

Variety Description: Sunflower (*Helianthus annuus* L.)

Variety:

I) Application Date:

II) Registration Date:

III) Release Year:

General:

1.1 Variety Name:

1.2 Previous Name:

1.3 Variety Compared:

1.4 Area of Adaptation:

1.5 Breeding Center:

1.6 Institute/Organization:

1.7 Applicant(s):

1.8 Maintainer:

1.9 Parentage:

1.10 Pedigree:

1.11 Breeder(s):

1.12 Variety Origin: (L) local bred (S) selection from exotic material (I) introduction

1.13 Variety type: (1) open pollinated (2) hybrid (3) inbred line (4) inbred line with genetic male sterility (5) inbred line with cytoplasmic male sterility

1.14 Cytoplasmic male sterility type: (1) CMS-1 (2) CMS-2 (3) CMS-3 (4) CMS-4 (5) CMS-5

1.15 Variety use: (1) oil (2) confectionery (3) birds' feed (4) ornamental (5) gene source

Maturity:

2.1 Maturity days: [days for specific season] (1) very early (2) very early to early (3) early (4) early to medium (5) medium (6) medium to late (7) late (8) late to very late (9) very late

2.2 Earlier than:

2.3 Later than:

2.4 Normal crop sowing season: (1) spring (2) summer (3) autumn

2.5 Suitable for sowing: (1) early (2) mid season (3) late season (4) all sowings

2.6 Uniformity in maturity: (1) extremely variable (5) intermediate (9) extremely uniform

2.7 Photoperiodic response: (1) neutral (2) short day (3) long day (4) ambiphotoperiodic

Seedling Characteristics:

3.1 Seedling length: mm after 14 days

3.2 Seedling hairiness: (1) absent (3) sparse (5) medium (7) profuse

3.3 Seedling color: (3) light green (5) green (7) dark green

3.4 Hypocotyl anthocyanin coloration: (1) absent (3) weak (5) medium (7) strong (9) very strong

3.5 Anthocyanin coloration on margin of young leaves: (1) absent (9) present

3.6 Size of cotyledons: (1) very small (3) small (5) medium (7) large (9) very large

3.7 Shape of cotyledons: (1) elliptical (2) oval (3) extended (4) rounded

Plant / Stem Characteristics:

4.1 Stem; main color at heading (darkest area): (3) light green (5) green (7) dark green

4.2 Growing point: (1) green (2) yellow green

- 4.3 Stem anthocyanin: (1) absent (3) weak (5) medium (7) strong (9) very strong
- 4.4 Pubescence at the top 5 cm: (1) absent (3) weak (5) medium (7) strong (9) very strong
- 4.5 Stem pubescence length: (1) short (9) long
- 4.6 Stem stiffness: (3) weak (5) intermediate (7) strong
- 4.7 Stem diameter (at mid portion): [mm] (3) thin (5) medium (7) thick
- 4.8 Plant height at full flowering: [cm] (1) dwarf, <40 cm (2) extremely small, 40.1-80 cm (3) mall, 80.1-120 cm (4) small to medium, 120.1-160 cm (5) medium, 160.1-200 cm (6) medium to tall, 200.1-240 cm (7) tall, 240.1-280 cm (8) tall to extremely tall, 280.1-320 cm (9) extremely tall, >320 cm
- 4.9 Stem branching (excluding environmental branching): (1) absent (2) only basal (3) predominantly basal (4) overall, fully branched with central head (5) predominantly apical (6) apical (7) fully branched without central head
- 4.10 Natural position of highest lateral head to the central head: (3) below (5) same level (7) above
- 4.11 Length of internodes (in central third of stem): [cm] (3) short (5) medium (7) long
- 4.12 Percent stalk breakage (note stage): %
- 4.13 Percent root lodging (note stage): %
- 4.14 Type of root: (1) tap (2) rhizome (3) tuber

Leaf Characteristics:

- 5.1 Leaves per plant:
- 5.2 Leaf color: (1) yellow green (3) light green (5) green (7) dark green (9) blue green
- 5.3 Leaf; anthocyanin coloration on margin of young leaves: (1) absent (9) present
- 5.4 Leaf attitude: (1) erect (3) semi erect (5) horizontal (7) descending
- 5.5 Leaf surface: (1) smooth (2) crinkled
- 5.6 Leaf pubescence: (1) absent (3) sparse (5) medium (7) dense
- 5.7 Leaf pubescence length: (1) short (9) long
- 5.8 Leaf length (midrib): [cm] (3) short (5) medium (7) long
- 5.9 Leaf width: [cm] (3) narrow (5) medium (7) broad
- 5.10 Leaf size: (1) extremely small (3) small (5) medium (7) large (9) extremely large
- 5.11 Petiole length (bottom of plants): [cm] (1) absent, sessile leaves (3) short (5) medium (7) long
- 5.12 Leaf; petiole anthocyanin: (1) absent (5) moderate (9) abundant
- 5.13 Leaf; angle between lower part of petiole and stem: (3) small (5) medium (7) large
- 5.14 Leaf shape: (1) oblong (2) lanceolate (3) triangular (4) cordate (5) rounded (6) ovate
- 5.15 Leaf; shape of distal part: (1) lanceolate (2) lanceolate to narrow triangular (3) narrow triangular (4) narrow triangular to broad triangular (5) broad triangular (6) broad triangular to acuminate (7) broad triangular to rounded (8) acuminate (9) rounded
- 5.16 Leaf apex: (1) acute (2) acuminate
- 5.17 Leaf base shape: (1) acute (2) deltoid (3) cordate (4) auriculate
- 5.18 Leaf auricles: (1) absent (3) small (5) medium (7) large (9) very large
- 5.19 Leaf wings: (1) none (3) weakly expressed (5) medium (7) strongly expressed
- 5.20 Leaf margin: (1) entire (2) crenate (3) dentate (4) undulate (5) serrate (6) double serrate (7) incised
- 5.21 Leaf margin indentation depth: (3) shallow (5) medium (7) deep

- 5.22 Leaf margin indentation regularity: (1) regular (2) irregular
 5.23 Leaf margin serration (fineness): (1) isolated or very fine (3) fine (5) medium (7) coarse (8) very coarse
 5.24 Leaf venation: (1) palmately netted (2) pinnately netted (3) reticulate
 5.25 Leaf; angle of lowest / lateral veins: (3) acute (5) right angle (7) obtuse
 5.26 Leaf; height of tip of the blade compared to insertion of petiole (at 2/3 height of plant): (1) very low (3) low (5) medium (7) high (9) very high
 5.27 Leaf; habit of petiole: (1) erect (3) semi-erect (9) horizontal
 5.28 Leaf; petiole pubescence: (1) absent (3) weak (5) medium (7) strong
 5.29 Leaf senescence: (3) early (5) medium (7) late
 5.30 Leaf blistering: (1) absent (3) weak (5) medium (7) strong (9) very strong
 5.31 Leaf glossiness: (1) absent (9) present
 5.32 Leaf; shape of cross section: (1) strongly concave (3) weakly concave (5) flat (7) weakly convex (9) strongly convex
 5.33 Number of leaves on main stem: (3) low, <21 (5) medium, 21-25 (7) high, >25

Flower Characteristics:

- 6.1 Days to flowering in 50% plants: [days] (3) early, <55 (5) medium, 55-75 (7) late, >75
 6.2 Earlier than:
 6.3 Later than:
 6.4 Bud opening before flowering: (1) absent (9) present
 6.5 Bud diameter (full size stage): cm
 6.6 Bract tightness on bud: (3) tight (5) intermediate (7) loose
 6.7 Flowering uniformity: (1) extremely variable (5) intermediate (9) extremely uniform
 6.8 Ray florets; density / number: (1) very few, <16 (3) sparse, few, 16-30 (5) medium, 31-40 (7) dense, many, 41-50 (9) very dense, >50
 6.9 Ray floret shape: (1) fusiform (2) narrow ovate (3) broad ovate (4) rounded
 6.10 Ray floret length: [mm] (3) short (5) medium (7) long
 6.11 Ray floret width: [mm] (3) narrow (5) medium (7) broad
 6.12 Ray floret color: (1) ivory, yellowish white (2) light yellow (3) medium yellow (4) orange yellow (5) orange (6) purple (7) reddish brown (8) multi-colored
 6.13 Ray floret size: (3) small (5) medium (7) large
 6.14 Longer than:
 6.15 Shorter than:
 6.16 Ray floret; petal curling: (1) flat petal (9) tubular petal
 6.17 Disc flower color: (1) yellow (2) orange (3) red (4) purple
 6.18 Stigma color: (1) yellow (5) intermediate (9) purple
 6.19 Disc flower; anthocyanin coloration of stigma: (1) absent (3) weak (5) medium (7) strong (9) very strong
 6.20 Disc flower; production of pollen: (1) absent (3) poor (5) medium (7) good
 6.21 Pollen color: (1) white (2) pale yellow (3) yellow (4) orange
 6.22 Disc flower; pappi: (1) absent (9) present
 6.23 Disc flower; pappi color: (1) greenish (2) reddish
 6.24 Extra-floral nectaries: (1) absent (2) present

- 8.7 Seed; secondary color: (1) white (2) whitish grey (3) grey (4) light brown (5) medium brown (6) dark brown (7) black (8) purple
- 8.8 Seed; tertiary color: (1) white (2) whitish grey (3) grey (4) light brown (5) medium brown (6) dark brown (7) black (8) purple
- 8.9 Seed; position of stripes: (1) marginal (2) lateral (3) both
- 8.10 Seed; stripes on margin: (1) absent (2) weakly expressed (3) strongly expressed
- 8.11 Seed; stripes between margin: (1) absent (2) weakly expressed (3) strongly expressed
- 8.12 Seed; primary color of stripes: (1) white (2) grey (3) brown (4) black
- 8.13 Seed; secondary color of stripes: (1) white (2) grey (3) brown (4) black
- 8.14 Seed; tertiary color of stripes: (1) white (2) grey (3) brown (4) black
- 8.15 Seed; spots/mottling on pericarp: (1) absent (9) present
- 8.16 Seed; pericarp thickness: (1) extremely thin, <0.30 mm (3) thin, 0.31-0.50 mm (5) medium, 0.51-0.70 mm (7) thick, 0.71-0.90 mm (9) very thick, >0.90 mm
- 8.17 Seed; cross section shape: (1) flat (2) ovoid (3) round
- 8.18 Seed pubescence: (1) glabrous (3) sparse (5) medium (7) dense
- 8.19 Seed index (000): [gm] (3) low, <40 g (5) medium, 40-60 g (7) high, >60 g
- 8.20 Yield/ h: MT
- 8.21 Kernel percentage: % (hull to nutmeat percentage)
- 8.22 Oil content: %
- 8.23 Composition of fatty acids in oil: (1) palmitic % (2) stearic % (3) oleic % (4) linolenic %
- 8.24 Chlorogenic acid percentage: %
- 8.25 Protein: %

Susceptibility to abiotic stress:

- 9.1 High temperature: (3) low (5) medium (7) high
- 9.2 Low temperature: (3) low (5) medium (7) high
- 9.3 Drought: (3) low (5) medium (7) high
- 9.4 Excess water / flooding: (3) low (5) medium (7) high
- 9.5 Salinity: (3) low (5) medium (7) high
- 9.6 Constant winds: (3) low (5) medium (7) high
- 9.7 High humidity: (3) low (5) medium (7) high
- 9.8 Iron deficiency (chlorosis): (3) low (5) medium (7) high

Susceptibility to pest:

- 10.1 Insects: (3) S (5) MS (7) MR (9) R (see list of insect pests)
- 10.2 Diseases: (3) S (5) MS (7) MR (9) R (see list of disease causing organisms)

Distinctness:

INSECT PESTS

- 10.1.1 Homeosoma nebullela European Sunflower Moth
- 10.1.2 Homeosoma electellum N. American Head Moth
- 10.1.3 Contarinia schulzi (sunflower midge)
- 10.1.4 Zygogramma exclamationis
- 10.1.5 Bothynus gibbosus
- 10.1.6 Masonaphis masoni
- 10.1.7 Empoasca abrupta
- 10.1.8 Cylindrocopturus adspersus
- 10.1.9 Aphididae homoptera
- 10.1.10 Tanymecus dilaticollis.
- 10.1.11 Banded Sunflower Moth (Cochylis hospes) (WALS.)

FUNGI

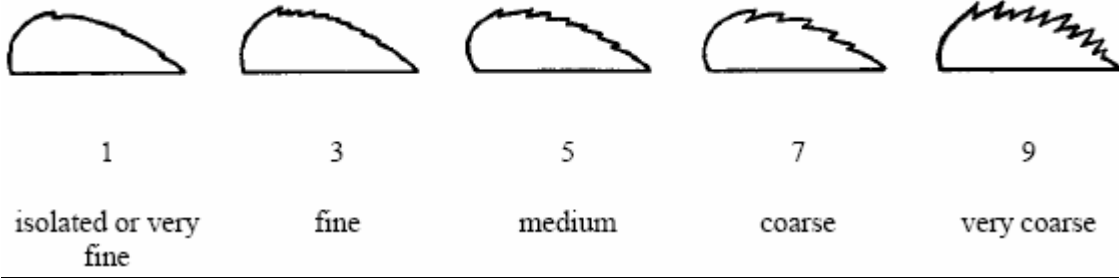
- 10.2.1 Plasmopara helianthi (downy mildew)
Specify race if known in NOTES
- 10.2.2 Puccinia helianthi (rust)
Specify race if known in NOTES
- 10.2.3 Sclerotinia sclerotiorum
 - 10.2.3.1 Root rot
 - 10.2.3.2 Leaf and stem rot
 - 10.2.3.3 Head rot
- 10.2.4 Sclerotinia minor
- 10.2.5 Botrytis cinerea
- 10.2.6 Septoria helianthi
- 10.2.7 Alternaria tenuis
- 10.2.8 Alternaria zinnii (leaf spot)
- 10.2.9 Alternaria helianthi
- 10.2.10 Phoma oleracea var. helianthi-tuberosi
- 10.2.11 Phomopsis (Diaporthe spp.)
- 10.2.12 Albugo leaf spot (Albugo tragopogonis) (Cystopus tragopogonis)
- 10.2.13 Erysiphe cichoracearum
- 10.2.14 Verticillium spp. (wilt)
- 10.2.15 Verticillium dahliae (Kleb.)
- 10.2.16 Verticillium albo-atrum (Reinke and Bath.)
- 10.2.17 Macrophomina phaseoli
- 10.2.18 Sclerotium rolfsii
- 10.2.19 Fusarium sp.
- 10.2.20 Rhizopus spp.

BACTERIA

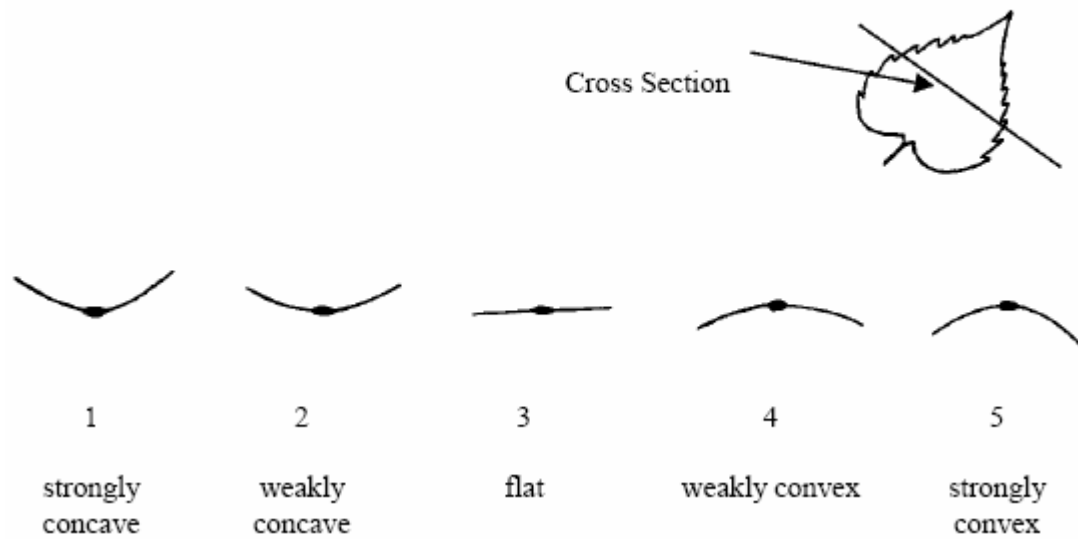
- 10.2.21 Erwinia carotovora

Explanations

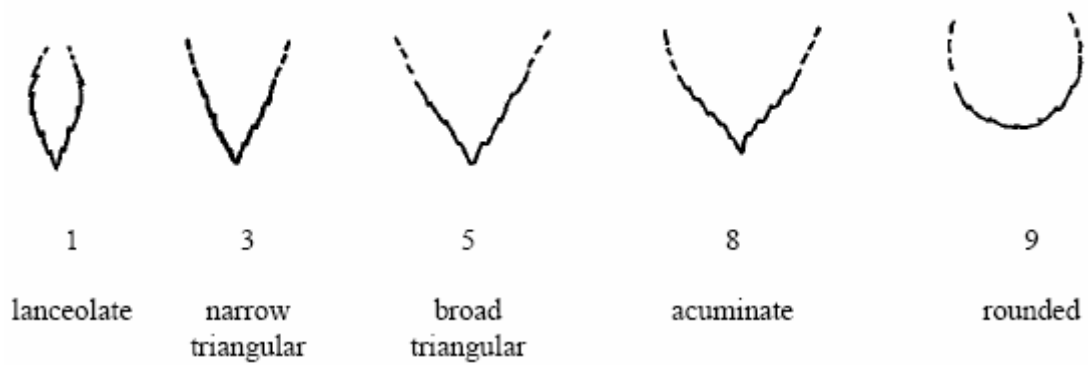
Leaf: serration



Leaf: shape of cross section (through the middle of the leaf)



Leaf: shape of distal part



Leaf: auricles



1

3

5

7

9

none or very small

small

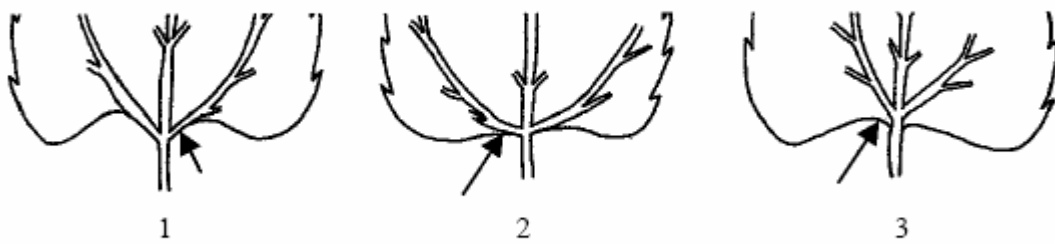
medium

large

very large

Leaf wings

(parenchym at base of lateral veins)



1

2

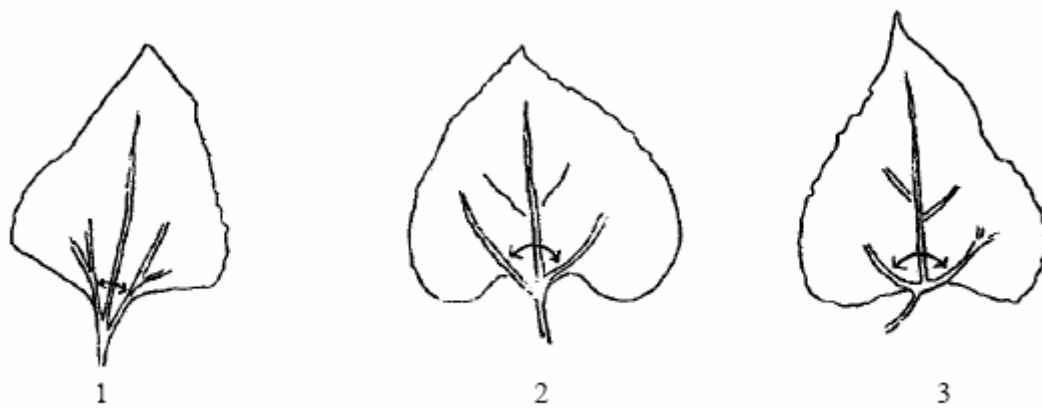
3

none or very weakly expressed

weakly expressed

strongly expressed

Leaf: angle of lowest lateral veins



1

2

3

acute

right angle or nearly right angle

obtuse

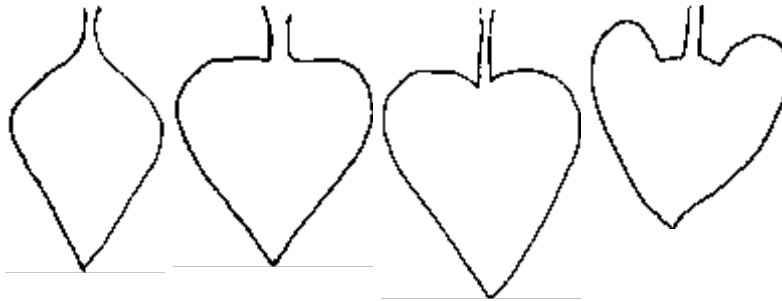
Leaf base

1 Acute

3 Deltoid

5 Cordate

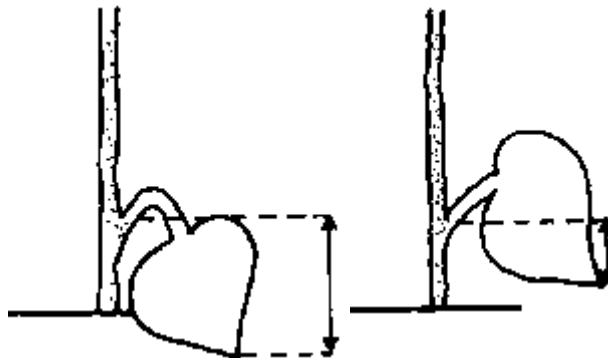
7 Auriculate



Height of the tip of the leaf blade compared to insertion of petiole (at 2/3 height)

1 Extremely low

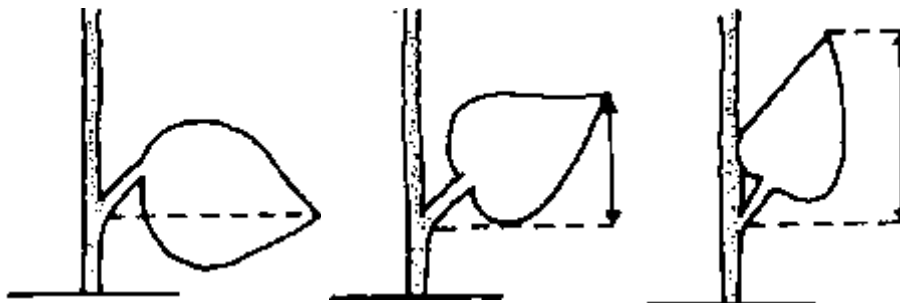
3 Low



5 Medium

7 High

9 Extremely high



Leaf shape

1 Oblong

2 Lanceolate



3 Triangular

4 Cordate

5 Rounded



6. Ovate

Ray floret: shape



1

fusiform



2

narrow ovate



3

broad ovate

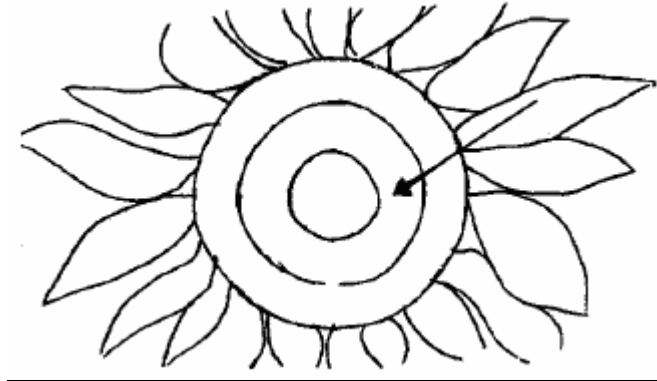


4

rounded

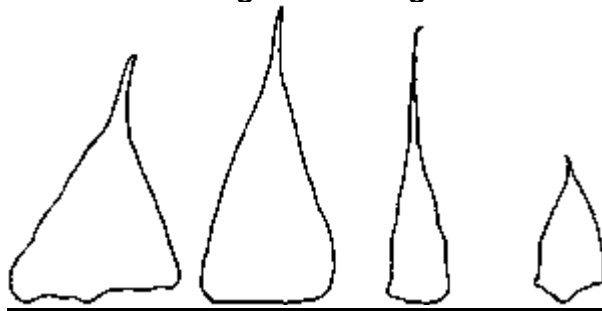
Disk flower: anthocyanin coloration of stigma

The anthocyanin coloration should be recorded on the stigma from the central third of the head just after the pollen appears at the top of the anthers.

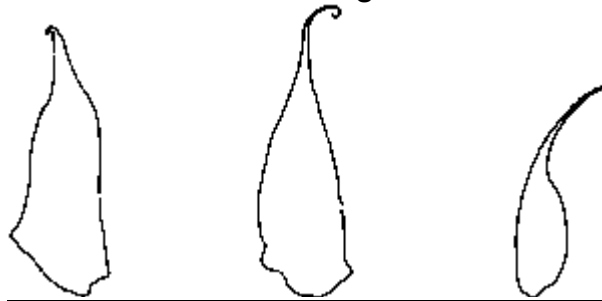


Bract shapes

Convergent or triangular



Parallel edges

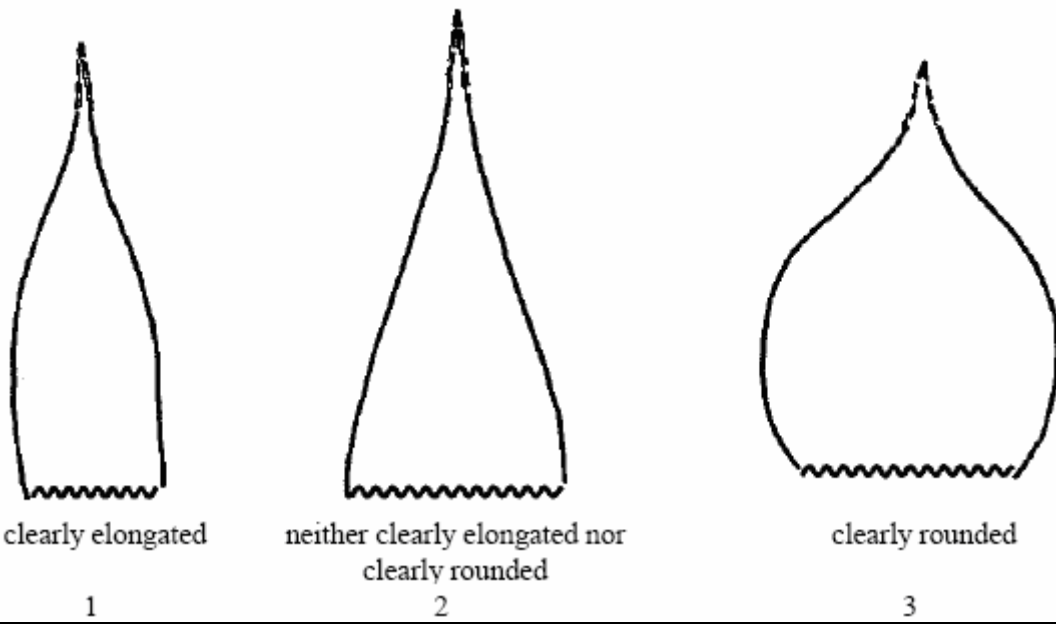


Rounded

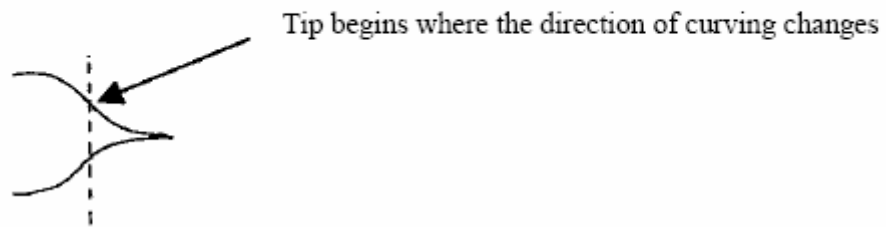
Curly



Bract: shape



Bract: length of the tip

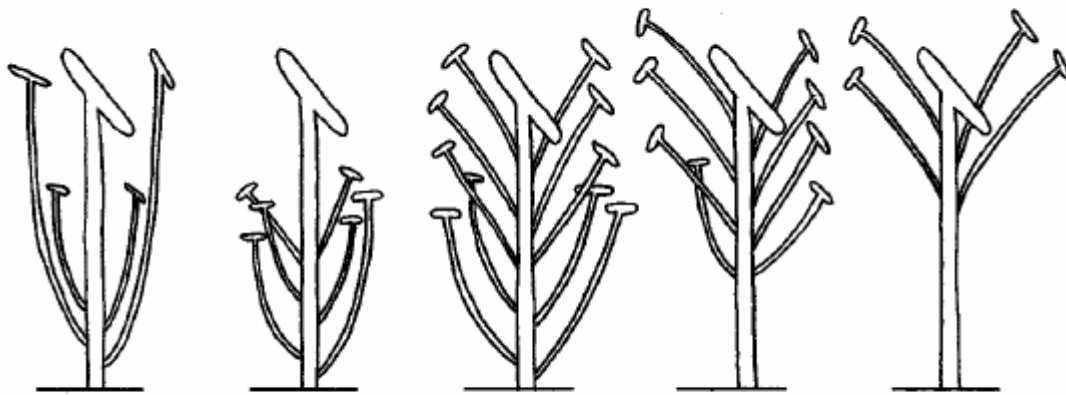


Seed shape

1 Elongated 2 Ovoid elongated 3 Ovoid wide 4 Rounded



Plant type of branching
(excluding environmental branching)



1

2

3

4

5

only basal

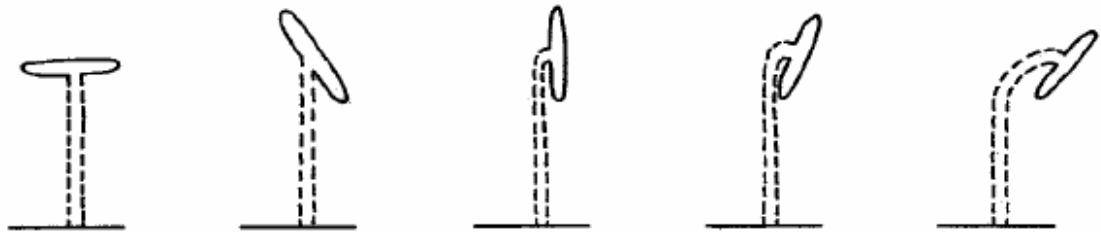
predominantly
basal

overall

predominantly
apical

only apical

Head attitude



1

2

3

4

5

horizontal

inclined

vertical

half-turned down
with straight stem

half-turned down
with curved stem



6

7

8

9

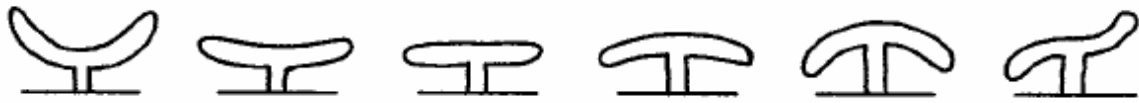
turned down with
straight stem

turned down with
slightly curved stem

turned down with
strongly curved stem

over turned

Head: shape of grain side



1 2 3 4 5 6

strongly weakly flat weakly strongly deformed
concave concave convex convex

Seed: shape



1 2 3 4

elongated narrow ovoid broad ovoid rounded

Seed stripes



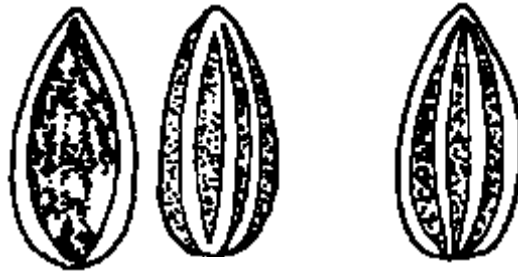
on margin



between margins

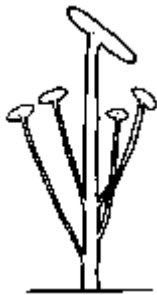
Position of stripes

1 Marginal 2 Lateral 3 Both marginal and lateral

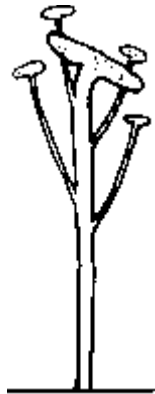


Type of branching

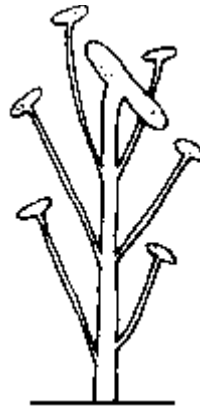
1 Basal branching



2 Top branching



3 Fully branched with central head

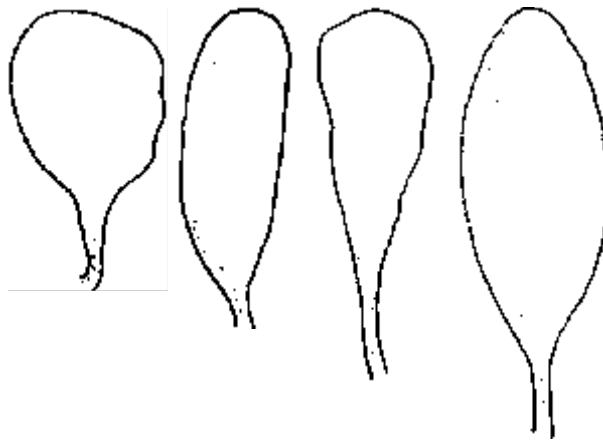


4 Fully branched without central head



Shape of cotyledons

1 Elliptical 2 Oval 3 Extended 4 Rounded



Head angle at maturity

0°



45°



90°



135°



180°



225°

