

APPENDIX

Appendix 1

Dodonaea Viscosa

(Figure 7a and 7b)

General Information and morphology

Scientific name: Dodonaea viscosa

Pronunciation: doe-DOE-nee-uh viss-KOE-suh

Common name(s): Varnish-Leaf, Hop bush (The shiny green leaves of this shrub have a varnished appearance that gives this plant its most widely used common name).

Family: Sapindaceae

Plant type: tree

Frost Tolerance: The green form is hardy to 15° F (-9°C), the red form to 26° F (-3°C)

Sun Exposure: Light shade to full sun, the red form doesn't turn fully red in the shade.

Origin: All over India mostly on the western side. Australia, New Zealand, tropical regions around the world

Uses: specimen; espalier; small parking lot islands (< 100 square feet in size); medium-sized parking lot islands (100-200 square feet in size); large parking lot islands (> 200 square feet in size); screen

Availability: grown in small quantities by a small number of nurseries

Description

Plant habit: oval

Plant density: symmetrical habit with a regular (or smooth) outline and individuals having more or less identical forms

Growth rate: moderate

Texture: fine

Growth Habits: Evergreen bush or small tree, short-lived, up to 12 feet tall (3.6 m), 6 feet wide (1.8 m)

Watering Needs: Little to moderate water when established, needs good drainage.

Propagation: Seeds in spring, cuttings in summer

The green form is more cold resistant than the red one. The red one is greenish-red in summer and turns red in the fall.

Foliage

Leaf arrangement: alternate

Leaf type: simple

Leaf margin: entire

Leaf shape: oblanceolate; obovate; spatulate

Leaf venation: pinnate

Leaf type and persistence: evergreen

Leaf blade length: 4 to 8 inches

Leaf color: green

Fall color: no fall color change

Fall characteristic: not showy

The "varnished" leaves of this plant have a resinous coating that is a protection against water loss, and this allows the plants to be exceptionally drought tolerant.

Flower

Flower color: yellow or Greenish yellow flowers are without true petals and appear in terminal clusters that are 3 inches in length.

Flower characteristic: summer flowering; fall flowering; spring flowering

Blooming Habits: The flowers of the hop bus are insignificant. Male and female flowers are generally on different trees.

Fruit

Fruit shape: pod or pod-like

Fruit length: .5 to 1 inch

Fruit cover: dry or hard

Fruit color: green; red; yellow

Fruit characteristic: showy

Fruiting Habits: Papery winged fruit in late summer. The three parted seedpods have 3 or 4 rounded wings.

The most outstanding part of this plant is the pendent fruit. These emerge green, turn yellow green, then pink and red, and then brown as they mature.

Trunk and Branches

Trunk/bark/branches: typically multi-trunked or clumping

stems; can be trained to grow with a short, single trunk; no horns

Current year stem/twig color: green

Current year stem/twig thickness: thin

Culture

Light requirement: plant grows in full sun

Soil tolerances: acidic; alkaline; sand; loam;

Drought tolerance: high

Soil salt tolerances: unknown

Plant spacing: not applicable

Other

Roots: usually not a problem

Winter interest: no special winter interest

Outstanding plant: plant has outstanding ornamental features and could be planted more

Invasive potential: not known to be invasive

Pest resistance: no serious pests are normally seen on the plant

Use and Management

*One may use Varnish Leaf as a specimen due to its nice fruit display. The plant is also attractive when it is not in fruit. Planted 5 to 8 feet apart, Varnish-Leaf makes a nice hedge or background plant, and it is very effective when employed as a screen. It is can also be grown in fence rows and is interesting when espaliered. It is a useful plant that is underutilized. It was observed that the three plants possess antibacterial activity against *Streptococcus pyogenes* and *Staphylococcus aureus* and strong activity against Coxsackie virus B3 and influenza A virus. In contrast, none of them exhibited anti-fungal activity. (Getie, M.et al, 2003).*Dodonaea viscosa* will tolerate dry sandy or rocky soils, salt spray, windy areas, and drought conditions. It favors areas that receive full sun and is often cultivated in loamy or sandy soils.*

Pests and Diseases

No pests or diseases are of major concern.

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Figure7a *Dodoneae viscosa*



Figure7b *Dodoneae viscosa...*
can grow in any climatic extremities

Appendix 2

List of instruments used for this study

Sr. No.	Tests/ Analysis	Model	Make
1	¹ H NMR, ¹³ C NMR	Varian Mercury YH300, 300MHz with superconducting magnet	Varian, Germany
2.	IR	Fourier Transform Infrared Spectrophotometer, model- FTIR 8400	Shimadzu, Japan
3.	GCMS	GCMS-QP5050.	Shimadzu, Japan
4.	Elemental analysis	Flash EA1112 series	Thermo Electron Corporation, UK.
5.	DNA sequencing	3130 genetic analyzer (AB)	Applied Biosystem, USA
6.	Polymerase Chain Reaction	GeneAmp PCR system (AB) 9700	Applied Biosystem, USA
8.	Real time PCR	7900 Fast Real Time-PCR system	Applied Biosystem, USA
9.	MTT assay for cytotoxicity study	SpectraMax 250 UV-vis microplate reader	Molecular Devices, Sunnyvale, US.
10.	Gel electrophoresis and documentation	Gel Doc XR	Biorad, Australia.
11.	Rota-evaporator	Rotavapor R-114	Buche, Germany

Appendix 3

Single-letter code for amino acids used in this study

G - Glycine (Gly)	W - Tryptophan (Trp)
P - Proline (Pro)	H - Histidine (His)
A - Alanine (Ala)	K - Lysine (Lys)
V - Valine (Val)	R - Arginine (Arg)
L - Leucine (Leu)	Q - Glutamine (Gln)
I - Isoleucine (Ile)	N - Asparagine (Asn)
M - Methionine (Met)	E - Glutamic Acid (Glu)
C - Cysteine (Cys)	D - Aspartic Acid (Asp)
F - Phenylalanine (Phe)	S - Serine (Ser)
Y - Tyrosine (Tyr)	T - Threonine (Thr)