

Nature's Exotic Masterpiece in the Rainforest: Heliconia

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Heliconias, which are native to South and Central America, are popular as ornamental plants and cut flowers because of their brilliant colours and exotic appearance. Their enhancing beauty has made them, a best landscape and as a potential cut flower. The heliconias exhibit a wide array of colours led by red, pink, orange, yellow and green combined with different sizes and shapes.

Due to its exotic appearance and brilliant colours, it fetches premium price in the market. Leaves of some varieties of heliconia are also sold as cut leaves for flower decoration. The genus *Heliconia* (Heliconiaceae) includes a number of species showing potential as commercial cut flower crops. *Heliconia psittacorum* and some of its hybrids (e.g., 'Golden Torch') are particularly promising because of their attractive flowers, long straight clean peduncles, prolific year-round flower production, excellent postharvest characteristics, and few pest problems. The inflorescences can be used in a manner similar to those of bird of paradise, but they are less massive and are therefore, easily incorporated into smaller floral arrangements.

Chromosome no: Basic X= 12, diploid $2n=2X=24$

Family: Heliconiaceae

Common names: Lobster claw, False bird of paradise, Parrot flower

Origin: South and Central America

Growing environment:

Natural tropical forest- water, rich soil and sunlight is suitable. It can be found in moist or wet regions sometimes, in seasonally dry areas and needs elevation below 1500 feet. Most of the genus are near the river banks and patches of the forest.

Propagation



For propagation, rhizome divisions and seeds are employed. Since not all species produce seeds, seeds are not used. These

seeds even have a lower germination percentage and take a year to germinate. At commercial level, rhizome is used as planting material for heliconia. The



Heliconia psittacorum



Heliconia bihai



Heliconia stricta



Heliconia caribaea



Heliconia chartacea



Heliconia indica

rhizomes are divided into sections that contain at least one bud and the base of the leaf stem, and they only need 4 to 8 weeks to sprout.

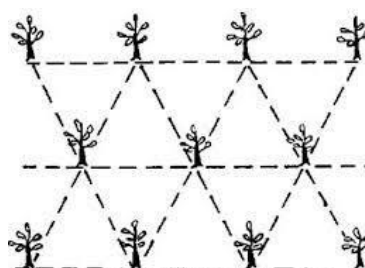
Light

Increased light intensity leads to better development and yield. Its penetration also boosts floral production four times more than that of 63% shadow. Lower light intensity grows taller, weaker plants with slightly intense bract colour and low productivity.

Temperature

Grows well under temperature range of 21°C to 35°C.

Growing media and planting



Raised beds of 1.5-2 m are used for planting. A triangular pattern planting is employed. A spacing of 0.75 to 1 m is provided for the plants initially.

A good growing medium can be made using equal parts soil, wood chip mulch and peat moss for starting

heliconias in a pot and also can be added to the hole when planting in the ground. Farm yard manure at 5 kg/m² is recommended.

Table 1: Aerial and soilborne diseases

Disorders	Disease	Treatment
Aerial disorders		
Leaf spots	<i>Bipolaris spp.</i> And <i>alternaria spp.</i>	Bravo and/or tilt
Shoot rots		
Emerging shoots	<i>Pythium myriotylum</i>	Previcur and/or fungarid avoid water-logging
Basal rots		
Pseudostem at ground level	<i>Cylindrocladium floridanum</i>	No chemical control currently available. Usually attacks weakened plants, so avoid water-logging, which can cause other root rots
Soilborne plant disorders		
Wilt syndrome	A form species of fusarium oxysporum	No chemical control available. Clean knives when harvesting flowers. Clean planting material. Never re-plant on diseased ground.
Rhizome rot	<i>Cylindrocladium floridanum</i>	No chemical control currently available. Avoid waterlogging.
Root Knot nematode	<i>Meloidogyne spp.</i>	Nematicides not recommended due to cost and toxicity. Organic mulches, e.g. green manures, forage hay incorporated into beds at planting.
Root Rots caused by poor soil drainage		
Fine-feeder roots	<i>Phytophthora spp.</i> and <i>Pythium spp.</i>	Recommended fungicidal drench, e.g. Copper oxychloride, Fongarid. Avoid planting in wet season. Incorporate gypsum in clay soils to aid in water dispersal. Do not plant rhizomes too deep in beds.

The rhizomes should be planted fresh with the top i.e., leaf stem/new shoots/buds pointing upwards. Planting depth of 3-4 cm under the soil is

recommended. New shoots or larger buds should be above the soil. If planted too deep, root rot is likely to occur. After planting water thoroughly. But do not water again until soil is getting dry.

Growing in pots: Even the lesser Psittacorum species may be cultivated in relatively big pots, as can most heliconias. To sustain the weight of the higher growing species, the pot must be sturdy and heavy. A new shoot will grow from the rhizome's base when the older stems wither and die. Store the pots in a warm, bright area. Plants can be replanted in well-drained soil after their leaves begin to unfold.

Replanting in soil: The majority of species can stretch out in all directions and need a lot of area. Larger species, like *Heliconia caribea*, can reach heights of up to 25 feet. Plant the rhizomes at least fifteen feet apart. Plant smaller species closer together, like *Heliconia psittacorum*. Remove old stems that have finished flowering and any dead leaves. In the beginning, a slow-release fertiliser is best; 20 g of N, P, and K are advised. More water and fertiliser are needed for larger, more established plants.

Growing speed and flowering:

Heliconias grow really quickly. Heliconias range in height from 60 cm to 6 m, depending on the species. When cultivated from a rhizome, the majority of the larger species will take 12 to 24 months to blossom. When cultivated from rhizomes, the smaller psittacorum varieties often blossom after 6–12 months.

Shading: In order to protect the leaves from sunburn and to stop wind loads that could harm the leaves, temporary shades are placed over the leaf canopy. To safeguard the blooms during their growing season, plantations should practise basic hygiene. A 30% to 50% shade net is typically advised.

Pruning: To encourage robust new growth, tall plants can be pruned or pulled down. Trim or snip off flowering or foliage plant stems immediately above leaves or aged leaf junctions. Reduce overgrowth to encourage stronger growth in the remaining areas. "Deadhead," or withered flowers or seed heads, should be removed to encourage the growth of fresh flowers. When necessary, remove any dead, fading, or



diseased leaves. When transferring, remove some leaves to lessen the strain on the newly planted roots.

Irrigation: Use of substantial amount of water. Root problems are caused by poor drainage, and longitudinal rolling of the leaf is caused by water stress. Use of overhead sprinklers relieve water stress in leaves and helps in uniform spreading through the dense foliage till the centre, if low level sprinklers are used it is inefficient due to density of the pseudo-stem.

Manures and fertilizers: Rich compost and more water is essential. Active growing season FYM-4kg/m², 20g of N, P₂O₅, K₂O/m² - at the time of planting and N-20g/m² top dressing after 2 months. As N:K ratio increases size of the plant and size of the inflorescence increases.

Micronutrients spray: Foliar spray 3-4 times/year improves leaf colour and micronutrients deficiency. Heliconia is a heavy feeder, good response to fertigation by increase plant size, flower size and productivity. Balanced soluble fertilizers with high nitrogen promotes rapid growth and flowering terminal inflorescence initiated with pre-determined no. of leaves 4-6 leaves in *Hipeastrum psittacorum*.

Weed control: weeds are manually removed for first few months and later there will not be any weed competition.

Plant protection: Scale, mealy bugs, wet feet causing rot in root system no such severe problem.

Nitrogen deficiency: overall yellowing of plants.

Iron deficiency: Due to high soil pH and poor drainage, causes yellowing in young leaves.

Magnesium deficiency: Yellow bands along older leaf margins.



Leaf Spot on psittacorum flower caused by *Curvularia incurvata*



Base and rhizome rot caused by *Cylindrocladium floridanum*



Internal vascular discolouration of lower pseudo stem of *Heliconia psittacorum* spp. caused by a form species of *Fusarium oxysporum*

Harvesting: Heliconias are normally harvested when fully mature as the flowers will not open once they get

harvested. While flowers last longer if the bracts are less open.

Yield: 60 to 120 stems/m²

Grading and Bunching: Excellent heliconia blooms are fully developed, devoid of flaws (such as fading or damage), and have high-quality foliage. Each smaller hanging species and the bigger upright species are grouped together by stem.

Storage conditions: Heliconia is extremely vulnerable to harm from chilling. Never hold them at a temperature lower than 10-12.5°C. Flowers can be kept in water at 12.5°C or in moist, crushed newsprint. Has a 14-15 day shelf life and is unaffected by preservative treatments.

Packing: Normally packed in horizontal fibre board box.

Intercultural operations: Suckering is the important phenomenon of heliconia. Therefore, to promote greater suckering and flowering, nutrients must be maintained. In general, heliconia plant basins treated with NPK at a 2:1:1 ratio and 3 kg/m² /year showed the highest response for several variables, such as flower weight, leaf area, and all vegetative characteristics. In addition to inorganic fertilizers, application of well decomposed FYM or green manure has beneficial effects on flower and sucker production in heliconia.

Grades

Heliconias are usually graded by bract size and classified as small, medium, large, and extra-large.

Grade	Stem length (cm)	Bloom	Bract
Small	80	15	-
Medium	70-90	20	3-4
Large	More than 90	25	3-4
Extra	More than 90	30	3-4
Pendant	110	More than 30	5-6

Pulsing

pulsing the stems with 10%, 30% and 50% sucrose solution for 30, 60 min, 12 and 24 hours. Stems subjected to pulsing with 10% sucrose for 60 min maintained the quality of the inflorescences compared to the other treatments. This treatment allowed the stems to reach 20 days of longevity, being 20% longer

than the control, showing color and brightness appropriate to the quality standards.

Ethylene Sensitivity: There is no evidence of any deleterious effects of ethylene exposure on the vase life of Heliconias.

Table 2: Factors affecting Flower Quality

Physical	➤ Abrasion due to wind causes brown superficial lesions on peduncles and bracts	➤ Incorporate wind breaks, e.g. native timber, palms and/or barna grass.
Chemical	<ul style="list-style-type: none"> ➤ Spray-damage due to herbicide drift can cause discolouration of bracts. ➤ Poor spraying practices can cause scorch marks and reduce bloom quality. 	<ul style="list-style-type: none"> ➤ Do not spray on windy days; choose calm weather conditions. ➤ Spray in early morning or late evening, i.e cooler parts of day. Use correct formulation, concentrations recommended on the label.
Biological	<ul style="list-style-type: none"> ➤ Flowers attacked by ants and rodents are not saleable. ➤ <i>Curvularia</i> spp. and <i>Alternaria</i> spp. can cause severe spotting on bracts. ➤ <i>Bipolaris incurvata</i> can cause flower bract spots. 	<ul style="list-style-type: none"> ➤ Aim to reduce pest populations through appropriate trash management. ➤ Regular spray program of Bravo. Improve aeration during wet season to avoid water buildup on leaves. ➤ Regular spray program of Mancozeb, Rovral and Tilt. Improve aeration during wet season to avoid water build-up on leaves.

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