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About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

characteristics and attributes for coding
the genus *Manihot*

I. Plant Habit

- (1) 1. Decumbent, prostrate, reclining, or caespitose shrub
- (2) 2. Erect shrub or small tree (below 4 m.)
- (3) 3. Tree (above 4 m.)

II. Tendency to lobe

- (1) 4. Makes one lobe
- (2) 5. Makes three lobes but also makes two and one near inflorescence.
- (3) 6. Makes 5 lobes predominantly with occasionally 3 or 1 near inflorescence.
- (4) 7. Makes 5 lobes predominantly but occasionally 7 or 3.
- (5) 8. Makes 7 lobes predominantly with some 9 or fewer.
- (6) 9. Makes essentially 9 or more lobes.

III. Shapes of leaf apex (end of median vein)

- (1) 10. Long, acuminate
- (2) 11. Acute
- (3) 12. Abruptly acuminate
- (4) 13. Rounded
- (5) 14. Emarginate

IV. Total length of median rib

- (1) 15. $0 < 5$ cm.
- (2) 16. $5 \geq 16$ cm.
- (3) 17. $16 >$

V. Amount of webbing (connected tissue)

- (1) 18. Minute
- (2) 19. Little
- (3) 20. Moderate
- (4) 21. Large
- (5) 22. Whole leaf

VI. Shape of median vein lobe (lobed leaved spp.)

- (1) 23. Linear
- (2) 24. Obovate-elliptic
- (3) 25. Pandurate
- (4) 26. Hastate
- (5) 27. Irregularly wavy to crenulate
- (6) 28. ~~Blank~~ (predominantly irregularly crenulate but with some hastate)
- (7) 29. ~~Blank~~ Rhomboid.

VII. Shape of single leaf (single leaved spp.)

- (1) 30. Elliptic
- (2) 31. Orbicular
- (3) 32. Populiform
- (4) 33. Reniform
- (5) 34. Cordate
- (6) 35. Blank
- (7) 36. Blank

VIII. Texture of leaf lamina

- (1) 37. Membraneous
- (2) 38. Intermediate
- (3) 39. Coriaceous

IX. Insertion of petiole on lamina

- (1) 40. At base of lamina
- (2) 41. Peltate
- (3) X. Ratio of lobes 7/16
- (1) 42. $\checkmark \approx 1$ longer than vein (P longer than vein)
- (2) 43. $\checkmark \approx 2$ as long
- (3) 44. $\checkmark \approx 4$ as long
- (4) 45. $\checkmark \approx 16$ as long
- (5) 46. Is petiole minute?

XI. Stipule length

- (1) 47. 0-5
- (2) 48. 5-9
- (3) 49. 9-17
- (4) 50. 17 + -

XII. Stipule shape

- (1) 51. Linear
- (2) 52. lanceolate
- (3) 53. ovate
- (4) 54. laciniate

XIII. Stipule margins

- (1) 55. entire
- (2) 56. serrate

XIV. Abaxial surface of leaf -- cuticle modifications

- (1) 57. smooth (no modification)
- (2) tuberculate
- (3) almost farinose
- (4) "stubby"
- (5) farinose

XV Hairiness of leaf (examined away from the point of insertion of the petiole).

- (1) None
- (2) spars^sely distributed hair
- (3) dense hair, generally distributed.

INFLORESCENCE

XVI Hairiness of inflorescence

- (1) very tomentose
- (2) tomentose
- (3) pubescent
- (4) glabrous

XVII Bracts, length of

- (1) small, 1 - 5 mm.
- (2) medium 5.01 - 16 mm.
- (3) large 16.01 - 40 mm.

XVIII Bracts, shape of

- (1) linear
- (2) lanceolate
- (3) ovate

XIX Bract margin

- (1) entire
- (2) laciniate

XX Bracteoles, insertion of

- (1) at base of pedicel
- (2) half way up pedicel
- (3) immediately below disc

XXI Bracteole length

- (1) minute, 0 - 1 mm.
- (2) small, 1+ - 5 mm.
- (3) moderate, 5+ - 9 mm.
- (4) large, 9+ - 15 mm.

INFLORESCIENCE CHARACTERS (CONT.)

XXII Bracteole shape

- (1) linear
- (2) lanceolate
- (3) ovate

XXIII length of pedicel

- (1) small, 0 - 6
- (2) moderate, 6+ - 15
- (3) large, 15+ -

STAMINATE FLOWERS--TENTATIVE

XXIV Total length of tepal

- (1) small, less than 5mm.
- (2) medium, 5 - 15
- (3) large, greater than 15

XXV ration, length tepal lobe/length tepal

- (1) small lobes (= or less than 1/9
- (2) medium lobes, (1/6)
- 3) large lobes, = or greater than 1/2

XXVI Filament length, long set

- (1) short, less than 5 mm.
- (2) medium, 5 - 15
- (3) long, 15 +

XXVII Filament length, short set

- (1) short, less than or = to 2 mm.
- (2) medium, 2 - 9 mm.
- (3) long

XXVIII Ratio of character 27/26

- (1)
- (2)
- (3)

STAMINATE FLOWER CHARACTERS

XXIX Hairiness of filaments

- (1) present
- (2) absent or sparse

XXX Lobing of glad and base of staminate flower

- (1) non-lobed
- (2) moderately lobed
- (3) deeply lobed

XXXI Color of staminate tepal

- (1) red
- (2) yellow
- (3) green