



MORPHOLOGICAL DESCRIPTOR

WALNUT (*Juglans regia* L.)



Federal Seed Certification & Registration Department
Ministry of Food, Agriculture & Livestock
Government of Pakistan, Islamabad

*Testing Genetic Suitability and Adaptability: and
Registration of Crop Varieties is Legal Obligation
under Section 8 of Seed Act, 1976.*

Ms. Naheed Naz

GENERAL

- Variety name
- Parentage
- Pedigree
- Breeder (s)
- Breeding center/institute
- Root stock name
- Scion name
- Origin of rootstock Local Selection from exotic material Introduction
- Origin of scion Local Selection from exotic material Introduction
- Type of maintenance Vegetative Seed Tissue culture Others
- Type of vegetative propagation Grafting/budding Hardwood cuttings Soft wood cuttings Others
- Scion/rootstock compatibility Poor Medium Good
- Comparable variety (s)
- Origin Local Exotic
- Breeding method Selection Hybridization Introduction Any other
- Areas of adaptation
- Maturity duration Short Medium Long
- Date of planting

TREE CHARACTERISTICS

- Tree vigour Low Medium High
- Growth habit Erect Semi erect Spreading
- Branching density Sparse Intermediate Dense
- Shoot color Green Brown Black
- Shoot pubescence Glabrous Slightly pubescent Pubescent

LEAF CHARACTERISTICS

- Leaf color L. green Green Dark green
- Leaf length/width (cm)/.....
- Leaflet shape Narrow elliptic Elliptic Broad elliptic
- No. of leaflets
- Leaflet length/width (cm)/.....
- Rachis color Green Yellow Red
- Leaflet margin Entire Serrate Dentate
- Leaf/rachis persistence Few remain attached to stem Intermediate Many remain attached to stem

INFLORESCENCE CHARACTERISTICS

- First catkin bearing year
- Catkin abundance Light Intermediate Heavy
- Years from seed or graft to first female flower
- Years from seed or graft to first yield
- Lateral bud flowering [%]
- Female flower abundance Light Intermediate Heavy [Rate in relation to age and volume of tree]
- Flower/inflorescence
- Stigma color Green Yellow Red
- Dichogamy Protandrous Protogynous Unknown

FRUIT/NUT CHARACTERISTICS

- Hull persistence after nut fall Slight Moderate Significant
- Hull dehiscence Non-dehiscent Slightly dehiscent Dehiscent

Morphological Descriptor**Walnut**

- Nut shape Round Triangular Broad Ovate Ovate Short trapezoid
 Long trapezoid Broad elliptic Elliptic Cordate
- Nut size Small Medium Bold
- Nut diameter (mm)
- Nut length (mm)
- Shell texture Very smooth Smooth Medium Rough Very rough
- Shell color Very light brown Light brown Medium Dark brown Very dark brown
- Shell seai Open/very weak Weak Intermediate Strong V. strong
- Shell strength Paper Weak Medium Strong
- Shell integrity Incomplete shell Intermediate Complete shell, no holes
- Shell thickness (mm)
- Shell thickness Thin Thick V. thick
- Inshell nut weight (g)

KERNEL/SEED CHARACTERISTICS

- Kernel color Extra light Light Light amber Amber Brown Dark brown
- Kernel weight (g) [Average of 20 sound kernels]
- Kernel (%)
- Kernel weight/nut weight x 100
- Kernel veins (%)
- Kernel flavor Satisfactory Unsatisfactory
- Kernel fill Poor Moderate Well
- Kernel plumpness Thin Moderate Plump
- Ease of removal of Kernel halves V. Easy Easy Moderate Difficult V. difficult
- Kernel shrivelness (%) Tip shrivelness <50% shrivel 50% or more shrivel Kernel blank
- Kernel protein (%)
- Kernel oil content (%)

ENVIRONMENTAL ADAPTABILITY (Evaluation done under define conditions)

Flowering Response to seasons Stable Variable Highly variable

Drought tolerance Least tolerant Medium Most tolerant
(Measured as reduction in yield).

Tolerance to salinity Least tolerant Medium Most tolerant
(Measured by reduction in plant height 30 days after sowing).

Tolerance to acid soils Least tolerant Medium Most tolerant
(Measured as reduction in plant height 30 days after sowing).

Cold tolerance Least tolerant Medium Most tolerant
(Measured as reduction in general vigour and productivity after being continuously exposed to an average temperature of 15 °C for at least 15 days).

Heat tolerance Least tolerant Medium Most tolerant
(Measured as yield reduction when continuously exposed to average of 40 °C during the flowering period).

RESISTANCE TO INSECTS/PESTS

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RESISTANCE TO DISEASES

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DISTINGUISHING CHARACTERISTICS

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RECOMMENDED/APPROVED BY

Variety Evaluation Committee (VEC)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Experts Sub Committee	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Provincial Seed Council	<input type="checkbox"/> Yes	<input type="checkbox"/> No

COMMENTS OF SPOT EXAMINATION

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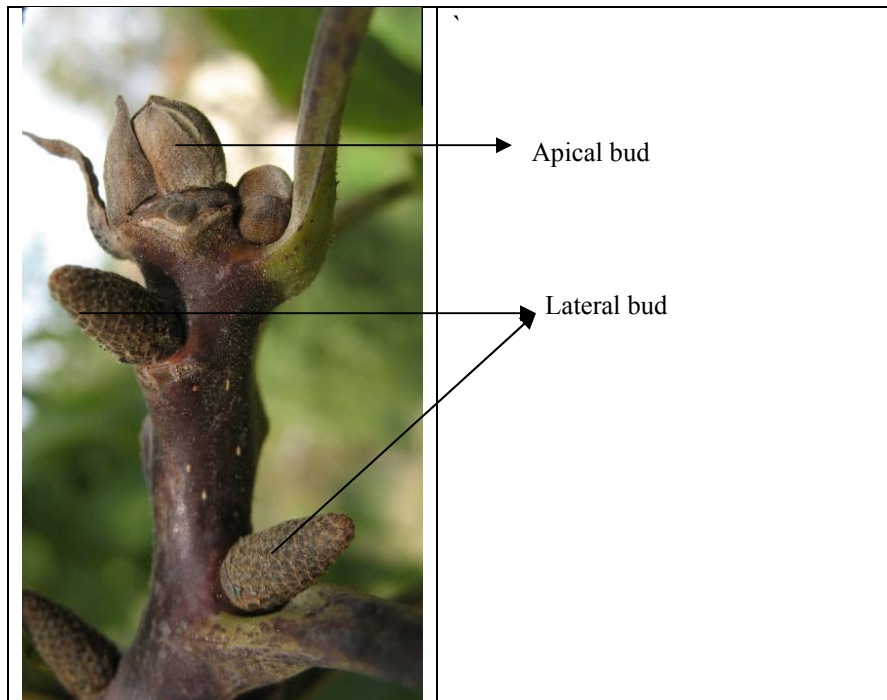
ADDITIONAL INFORMATION

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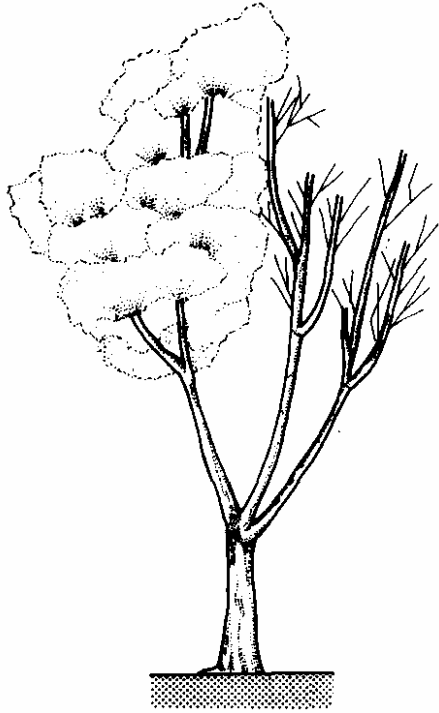
BARK COLOR OF FULLY MATURED WALNUT TREE



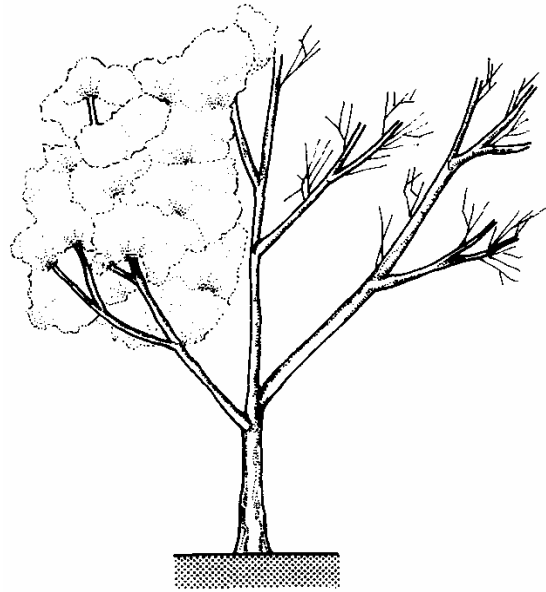
Silvery gray



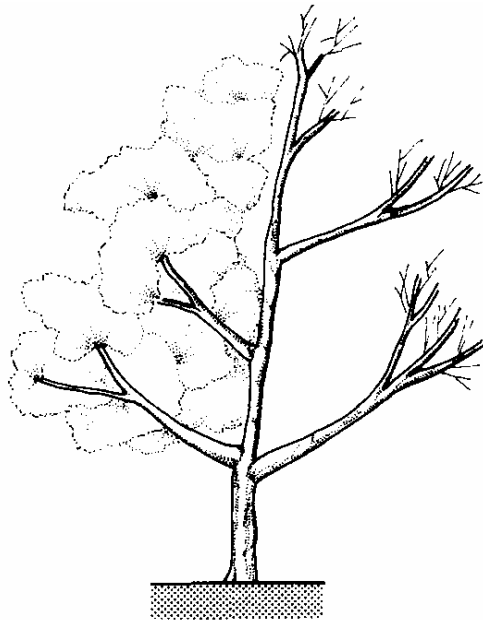
GROWTH HABIT



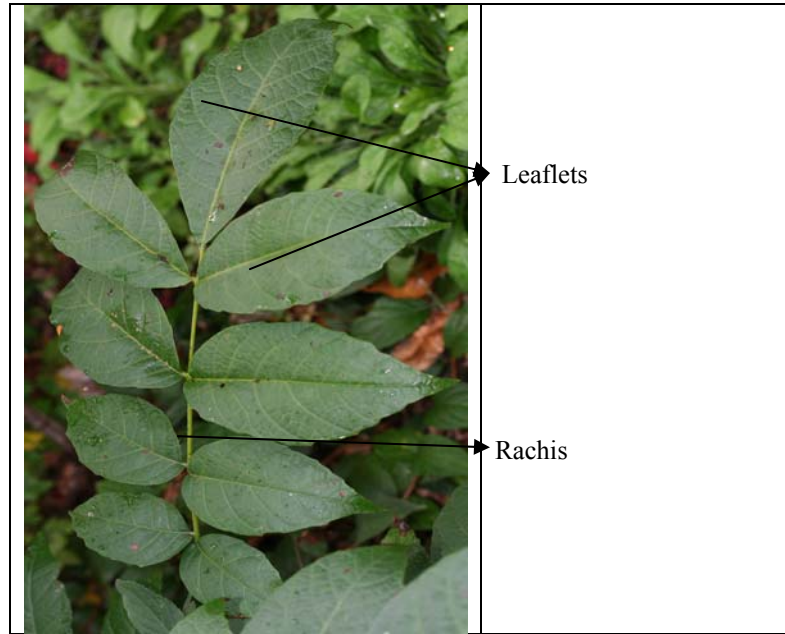
Erect



Semi erect

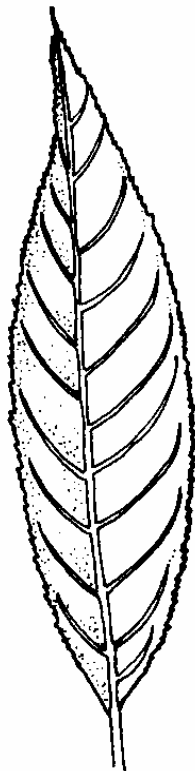


Spreading

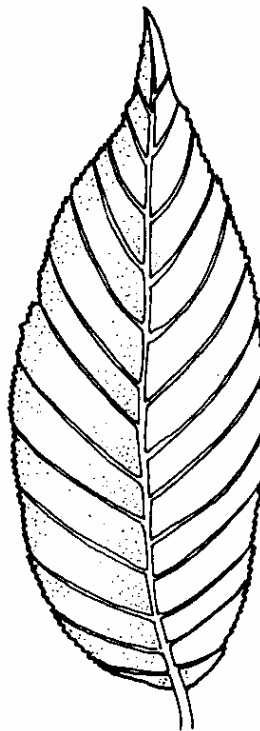


Imparipinnate Leaflet

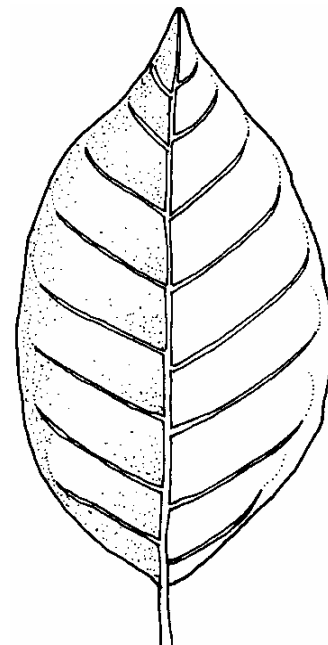
LEAFLET SHAPE



Narrow elliptic

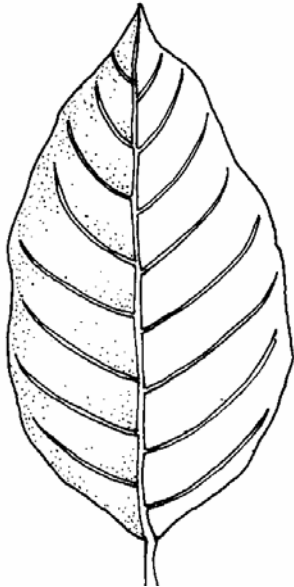


Elliptic

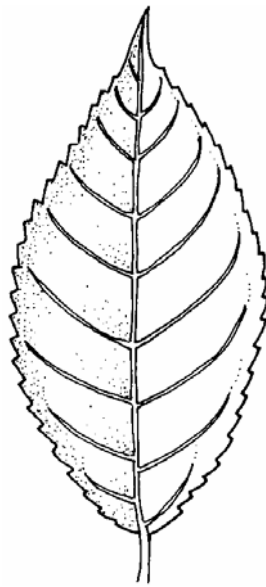


Broad elliptic

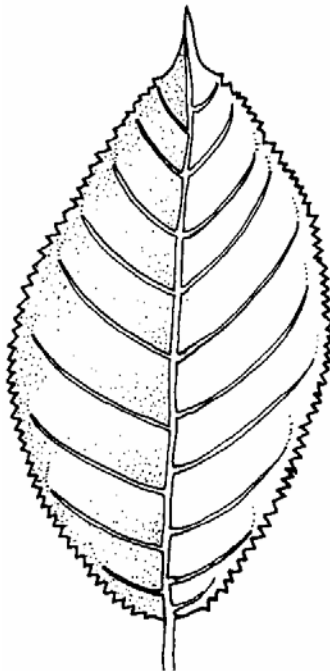
LEAFLET MARGIN



Entire



Serrate



Dentate/toothed



Male & Female Catkin



Female flower

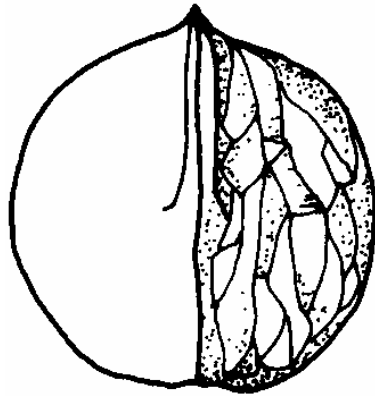


Branches bearing immature walnuts

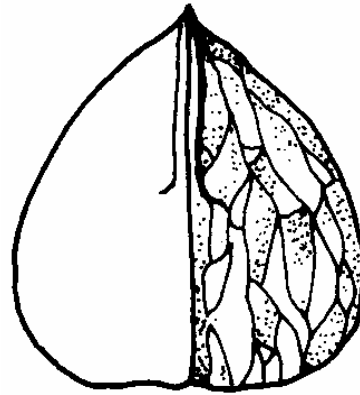


Epicarp exposing mature walnut

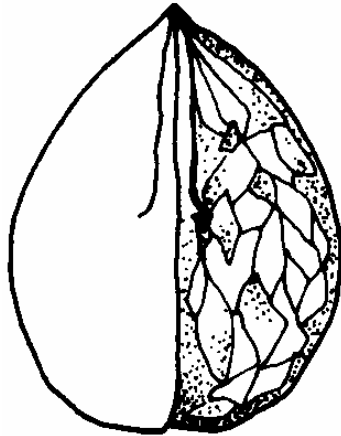
NUT SHAPE



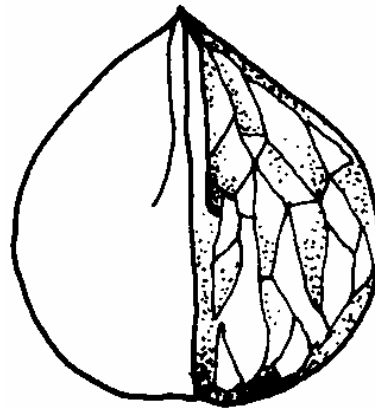
Round



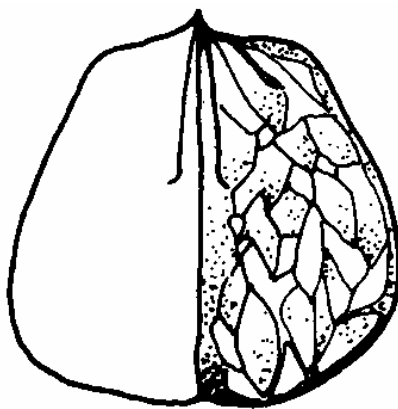
Triangular



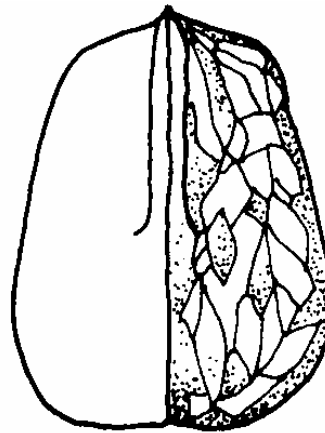
Broad ovate



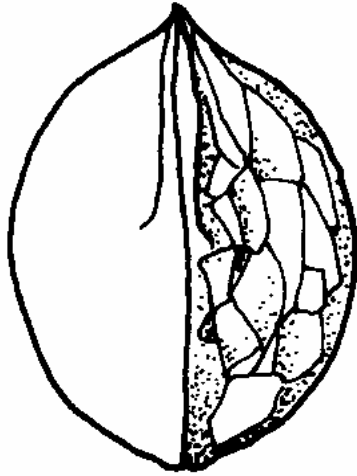
Ovate



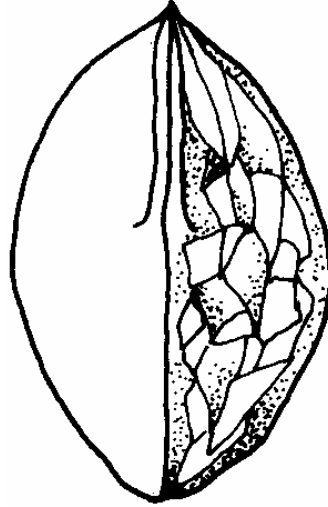
Short trapezoid



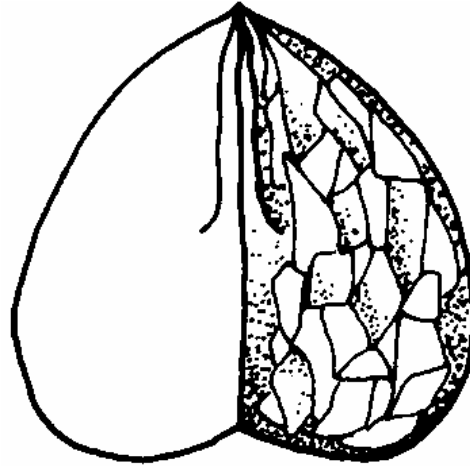
Long trapezoid



Broad elliptic



Elliptic



Cordate

SHELL STRENGTH



Paper



Weak



Medium



Strong

SHELL THICKNESS



Thin



Thick



V. thick

SEED/KERNEL COLOR



Extra light brown



Light brown



Light amber



Amber



Brown



Dark brown



Seed/Kernel veins