

ECHO Asia Regional Impact Center

2011 Seed Catalogue

Contact us with your requests: [**asiaseedbank@gmail.com**](mailto:asiaseedbank@gmail.com)

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PI 538255

Amaranth (grain)/ผักขมเมล็ด *Amaranthus cruentus*

The young leaves and stems of amaranth can be eaten like cooked spinach but mainly grown for the high protein grain (~12-16%). Recommended to plant approximately one month before the end of the rainy season, requiring approximately 75 days until harvest. Direct seed or transplant in hills 15 cm (5.9 in) apart in rows 60 cm (24 in) apart.

Grain PI 538255: Yellow inflorescence, white stem

Grain PI 537320: White stem, red inflorescence

Grain PI 606767: Light brown inflorescence



PI 537320



PI 606767



Tigerleaf

Amaranth (vegetable)/ผักขม *Amaranthus tricolor*

Mostly short-day crops, amaranths are fast growing, short-lived annuals grown for the protein-rich leaves and plant tops, also high in calcium and iron. Prefer sunny locations; grow best where day temperatures reach at least 21°C (70°F). Plant (direct seed or transplant) in hills 15 cm (5.9 in) apart in rows 60 cm (24 in) apart.

Tigerleaf: Produces leaves with green and red stripes



Greenleaf

Greenleaf: Light green leaf



Burmese

Calabash gourd/น้ำเต้า *Lagenaria siceraria*

Young fruits, leaves and young shoots edible; seed yields an oil used in cooking. Very prolific in subtropics; tolerates heat and humidity better than most cucurbits. Can be planted year-round. Soil pH: 4.5-7.5. Grow on trellis.

Burmese: Produces very large fruit up to 50 cm (20") long

ECHO Bottle Gourd: Light green fruit; 15 cm long (6"). Mature fruits can be made into bottles or bird houses when dry.



ECHO Bottle Gourd

Om Koi Long: Edible fruit up to 24" (60 cm) long



Om Koi Long



Chili pepper: Karen/พริกกะเหรี่ยง and Chili pepper: Tiny Hot/พริกขี้หนู *Capsicum frutescens*

Pepper plants grown as annual in temperate climates but can be perennial if no frost. Height varies with variety, but 1m (3.3 ft) is typical. Prefer well drained, sandy or silty-loam soil. Hot, dry weather is best for fruit ripening. In humid areas best to grow peppers during dry season and water as needed. Soil pH: 4.5-7.0.

Karen: Hot, red peppers; 2-4 cm long

Tiny Hot: Very hot, small peppers; 2-3 cm long

Corn



Multi-colored corn

Popcorn/ข้าวโพดแก้ว *Zea mays*

Naga: Popcorn from Northeast India. Hardy crop. Small ears with round, yellow, hard kernels. Can be fed to animals. Plant during the rainy season or dry season with irrigation. Establish rows 24-30 in (60-75 cm) apart; 12 in (30 cm) within rows.

Flint corn/ข้าวโพดพันธุ์พื้นเมืองเมล็ดสีส้ม *Zea mays*:

Naga Multi-colored: Field corn from Northeast India. Mid-sized ears with multi-colored kernels. Plant during the rainy season or dry season with irrigation. Grows vigorously under suitable conditions. Can be consumed by humans and animals. Establish rows 24-30 in (60-75 cm) apart; 12 in (30 cm) within rows.

Sweet corn/ข้าวโพดหวานสีเหลือง *Zea mays var. saccharata*

Hawaiian Supersweet # 9 – Yellow: Yellow, sweet, crispy; matures 68-75 days. Large ears; kernels very tender. Grows well in tropical conditions. An improved open pollinated variety. Establish rows 24-30 in (60-75 cm) apart; 12 in (30 cm) within rows.



Cowpea/ถั่วดำ *Vigna unguiculata*

Chiang Dao: Viny cowpea used often used as a green manure cover crop; often relay cropped. Vines less than 1m long; pods approximately 8 in (20 cm) long. Tender pods, young and mature bean seeds edible. Drought tolerant if root system established. Four months to maturity. Fixes approximately 80 kg N/ha. Needs well drained and properly inoculated soil. Establish 30-45 cm (12-18 in) apart.



Eggplant/มะเขือ *Solanum melongena*

Yellow: Very productive in hot, humid weather. Fruit turns yellow when mature. Productive at ECHO even with nematodes, but susceptible to soil pathogens. Fruits are eaten as vegetables when young (about 2/3 of full size). An annual crop, eggplant does best in well drained soils with temperatures of 28-35°C (75-100°F). Can plant all year, but performs best during the cool, dry season. Soil pH: 4.3-8.5.



Green bean/ถั่วแขกพุ่ม *Phaseolus vulgaris*

Green (or French) beans do well in the tropics when planted at elevations between 1000 and 3000 m and when soil temperature is over 10°C (50°F). Grow during the cool-dry season at lower elevations. Prefer well-drained friable (breaks easily when handled) soils, in full sun with a pH of 5.5 to 7.0.

Naga: Quick producing pole variety from NE India. Produces tender, sweet 12-cm pods. Medium brown seeds. Currently, we have Naga#2 available.

Khasi: Quick producing pole variety from NE India that produces 12-cm long pod. Dark brown seeds.

Naga green bean, Pole-type

No photo yet

Indigo, Large/ครามใหญ่ *Indigofera teysmannii*

Philippine: Mid-sized nitrogen fixing tree. Grows best in tropical/sub-tropical, humid/sub-humid climates. Applications in Asia include forage production for goats, soil conservation hedgerows, firewood production as well as an agroforestry overstory (shade) tree. Can attain heights of 3-5 m within two years. Lifespan of at least several years. Can be direct seeded.



Jack bean/ถั่วพริ้ว *Canavalia ensiformis*

Thai: A bushy annual legume. Drought-tolerant, it produces large leaves and smooth pods (edible when tender) that yield large, smooth, white seeds (toxic). An excellent green manure cover crop, jack bean produces considerable amounts of biomass and fixes up to 230 kg N/ha. Can be used for fodder. Establish 40-60 cm apart. Matures in 120 days.



Job's tears/มะเดือย *Coix lacryma-jobi*

Mekong Mix: Edible, soft-shell type; a grassy, minor grain (also known as pearl barley). Grows to 1.5 m tall. Can be eaten like rice, ground into flour, added to soups and snacks and fermented. The grains fed to poultry; foliage used as fodder. Often planted beginning of rainy season, establish 12 in (30 cm) apart. Reportedly best suited to latitudes between 22° N and S.



Annual lablab

Lablab bean(annual)/ถั่วแปะยี *Lablab purpureus*

Used as a green manure cover crop and under good growing conditions, the viny biomass smothers weeds; can fix approximately 130 kg N/ha. Highly palatable to animals (23% protein). Once established, will tolerate drought. Produces mature seed around 6 months. Plant approximately 80 cm (~ 1 yd.) apart.

Chiang Dao Mix: An annual, white-seeded, field lablab. Used as a green manure cover crop.

Highworth: Non-shattering pods with black seeds. Quick maturing, yields well. Used as a green manure cover crop.



Vegetable lablab

Lablab bean(vegetable)/ถั่วแปบ *Lablab purpureus*

Pun Pun: Has 4-inch long, light green pods. A climbing, semi-perennial legume grown for edible green pods, leaves and flowers. Young and old bean seeds are also consumed (raw dry seed is reportedly poisonous). Usually planted during the rainy season. In Thailand, begin flowering indeterminately in November; green pods harvested from December to March.



Lettuce

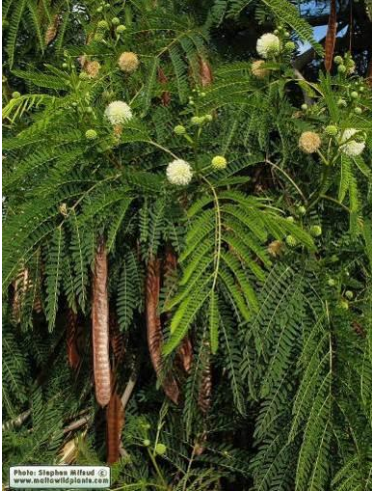
Tropical or Indian lettuce/ผักกาดหอมบ้าน *Lactuca indica*

ECHO Tropical: A fast-growing, self-seeding, semi-perennial (2 m in height). Young leaves can be eaten raw. Older leaves edible; served with vinegar, steamed or boiled. Fair source of vitamins A and C. Thrives under warm, moist conditions. The optimum temperature range is 25–30°C (77-95°F). If planted in well-drained soil, can tolerate rainfall in excess of 3500 mm/year; pH 5-8.

No photo yet

Lettuce/ผักกาดหอม *Lactuca sativa*

Khasi green: Loose-leaf type from northeast India. Light green leaves eaten raw. Sow at end of rainy season or beginning of cool season. Long, hot days generally prompt plants to bolt (send up a flower stalk); the sap in the leaves turns unpalatably bitter. Needs regular watering and welcomes shade from taller crops. A rich, loose soil with a pH between 6.0 and 7.0 is ideal.



Leucaena/กระถิน *Leucaena diversifolia*

UHDP: This Leucaena variety has been promoted by the Mindanao Baptist Rural Life Center for many years as mildly acid soil tolerant and a psyllid resistant alternative to *Leucaena leucocephala*. Coppices well; good for hedgerows, intercropping and alley cropping. Has timber and firewood potential. However, forage quality is reported lower than *L. leucocephala*. Better adapted to higher elevations and cooler temperatures than *L. leucocephala*. Flowers year round in northern Thailand. Best to scarify seed before sowing.



Lima bean/ถั่วราชมาษ *Phaseolus lunatus*

Burma Red: Indeterminate climbing lima bean; produces medium-sized red beans approximately 90 days after planting. Immature sprouts, leaves, green shelled beans and pods are consumed in Asia (raw seeds may be toxic). Plant at the beginning of the rains; dry period needed for seeds to mature. Prefer well-drained, well-aerated neutral (pH 6-7) soils.



Thai Oval

Luffa Sponge, Smooth/บวบหอม *Luffa cylindrica*

Luffas produce vigorous climbing vines (grown on trellis). Fruit also used as sponge. Well adapted to warm dry tropics, but can be grown in wet tropics. With access to water, plant year-round. The vines are frost sensitive.

Thai Oval: Large, oval, edible fruit. Leaf shoots also edible; seeds toxic.

Thai Long: Smooth, long, edible fruit (~30 cm). Leaf shoots also edible; seeds toxic.

Smooth (ECHO): Smooth, long fruit (edible when young). Leaf shoots also edible; seeds toxic



Thai Long

Luffa Sponge, Smooth/บวบหอม *Luffa cylindrical* (continued)



Smooth ECHO



Bangladesh

Malabar spinach/ผักปลัง *Basella alba*

Bangladesh: Large-leafed and vigorous, producing in 70 days. Malabar spinach needs night temperatures above 14°C (60°F). Best suited to humid regions. Tolerates a wide range of soil conditions but does best on slightly acidic (pH 6-6.7), humus-rich sandy loams. Trellising is helpful. Recommended spacing between rows 20-30 cm (7.9 – 11.8 in); within rows 15-20 cm (5.9 – 7.9 in) apart.



Moringa, drumstick tree, horseradish tree/มะรุม *Moringa oleifera*

Leaves high in protein, calcium, vitamins A,B, and C. Drought-resistant; grows well in infertile, dry soils to 1000 m. Can also be used as animal feed. Does not tolerate water-logging. Coppices well with a light crown density; good for intercropping.

Regional Mix: Mixture of various types native to Southeast Asia. Most parts of the plant are edible. Leaves high in protein, calcium, vitamins A,B, and C.

PKM-1: These trees said to be bushier and yield more pods than non-improved moringa. 6 months to pod production.



Mustard/ผักกาดเขียว *Brassica juncea*

Khasi: Fleshy, pubescent leaves with a slightly bitter flavor. A cool season crop, mustard grows best in cooler, milder temperatures (15-18° C). Can tolerate annual rainfall between 500 to 4200 mm. Can be used in salads or cooked as a green. Seeds may also be pressed for oil. Best to plant at the end of the rains, just prior to the cool season.



Niger seed/เมล็ดไนเจอร์ *Guizotia abyssinnica*

Burmese: A member of the Aster family, Niger is an oilseed crop. Seeds contain around 40 % oil and about 20 % protein. Requires short day-length for flowering. Sown into fields at end of rainy season; desired planting distance of 20 to 30 cm (7.9 to 11.8 in). Ready for harvest approximately three months after planting. Seed cake used for livestock feed.



Okra/กระเจี๊ยบเขียว *Abelmoschus esculentum*

Clemson Spineless: Prolific producer of dark green, spineless pods which can be harvested continuously for weeks. Pods best when 3-5 in long. Plants grow to 4 ft in height. Plant at least 1 foot (30.5 cm) apart. Can be grown year-round in warm climates.

Clemson Spineless



Pigeon pea/ถั่วมะแฮะ *Cajanus cajan*

Thailand Mix: Pigeon pea is a perennial, tree-like shrub that grows to 4 to 10 ft (1.22 – 3.05 m) tall and is used for food and fodder as well as agroforestry systems. Pods are edible with seeds high in protein (~21%). Producing a deep root systems, pigeon pea plants fix nitrogen quickly (168-280 kg/ha). Although a short-lived perennial (up to 5 years), the crop can be planted as an annual.



Rice bean/ถั่วแดง *Vigna umbellata*

Chiang Dao: Slender, annual, twining vine (1 meter long). Drought-tolerant; needs well-drained soils. Often relay cropped with corn (green manure cover crop). Pods, about 10 cm long, are produced in groups of 5-12. Requires short days to flower. Five months to maturity. Tender pods and dry seeds edible. Establish 30-45 cm (12-18 in) apart. Fixes approximately 80 kg N/ha.



Roselle/กระเจี๊ยบ *Hibiscus sabdariffa*

Burmese: Annual plant of Southeast Asian origin with calyx used in for tangy-flavoured drinks, sauces, or eaten fresh. The leaves are edible raw or cooked. Seeds a source of cooking oil. Prefers deep, fertile, well-drained loam. Fresh leaves contain 2-3% protein and traces of calcium, phosphorus, and iron. A short day plant that can be grown in temperate regions but will not produce fruit.



Siamese senna/จี่เหล็กบ้าน *Senna siamea*

According to Winrock International, *Senna siamea* is a non nitrogen-fixing leguminous tree, heights up to 15-20 meters. It is widely planted in many Southeast Asian countries for erosion control, windbreaks, shelterbelts, fuelwood, and polewood. It is a good ornamental tree for planting along roadsides, and it is also used in alley cropping, intercropping, and hedgerows. Although toxins reported, leaf shoots and flowers sometimes consumed. It is planted as a shade tree in cocoa, coffee, and tea plantations. It is commonly called Thailand shower, minjiri, or kassod and has many regional names. Older seeds should be scarified. Does not grow well above 1300 meters.



Sorghum/ข้าวฟ่าง *Sorghum bicolor*

Pang Daeng : 3 meter tall minor grain crop. In northern Thailand, cleaned grain cooked like rice or popped like popcorn. Grain is also fed to chickens raw or cooked as pig feed. Usually planted at the beginning of the rainy season and harvested at the beginning of the dry season (approximately 6 months). Adapted to a wide range of soils if moderately well-drained



Sunn hemp/ปอเทือง *Crotalaria juncea*

An excellent versatile green manure crop for improving rice paddy and other soils and controlling weeds. Soil pH: 5.0-8.4. Possible toxicity to livestock if more than 10% of diet for cattle; recommended not to be fed to horses and pigs. *C. juncea* may suppress nematodes; some drought resistance. Although it is adapted to hot climates, this plant will endure slight frost; a good source of fiber for the manufacture of twine and cord; fixes up to 67 kg (147 lb) of nitrogen per acre. Can broadcast seed or drill in rows 6 in. (15 cm) apart. Best to incorporate into soil 30-50 days after sowing. Older plants are fibrous and more difficult to incorporate. To reduce chances of poisoning, it is best to limit *C. juncea* forage intake to no more than 45% in rations for sheep, 10% for cattle, and not fed at all to horses and pigs.



Sweet leaf, Katuk/ผักหวานบ้าน *Sauropus androgynous*

Green leafy, perennial vegetable grown as a shrub. Does extremely well in hot humid conditions; tolerates occasional flooding. Occurs in elevations from sea level to 1300 m. Harvested year-round, the first harvest in 55-70 days.

Thai: Leaves and young stem tips make a good edible green; grows as an edible hedge; flavor reminiscent of fresh peas or peanuts. Cuttings preferably sent rather than seed because seed has a low germination.



Upland Mix

Wax gourd/Wintermelon/ฟักหม่น *Benincasa hispida*

Upland Mix: Large, green gourd about 1.5 to 2 ft long (45.7 - 61 cm). Wax gourd is the best cucurbit for seed oil in hot, humid tropics. Flesh eaten like summer squash; fruit may be stored for many months at room temperature. It can be grown year-round in tropical climates but usually planted a beginning of rainy season. Frost sensitive. Soil pH 5.0-7.5.



Day Neutral

Winged bean/ถัวยาว *Psophocarpus tetragonolobus*

Winged bean is a climbing perennial, cultivated either as an annual or perennial (if day neutral varieties are grown). Most varieties are planted at the beginning of the rainy season. Rows should be spaced 2 m apart; hills 1-2 m apart. Plant 2-3 seeds per hill. For improved germination, soak seeds overnight before planting.

Bogor: 20 cm (8 in) pods, vigorous, high yields.

Day Neutral: Blooms during longer days, allowing for out-of-season production.

Pang Daeng Nawk: Short-day length variety from northern Thailand, produces long, tender pods (30 cm).



Pang Daeng Nawk



Yam bean, Jicama/มันแก้ว *Pachyrhizus erosus*

Lao: Leguminous plant with a tuber eaten raw (snack or salads); also remains crunchy when cooked. High in carbohydrates but otherwise low nutritional value. Requires short days for tuber production. Leaves and seed toxic (contain rotenone). Produces well in hot, humid environments with a long, warm, frost-free growing season. Can be trellised. Prefers well-drained soil. Optimum soil pH 6.5-8.

