Canario Bola	Moderate resistance to bean rust; susceptible to anthracnose; altitudinal adaptation: 1400-2400; yield: 1200-2200
Ecuador	Yellow	**Canario**	2007	INIAP-428 | Selection of local variety	No description

country	market class	Variety	Year released	parental line	characteristics
		Guarandeno			
Ecuador	Red mottled	**Libertador**	2007	INIAP-427 | G 12722 x G 21720	No description
Ecuador	Red mottled	**Paragachi Andino**	2009	INIAP-429 | SUG 26 x CAL 82	No description
Ecuador	Red mottled	**Portilla**	2009	INIAP-430 | INIAP 414 x INIAP 424	No description
Ecuador	Yellow	**Rocha**	2009	INIAP-480 | INIAP 420 x (Cocacho x San Antonio)	No description
Ecuador	Black	**Afroandino**	2010	INIAP-482 | Selection of CIAT A-55	No description
Ecuador	Red mottled	**Rojo del Valle**	2010	INIAP-481	No description
Ecuador Count	18				
El Salvador	Small red	**CENTA 2000**	2000	(Tío Canela 75, 1996, from Honduras) MD 3075 | DOR 483 x (DOR 391 x Pompadour J)	CENTA 2000 is a semi-dark red bean variety, bright, grain small, with the following characteristics: • High yield potential; • Resistant to golden mosaic virus, virus common mosaic and tolerant to rust and bacterial; • Good general adaptation;
El Salvador	Small red	**CENTA San Andres**	2002	(Amadeus 77, 2003, from Honduras) EAP 9510-77 | CENTA 2000 x DICTA 105	Has grain color: semi-dark red; Days to flower: 32; Days to maturity: 68.. Common Mosaic Virus: Resistant; Golden mosaic virus : Resistant; Rust: Susceptible; Web blight: Susceptible; Anthracnose: Susceptible; Common bacterial: Tolerant; High temperature: Tolerant; Drought: Tolerant
El Salvador	Small red	**CENTA Pipil**	2005	PRF 9653-16B-3 | Bribri / MD 3037 // RS 3	CENTA Pipil: Grain color: semi-dark red; Days to flower: 34; Days to maturity: 70; Pods per plant: 23; Grains per pod: 6; Yield per acre: 35; Adaptation (m): 50-1200; Yield per acre: 35; Adaptation (m): 100-1500; Planting dates from: May-August-Nov. Common Mosaic Virus: Resistant; Golden mosaic virus : Resistant; Rust: Tolerant; Web blight: Susceptible; Anthracnose: Tolerant; Common bacterial: Tolerant; High temperature: Tolerant; Drought: Tolerant
El Salvador	Small red	**CENTA C.P.C.**	2008	PPB 11-20 MC | Concha Rosada / SRC 1-1-18 / 1-2-12 SRC	CENTA-CPC is short vine bush, with 33 days to flowering and 68 days to physiological maturity, with an average yield of 1,600 kg / ha. It is resistant to golden yellow mosaic virus and common mosaic and tolerant to fungal diseases web blight and angular leaf spot, as well as to common bacterial blight, has tolerance to drought and high temperatures. Adapted to from 100 to 1500 m and can be sown seasons in May, August and November in monoculture systems and with maize. The seed is bright red with an average of 23 pods per plant and 7 grains per pod.
El Salvador	Small red	**CENTA Nahuat**	2008	(Deorho, 2007, from Honduras) SRC 2-18-1 | SRC 1-12-1 / MD 3075	CENTA-Nahuat is resistant to golden yellow mosaic virus and common mosaic. It has tolerance to fungal disease, web blight, angular leaf spot and rust. also tolerant to insect leafhopper, pod weevil weevils and storage. In addition, it is tolerant to drought and high temperatures. Adapts from 100 to 1,500 m and can be sown in May, August and November, in systems: monoculture, and with maize. The seed is glossy bright red, with an average of 23 pods per plant and 6 grains per pod.
El Salvador Count	5				
Guatemala	Black	**MEN 2207-17**	2010		No description
Guatemala	Black	**ICTA Peten**	2010	MDX	No description

country	market class	Variety	Year released	parental line	characteristics
Guatemala	Black	**ICTA Sayaxche**	2010	MEN 2017	No description
Guatemala	Black	**Altense Precoz**	2011	ICTA Ligero x Sequia 15	No description
Guatemala	Black	**ICTA Super Chiva**	2011	4649	No description
Guatemala	Black	**ICTA Zam**	2011	MHN 322-9	No description
Guatemala Count	6				
Haiti	Small black	**Aifi Wuriti**	2008	EAP 9712-13 |	Aifi Wuriti,' a black bean variety developed and released by the project in Honduras, has also proven to be well adapted to the bean production systems in Haiti. Farmers and consumers have indicated a preference for this cultivar.
Haiti	Black	**Arrollo Loro Negro**	2008	(Arrollo Loro Negro, 1998, from Dom Rep)	web blight and rust resistance and heat tolerance
Haiti	Red mottled	**PC 50**	2008	(PC 50, 1987, from Dom Rep)	Ur-4 and Ur-9 rust resistance genes and cooking quality
Haiti	Black	**XRAV40-4**	2008		No description
Haiti Count	4				
Honduras	Small red	**Tío Canela 75**	1996	MD 3075 | DOR 483 // DOR 391 / Pompadour J	Tio Canela-75 (PI595892) is noted for its disease resistance and heat tolerance. In trials conducted over 15 locations in Honduras during 1994 and 1995, yield of Tio Canela-75 averaged 2226 kg/ha, 17 and 44% more than that of Dorado and the farmer control variety. In on-farm trials at 49 locations throughout Honduras, average yield of Tio Canela-75 was 1200 kg/ha, 41% greater than that of the farmer control variety. In addition, Tio Canela-75 was superior to Dorado and landrace varieties for resistance to bean golden mosaic bigeminivirus, Xanthomonas campestris pv. phaseoli, Uromyces appendiculatus and Thanatephorus cucumeris. Tio Canela-75 was identified to be one of the most heat tolerant lines in trials conducted in Nacaome, Honduras in 1994 and 1995. Tio Canela-75 is recommended for low and intermediate altitude (<1200 m) bean production regions of Central America.
Honduras	Small red	**Amadeus 77**	2003	EAP 9510-77 | MD 3075 / DICTA 105; F2:6 derived line from the cross 'Tio Canela 75'/DICTA 105	Small red dry bean (Phaseolus vulgaris L.) 'Amadeus 77' (Reg. no. CV-221, PI 634536) was developed at the Escuela Agricola Panamericana (EAP), Zamorano, Honduras, and released for Central America in collaboration with the National Bean Programs of Honduras, El Salvador, Nicaragua, and Costa Rica and the University of Puerto Rico in 2003. Amadeus 77 is a good yielding cultivar with resistance to diseases and heat. Amadeus 77 was an F2:6 derived line from the cross 'Tio Canela 75'/DICTA 105. Tio Canela 75 has small red seeds and resistance to Bean golden yellow mosaic virus (BGYMV, a geminivirus).
Honduras	Small red	**Carrizalito**	2003	EAP 9510-1 | MD 3075 / DICTA 10; [F.sub.2:6] derived line from the cross 'Tio Canela 75'/DICTA 105	Small red dry bean 'Carrizalito' (Reg. no. CV-247, PI 639174) was developed at the Escuela Agricola Panamericana (EAP), Zamorano, Honduras, and released for Honduras in 2003 and Costa Rica in 2004, in collaboration with the National Bean Programs of Honduras and Costa Rica, and the University of Puerto Rico. Carrizalito is a high yielding, disease resistant cultivar, adapted to the midaltitude (800-1200 m asl) bean production regions of Central America.

country	market class	Variety	Year released	parental line	characteristics
Honduras	Small red	**Cayetana 85**	2003	PRF 9653-16B-2A | EAP 9503 / RS3 // Bribri / MD 30-37 //// EAP 9503 / RS3 // A429 / K2 /// V8025 / XR 16492 // APN83 / CNC	No description
Honduras	Small red	**Cedrón**	2003	PTC 9557-10 | EAP 9021 / Bribri // UPR 9356-26 / UPR 9438-129	No description
Honduras	Small red	**Macuzalito**	2004	PPB 9911-44-5-13M | Concha Rosada // SRC 1-1-18 / SRC 1-12-1	Macuzalito was 'released' in August 2004 and has since been tested and multiplied in 30 locations. Macuzalito is being further improved by scientists at EAP-Zamorano through the inclusion of genes for resistance to Angular Leaf Spot Disease. Maturity:Moderate; Uniformity of maturation and colour: Uniform with attractive red colour; Disease tolerance: Medium; Architecture: Excellent, medium height with well distributed pods; Yield: Good yield
Honduras	Small red	**Nueva Esperanza 01**	2005	DICZA 9801 | UPR 9606-2-2 / MD 30-37	No description
Honduras	Small red	**Palmichal 1**	2005	PRF 9707-36 | UPR 9356-26 / TC-75 // EAP 9507 / AL12	No description
Honduras	Small red	**Cardenal**	2007	MER 2226-41 | SRC 1-12-1-47 / Amadeus 77	BGYM and BCM resistant small red bean varieties; have greater seed yield potential and seed types with a higher commercial value (lighter red seed color) than previously released cultivars.
Honduras	Small red	**Conan 33**	2007	PRF 9653-25B-1 | EAP 9503 / RS3 // Bribri / MD 30-37 //// EAP 9503 / RS3 // A429 / K2 /// V8025 / XR 16492 // APN83 / CNC	No description
Honduras	Small red	**Deorho**	2007	SRC 2-18-1 | SRC 1-12-1 / MD 3075	BGYM and BCM resistant small red bean varieties; have greater seed yield potential and seed types with a higher commercial value (lighter red seed color) than previously released cultivars
Honduras	Small red	**Don Cristobal**	2007	SRC1-12-1-8 | DOR476//XAN155/DOR364	No description
Honduras	Small red	**Victoria**	2007	SRS56-3 Amadeus77/SEA5	No description
Honduras	Small red	**Briyo AM**	2009	IBC306-95 | Amadeus77//Amadeus77/Rojo de Seda	No description
Honduras	Small red	**La Majada AF**	2009	IBC301-182 | Amadeus77//Amadeus77/Paraisito	No description
Honduras	Small red	**Milagrito**	2009	F0243 | Mass selection from landrace	No description
Honduras	Small red	**Quebradeño**	2009	IBC307-7 TC75//TC75/Cincuenteño	No description
Honduras	Small red	**Milenio**	?	SRC 1-12-1	has the BGYMV resistance of Tio Canela
Honduras	18				
Malawi	Yellow, roundish	**Bwenzilaana**	1980		Tolerant to angular leaf spot,mosaic, halo, and web blight, and rust; relatively tolerant to common bacterial blight
Malawi	Tan	**Kamtsilo**	1980		No description
Malawi	Red, roundish	**Kanzama**	1980		Tolerant to web blight, common bacterial blight, anthracnose, scab, angular leaf spot, halo blight, and rust; susceptible to mosaic
Malawi	Red solid, radical	**Namajengo**	1980		No description

country	market class	Variety	Year released	parental line	characteristics
Malawi	Tan, kidney-shaped	**Nasaka**	1980		Good variety but susceptible to a number of common bean diseases
Malawi	Tan	**Sapelekedwa**	1980		A bush type variety
Malawi	Speckled pink, roundish	**Bunda 93**	1993		Tolerant to halo blight, common bacterial blight, anthracnose, scab, angular leaf spot, web blight, and rust; susceptible to mosaic
Malawi	Tan	**Chimbamba**	1993	Originating from a cross between G 4017 x G 4830	This variety has small, tan seeds (22 g per 100 seeds) with brown stripes. It matures in 90 days and is determinate, semi-erect with small leaves. It does well in a wide range of environments and shows good levels of resistance to the common diseases. It has the "I gene" and performs well under drought and yields over 2500 kg ha-1.
Malawi	Speckled red, kidney-shaped	**Kalima**	1993		Tolerant to common bacterial blight, anthracnose, and scab; relatively tolerant to angular leaf spot, halo blight and rust
Malawi	Tan	**Kambidzi**	1995	Originating from a cross between G 4017 x G 4830	Originating from a cross between G 4017 x G 4830, this variety has small, tan seeds (22 g per 100 seeds) with brown stripes. It matures in 90 days and is determinate, semi-erect with small leaves. It does well in a wide range of environments and shows good levels of resistance to the common diseases. It has the "I gene" and performs well under drought and yields over 2500 kg ha-1.
Malawi	Red speckled	**Maluwa**	1995	originated from a cross between Limone # 0-1 x PVA 77	It has red, speckled, medium sized seeds (46 g per 100 seeds). It is determinate and matures in about 85 days and is suitable for short growing seasons in the mid-altitude plains where it copes well with drought. It grows well with modest levels of N and P (20 kg ha-1) and has a yield potential of 2000 kg ha-1.
Malawi	Tan	**Mkhalira**	1995	originated from a cross between G 3807 x G 2618	It belongs to the Mesoamerican gene pool and has small, tan seeds (24 g per 100 seeds). It is semi-erect but determinate with small leaves. It matures in 90 days. It grows well in a wide range of environments and shows good levels of resistance to the common diseases. However, it has the "I gene" which produces a necrotic reaction in the presence of the necrotic strains of BCMV. It performs well under drought conditions and when intercropped with maize. It has a yield potential of 2500 kg ha-1.
Malawi	Tan	**Nagaga**	1995	cross between G 76 x G 21721	It has a determinate growth habit. It has large, tan seeds (52 g per 100 seeds) and matures in about 85 days. It shows a good level of resistance to Bean Common Mosaic Virus (BCMV) and is well adapted to a wide range of environments. Its yield potential is greater than 2000 kg ha-1.
Malawi	Red speckled	**Napilira**	1995	originated from a cross between Bola x AND 277	It has red, speckled, mediumsized seeds (42 g per 100 seeds). It is determinate and suitable for the highlands with a long growing season (90 days). It performs well under low phosphorus conditions and shows good levels of resistance to Angular leaf Spot (ALS), Halo Blight (HB) and Powdery Mildew (PM). It has a yield potential of 2000 kg ha-1.
Malawi	Red	**Sapatsika**	1995	originated from a double cross between (PVA 142 x TIB 33341) x (PVA 1426 x A 197)	This variety originated from a double cross between (PVA 142 x TIB 33341) x (PVA 1426 x A 197). It is has large, red kidney seeds. It is erect but semi-determinate. It grows well in cool environments and shows good levels of resistance to the common diseases. It matures in 90 days, performs well when intercropped with maize and has a yield potential of 2000 kg ha-1.
Malawi	Medium	**BC-D/O (19)**	2006		Bunda 1; first improved sugar bean releases; determinate bush; have excellent resistance to BCMV and BCMNV

country	market class	Variety	Year released	parental line	characteristics
	cranberry				
Malawi	Small brown	**BCMV-B2**	2006		Bunda 2; indeterminate climbers; have excellent resistance to BCMV and BCMNV; has small brown seed, high yield, and high levels of drought tolerance. It has demonstrated yields of more than 3,000 kg ha-1 in smallholder fields in trials supervised by the NGO, Total Land Care
Malawi	Medium cranberry	**BCMV-B4**	2006		Bunda 3; first improved sugar bean releases; indeterminate climbers; have excellent resistance to BCMV and BCMNV
Malawi Count	18				
Mexico	Red mottled	**Flor de Mayo M38**	1993	originated from the modified double-cross population MX6344 which has the pedigree A409/(BAT1670/(NEP Bayo 22/XAN112))	Drought tolerance, I gene for BCMV; Flor de Mayo M38 possesses an indeterminate prostrate Type II growth habit and matures in ~105 days. It carries the dominant gene I for resistance to bean common mosaic potyvirus, is highly resistant to prevalent races of Uromyces appendiculatus, and is tolerant of local isolates of Colletotrichum lindemuthianum; average protein content on a dry weight basis (26%) is superior to most other cultivars in its class..
Mexico	Red mottled	**Flor de Junio Marcela**	1996	derived from the single cross between Flor de Junio and landrace Jalisco	First improved, high-yielding Flor de Junio cultivar suited for the midaltitude irrigated conditions of Mexico. The commercial Flor de Junio (FJ) bean class in Mexico is classified as a medium-sized bean with a seed coat color pattern of a predominant pink stripe on a cream background. Flor de Junio Marcela has a relatively short-cooking time and is resistant to the prevalent races of bean common mosaic virus.
Mexico	Black	**Negro Altiplano**	1997	tested as NG 91207, was derived from a triple cross, 'Negro Durango'//BAT 260/'Negro Querétaro'	Anthracnose and rust resistance, I gene resistance to BCMV and tolerance to common bacterial blight and root rot; first opaque black seeded cultivar developed for Mexican highlands for rainfed and irrigated conditions. This is a commercial class that is mainly produced and consumed in the tropical lowlands.
Mexico	Black	**Negro Sahuatoba**	1997	tested as NG 91190, was derived from a simple cross, BAT 308/XAN 87	Anthracnose and rust resistance, I gene resistance to BCMV and tolerance to common bacterial blight and root rot; first opaque black seeded cultivar developed for Mexican highlands for rainfed. Negro Sahuatoba belongs to a commercial seed class that is mainly produced and consumed in the tropical lowlands..
Mexico	Pinto	**Bayacora**	2001	tested as PT91080, was derived from the single cross, `Pinto Nacional 1'/`Pinto Sierra'	Anthracnose and rust resistance and tolerance to root rots; erect, early-season cultivar for rainfed conditions in the semiarid highlands. In field trials conducted during 1993-97 in both semiarid and irrigated locations, Bayacora outyielded the control cultivar 'Pinto Nacional 1'. It is resistant to root rots (Fusarium solani f.sp. phaseoli and Rhizoctonia solani [Thanatephorus cucumeris]) and has a significantly shorter cooking time than that of other cultivars and landraces.
Mexico	Pinto	**Mestizo**	2001	derived from the single cross, 'Bayo Victoria'/'Olathe'	Resistant to rust and most races of anthracnose and tolerance to common bacteral blight and root rot; It is a high-yielding, disease-resistant, upright, early season pinto-seeded cultivar for rainfed conditions in the semiarid highlands of Mexico..
Mexico	Black	**Negro Vizcaya**	2004	tested as NG 93060, was derived from the multiple interracial cross AS0ll/4/'Negro San Luis' (PI 583654)/ BAT477/13/XAN87//G2618/G4017	High-yielding, disease-resistant, drought tolerant, shiny black-seeded cultivar for rainfed conditions in the semiarid highlands of Mexico. Negro Vizcaya carries a single dominant hypersensitive I gene to bean common mosaic virus, and is sensitive to the necrosis inducing strains of bean common mosaic necrosis virus. It is resistant to highland isolates of halo blight (Pseudomonas syringae pv. phaseolicola). It is

country	market class	Variety	Year released	parental line	characteristics
					tolerant to common bacterial blight, rust, anthracnose and root rot.
Mexico	Red mottled	**Flor de Mayo 2000**	2005	tested as FM94050, was derived from the cross, RIZ30/'Flor de Mayo M38'	Highly desirable seed type with short cooking time; Flor de Mayo M38 is an indeterminate Type III, 105-d maturity, disease resistant cultivar adapted to the highlands of Mexico. Flor de Mayo 2000 produces a typical flor de mayo seed with a pink–purple marbled pattern on a cream background. Seed size is medium and averages 28.3 g 100 seed−1, ranging from 27.6 to 32.3 g 100 seed−1 depending on location. The seed is similar in size, shape and color to common highland landraces in the flor de mayo class, but larger in size than Flor de Mayo Bajío. Average cooking time for cultivar Flor de Mayo 2000 is slightly longer (66 min) than the time for Flor de Mayo Bajío (61 min), but is less than the time for Flor de Mayo M38 (71 min).
Mexico	Pinto	**Pinto Villa**	1995	derived from the 3-way cross II-925M29-1 * (Canario 101 * Mex 4-2)	It possesses an indeterminate prostrate Type III growth habit and has shown broad adaptation and yield stability in the semiarid highlands, adaptation that is partially due to its phenological plasticity and tolerance of low night temperatures during seed filling. Under normal rainfed conditions it requires ~95 days to reach maturity. Under variable semiarid environments, maturity ranges from 75 to 119 days which may be partially due to its photoperiod sensitivity. Pinto Villa is highly resistant to Colletotrichum lindemuthianum, and is tolerant of races of Uromyces appendiculatus var. appendiculatus in the drier locations of the Mexican highlands, Pseudomonas syringae pv. phaseolicola, Xanthomonas campestris pv. phaseoli and low soil fertility and drought. It is better adapted to early planting dates in the less productive rainfed environments than all other available cultivars. Under favourable rainfed environments of the humid highlands it outyielded all landraces in the Pinto seed class.
Mexico Count	9				
Nicaragua	Small red	**INTA Canela**	2001	(Tío Canela 75, 1996, from Honduras) MD 3075 | DOR 483 // DOR 391 / Pompadour J	No description
Nicaragua	Light Red	**INTA Rojo**	2003	(Amadeus 77, 2003, from Honduras) EAP 9510-77 | MD 3075 x DICTA 105	'INTA ROJO' has an intermediate upright bush, Type II growth habit with short vine. It flowers in 36 to 38 days. Stem color is green with red pigmentation. Green pods turn yellow with red pigmentation at physiological maturity. Additionally, it has long pods containing seven to eight seeds per pod. Also, it has ovoid elongated seeds, averaging 25g.100seeds-1. Seed coat color is shiny red (Rosas et al, 2004). This color quality placed 'INTA ROJO' in an advantageous position in the national market, where landraces are preferred due to their color and culinary properties
Nicaragua	Red	**INTA Precoz**	2006	SRC 2-18 | Rojo Nacional // Bribri / MD 3075	No description
Nicaragua	Small red	**Mar Rojo**	2007		No description
Nicaragua	Small red	**Luisito**	2007		No description
Nicaragua	Small red	**Rio Rojo**	2007		No description
Nicaragua	Dark red	**INTA Fuerte Sequia**	2009	SX 14825-7-1	No description

country	market class	Variety	Year released	parental line	characteristics
Nicaragua	Small red	**INTA Matagalpa**	2010		No description
Nicaragua Count	8				
Puerto Rico	White	**Arrollo Loro**	1983	derived from a single backcross with Bonita as the recurrent parent and La Vega as the non-recurrent parent, followed by recurrent selection and population bulking	I gene for BCMV resistance and rust resistance; Phaseolus vulgaris cv. Arroyo Loro (PI536019), released as breeding line
Puerto Rico	White	**Morales**	1999	derived from the cross Arroyo Loro/Don Silvio	bgm-I gene for BGYMV, I gene for BCMV, rust resistance; Released in 1998 and derived from the cross Arroyo Loro/Don Silvio, this Phaseolus vulgaris cultivar (PI606249), with indeterminate bush, short-vine Type II growth habit, is noted for its resistance to bean golden mosaic bigeminivirus (BGMV), carrying the recessive bgm1 resistance allele. Morales is also resistant to the bean rust (Uromyces appendiculatus) races prevalent in Puerto Rico and carries the I gene for resistance to bean common mosaic potyvirus. Seed yields of Morales were similar to those of Arroyo Loro in trials conducted at Puerto Rico during 1995-97.
Puerto Rico	Pink	**Rosada Nativa**	1999	Derived from the cross DOR483/BelNeb Rust Resistant-1	bgm-I gene for BGYMV, I gene for BCMV, rust resistance, and heat tolerance; Indeterminate; It carries the recessive bgm1 allele for resistance to bean golden mosaic bigeminivirus and the I gene for resistance to bean common mosaic potyvirus. It is moderately resistant to Rhizoctonia solani. In field trials conducted in Puerto Rico during 1995-97, Rosada Nativa produced seed yields similar to those of Arroyo Loro when planted in the cooler winter growing season and greater than those of Arroyo Loro when planted in the hot and humid summer growing season.
Puerto Rico	White	**Verano**	2008		has resistance to BGYM, bean common mosaic (BCM) and common bacterial blight in both the leaves and pods. Verano produces greater seed yield and has better seed quality than the cultivar 'Morales' when planted during the warmer and more humid months of the summer; Verano has tolerance to high temperature and resistance to Bean golden yellow mosaic virus, Bean common mosaic virus, and common bacterial .
Puerto Rico Count	4				
Tanzania	Other	**SUA 90**	1990		SUA 90 was developed at CIAT (accession number G5476) and distributed in Africa with the designation TMO 216. It has a khaki seed colour and was released in 1990; adapted to low and mid-altitude (300–1500 m) bean agro-ecologies, are high yielding under smallholder conditions (up to 2000 kg/ha) and are resistant to rust, ALS, BCMV and BCMNV. Both varieties show some tolerance to drought, and beanfly [observations in farmers' fields in northern Tanzania], are early-maturing (65–74 days) and cook more quickly than most local varieties
Tanzania	Red kidney	**Rojo**	1997	derived from the single cross Rojo x Kablanketi	'Rojo', a red kidney type released in 1997, is a cross between CIAT germplasm and an accession from the Prosser Irrigated Research Station in the USA. Rojo contains the I gene for BCMV resistance in combination with recessive genes creating a more durable form of resistance without showing 'black root rot'; adapted to low and mid-

country	market class	Variety	Year released	parental line	characteristics
					altitude (300–1500 m) bean agro-ecologies, are high yielding under smallholder conditions (up to 2000 kg/ha) and are resistant to rust, ALS, BCMV and BCMNV. Both varieties show some tolerance to drought, and beanfly [observations in farmers' fields in northern Tanzania], are early-maturing (65–74 days) and cook more quickly than most local varieties. Grain yield: 0.9-1.5 t/ha
Tanzania	Kablanketi	**Mshindi**	2006	derived from cross Rojo x Kablanketi	First improved Kablanketi type to be released w/ BCMV resistance. Grain yield: 0.9-1.5 t/ha; Anthocyanincolouration:present; Growth habbit:bush; Plant height (cm):48; Days to flowering:28-32; Flower colour:pink; Pod colour at maturity:light brown; Seed shape:roundish; Testa colour:grey mottled; seed size: medium
Tanzania	Large red kidney	**Pesa**	2006	Derived from the single cross Rojo x Kablanketi made in Dec-Jan 1992-93	Growth habit: bush; Twining tendency: none; Plant height (cm):44; Flower colour:pink; Pod colour at maturity:light brown; Seed shape:kidney; Testa texture:smooth; Testa colour: dark red
Tanzania Count	4				
USA	Black	**Black Magic**	1982	derived from the cross NEP2 X Black Turtle Soup and developed by ideotype breeding	Second black bean varieties released; has an upright, short stem habit; high yield stability in Michigan; carry the single dominant I-gene form of resistance to all strains of bean common mosaic virus and are essentially immune to races of Uromyces phaseoli [U. appendiculatus] prevalent in Michigan; tolerant to ozone, to Michigan isolates of Pseudomonas syringae pv. phaseolicola and to Isariopsis [Phaeoisariopsis] griseola. Domino exhibits significant field tolerance to Sclerotinia sclerotiorum and field tolerance to Fusarium solani f. sp. phaseoli.
USA	Black	**Domino**	1982	derived from the cross NEP2 X Black Turtle Soup and developed by ideotype breeding	First black bean varieties released; upright, short stem habit; carry the single dominant I-gene form of resistance to all strains of bean common mosaic virus and are essentially immune to races of Uromyces phaseoli [U. appendiculatus] prevalent in Michigan. Domino exhibits significant field tolerance to Sclerotinia sclerotiorum and both cultivars show field tolerance to Fusarium solani f. sp. phaseoli. The seed characteristic is within the normal range for tropical black bean cultivars.
USA	Light red kidney	**Isabella**	1982	derived from Redkloud X Mecosta	Early-season, high-yielding kidney; has an upright, determinate growth habit, with good lodging resistance and a high harvest index. Tests in Michigan showed that it has good yield stability. Isabella carries the dominant I-gene type of resistance to all strains of bean common mosaic virus (BCMV) and the recessive bc-1 gene, which protects the I-gene against necrosis-inducing BCMV strains present in Michigan; this gene combination is believed to be unique. The cultivar is essentially immune to indigenous races of Uromyces phaseoli [U. appendiculatus] present in Michigan and is resistant to the α race of Colletotrichum lindemuthianum. Seed characteristics of Isabella fall within the acceptable range for light red kidney bean cultivars.
USA	Navy	**C-20**	1983	derived from the F7 of the three-way cross Jamapa/NEP2//73130E2B (W20/Kentwood)	High yielding upright navy; C20 exhibits a type II, upright, determinate habit; plants average 50 cm in height, being about 15 cm taller than Seafarer, are erect, narrow in profile with few basal branches. C20 matures in 98 to 104 days and has exceeded yields of Sanilac, Seafarer and Fleetwood by 22 to 33% over 4 years in 16 localities in Michigan. C20 carries the single dominant I gene form of resistance to all strains of bean common mosaic virus; is resistant to beta, γ and delta

country	market class	Variety	Year released	parental line	characteristics
					races of Colletotrichum lindemuthianum; is immune to the Uromyces phaseoli [U. appendiculatus] races; is tolerant of Michigan isolates of Pseudomonas phaseolicola; and is tolerant of Isariopsis [Phaeoisariopsis] griseola, Alternaria alternata, Sclerotinia sclerotiorum, Fusarium solani and air pollution. Canning tests indicated that C20 produces a cooked product similar to that of other acceptable P. vulgaris cultivars.
USA	Navy	**Mayflower**	1987	Selected from a cross between the breeding lines N80043 (which originated as an F4 selection from the cross 61627 (NEP2/Black Turtle Soup) with 2W33-2) and cultivar C20	At 37 locations during 1984-88, Mayflower possessed the same yield potential as C20 and yielded 20% (0.56 mg/ha) more than Seafarer. Mayflower exhibits a type II, upright and short-vine plant habit. Mature plants are erect, narrow in profile with few basal branches and average 53 cm in height, 15 cm taller than Seafarer. Mayflower generally reaches maturity 93-98 days after planting. Mayflower carries the dominant hypersensitive I gene giving resistance to all strains of bean common mosaic potyvirus, is resistant to beta and gamma races of Colletotrichum lindemuthianum, has hypersensitive, necrotic resistance to races of Uromyces appendiculatus present in Michigan and tolerance of Michigan isolates of Pseudomonas syringae pv. phaseolicola and P. griseola. It is tolerant of ozone. Mayflower has ovoid white seed and a 100-seed weight of 20.3 g. Mayflower has acceptable cooked colour, washed drained weight ratio (1.3) and processed texture (78.8 kg/100 g).
USA	Black	**Black Hawk**	1989	derived from Tuscola/CN49-242//Black Magic/3/Midnight	Anthracnose resistant; erect with a short vine growth habit; height (55 cm) and lodging resistance to commercial cultivars such as T39. It matures 2 days later than Domino and Black Magic and reaches harvest maturity 100 days after planting. Blackhawk carries the dominant gene I for hypersensitive resistance to all strains of bean common mosaic potyvirus and the gene ARE conferring resistance to alpha, beta, gamma, delta, lambda and epsilon races of C. lindemuthianum. It has hypersensitive necrotic resistance to Uromyces appendiculatus, carrying the same dominant resistance gene as Domino and Black Magic. Blackhawk exhibits tolerance of ozone air pollution and is tolerant of Michigan isolates of Pseudomonas syringae pv. phaseolicola and Phaeoisariopsis griseola.
USA	Pinto	**Sierra**	1989	An F2-derived selection from a base population established by intermating 9 commercial Type 3 pinto bean cultivars with 16 small-seeded architectural Type 2 navy and black bean breeding lines	First pinto bean released; Sierra is an erect Type 2 pinto bean with a short vine growth habit. At high plant population densities (25 plants/m) Sierra tends towards a single stem habit. It is 20 cm taller than commercial cultivars and has significantly improved lodging resistance compared with the prostrate Pindak. Sierra matures 95 days after planting, approximately 7 days later than other commercial cultivars. Sierra is moderately resistant to Colletotrichum lindemuthianium and tolerant of Michigan isolates of Pseudomonas syringae pv. phaseolicola. It possesses hypersensitive, necrotic resistance to most races of Uromyces appendiculatusvar. Appendiculatus, and dominant resistance to US races 38 to 42, 52 to 57, 59 to 61 and 68 to 70. Sierra exhibits improved field tolerance of Empoasca fabae, which appeared to be associated with high trichome number producing dense pubescence on the adaxial leaf surface. The 100-seed weight of Sierra (39 g) was greater than that of Pindak (35 g)

country	market class	Variety	Year released	parental line	characteristics
					and similar to that of Olanthe and Othello. Seed shape is satisfactory. Hydration and drained weight ratio averaged 1.9 and 1.3, respectively. Texture of the canned product ranged from 85 to 119 kg/100 g compared with 89 to 108 kg/100 g for Olathe at the same sites.
USA	White	**Starlight**	1991		Has the Ur-3 rust resistant gene and good avoidance of white mold
USA	Great northern	**Alpine**	1992	Derived from the cross Starlight/P86297	Alpine is about 50 cm tall with improved lodging resistance (1.5 compared with 3 for Starlight) and a higher pod placement, allowing successful production of the GN market class in the humid Midwest. Alpine matures in about 93 days, equivalent to Starlight, and flowers 45 days after planting. The gene Ur-3 confers hypersensitive necrotic resistance to US races 38-42, 52-57, 59-61 and 68-70 of Uromyces appendiculatus, and Alpine has moderate resistance to Colletotrichum lindemuthianum. The 100-seed weight is 35.5 g, compared with 34.5 g for UI59, 33.1 g for Beryl and 41 g for Starlight. Processing quality rated over 3 years was acceptable compared with Beryl and Starlight. Texture was 43 kg/100 g, falling within the acceptable range of 40-55 kg/100 g established for processed GN beans.
USA	Pinto	**Aztec**	1992	Derived from the cross CO81-12034/P86297	Early-season upright pinto; Abstract: Derived from the cross CO81-12034/P86297, this early-season, upright, type II Phaseolus vulgaris variety (PI561473) was released in 1992. It averaged 2960 kg/ha over 25 locations, although it was 10% lower yielding than the late-maturing Sierra. Aztec yielded about the same as the early-season Pindak and outyielded Topaz by 17%. It carries resistance to the alpha race of Colletotrichum lindemuthianum. Seeds are large (41 g/100 seeds), equivalent to those of Othello but significantly larger than those of Pindak (35.5 g) or Sierra (37.5 g). Seeds are attractive, and suitable for dry pack markets. Processing quality is superior to that of Sierra, especially due to a high drained weight after cooking, but cooked texture is somewhat lower than that of Sierra (64 vs. 74 kg/100 g).
USA	Light red kidney	**Chinook**	1992	Derived from the cross CN49242/3*Montcalm//Redkloud	Chinook (PI555665) is a determinate, upright, midseason maturity; carries the unique combination of the single dominant inhibitor gene I for resistance to all strains of bean common mosaic potyvirus (BCMV) and the recessive bc1 gene which protects the hypersensitive I gene against necrosis-inducing BCMV strains present in Michigan. It is essentially immune to races of Uromyces appendiculatus prevalent in Michigan and is resistant to Colletotrichum lindemuthianum. Chinook outyielded the standard cv. Isabella by 15% at non-irrigated sites during 1986-90; at high-input irrigated sites their yields were similar. Chinook has a 100-seed weight of 56 g and its processing quality, evaluated over 3 years, was rated superior to that of Isabella.
USA	Pinto	**Chase**	1993		Has resistance to halo blight, bacterial brown spot, rust, moderate resistance to common bacterial blight, moderate avoidance of white mold, and resistance to potato leafhopper injury
USA	Navy	**Huron**	1994	derived as an F6 selection from a cross made in 1987 between the full-season, high-yielding, upright indeterminate (type II) cultivar C20 and the determinate (type I), midseason, disease-resistant cultivar Harokent	Selection was conducted at Michigan and advancement of progeny at Puerto Rico. Huron shows the upright type II indeterminate growth habit, with height averaging 46 cm. It is an early to midseason cultivar, maturing on average 92 days after planting. Huron carries the single dominant hypersensitive gene I for resistance to bean common mosaic potyvirus, confirmed using a RADP marker, but is susceptible to

country	market class	Variety	Year released	parental line	characteristics
					temperature-insensitive strains such as NL3 and NL8. It possesses the A gene for resistance to the α race of Colletotrichum lindemuthianum, the Ur3 gene conferring resistance to Uromyces appendiculatus race 53 and all races prevalent in Michigan. Huron has also shown tolerance of Michigan isolates of Pseudomonas syringae pv. phaseolicola and Sclerotinia sclerotiorum. In canning trials, Huron was rated as excellent in cooking quality.
USA	Dark red kidney	**Isles**	1994	Derived from the cross X82405/Isabella	Anthracnose resistant; has an upright type I determinate bush growth habit, with plant height averaging 45 cm. It matures 95-99 days after planting, 2-3 days earlier than Montcalm. Seeds of Isles are larger than those of Montcalm (100-seed weight averages 64 vs. 58 g), and Isles has been rated as equivalent to Montcalm in cooking quality. Isles carries the dominant hypersensitive gene I for resistance to bean common mosaic potyvirus, confirmed using a RAPD marker, but is susceptible to the temperature-insensitive strains such as NL3 and NL8. It is the first dark red kidney bean to carry the A and Are genes, which condition resistance to all known North American races of anthracnose. It is essentially immune to Uromyces appendiculatus races prevalent in Michigan and is tolerant of Michigan isolates of Pseudomonas syringae pv. phaseolicola.
USA	Black	**Raven**	1994	F8 selection in the cross N84004/B85009 through selection in Michigan and advancement in Puerto Rico	Raven exhibits an upright type II indeterminate growth habit, averages 50 cm in height and has excellent resistance to lodging. It is a mid-season variety, maturing 92 days after planting. Seeds of Raven average 16.5 g/100 seeds (range 16-20 g) and were rated as acceptable for canning. Raven carries the dominant hypersensitive I gene for resistance to bean common mosaic potyvirus combined with the recessive bc3 gene. Presence of this gene combination was confirmed using RAPD markers. Raven is the first bean cultivar to exhibit complete resistance to bean common mosaic potyvirus worldwide. It also carries the A gene for resistance to alpha and alpha Brazil races of anthracnose and the Ur3 gene for resistance to Uromyces appendiculatus. Raven is also tolerant of Michigan isolates of Pseudomonas syringae pv. phaseolicola.
USA	White	**Newport**	1995	Derived from the cross N85606/Harokent	Newport (PI586656) averages 50 cm in height and exhibits an upright Type I determinate growth habit with excellent resistance to lodging. In trials, Newport averaged 2450 kg/ha, 8% greater than the early season variety Seafarer, equivalent to the midseason determinate varieties Midland and Albion, but 10-17% less than the Type II varieties Avanti and Mayflower. Newport carries the single dominant hypersensitive I gene for resistance to bean common mosaic potyvirus, the A and Are genes which condition resistance to all known races of Colletotrichum lindemuthianum present in North America, and the Ur3 which conditions resistance to Uromyces appendiculatus race 53 and all indigenous races prevalent in Michigan. Newport is tolerant of Michigan isolates of Pseudomonas syringae pv. phaseolicola. The 100-seed weight of Newport is in the range 19-24 g. Under processing, Newport was similar to other commercial cultivars for cooked colour, texture, hydration and drained weight ratios.
USA	Navy	**Mackinac**	1996	Derived from the cross N90435/Avanti	Anthracnose resistant, midseason, upright navy bean; Mackinac carries

country	market class	Variety	Year released	parental line	characteristics
					the single dominant hypersensitive I gene for resistance to bean common mosaic potyvirus, the Co1 gene conditioning resistance to Colletotrichum lindemuthianum races 65 and 73 and the Ur3 gene which confers resistance to all indigenous Uromyces appendiculatus races prevalent in Michigan. In addition, Mackinac is tolerant of Michigan isolates of Pseudomonas syringae pv. phaseoli and is similar to Avanti in its tolerance of Sclerotinia sclerotiorum. Cooking quality of Mackinac is similar to that of Avanti.
USA	White	**Beluga**	1997	derived from a cross between the Italian Borlotto bean BEA and the white kidney bean Lassen	First white kidney bean released; Brief information is given on this upright, full-season, disease-resistant alubia bean (Phaseolus vulgaris) cultivar (PI604229), released in 1998 and derived from a cross between the Italian Borlotto bean BEA and the white kidney bean Lassen. Beluga is recommended for production in coarse-textured soils under a high-input management system. It carries the single dominant hypersensitive I gene for resistance to bean common mosaic potyvirus and the Co1 gene which conditions resistance to races 65 and 73 of anthracnose (Colletotrichum lindemuthianum). It is also essentially immune to the indigenous races of rust (Uromyces appendiculatus) prevalent in Michigan. Beluga has large white kidney seeds which average 62 g/100 seed.
USA	Pinto	**Kodiak**	1997	Derived from the cross P90557/G91213	Large seeded, high-yield, rust and virus resistance; midseason maturity and disease resistance. Kodiak possesses that single dominant hypersensitive gene I for resistance to bean common mosaic potyvirus, in combination with the recessive gene bc-1 2 . It also carries the genes Ur3 and Ur6 for resistance to races of Uromyces appendiculatus and is tolerant of Fusarium solani.
USA	Great northern	**Matterhorn**	1997	Derived from the cross Alpine/X90012, Matterhorn (PI604228)	Mid-season, high-yield, rust and virus resistance, upright, early to mid-season maturity.
USA	Dark red kidney	**Red Hawk**	1997	Derived from the cross Charlevoix/2*Montcalm	A full-season, disease-resistant, dark red kidney bean with excellent processing quality. Red Hawk carries the single dominant hypersensitive I gene for resistance to bean common mosaic potyvirus and the Co1 and Co2 genes conferring resistance to all known North American races of Colletotrichum lindemuthianum. It is also essentially immune to indigenous races of Uromyces appendiculatus prevalent in Michigan and tolerant of Minnesota isolates of Pseudomonassyringae and Michigan isolates of Xanthomonas campestris pv. phaseoli.
USA	Light red kidney	**Chinook 2000**	1998	Derived from a single plant selection made within the light red kidney bean (Phaseolus vulgaris) cultivar Chinook	Anthracnose resistant; Derived from a single plant selection made within the light red kidney bean (Phaseolus vulgaris) cultivar Chinook, Chinook 2000 (PI604227) was released in 1998 as a full-season, disease-resistant cultivar with excellent canning quality.
USA	Black	**Phantom**	1998	Derived from the cross Raven * N90618	Anthracnose resistant, upright black bean; Black bean cv. Phantom was developed and released by the Michigan Agricultural Experiment Station and the USDA-ARS in 1999 as an upright, midseason, disease resistant cultivar. In a 4-season (1995-98) field experiment, Phantom averaged 2500 kg/ha and outyielded Raven by 12% at 8 locations. Phantom was selected for resistance to bean common mosaic potyvirus [bean common mosaic virus], bean anthracnose (caused by Colletotrichum lindemuthianum) races 7, 65 and 73, and bean rust (caused by Uromyces appendiculatus) race 53. Phantom has

country	market class	Variety	Year released	parental line	characteristics
					demonstrated uniform maturity and excellent dry-down across a broad range of environments.
USA	Black	**Jaguar**	1999	Derived from a cross made in 1992 between MSU breeding lines B90211 and N90616	Anthracnose resistant, upright black bean; this cultivar is resistant to bean common mosaic virus, Michigan isolates of root rot (Fusarium solani f.sp. phaseoli) and white mould (Sclerotinia sclerotiorum). It carries the Co-1 and Co-2 genes, which condition resistance to races 7, 65 and 73 of bean anthracnose (Colletotrichum lindemuthianum) and the Ur-3 rust (Uromyces appendiculatus) resistance gene, which conditions resistance to race 53 and all indigenous bean rust races prevalent in Michigan.
USA	Red kidney	**UC Nichols**	2000		I gene resistance to BCMV; has a very strong root system, and has demonstrated high yields and excellent canning quality; Full-season, high yield, excellent canning DRK
USA	Yello	**UC Canario 707**	2001		I gene resistance to BCMV; a sulfur yellow bean with high yield, large seed size, and BCMV resistance, represents a new seed type for producers in the USA; A high-yielding, common mosaic-resistant yellow bean with excellent seed size and color, which now dominates the expanding yellow bean acreage in the state
USA	Pink	**UC Flor 9623**	2001		I gene resistance to BCMV, erect architecture; a representative of the "Flor de Mayo" class popular in some areas of Mexico, combines BCMV resistance with very erect architecture and high yield; An ethnically popular Flor de Mayo bean with very high yield and resistance to BCM virus.
USA	Navy	**Seahawk**	2003	derived from Bunsi * Huron	White mold resistance, high-yielding navy bean; Seahawk (Reg. no. CV-210, PI 633036), derived from Bunsi * Huron and released in 2003, is a high-yielding, mid-season, navy bean cultivar possessing tolerance of white mould (Sclerotinia sclerotiorum) and excellent canning quality.
USA	Black	**Condor**	2004	derived from a cross between black bean cultivars Phantom and Black Jack	Anthracnose resistant, high-yield, canning quality; black bean, high – yielding, upright architecture, disease resistant, excellent canning quality; Condor carries the dominant I gene conferring resistance to bean common mosaic virus, the Co-1 and Co-2 genes conferring resistance to bean anthracnose (Colletotrichum lindemuthianum) and the Ur-3 genes conferring resistance to bean rust (Uromyces appendiculatus). The cultivar is tolerant to root rot (Fusarium solani f.sp. phaseoli), white mould (Sclerotinia sclerotiorum). Data are presented on the morphological characteristics of Condor.
USA	Small red	**Merlot**	2004	Derived from a cross between ARS-R94037 and ARS-R94161	Merlot is a new upright, short vine, full-season maturity, disease-resistant small red bean cultivar. Merlot is thought to be the first small red commercial cultivar with resistance to bean rust, with a robust upright vegetative growth appearance, and consistent and desirable canning quality.
USA	Other	**Redcoat**	2004	previously coded as MSU breeding line K01234	First anthracnose and virus resistant Soldier bean; 'Redcoat' previously coded as MSU breeding line K01234, was released as a productive disease resistant soldier bean cultivar with a determinate Type I growth habit. "Redcoat' possesses the same combination of desirable agronomic and disease characteristics as is present in the commercial 'Red Hawk' kidney bean cultivar. The seed exhibits the color pattern characteristics of the soldier bean market class in addition to displaying the attractive red color of 'Red Hawk' seed that contrasts with the white background

country	market class	Variety	Year released	parental line	characteristics
					color of the 'Redcoat'. 'Redocat' originated from a few off-type seeds found in a Foundation Seed lot of 'Red Hawk', a commercial dark red kidney bean cultivar grown in Northern Michigan in 1999.
USA	Cranberry	**Capri**	2005	tested as C99833, was developed from the cross 'Cardinal'/K94803	Virus resistant bush cranberry bean; highyielding, determinate bush habit, large seed size, highly marketable, mosaic virus resistant; 'Capri" cranberry bean (Phaseolus vulgaris) (Reg. no. CV-262, PI 642027) was developed and released in 2005 as an upright, midseason, disease-resistant cultivar. Capri carries the dominant I gene for resistance to Bean common mosaic virus. Capri displays resistance to indigenous bean rust races (caused by Uromyces appendiculatus) prevalent in Michigan. Other characteristics (including yield, morphology and seed quality) of Capri are given.
USA	Pink	**Sedona**	2005	tested as S00809, was developed from the cross X94076/R94142	First upright pink bean variety in the US, suitable for direct harvest, excellent canning quality, mosaic virus resistance and drought tolerance; midseason, disease-resistant cultivar. Sedona possesses the bc-I2 gene that conditions resistance to certain strains of Bean common mosaic virus and exhibits delayed mild mosaic symptoms to the temperature-insensitive necrosis-inducing strains of Bean common mosaic necrosis virus such as NL 3. Sedona displays resistance to the indigenous bean rust races of Colletotrichum lindemuthianum prevalent in Michigan. Sedona is tolerant to Michigan isolates of root rot (caused primarily by Fusarium solani sp. phaseoli). Sedona exhibits similar levels of tolerance or plant avoidance (46% incidence) to white mould (caused by Sclerotinia sclerotiorum) as Merlot (44% incidence). The morphology, yield and seed quality of Sedona are described.
USA	Other	**Fuji**	2008	developed as a fourth backcross line from the commercial cultivar Hime	Virus resistant otebo bean for export to Japan. Fuji differs from Hime in possessing resistance to Bean common mosaic virus. In comparative trials, Fuji is similar to Hime in performance (2406 kg ha-1), plant height (43 cm), lodging resistance (2.2), and seed size (27.6 g 100 seed-1). Fuji flowers in 43 d and matures in 90 d 3 d earlier than Hime. Fuji and Hime possess the same determinate growth habit and resistance to race 73 of anthracnose [caused by Colletotrichum lindemuthianum (Sacc. & Magnus) Lams.-Scrib.]. Fuji meets the quality characteristics for use in sweet bean paste.
USA	Pinto	**Santa Fe**	2008	An F4-derived line developed using pedigree selection was advanced on the basis of superior yield performance, upright plant architecture and improved disease resistance	'Santa Fe' pinto bean was released in 2008 as an upright, midseason, disease-resistant cultivar. An F4-derived line developed using pedigree selection was advanced on the basis of superior yield performance, upright plant architecture and improved disease resistance. Santa Fe combines competitive yield potential (2729 kg ha-1) with erect type II architecture while retaining midseason maturity (91 d) in a pinto seed type. Santa Fe has resistance to lodging, making it suitable for direct harvest under narrow-row production systems. The upright architecture also contributes to avoidance to white mold [caused by Sclerotinia sclerotiorum (Lib.) de Bary], a disease aggravated by narrow rows. Santa Fe possesses resistance to specific races of rust [incited by Uromyces appendiculatus (Pers.:Pers.) Unger], virus, and anthracnose [caused by Colletotrichum lindemuthianum (Sacc. & Magnus) Lams.-Scrib]. Santa Fe has a large mottled dry bean seed (40.4 g 100 seed-1) that meets the standards and canning quality of the pinto bean seed

country	market class	Variety	Year released	parental line	characteristics
					class.
USA	Black	**Zorro**	2008	Developed from a backcross population using pedigree selection to the F4 followed by pure line selection for disease and agronomic and quality traits	Zorro combines high yield potential with erect architecture and is among the highest-yielding contemporary black and navy bean cultivars. Zorro has excellent resistance to lodging, making it suitable for direct harvest under narrow production systems. The upright architecture also contributes to avoidance to white mold, a disease aggravated by narrow rows. Zorro possesses partial resistance to common bacterial blight and resistance to specific races of rust [incited by Uromyces appendiculatus, virus, and anthracnose. Zorro has a small opaque dry bean seed typical of the black bean seed class that meets the standards of national and international markets. The canning quality of Zorro is equivalent to other black bean cultivars as it retains more black color following processing.
USA	Cranberry	**Bellagio**	2010	developed using pedigree selection to the F4 generation followed by pure-line selection for disease, agronomic, and quality traits	Virus anthracnose resistant vine cranberry bean; 'Bellagio' cranberry bean (Phaseolus vulgaris L.) (Reg. No. CV-297, PI 659109), developed by the Michigan Agricultural Experiment Station was released in 2010 as a new edible, dry-bean cultivar combining virus and anthracnose resistance with excellent canning quality. Bellagio was developed using pedigree selection to the F4 generation followed by pure-line selection for disease, agronomic, and quality traits. Bellagio is a vine cranberry that combines improved plant architecture and full-season maturity with disease resistance and superior canning quality. In 4 yr of field trials, Bellagio yielded 2282 kg ha-1, the plant height averaged 49 cm, the lodging resistance score was 2.5, and the seed size was 53.5 g 100 seed-1. Bellagio differs from the commercial 'Michigan Improved Cranberry' (MIC) vine cranberry cultivar in possessing resistance to Bean common mosaic virus and anthracnose. Bellagio and MIC both possess the type-III indeterminate growth habit, but Bellagio has a more upright structure and better resistance to lodging. Bellagio flowers in 43 d and matures in 96 d, 3 d earlier than MIC and has excellent canning quality that is equivalent to that of MIC.
USA Count	37				
Grand Count	146				