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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.

Colors of parts

Ext Stem Color

312	5 GY 4/3	346	10 Y 6/7
313	2.5 YR 7/10	345	7.5 GY 8/7
314	5 YR 8/7	344	5 GY 5/6
315	2.5 Y 4/4	343a	10 GY 7/8
316	~~7.5 YR 8/8~~ Silver	343	2.5 GY 8/9
317	"	342	7.5 Y 6/7
318	"	384	Br
319	"	383	Med Br
320	10 YR 4/4	365	Silver
321	10 YR 4/4	366	"
322	5 Y 4/3	367	Br
323	2.5 YR 6/12	368	"
324	7.5 YR 4/5	369	"
325	Silver	341	10 Y 9/9
326	10 YR 6/8	340	7.5 GY 4/4
327	Silv.	339	7.5 Y 9/8
328	5 YR 4/5	338	7.5 GY 7/9
329	Silv.	337	2.5 GY 8/6
330	Br.	336	7.5 GY 9/4
331	Br	359	10 YR 6/8
332	Silv.	360	5 GY 6/8
333	Br	351	7.5 GY 7/9
349	2.5 GY 8/9	350	10 GY 7/8
347	5 GY 8/8	358	10 Y 6/7
348	5 GY 7/10	356	~~10 Y~~ 2.5 Y 4/4
		374	2.5 ~~G~~ Y 3/1

Ext Stem Color

~~387~~ ~~389~~

425 10R 7/9

452 2.5YR 4/7

463 5YR 6/11

Int. Stem Color

312	2.5 GY 9/8	346	- wh
313	2.5 Y 9/9	345	- "
314	7.5 Y 9/8	342	"
315	7.5 Y 9/8	3439	"
316	7.5 Y 9/8	343	"
317	7.5 Y 9/8	341	"
318	10 Y 9/9	384	2.5 GY 9/8
319	10 Y 9/9	382	2.5 GY 9/8
320	white		
321	10 Y 9/9	336	10 GY 8/7
322	10 Y 9/9	360	7.5 GY 9/4
323	2.5 Y 9/9	~~350~~	~~10 GY 7/8~~
324	2.5 Y 9/9	~~358~~	~~10 Y 6/7~~
325	Lt. yellow	~~356~~	~~2.5 Y 4/4~~
326	2.5 GY 9/8	374	2.5 GY 9/8
327	2.5 GY 9/8		
328	7.5 Y 9/8		
329	5 Y 9/9		
330	7.5 GY 9/8		
331	2.5 GY 9/8		
332	2.5 GY 9/8		
333	2.5 GY 9/8		
349	white		
347	"		
348	"		

Fruit Stem Color

375	2.5GY 9/8	438	7.5YR 9/4
379	2.5GY 9/8	439	7.5YR 9/4
380	2.5GY 9/8	452	7.5YR 9/4
382	2.5GY 9/8	453	2.5GY 9/8
387	7.5Y 9/8	454	2.5Y 9/9
389	2.5GY 9/8	455	2.5GY 9/8
390	7.5GY 9/4	456	2.5GY 9/8
392	7.5Y 9/8	457	7.5GY 9/4
393	2.5GY 9/8	459	7.5YR 9/4
415	7.5GY 9/4	461	2.5GY 9/8
416	7.5GY 8/7	462	2.5GY 9/8
417	2.5GY 9/8	463	7.5YR 9/4
419	7.5Y 9/8	464	5Y 9/9
420	2.5Y 9/9	465	7.5Y 9/8
421	2.5GY 9/8	466	2.5GY 9/8
423	7.5GY 9/4	469	
424	7.5YR 9/4		
425	2.5Y 9/9		
426	7.5Y 9/8		
427	10Y 9/9		
428	7.5Y 9/8		
429	7.5Y 9/8		
432	2.5Y 9/9		
433	7.5YR 9/4		
434	7.5YR 9/4		
436	7.5YR 9/4		

Bud Color

10 G	2.5 GY	5 GY	7.5 GY	10 GY
7/8	8/9 - 2	8/8 - 2	8/7 - 1	
	7/10 - 2	7/10 - 4	7/9 - 4	
	5/5 - 3	6/8 - 6	6/8 - 1	
	4/3 - 10	5/6 - 3	5/7 - 3	
	3/1 - 7	4/3 - 5	4/4 - 2	
		3/2 - 2	3/2 - 2	3/2 - 2

10 Y	7.5 Y	5 Y	2.5 Y
5/5 - 1			5/5 - 1
4/3 - 7	4/3 - 2		
3/1 - 3	3/1 - 3	3/1 - 3	

10 YR	5 YR	5 R	2.5 R
3/1 - 2	3/3 - 1	4/12 - 1	4/10 - 2
			3/7 - 1

5 RP	2.5 RP	7.5 P	2.5 P
3/9 - 1	3/8 - 1	6/8 - 1	3/8 - 2

Attributes

① 10 G	- 7.5 GY	② 10 G	- 7.5 GY	③ 5 GY	- 7.5 Y
8/6	9/4	5/8	5/7	8/8	9/8
6/8	6/8	3/5	3/2	6/8	6/7

④ 5 GY	- 7.5 Y	⑤ 5 Y	- 5 YR	⑥ 5	
5/6	5/5	5/6	5/8		
3/2	3/1	3/1	3/3		

Bud Color

312 7.5 P 6/8
313 2.5 GY 8/9
314 7.5 GY 7/9
315 7.5 GY 7/9
316 10 G 7/8
317 7.5 GY 7/9
318 7.5 GY 7/9
319 7.5 GY 6/8
320 5GY 7/10
321 7.5 GY 8/7
322 Green
323 2.5 GY 8/9
324 red-green
325 M green
326 10 Y 4/3
327 7.5 GY 5/7
328 2.5 R 3/7
329 7.5 Y 4/3
330 10 Y 4/3
331 7.5 GY 4/4
332 2.5 GY 4/5
333 2.5 GY 4/3
349 2.5 GY 3/1
347 5 GY 3/2
348 2.5 GY 4/3

346 ~~2.5 GY 6/8~~
345 10 YR 3/1
344 10 GY 3/2
343a 2.5 GY 4/3
343 7.5 ~~G~~ Y 3/1
342 5 YR 3/3
364 5 GY 4/3
383 7.5 GY 8/2
365 5 GY 4/3
366 7.5 GY 5/7
367 2.5 GY 7/10
368 2.5 GY 5/5
369 5 GY 4/3
370 ~~2.5 R 4~~ 10 Y 5/5
340 5 GY 3/2
339 5 Y 3/1
338 7.5 Y 3/1
339 5 GY 5/6
336 2.5 GY 3/1
359 5 RP 3/9
360 7.5 GY 4/4
351 10 Y 3/1
350 10 GY 3/2
358 10 Y 3/1
356 10 Y 4/3
374 2.5 GY 4/3

Bud Color

375	5GY 8/8
379	3GY 5/6
380	5GY 4/3
382	5GY 7/10
387	7.5GY 3/2
388	10Y 4/3
389	7.5Y 3/1
390	2.5GY 3/1
391	2.5GY 3/1
392	10YR 3/1
393	5Y 3/1
415	2.5GY 3/1
416	2.5GY 5/5
417	2.5R 4/10
419	2.5GY 4/3
420	5GY 4/3
421	2.5GY 4/3
422	5GY 8/8
423	10Y 4/3
424	5Y 3/1
425	2.5R 4/10
426	5R 4/12
427	2.5RP 3/8
428	2.5GY 7/10
429	5GY 6/8
430	5GY 5/6
432	2.5Y 5/5
433	5GY 6/8
434	7.5GY 5/7
436	5GY 7/10
438	2.5GY 4/3
439	2.5P 3/8
452	5GY 7/10
453	5GY 6/8
454	2.5GY 3/1
455	2.5GY 4/3
456	10Y 3/1
457	2.5P 3/8
458	2.5GY 4/3
459	2.5P 3/8
460	2.5GY 3/1
461	5GY 6/8
462	10Y 4/3
463	7.5Y 4/3
464	2.5GY 5/5
465	5GY 6/8
466	5GY 6/8
469	10Y 4/3

Petiole Color -

2.5 R	5R	7.5R
4/10 5/12	5/13	5/13
5/12 4/10	4/12	
4/10 3/7	4/12	
3/7 3/7	4/12	
6/11 3/7	3/7	
4/10 3/7	4/12	
4/10 4/10	4/12	
3/7 3/7	4/12	
3/7 3/7	4/12	
3/7 4/10	3/7	
3/7 4/10	6/11	
3/7 4/10		
4/10 4/10		
3/7 4/10		
3/7 4/10		
3/7 3/7		
4/10		
3/7		
3/7		
4/10		
3/7		
3/7		
3/7		
3/7		
4/10		

7.5Y
6/7

10Y
6/7
6/7
6/7
7/9
7/9
7/9

2.5R	5R
6/11 1	6/11-1
5/12 2	5/13-1
4/10 17	4/12-7
3/7 23	3/7-2

Attrib. 1

2.5R	5R	7.5R
6/11	6/11	
5/12	5/13	5/13

Attrib 2

2.5R	5R
4/10	4/12

= 1 Att. ?

Attrib 3

2.5R	5R
3/7	3/7

Attrib. 4

7.5Y	10Y
7/9	7/9
6/7	6/7

Attrib. 5

RG

Attrib 6

Green.

Petiole Color

375 7.5 Y 6/7
379 2.5 R 3/7
380 2.5 GY 6/8
382 2.5 R 4/10
387 5 R 3/7
388 2.5 GY 8/9
389 2.5 R 3/7
391 2.5 GY 7/10
392 2.5 R 3/7
415 2.5 R 3/7
416 10 Y 7/9
417 2.5 R 3/7
419 5 GY 7/10
420 5 GY 7/10
421 7.5 R 5/13
422 5 GY 7/10
423 2.5 GY 6/8
425 2.5 R 4/10
426 2.5 R 4/10
427 5 GY 7/10
428 2.5 R 5/12
429 2.5 R 4/10
M.sh. 430 2.5 GY 6/8
432 2.5 R 3/7
433 2.5 R 6/11
434 2.5 R 4/10
436 2.5 R 4/10
438 2.5 R 3/7
439 2.5 GY 6/8
452 5 R 6/11
453 2.5 GY 7/10
454 2.5 GY 8/9
455 2.5 GY 8/9
456 2.5 R 3/7
457 2.5 R 3/7
458 2.5 GY 8/9
459 2.5 R 3/7
460 2.5 R 3/7
461 2.5 GY 7/10
462 2.5 R 4/10
463 10 Y 7/9
464 2.5 R 3/7
465 2.5 R 3/7
469 2.5 R 3/7

attributes
for color

Potisle Color

312 5GY 6/8
313 2.5GY 8/9
314 5GY 7/10
315 2.5GY 8/9
316 2.5R 5/12
317 5R 5/13
318 5GY 8/8
319 5GY 8/8
320 5GY 7/10
321 7.5GY 7/9
322 Green
323 5R 4/12
324 2.5R 4/10
325 Lt Yellow Green
326 5GY 6/8
327 2.5GY 7/10
328 2.5R 3/7
329 R.G.
330 5R 4/12
331 2.5R 3/7
332 2.5GY 6/8
333 5GY 7/10
349 2.5R 3/7
347 10Y 6/7
348 5R 4/12

346 2.5R 3/7
345 10Y 6/7
344 2.5R 4/10
3439 2.5R 3/7
343 5R 3/7
384 2.5GY 8/9
383 2.5R 3/7
365 5R 4/12
366 2.5R 4/10
368 2.5R 4/10
369 5R 4/12
370 2.5R 4/10
340 2.5R 4/10
339 5R 4/12
338 2.5R 4/10
337 2.5R 4/10
336 2.5R 3/7
359 2.5R 4/10
360 2.5R 3/7
351 2.5R 3/7
358 5R 4/12
356 { 10Y 6/7
2.5R 4/10
374 10Y 7/9

10R 7/9

2.5YR 8/6
Yellow Pinks
to Lt Orange

Dark Reddish Orange
to Strong Brown

10R
4/9
3/4
2.5YR
5/9
5YR
5/8
4/5

Strong orange yellow
to Strong Yellow

7.5YR
8/6
6/9
10YR
6/8
2.5Y
7/10

2.5RP
8/5 Pinks
to
2.5R Lt Red
9/3
8/5
7/8
5R
8/6
7.5R
8/6

Root Est Col.

add one more ~~Light~~
from 10R 3/4 to 10YR 3/7
(moderate reddish brown to brownish
grey)
to correspond to present (or
earlier) designations of
"brown" to dark brown".

Root Ext. Col.		2.5RP 8/5	
325 – Brown		2.5R	2.5YR
349	2.5R 9/3	9/3	8/6
347	2.5R 7/8	9/3	8/6
348	5R 8/6	8/5	5/9
346	2.5R 8/5	8/5	5YR
345	2.5R 8/5	7/8	5/8
344	2.5R 7/8	7/8	4/5
343	2.5YR 8/6	5R	7.5YR
341	2.5Y 7/10	8/6	8/8
340	10YR 6/8	8/6	6/9
339	7.5YR 8/8	7.5R	6/9
338	7.5R 8/6	8/6	10YR
337	5R 8/6	10R	6/8
336	2.5R 9/3	7/9	
359	5YR 5/8	4/9	2.5Y
360	7.5YR 6/9	3/4	7/10
351	10R 7/9	3/4	
350	2.5YR 8/6	~~2.5RP~~	
358	7.5YR 6/9	~~8/5~~	
452	2.5RP 8/5		
462	2.5YR 5/9		
463	10R 3/4		
464	5YR 4/5		
465	10R 4/9		
469	10R 3/4		

Root Cortex

2.5 Y	5 Y	7.5 Y
9/9	8/12	9/8
9/9	8/12	9/8
9/9	9/9	9/8
		9/8
		9/8
		9/8
		9/8

Y

YR

2.5 YR	5 YR	7.5 YR
9/3	8/7	9/4
		9/4
		9/4

W

Root Color

313	2.5Y 9/9
314	7.5Y 9/8
323	5Y 8/12
324	7.5Y 9/8
325	7.5YR 9/4
327 ~~326~~	2.5Y 9/9
328	7.5Y 9/8
329	5Y 8/12
331	7.5Y 9/8
360	7.5Y 9/8
417	2.5YR 9/3
425	5Y 9/9
429	7.5Y 9/8
433	2.5Y 9/9
454	5YR 8/7
461	7.5YR 9/4
463	7.5YR 9/4
466	7.5Y 9/8

5 Y
9/9

7.5 Y
9/8

7.5 YR
9/4
8/8
9/4

10 P
6/9

2.5 RP
8/5
8/5

Root subepidermis

2.5 R
8/5 7/8
8/5 6/11
7/8 9/3
7/8 9/3
8/5

5 R

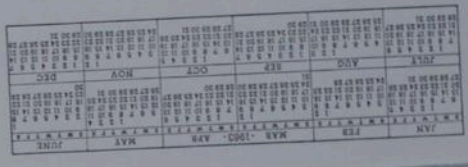
5 RP
5/10
7/9
6/10
5/10
6/10

W

Color Root Subfield.

323 5Y 9/9
327 7.5YR 9/4
328 7.5YR 8/8
349 wh
347 2.5 R 8/5
348 2.5 R 8/5
346 2.5 R 7/8
345 2.5 R 7/8
344 2.5 R 8/5
359 2.5 R 7/8
387 2.5 RG 7/1
432 2.5 R 9/3
433 2.5 R 9/3
436 7.5YR 9/4
452 10 P 6/9
453 2.5 RP 8/5
456 2.5 RP 8/5
457 5 RP 5/10
458 5 R 7/9
461 7.5 Y 9/8
464 5 RP 6/10
465 5 RP 5/10
469 5 RP 6/10

Pollen
Measurements



Box 3
Slide #
56 Weintraube & Rolla 122 - M. angustiloba
12 unevenly stained, some none
sculpt ± = 60, 62 - some slight, some full
a number of cells irregularly shaped.
54 White 542 - M ——
14, 12, 13, 14 staining ibid 56.
sculpt = 56, 60
52 Thackery 487 M angustiloba
13, 12
Sculpt ibid. 54. Staining irregular
Shape irregular
50 - Rose 11190 - M. angustiloba
13, 14 None stained
Sculpt - More esculenta-like - regular pattern
Shape regularly rounded
48 - McVaugh 15531 - M. angustiloba -
2 Distinct pollen sizes on this slide
Vol. of #1 {4x that of #2} —— 1 - 14, 13, 15 } neither stained uniformly -
2 - 11, 12, 10 } but some of ea. with light stain.
Sculpturing of the 2 more or less the same, though the smaller is more regularly sculptured
46 Pringle 11318 M. angustiloba None stained.
14, 15, 13
Sculpturing ibid 50

Box 3
slide #

41 Perkins + Hall 3565 - M. angustiloba a few very lightly stained
13, 14
sculpt. ibid 50
Some (3-4) v. small grains. (Diam 4-5 div)

42 Schott III #8 - Jan. manihot v. angus.
15, 13, 14 v. lightly stained most not stained
cells irregularly shaded.
sculpt. ibid 47

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40 and 39 Guedes (sp?) M.? "manivo de vaca de" Brazil
18, 17, 21, 19 not grains doubly stained
Sculpt. - in general, similar to other spp., but the rosette pattern is larger, with the individual parts of the rosette more pronouncedly triangular, and each with more distance between them -

36 - Lisboa 24 32 - M. Ceara.
and 37. 17, 16
Sculpt. = ± the same pattern as others - nothing particularly distinguishing in sculpt.

N.B. Ea. grain has one (occasionally 2-3-4) doubly staining spots in the protoplasm. Some of the grains are stained only in this spot, while others have the dark spot, then are also quite doubly stained in all parts of the cell.

Box 3

Slide II

36 - Ule 9546 - M. sp. Rio Acre - all stained, lightly to dark.
17, 16, 18
Sculpt v. rough - same gen'l pattern, but individual parts of rosette larger, deeper (or higher) than individual parts widely separated.
Seems to be a larger no. of pores in these grains.

34 Ule 7645 - M. sp.? Rio Branco -
16, 15 v. light to no staining (some dark)
Sculpt ± = to generic pattern.
Some indication of the same dark area as in 36, but not stained as deeply nor to the slot ended in all grains.
In the darkly stained grains - no indens of "slot"

32. Huber 1287 - M. — all dark stained
17, 13, 16
Sculpt ± = generic pattern, but individual parts of rosette much larger than others. On 2 or 3 of the grains the "slot" of slides 38 + 37, is seen, but not so definitely.

Pollen diam. (in div. of oc. micrometer, LP)

Box 3
Slide #

72 Kenoyer C142 (M. angustifolia) no cells stained.
14, 15

70 Hinton 4349 - M. angustifolia -
13, 14, 15 nearly all stained.

68 Hinton 4467 - M. angustifolia all stained
12, 13, 15, 14 -

66 Hinton 4220 - M. angustifolia None stained. ag? slide
13, 15
Third slide, # 64 has some stained cells, but also cells of irregular shape.
Slide 64 (Hinton 4220) has surface sculpturing differing in pattern from the 2 previous (#s 65, 66
Slide 63 ditto # 64

62 Zingg 10 - (M. angustifolia) (some not stained)
12, 11, cells all lightly stained generally small diam.
Sculpture pattern as in 64.

60 - White 3013 (M. angustifolia)
14, 12, 13 - v. lightly stained, or mostly not stained

Sculpt. = 62

Box 3
Slide II

Diameters measured only by Div. of ocular micrometer in LP - not converted to microns.

Notes on pollen slides

93, 94 X. M. asperifolia - Purpus 8484 - Mex -
Poller damaged - check specimen.

91, 92 ☆ M. paniculata Nelson 2852
Diam. LP. 13 div., 12, 12,
Well stained.

90 - ~~#~~ Maturda 16375.
Diam. LP. 15 div. (uniformly)
Well stained.

88 - Hinton 6264
Diam. 12. Div. Stained

86 - Hinton 6468
Diam 12 ± Stained

84 - King 1213
Diam 15 — some very slightly ~~stained~~, stained

82 - Hinton 13972 -
Diam. 12 - Irreg. shapes -
Fairly well stained.

80 - Hinton 1207 -
Diam 16, 15 - Well stained but many not irreg shape -

78 Hinton 4374
Diam. 12 - All grains well stained.

76 Rose 1611
Diam 15 . all stained

74 Hinton 4555 most stained, some sl. stained
Diam 12 - 14

N.B.

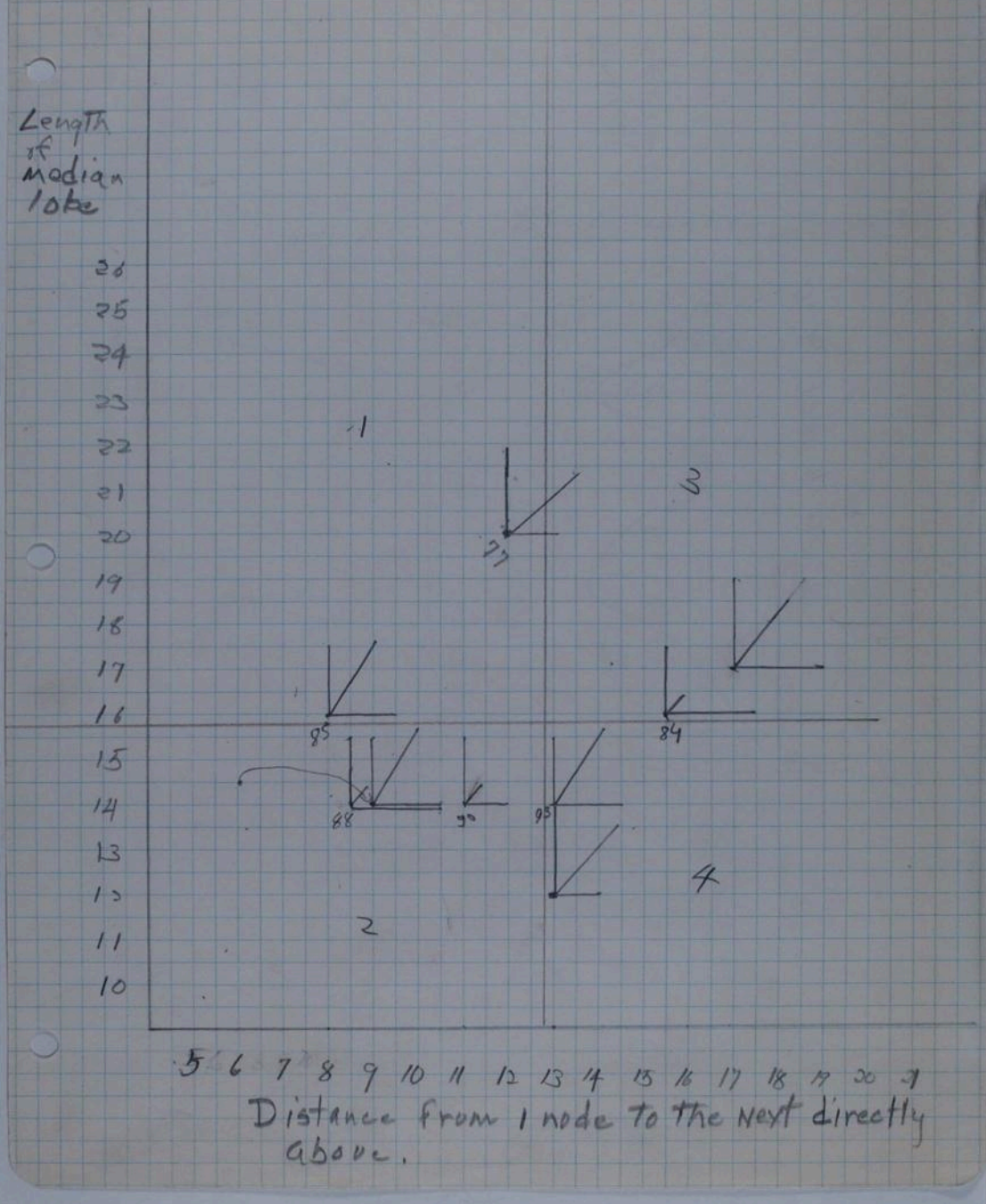
Rogers 421 (Bolivia) M. esculenta is steril - no pollen in anthers.

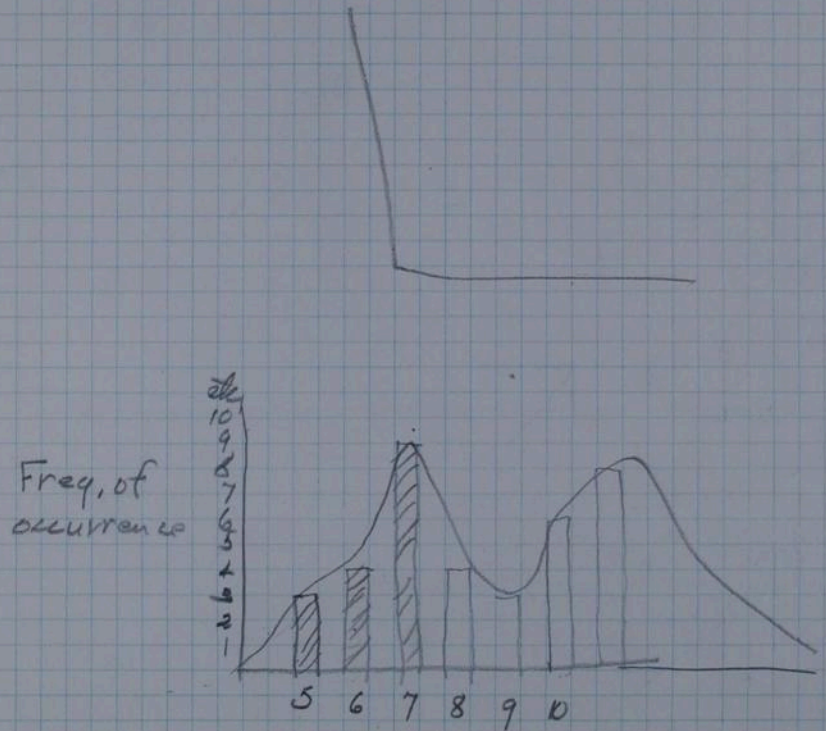
D. J. Rogers, 19_

Box 3

slide #

30 - Huber 1275 - N. utilissima - most dark-faced
19, 17, 18, 16, 17, 19
20
Sculpt. generic portion, individual projections pronounced





5 cm 10 cm

85 1
3
4
3

12.0

11 = Index value for specimen # 85

77 1
4
4
2

11

25 cm 30 cm

84 3
3
1
4

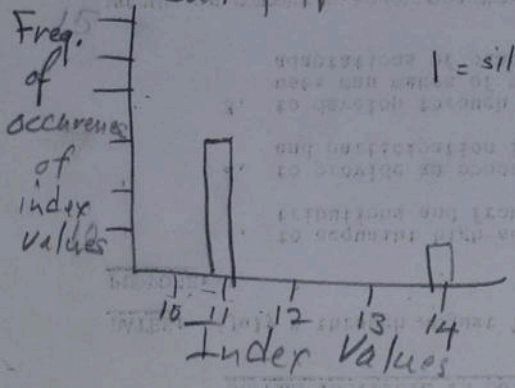
11

93 4
3
4
3

14

Bar graph

1 = silver



Color of stem

	value
5mm = silver	1
1cm = inter. S-B	2
1.5cm = B	3
2cm = Y	4

| = color of stem

Color of young foliage (Budcolor)

	value
5mm = RB.	1
1 cm = RG	2
1.5cm = BG	3
2cm = G	4

No. of lobes/leaf

	value
5 mm = 1 = 5 lobes/leaf	1
1 cm = 1 = 7 " "	2
1.5cm = 8 " "	3
2cm = 9 " "	4

Leaf lobe shape

5mm = obovate	1
1 cm = pandurate	2
1.5cm = linear	3

Surface of root

5 mm = smooth	1
1 cm = rough	2

#1 color of stem (ext.)

#2 color of stem (int.)

#3 Bud color (color of young foliage)

#4 Petiole color

#5 leaf lobe shape

#6 No. of lobes/leaf

#7 Surface of root

Gray Herb.

Mex-

M. carthagin - Hammer 1142, Ortega 6.345. (under M. chloristica)

" candata - Pringle 8687, Rose 3497

" colimensis - Hinton 10376

M. rhomboidea - Specimen of Sundell - Sundell #7473, labeled as M. carthaginensis, filed under rhomboidea.

Types - Mex -

M. candata - Palmer 201.

M. chloristica - Nelson & Goldman 7401.

" colimensis - Jones 6140

" intermedia - Pringle 13938

" nicholsii - Gentry 2372

" mexicana - Goldsmith 120

" pringlei - Pringle 3538 (see 3826 garden type)

" rubricaulis - E. Palmer 224.

" South Am.

M. dulcis var diffusa - H. H. Smith 365

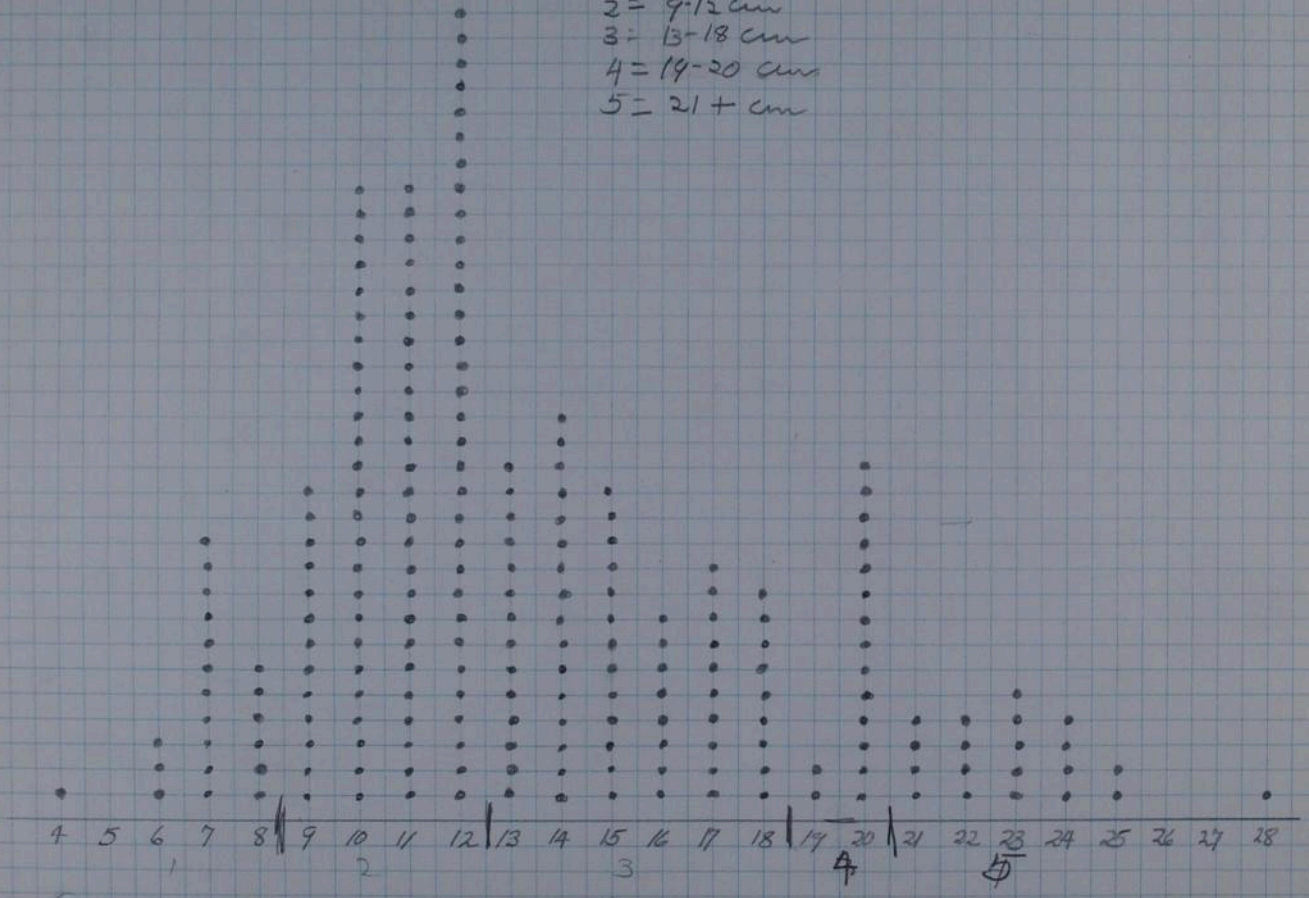
M. macrantha - Hassler 5132

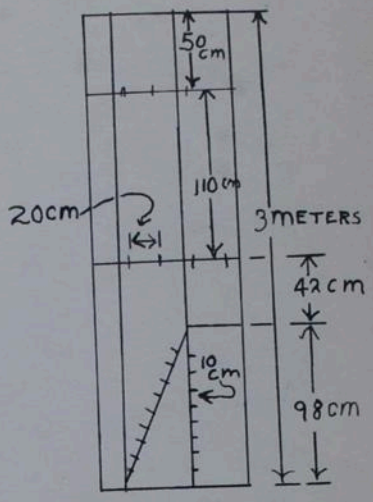
Herb. has no. of Hassler spec. labelled, apparently with Pax's varietal names, of M. utilissima.

Gray Herb-
Typer-F. Am.
M. acutissima = acuminatissima Gardner 3446.
this not a good relative of M. utilissima!
M. crotalariaeformis - scarp, collected
by St. Hilaire #2550
M. heterotrichandra M. Arg. - Riedel Brasilia
M. pseudoheterophylla P+H. - Hassler 5649
M. Guardiana var lobata Chod + Hassler - Hassler 5413.

Stony Length Categories (Internode length from leaf scar to next directly above)

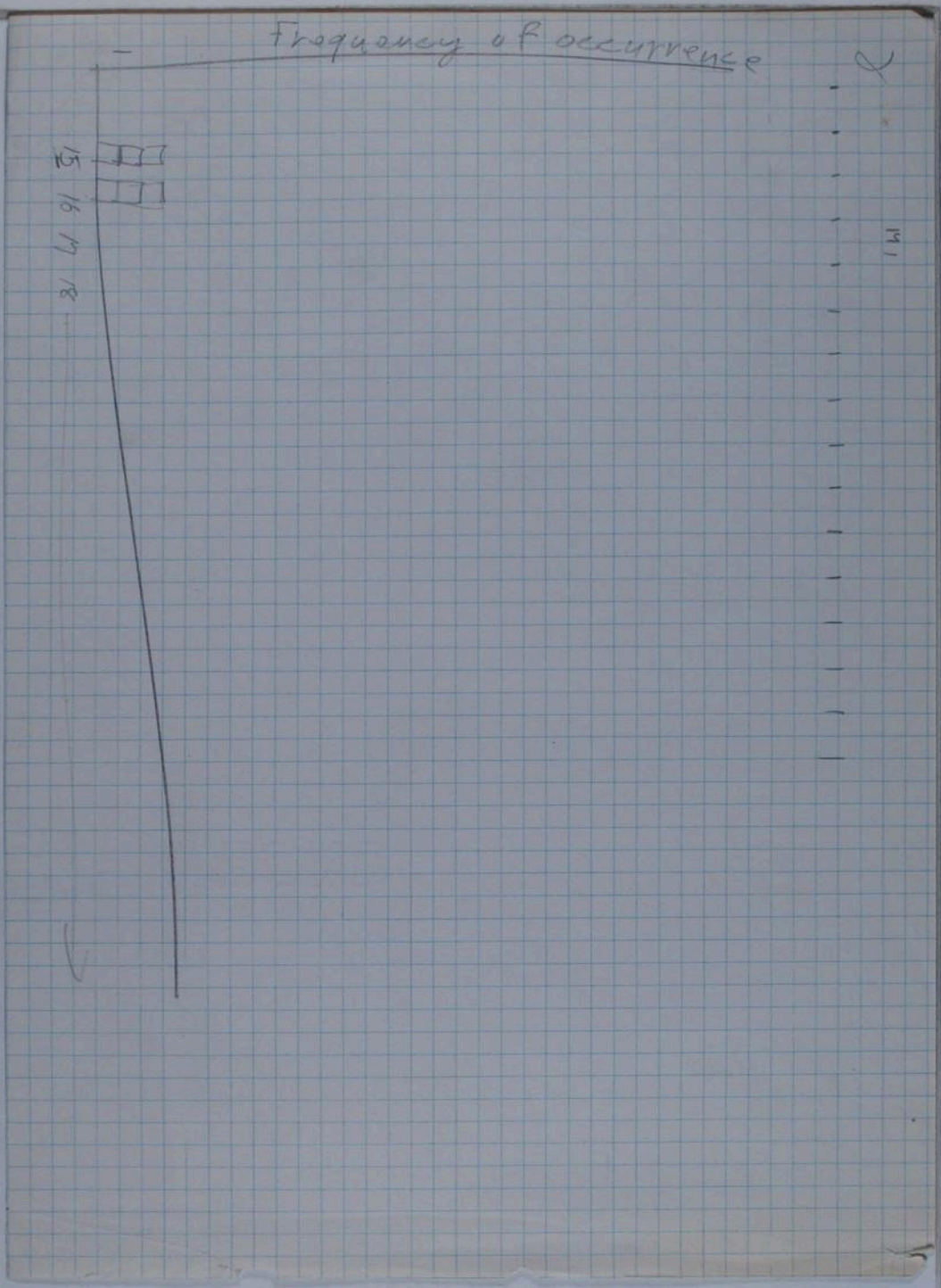
1 = 4-8 cm
2 = 9-12 cm
3 = 13-18 cm
4 = 19-20 cm
5 = 21+ cm

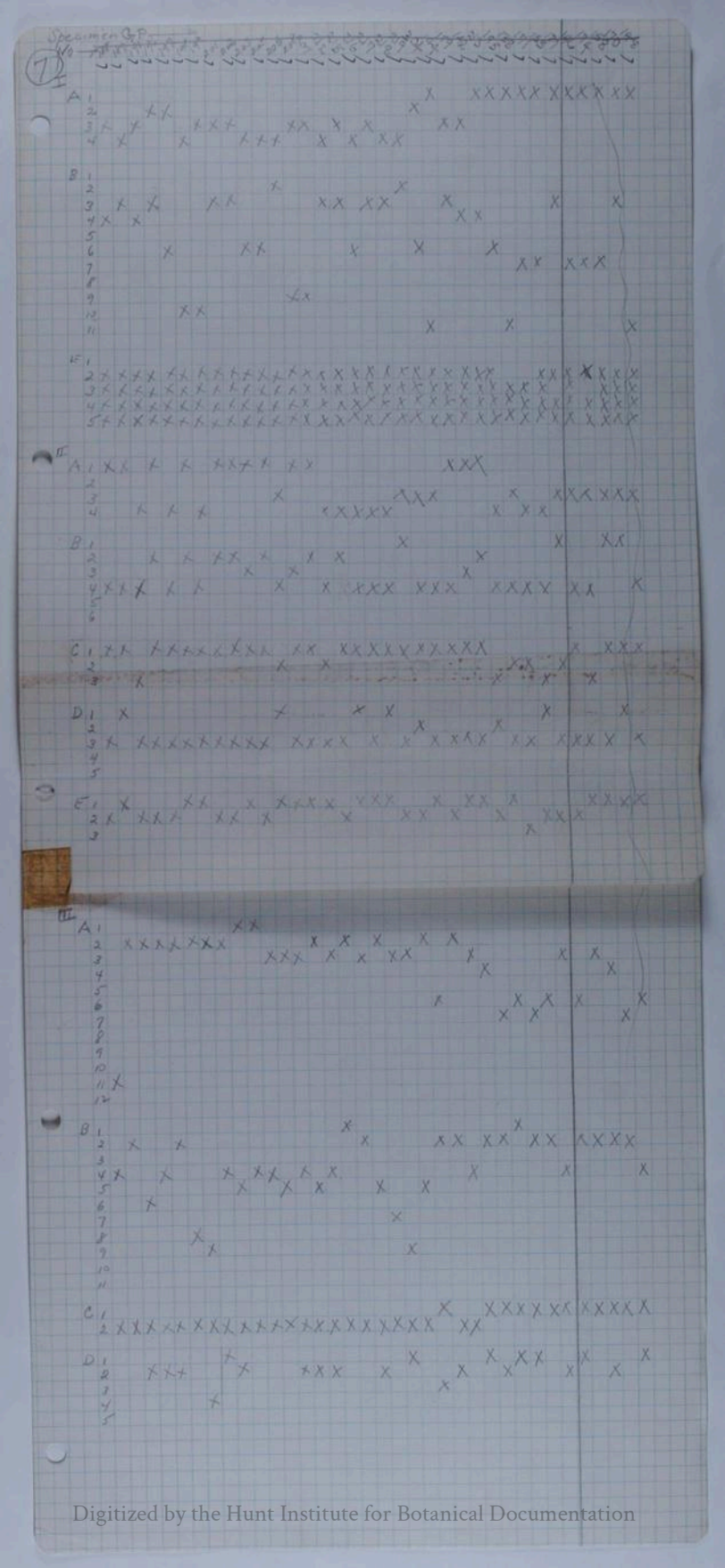


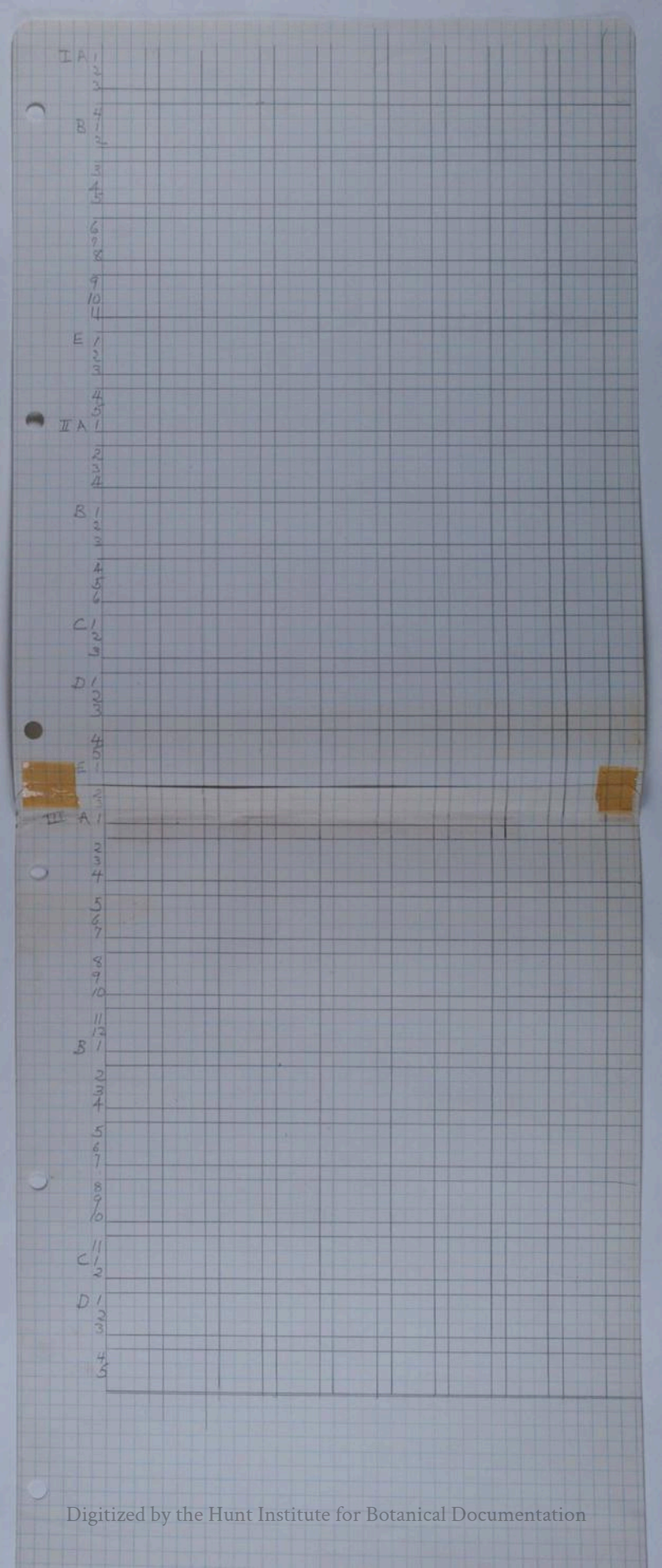


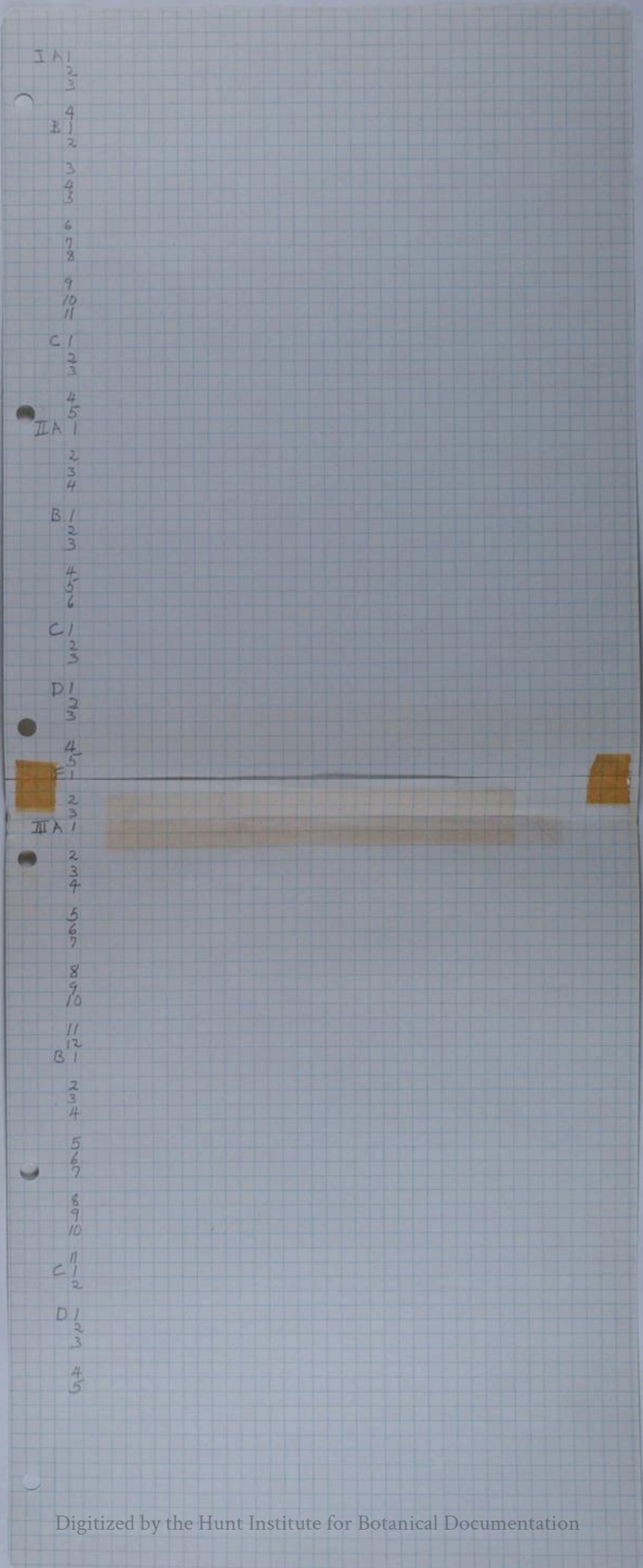
BOARD DIMENSIONS

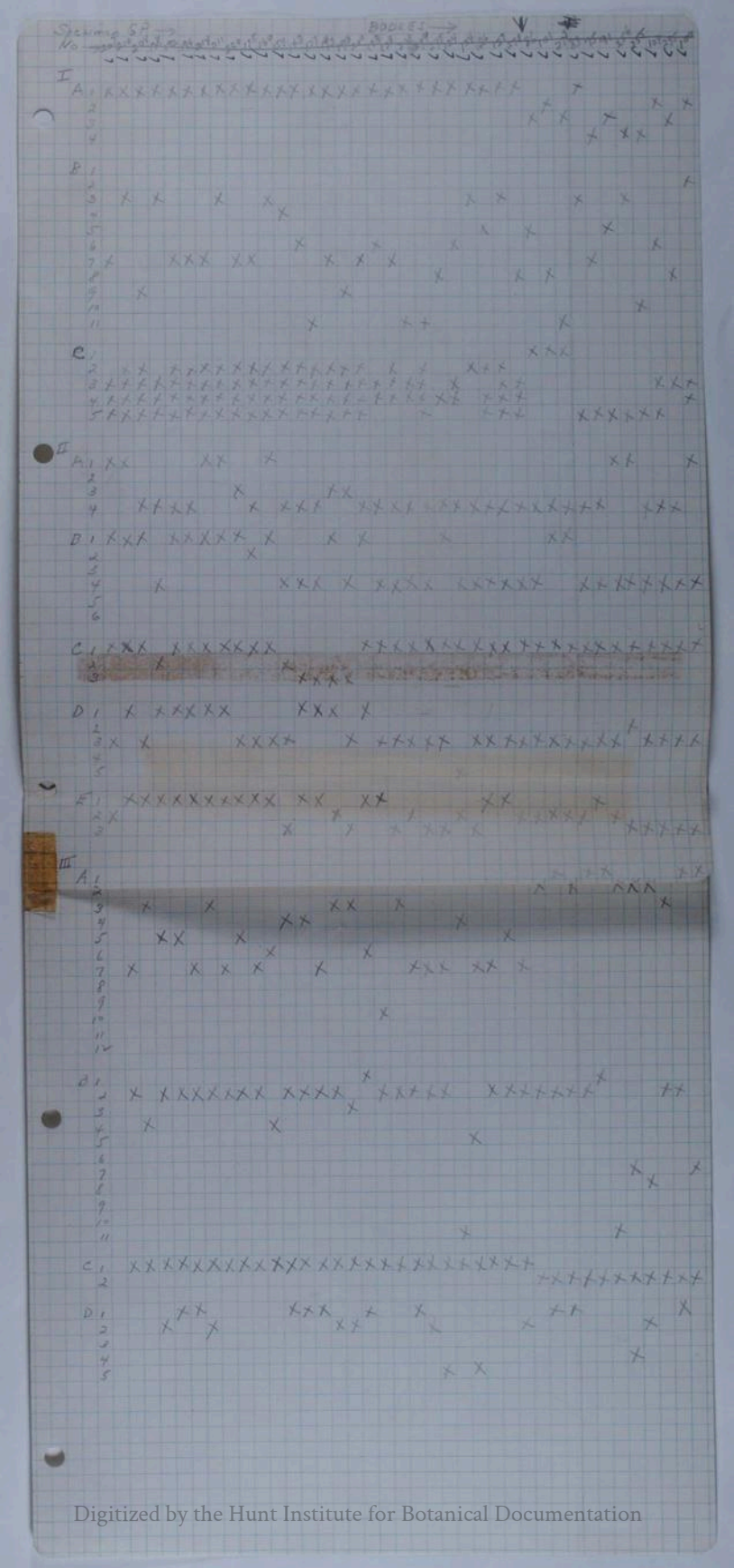
140
110
250











I Stem characters

A. Color of stem - External
1 Silver
2 Intermediate silver brown
3 Brown
4 Yellow

B Internal stem color
1 DY
2 Y
3 LY
4 YG
5 C
6 LC
7 W
8 LGY
9 LG
10 VY
11 GW

C Attitude of plant
1 Erect
2 Inclined
3 Decumbent

D Height of plant at Bodles/or Grove Place
1 Low
2 medium
3 Tall

Other stem characters to be Considered
F Number of leaf scars/10 cm.
G Spacing " "
H Shape of " "

E Branching of plant
1 2 Base
2 3 1/4
3 4 1/2
4 5 3/4
5 6 Top
} indicates place of branching + no. of places of branching

II Leaf characters

A. Color of bud + young foliage
1 RB 5 B
2 RG 6-G-R
3 BG
4 G

B. Petiole color
1 R 6-B-R
2 RG
3 GR
4 G
5 LG

C. Stipule prominence
1 = 0
2 = intermediate
3 = Well developed

Others to be Considered
4. Shape of lobes
5. No. of lobes
6. Degree of glabrous-glaucous

III Root characters

A Color - External

1 DB
2 B
3 LB
4 PB
5 T
6 PT
7 LT
8 PW
9 LP
10 P
11 RB

B Internal - cortex

1 VW
2 W
3 VLC
4 LC
5 C
6 CY
7 LY
8 Y
9 PY - Pinkish yellow
10 PW
11 CW

C Surface of root

1 Smooth
2 Sl rough
3 R
4 V. rough

Other root characters to be considered

D. Shape
E. Number
F. Position

G Lower fruit + seed characters:

VARIEDADES DE YUCA

No.	3028	ELMO STICK	BODLES EXP. STA/, Old Harbor, Jamaica
	3029	FOWL FAT	"
	3030	YELLOW HEART	"
	3031	YELLOW STICK	"
	3032	AGRICULTURAL WHITE STICK	BODLES
	3033	NEW GREEN BORORIDGE	"
	3034	NEW STICK	"
	3035	LAURA	"
	3036	YELLOW SAUNDERS	"
	3037	BLUE BUD, PORTLAND NO/ 5	"
	3038	INGRAM	"
	3039	BLACK STICK BUCK-BUCK	"
	3040	EYE WATER	"
	3041	RICHMOND STICK	"
	3042	AGRICULTURAL, PORTLAND	"
	3043	JOHN HENRY	"
	3044	WHITE MARGARET	"
	3045	SUGAR LOAF	"
	3046	Mullings	"
	3047	BIG YARD, MARLIE HILL	"
	3048	WHITE JOE	"
	3049	SMALLING, SANTA CRUZ	"
	3050	WHITE CUBAN	"
	3051	RODNEY	"
	3052	WHITE STICK, PORTLAND NO. 1	"
	3053	BROWN STICK	"
	3054	BOBBY HANSON	"
	3055	CATCH THIEF	"
	3056	BULLET TREE	"
	3057	WESTMORELAND	"
	3058	BLUE BUD, ROCK HILL	"
	3060	BUNCH OF KEYS	"
	2069	VALENCA	Ministerio de Agricultura, Cuba
	2070	"SRA/ ESTA EN LA MESA"	" " " "
	2071	MANGI	" " " "
	2072	BRASIL R.E. 144731	" " " "
		CAMOTA	Institute, Turrialba
		CREMA	"
		SIETE MESES	"
		CAMOTA BLANCA No. 1	"
		No. 1	"
		HIGUERILLA	"
		ZOPILOTA	"
		CAMOTA BLANCA No. 2	"
		CAMOTA CORRIENTE	"
		VAINILLA	"
	3130	YUCA 214417	USDA (Plant Int. & Expl.) Peru?
	3131	YUCA 214416	" "
	3132	YUCA 214419	" "

invernadero

#

Hay una "Balenca" + "No. 2", Amarilla Corriente", "Rosada"

Varieties of Manihot utilissima at Turrialba

2766	Cubana Blanca	El Cacao, Alajuela
2767	Flor de lis/ Brazil	" " "
2768	Brasil	" " "
2769	Chilena	" " "
2780	Blanco	San Rafael del Sur, Nicaragua
2781	Colorado	" " " "
2782	Colorado (2)	" " " "
2783	Cubana	Masaya, Nicaragua
2784	Manihot sp.?	Montelimar, "
2785	(1)	Las Mercedes, Managua, Nicaragua
2786	(2)	" "
2787	(3)	" "
2788	El Cacao 1	Alajuela?
2789	" " 2	"
2886	Var. "EPC No. 3 tipo dulce	Min. de Agricultura y Ganaderia, Centro Nacional de Agronomia, Sta. Tecla., El Salvador
2887	" Nativa	" " "
2888	" Bayuna	" " "
2889	" Amarilla	" " "

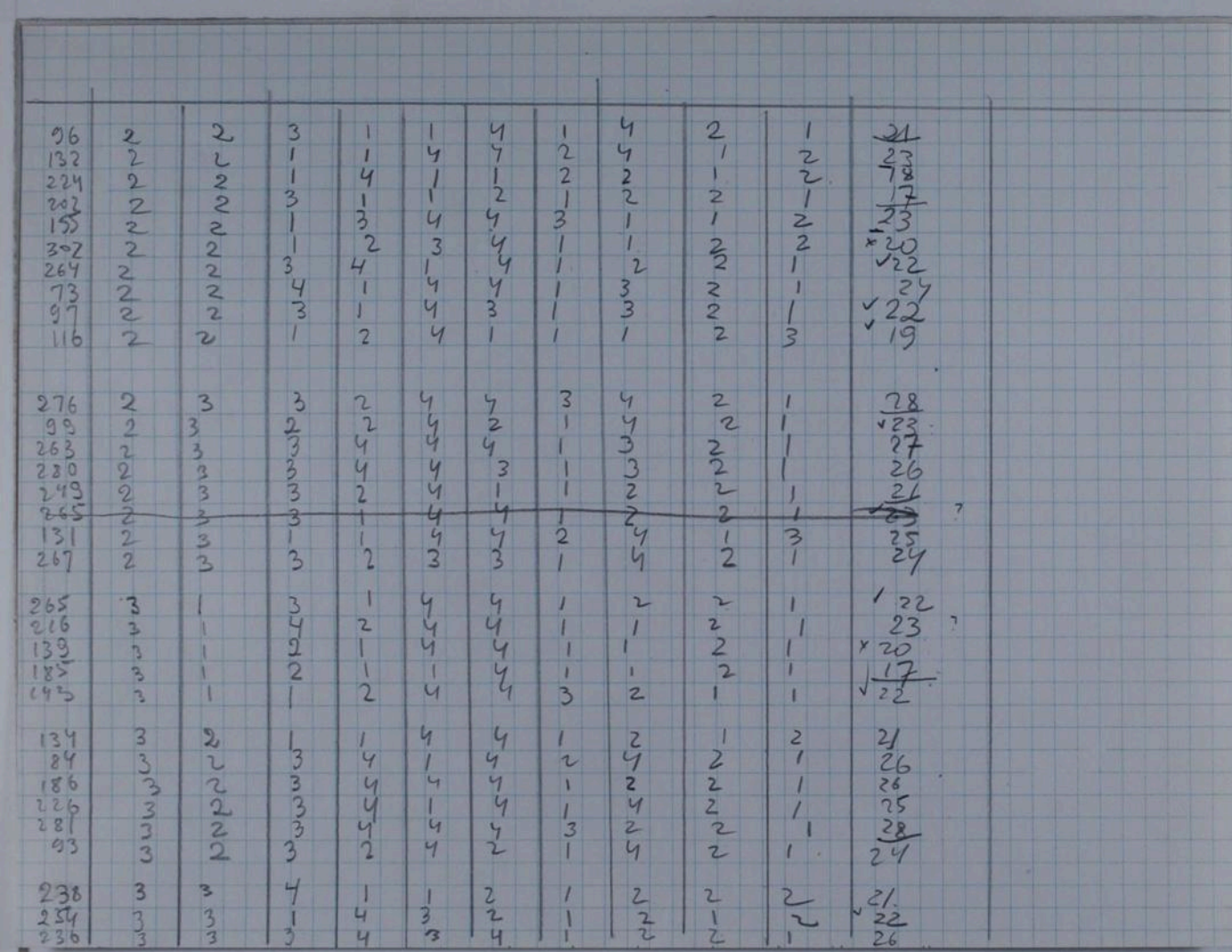
No	Col. of stem	Col. of cut	Bud color	Petiole	Leaf lobe shape	No. of lobes	Surface of root	Root color of root	T
73	yellow-2	l.y.-0,5	green-2	green-2	obov. 0,5	8-1,5	rough-1		25
74	wh. c. 1	W-2	g-2	g-2	obov.-0,5	7-1	rough-1	b-0,5	25
75	Y-2	white-1,5	g-2	g-2	obov. 0,5	7-1	rough-1	b-0,5	27
77	Y-2	Y-0,5	g-2	g-2	obov.-0,5	7-1	rough-1	b-0,5	24
78	Y-2	DY-0,5	g-2	g-2	obov.-0,5	9-2	rough-1	b-0,5	22
80	Y-2	LY-0,5	g-2	g-2	obov.-0,5	7-1	rough-1	b-0,5	25
81	Y-2	LY-0,5	g-2	g-2	obov-0,5	8-2	rough-1	b-0,5	26
82	B-1,5	LY-0,5	g-2	gR-1,5	obov.-0,5	8-1,5	rough-1	b-0,5	23
84	B-1,5	SK-2	RB-0,5	g-2	pond-1	9-2	rough-1	b-0,5	29
85	B-1,5	CH-1	Bg-1,5	SR-1,5	obov-0,5	8-1,5	rough-1	b-0,5	22
88	B-1,5	C-1	RB-0,5	g-2	obov-1	9-2	rough-1	rb-2	24
90	B-1,5	LY-0,5	RB-0,5	g-2	pond-1	7-1	rough-1	b-0,5	21
91	B-1,5	C-1	RB-0,5	g-2	obov-0,5	7-1	rough-1	brown-0,5	21
93	B-1,5	C-1	g-2	Svp.-1	obov 0,5	9-2	rough-1	brown-0,5	24
95	B-1,5	Y-0,5	g-2	g-2	obov.-0,5	9-2	rough-1	brown,0,5	25
96	B-1,5	LY-0,5	RB 0,5	g-2	obov-0,5	9-2	rough-1	brown-0,5	22
97	B-1,5	LY-0,5	g-2	SR-1,5	obov-0,5	8-1,5	rough-1	brown,0,5	23
98	S-0,5	LY-0,5	g-2	g-2	obov-0,5	7-1	rough-1	brown-0,5	18
99	SB-1	LC-1	g-2	Svp-1	obov-0,5	9-2	rough-1	brown-0,5	22
100	SB-1	Y-0,5	RB-0,5	g-2	obov-0,5	7-1	rough-1	b-0,5	22
101	SB-1	LSY-2	g-2	R-0,5	obov.-0,5	7-1	rough-1	b-0,5	22
102	Y-2	LY-0,5	g-2	g-2	obov-0,5	7-1	rough-1	b-0,5	21
103	SB-1	LY-0,5	g-2	R-0,5	obov.-0,5	7-1	rough-1	b-0,5	19
105	SB-1	LY-0,5	g-2	g-2	obov.-0,5	9-2	rough-1	b-0,5	24
106	SB-1	LY-0,5	g-2	SR-1,5	obov.-0,5	7-1	rough-1	b-0,5	17
107	SB-1	LY-0,5	g-2	g-2	obov-0,5	7-1	rough-1	b-0,5	19
108	SB-1	Y-0,5	g-2	g-2	obov-0,5	9-2	rough-1	b-0,5	24
109	SB-1	LY-0,5	RB-0,5	g-2	obov-0,5	7-1	rough-1	b-0,5	20
110	S-0,5	LY-0,5	g-2	SR-1,5	pond-1	9-2	rough-1	b-0,5	23
111	S-0,5	C-1	Bg-1,5	Svp-1	pond-1	8-1,5	smooth-0,5	b-0,5	17
112	S-0,5	LC-1	g-2	g-2	pond-1	8-1,5	smooth-0,5	pink-1,5	21
113	S-0,5	W-1,5	g-2	g-2	obov-0,5	8-1,5	rough-1	tan-1,0	26
114	S-0,5	C-1	g-2	g-2	pond-1	9-2	smooth-0,5	tan-1,0	25
115	S-0,5	C-1	g-2	RS-1	obov-0,5	7-1	rough-1	b-0,5	20
116	S-0,5	LC-1	g-2	R-0,5	obov-0,5	5-0,5	rough-1	pink-1,5	20
117	S-0,5	LY-0,5	g-2	SR-1,5	obov-0,5	7-1	smooth-0,5	pink-1,5	18
120	S-0,5	W-1,5	g-2	R-0,5	obov-0,5	7-1	rough-1	tan-1,0	18

No	Color of stem cut	Color of stem cut	Bud col	Petiole col.	Leaf lob shape	No of lobes	Surface of root	Cut color of root			Π
122	S-0,5	eY-0,5	G-2	R-0,5	obov.-0,5	7-1	smooth-0,5	tan-1	✓		21
123	S-0,5	lC-1	G-2	G-2	obov-0,5	7-1	smooth-0,5	pink-1,5	✓		23
124	S-0,5	lC 1	G-2	G-2	obov-0,5	9-2	sm-0,5	br-0,5			23
125	S-0,5	W-1,5	BG-1,5	R-0,5	obov-0,5	5-0,5	rough-1	tan-1	✓		17
126	S-0,5	C-1	G-2	G-2	obov-0,5	7-1	sm-0,5	tan-1	✓		21
127	S-0,5	eY-0,5	G-2	G-2	obov-0,5	7-1	sm-0,5	tan-1	✓		18
129	S-0,5	C-1	G-2	R-0,5	obov-0,5	9-2	sm 0,5	B-0,5	✓		20
130	S-0,5	W-1,5	G-2	G-2	pond-1	7-1	rough-1	pink-1,5	✓		26
131	S-0,5	eY-0,5	G-2	G-2	pond-1	9-2	sm-0,5	pink 1,5	✓		24
132	S-0,5	Y 0,5	G-2	G-2	pond-1	9-2	sm. 0,5	tan-1	✓		24
133	S-0,5	GW-2	B-1,5	G-2	obov 0,5	7-1	sm 0,5	tan-1	✓		24
134	S-0,5	eY-0,5	G-2	G-2	obov-0,5	7-1	sm-0,5	tan-1	✓		24
137	S-0,5	GW-2	G-2	G-2	lin-1,5(?)	5-0,5	sm 0,5	l tan-1		×	29
138	S-0,5	GW-2	BG-1,5	G-2	lin-1,5	7-1	sm-0,5	pink vit. 1,5			29
139	SB-1	eY-0,5	S-2	S-2	obov-0,5	5-0,5	rough-1	B-0,5			25
140	Y-2	eC-1	RB-0,5	R-0,5	obov-0,5	7-1	rough-1	B-0,5			23
141	Y-2	eC-1	RB-0,5	RG-1	obov-0,5	5-1	rough-1	B-0,5			21
143	S-0,5	eC-1	G-2	G-2	lin-1,5(?)	5-1	sm-0,5	B-0,5			27
144	S-0,5	GW-2	BG-1,5	G-2	obov-0,5	7-1	sm-0,5	tan-1			24
145	B-1,5	eG-2	G-2	G-2	obov-0,5	7-1	rough-1	br-0,5			29
146	S-0,5	W-1,5	BG-1,5	G-2	obov-0,5	7-1	sm-0,5	tan-1			19
148	S-0,5	WG-2	BG-1,5	G-2	obov-0,5	7-1	sm 0,5	tan-1			24
151	SB-1	eY-0,5	S-2	S-2	obov-0,5	7-1	rough-1	br-0,5			22
152	SB-1	eY-0,5	G-2	R-0,5	obov-0,5	7-1	rough-1	br-0,5			19
154	S-0,5	YG-1	G-2	G-2	lin-1,5	7-1	sm-0,5	br-0,5			20
155	S-0,5	W-1,5	G-2	G-2	lin-1,5	5-0,5	sm-0,5	tan-1			24
156	B-1,5	eG-2	G-2	RG-1	obov-0,5	7-1	rough-1	br-0,5			25
157	B-1,5	eY-0,5	S-2	RG-1	obov-0,5	7-1	rough-1	br-0,5			20
159	SB-1	eW-1	BG-1,5	RG-1	lin-1,5	7-1	rough-1	br-0,5			22
161	B-1,5	eC-1	G-2	G-2	obov 0,5	7-1	rough-1	br-0,5			26
163	SB-1	W-1,5	G-2	G-2	obov-0,5	7-1	rough-1	br-0,5			24
164	B-1,5	eYG-2	G-2	G-2	obov-0,5	7-1	rough-1	br-0,5			26
165	SB-1	W-1,5	RB-0,5	RG-1	pond-1	5-0,5	rough-1	br-0,5			19
166	SB-1	eY-0,5	SR-1	R-0,5	obov-0,5	7-1	rough-1	br-0,5			19
170	S-0,5	eY-0,5	BG-1,5	R-0,5	obov-0,5	5-0,5	sm-0,5	tan-1			17
172	S-0,5	C-1	G-2	G-2	obov-0,5	7-1	rough-1	tan-1			23
173	B-1,5	eY-0,5	G-2	G-2	obov-0,5	7-1	rough-1	br-0,5			24
174	S-0,5	W-1,5	BG-1,5	S-2	lin-1,5	7-1	sm-0,5	br-0,5			24

Nr	Color of stem ext	Color of stem int	Bud color	Petiole col.	Leaf lob shape	Nr of lobes	Surface of root	Rot color of root	III
176	B-1,5	EG-2	BS-1,5	RS-1	obov-0,5	7-1	rough-1	Br-0,5	23
183	SB-1	EY-0,5	S-2	S-2	obov-0,5	5-0,5	rough-1	Br-0,5	19
185	SB-1	EY-0,5	RB-0,5	S-2	obov-0,5	5-0,5	rough-1	Br-0,5	23
186	B-1,5	EG-2	S-2	S-2	obov-0,5	7-1	rough-1	Br-0,5	29
189	Y-2	EY-0,5	RB-0,5	S-2	obov-0,5	5-0,5	rough-1	Br-0,5	21
190	S-0,5	EG-2	BG-1,5	S-2	lin-1,5	7-1	sm-0,5	Br-0,5	24
191	B-1,5	YG-1	S-2	S-2	lin-1,5	7-1	rough-1	Br-0,5	26
192	SB-1	LG-1,5	BG-1,5	R-0,5	lin-1,5	5-0,5	rough-1	Br-0,5	21
198	Y-2	YY-2	RB-0,5	RG-1	obov-0,5	7-1	rough-1	Br-0,5	20
199	B-1,5	BY-0,5	S-2	S-2	obov-0,5	7-1	rough-1	Br-0,5	24
200	S-0,5	LG-1,5	S-2	R-0,5	obov-0,5	5-0,5	sm-0,5	tan-1	20
202	B-1,5	EY-0,5	RB-0,5	RG-1	obov-0,5	7-1	rough-1	Br-0,5	18
203	Y-2	EG-1	RB-0,5	SR-1,5	obov-0,5	7-1	rough-1	Br-0,5	19
204	S-0,5	EG-2	S-2	R-0,5	obov-0,5	7-1	sm-0,5	Br-0,5	23
207	S-0,5	LG-1,5	RB-0,5	R-0,5	obov-0,5	7-1	no root	no root	
209	B-1,5	EG-2	BB-0,5	RG-1	obov-0,5	7-1	rough-1	Br-0,5	25
210	S-0,5	EY-0,5	RB-0,5	R-0,5	obov-0,5	5-0,5	sm-0,5	Br-0,5	14
211	S-0,5	EY-0,5	RB-0,5	R-0,5	obov-0,5	5-0,5	sm-0,5	tan-1	15
213	S-0,5	YG-1	RB-0,5	RG-1	obov-0,5	7-1	sm-0,5	Br-0,5	
216	Y-2	EG-1	S-2	S-2	obov-0,5	5-0,5	rough-1	Br-0,5	28
218	Y-2	EY-0,5	S-2	S-2	obov-0,5	5-0,5	rough-1	Br-0,5	27
219	Y-2	Y-0,5	RG-1,5	R-0,5	obov-0,5	7-1	rough-1	Br-0,5	17
221	B-1,5	SG-2	S-2	S-2	lin-1,5	7-1	rough-1	Br-0,5	31
222	B-1,5	SG-2	BG-1,5	SR-1,5	obov-0,5	7-1	rough-1	B-0,5	27
224	S-0,5	SG-2	RB-0,5	R-0,5	spud-1,5	7-1	sm-0,5	tan-1	19
225	S-0,5	SG-2	BB-1,5	S-2	lin-1,5	7-1	sm-0,5	tan-1	25
226	B-1,5	SG-2	RB-0,5	S-2	obov-0,5	9-2	rough-1	B-0,5	28
227	B-1,5	SG-2	BG-1,5	S-2	obov-0,5	8-1,5	rough-1	Br-0,5	26
228	S-0,5	C-1	S-2	R-0,5	obov-0,5	5-0,5	sm-0,5	tan-1	15
230	Y-2	C-1	BB-0,5	SR-1,5	obov-0,5	5-0,5	rough-1	Br-0,5	18
231	SB-1	LY-0,5	S-2	R-0,5	obov-0,5	7-1	rough-1	Br-0,5	19
232	S-0,5	C-1	RG-1,5	SR-1,5	obov-0,5	7-1	sm-0,5	tan-1	23
234	S-0,5	LG-2	S-2	R-0,5	obov-0,5	7-1	rough-1	B-0,5	21
236	B-1,5	SG-2	BG-1,5	S-2	obov-0,5	7-1	rough-1	Br-0,5	27
237	S-0,5	C-1	RB-0,5	R-0,5	obov-0,5	7-1	sm-0,5	tan-1	15
238	Y-2	EY-0,5	RB-0,5	RB-1	obov-0,5	7-1	rough-1	Br-1	22
239	B-1,5	SG-2	RB-0,5	S-2	obov-0,5	7-1	rough-1	B-0,5	22

Nr	Colorz of stem ext	Color of stem int	Bud color	Petiole color	Leaf lob shape	Nr of lobes	Surface of root	Ext. color of root	Yield
240	S-0,5	CH-1	BS-1,5	P-0,5	obov-0,5	8-1,5	sm-0,5	tan-1	16
241	B-1,5	BH-2	RB-0,5	RS-1	obov-0,5	7-1	Rough-1	Br-0,5	24
242	S-0,5	LC-1	S-2	RS-1	linear-1,5	9-2	sm-0,5	tan-1	24
243	SB-1	SH-2	RB-0,5	RS-1	obov-0,5	7-1	rough-1	Br-0,5	23
244	S-0,5	C-1	BS-1,5	RS-1	lin-1,5	7-1	rough-1	B-0,5	23
245	S-0,5	CH-1	BS-1,5	R-0,5	obov-0,5	7-1	rough-1	Br-0,5	18
246	SB-1	SH-2	S-2	S-2	lin-1,5	7-1	rough-1	Br-0,5	24
247	B-1,5	SH-2	BS-1,5	SL-2	obov-0,5	9-2	rough-1	Br-0,5	24
248	B-1,5	C-1	BS-1,5	S-2	obov-0,5	5-0,5	rough-1	Br-0,5	19
249	B-1,5	CH-1	S-2	R-0,5	obov-0,5	7-1	rough-1	Br-0,5	20
250	S-0,5	SH-2	RB-0,5	R-0,5	obov-0,5	5-0,5	rough-1	Br-0,5	17
251	B-1,5	LY-0,5	RB-0,5	SR-1,5	obov-0,5	7-1	rough-1	Br-0,5	16
252	B-1,5	SH-2	RB-0,5	R-0,5	obov-0,5	5-0,5	rough-1	Br-0,5	19
253	B-1,5	SH-2	BS-1,5	S-2	lin-1,5	9-2	rough-1	Br-0,5	26
254	S-0,5	SG-2	BS-1,5	RS-1	obov-0,5	7-1	sm-0,5	T-1	23
255	Y-0,5	BY-0,5	S-2	S-2	obov-0,5	7-1	rough-1	Br-0,5	17
256	B-1,5	LY-0,5	RB-0,5	S-2	obov-0,5	7-1	rough-1	Br-0,5	17
257	Y-0,5	LC-1,5	S-2	S-2	obov-0,5	7-1	rough-1	Br-0,5	24
258	Y-0,5	C-1	RB-0,5	S-2	obov-0,5	7-1	rough-1	Br-0,5	19
259	Y-0,5	LY-0,5	S-2	S-2	obov-0,5	7-1	rough-1	Br-0,5	18
260	B-1,5	SH-2	S-2	S-2	obov-0,5	7-1	rough-1	Br-0,5	23
261	B-1,5	CSH-2	BS-1,5	RS-1	lin-1,5	8-1,5	rough-1	Br-0,5	26
262	B-1,5	SH-2	S-2	RS-1	obov-0,5	7-1	rough-1	Br-0,5	21
263	B-1,5	SH-2	S-2	S-2	obov-0,5	8-1,5	rough-1	Br-0,5	26
264	B-1,5	SH-2	RB-0,5	S-2	obov-0,5	7-1	rough-1	Br-0,5	23
265	B-1,5	LY-0,5	S-2	S-2	obov-0,5	7-1	rough-1	Br-0,5	27
266	Y-0,5	LY-0,5	RB-0,5	S-2	obov-0,5	7-1	rough-1	Br-0,5	17
267	B-1,5	C-1	BS-1,5	SR-1,5	obov-0,5	9-2	rough-1	Br-0,5	22
268	B-1,5	LY-0,5	S-2	S-2	obov-0,5	7-1	rough-1	Br-0,5	23
269	B-1,5	SH-2	BS-1,5	S-2	obov-0,5	9-2	rough-1	Br-0,5	26
270	B-1,5	LYS-1	S-2	RS-1	obov-0,5	9-2	rough-1	Br-0,5	24
271	S-0,5	LYS-1	S-2	S-2	lin-1,5	7-1	sm-0,5	tan-1	21
272	B-1,5	SH-2	S-2	S-2	lin-1,5	9-2	rough-1	Br-0,5	27
274	R-1,5	LYS-1	RB-0,5	S-2	obov-0,5	7-1	rough-1	Br-0,5	18
275	B-1,5	LYS-1	RB-0,5	S-2	obov-0,5	8-1,5	rough-1	Br-0,5	22
276	B-1,5	LYS-1	S-2	S-2	lin-1,5	9-2	rough-1	Br-0,5	27
277	B-1,5	SH-2	S-2	R-0,5	obov-0,5	7-1	rough-1	Br-0,5	23
279	Y-0,5	LY-0,5	S-2	S-2	obov-0,5	9-2	rough-1	Br-0,5	23

Nr	Color of stem ext	Color of stem cut	Bud color	Petiole color	Leaf lob shape	No of fibers	Surface of root	Ext color of root	I	V
280	B2 - 1,5	GL- 2	G-2	GR - 1,5	obov - 0,5	8 - 1,5	rough - 1	B2 - 0,5		25
281	B - 1,5	GL-2	G-2	G-2	lin - 0,5	7-1	rough-1	B2 - 0,5		28
282	B - 1,5	GL-2	G-2	G-2	obov 0,5	9-2	rough-1	B2 - 0,5		28
283	B - 1,5	GL-2	RB-0,5	RG - 1,5	lin - 1,5	7-1	rough-1	B2 - 0,5		25
284	B - 1,5	GL-2	G-2	R - 0,5	obov - 0,5	9-2	rough-1	B2 - 0,5		22
285	B - 1,5	LYG-2	G-2	G-2	obov - 0,5	7-1	sm - 0,5	B2 - 0,5		22
286	SB - 1	LYG-2	G-2	R - 0,5	obov - 0,5	7-1	sm - 0,5	tan - 1		19
287	SB - 1	YGL-1	G-2	R - 0,5	obov - 0,5	9-2	sm - 0,5	tan - 1		22
288	G - 0,5	LYG-2	BG - 1,5	R - 0,5	gaud - 1	7-1	sm - 0,5	tan - 1		17
289	G - 0,5	GR-2	G-2	G-2	gaud - 1	7-1	sm - 0,5	tan - 1		24
290	B - 1,5	LYG-2	G-2	G-2	obov - 0,5	7-1	rough - 1	B2 - 0,5		26
291	G - 0,5	LYG-2	BG - 1,5	G-2	obov - 0,5	9-2	rough-1	tan - 1		26
292	SB - 1	LR - 1,5	BG - 1,5	GR - 1,5	obov - 0,5	5-0,5	rough-1	B2 - 0,5		21
293	G - 0,5	GL-2	G-2	GR - 1,5	obov - 0,5	5-0,5	sm - 0,5	tan - 1		22
294	LB - 1	GLR-2	G-2	R - 0,5	obov - 0,5	9-2	sm - 0,5	tan - 1		21
295	B - 1	LYG-2	G-2	G-2	obov - 0,5	7-1	rough - 1	B2 - 0,5		21
296	G - 0,5	LYG-2	RR - 0,5	R - 0,5	obov - 0,5	7-1	sm - 1	tan - 1		16
297	G - 0,5	LYG-2	G-2	R - 0,5	obov - 0,5	7-1	sm - 1	tan - 1		22
298	G - 0,5	GR-2	G-2	G-2	obov - 0,5	7-1	sm - 1	tan - 1		25
299	G - 0,5	GL-2	G-2	G-2	lin - 1,5	7-1	sm - 1	tan - 1		27
300	G - 0,5	GY-2	BG - 1,5	G-2	lin - 1,5	7-1	sm - 1	tan - 1		25
301	G - 0,5	GW-2	BG - 1,5	G-2	obov - 0,5	7-1	sm - 1	tan - 1		24
302	G - 0,5	YG - 1	BG - 1,5	G-2	obov - 0,5	5-0,5	sm - 1	tan - 1		21
303	G - 0,5	LG - 2	G-2	G-2	lin - 1,5	9-2	sm - 1	tan - 1		



Sp. no.	Length of lb	Dist. from 1 node to the other									
230	1	1	4	2	1	3	1	1	2	1	17
183	1	1	2	1	4	4	1	1	2	1	17.
188	1	1	4	4	1	2	1	2	2	1	· 20
126	1	1	1	2	4	4	1	2	1	2	✓19
125	1	1	1	3	3	1	1	1	2	2	16
253	1	2	3	4	3	4	3	4	2	1	27
271	1	2	1	2	4	4	3	2	1	2	✓22
213	1	2	3	4	4	4	3	4	2	1	28
98	1	2	1	1	4	4	1	2	2	1	✓19
120	1	2	4	3	4	1	1	2	2	2	✓19
102	1	2	4	1	4	4	1	2	2	1	22
154	1	2	1	2	4	4	3	2	1	1	21
303	1	3	1	4	4	4	3	4	2	2	28
112	1	3									
257	1	3	1	1	4	4	1	2	2	1	20.
78	1	3	4	1	4	4	1	4	2	1	25
295	1	3	2	4	4	4	1	2	2	1	24
106	1	3	2	1	4	3	1	2	2	1	× 20
288	1	3	1	4	3	1	2	2	1	2	× 20
109	2	1	2	1	1	4	1	2	2	1	17
283	2	1	3	4	1	3	3	2	2	1	22
156	2	1	3	4	4	2	1	2	2	1	22
173	2	1	3	1	4	4	1	2	2	1	21
75	2	1	4	3	4	4	1	2	2	1	24
210	2	1	1	1	1	1	1	1	1	1	11
199	2	1	3	1	4	4	1	2	2	1	21

Quadrat N° 1

Sp. N°											summe
255	1	1	1	4	4	1	2	2	1	=	17
78	1	4	1	4	4	1	4	2	1	=	22
295	1	2	4	4	4	1	2	2	1	=	21
106	1	2	1	4	3	1	2	2	1	=	17
288	1	1	4	3	1	2	2	1	2	=	17
112	1	1	2	4	4	2	3	1	3	=	21

Quads. N° 2

274	2	3	2	1	4	1	2	2	1	=	18
256	2	3	1	1	4	1	2	2	1	=	17
247	2	3	4	3	4	1	4	2	1	=	24
120	2	1	3	4	1	1	2	2	2	=	18
294	2	2	4	4	1	1	4	1	2	=	21
285	2	3	4	4	4	1	2	1	1	=	22
229	2	1	2	4	1	1	1	1	2	=	15
154	2	1	2	4	4	3	2	1	1	=	20
107	2	2	1	4	4	1	2	2	1	=	19
98	2	1	1	4	4	1	2	2	1	=	18
260	2	3	4	4	4	1	2	2	1	=	23
296	2	1	4	1	1	1	2	2	2	=	16
111	2	1	2	3	2	2	3	1	1	=	17
273	2	3	4	4	4	3	4	2	1	=	27
284	2	3	4	4	1	1	4	2	1	=	22
85	2	3	2	3	3	1	3	2	1	=	22
246	2	2	4	4	4	3	2	2	1		24
271	2	1	2	4	4	3	2	1	2		21
88	2	3	2	1	4	2	4	2	4		24
248	2	3	2	3	4	1	1	2	1		19

Quads. No 2.

117	2	1	1	4	3	1	2	1	3	= 18 ✓
219	2	4	1	3	1	1	2	2	1	= 17 ✓
207	2	1	3	1	1	1	2	—	—	=
240	2	1	2	3	1	1	3	1	2	= 16 ✓
286	2	2	4	4	1	1	2	1	2	= 19 ✓
146	2	1	3	3	4	1	2	1	2	19 ✓
253	2	3	4	3	4	3	4	2	1	= 26 ✓
127	2	1	1	4	4	1	2	1	2	= 18 ✓
102	2	4	1	4	4	1	2	2	1	= 21 ✓
262	2	3	4	4	2	1	2	2	1	21 ✓
259	2	1	1	4	4	1	2	2	1	18 ✓
251	2	3	1	1	3	1	2	2	1	16 ✓

Quads No 3

198	3	4	4	1	2	1	2	2	1	= 20 ✓
125	3	1	3	3	1	1	1	2	2	= 17 ✓
157	3	3	1	4	2	1	2	2	1	= 20 ✓
230	3	4	2	1	3	1	1	2	1	= 18 ✓
126	3	1	2	4	4	2	2	1	2	= 21 ✓
183	3	2	1	4	4	1	1	2	1	= 19 ✓
203	3	4	2	1	3	1	2	2	1	= 19 ✓

Quads. No 4

276	4	3	2	4	4	3	4	2	1	= 27 ✓
99	4	2	2	4	2	1	4	2	1	= 22 ✓
263	4	3	4	4	4	1	3	2	1	= 26 ✓
300	4	1	4	3	4	3	2	2	2	= 25 ✓
289	4	1	4	4	4	2	2	1	2	= 24 ✓
280	4	3	4	4	3	1	3	2	1	= 25 ✓
239	4	3	4	1	4	1	2	2	1	= 22 ✓

Sq. No	Quads. No 4.									
267	4	3	2	3	3	1	4	2	1	= 23 ✓
131	4	1	1	4	4	2	4	1	3	= 24 ✓
266	4	1	1	1	4	1	2	2	1	= 17 ✓
269	4	3	4	3	4	1	4	2	1	= 26 ✓
249	4	3	2	4	1	1	2	2	1	= 20 ✓

Quad. No 5

96	5	3	1	1	4	1	4	2	1	= 22 ✓
297	5	1	4	4	1	1	2	2	2	= 22 ✓
129	5	1	2	4	1	1	4	1	1	= 20 ✓
95	5	3	1	4	4	1	4	2	1	= 25 ✓
77	5	4	1	4	4	1	2	2	1	= 24 ✓
287	5	2	2	4	1	1	4	1	2	= 22 ✓
130	5	1	3	4	4	2	2	2	3	= 26
275	5	3	2	1	4	1	3	2	1	= 22 ✓
242	5	1	2	4	2	3	4	1	2	= 24 ✓
74	5	2	4	4	4	1	2	2	1	= 25 ✓
227	5	3	4	3	4	1	3	2	1	= 26 ✓
73	5	4	1	4	4	1	3	2	1	= 25 ✓
237	5	1	2	1	1	1	2	1	2	= 15 ✓
299	5	1	4	4	4	3	2	2	2	= 27 ✓
270	5	3	2	4	2	1	4	2	1	= 24 ✓
291	5	1	4	3	4	1	4	2	2	= 26 ✓
290	5	3	4	4	4	1	2	2	1	= 26 ✓
115	5	1	2	4	2	1	2	2	1	= 20 ✓
105	5	2	1	4	4	1	4	2	1	= 24 ✓
81	5	4	1	4	4	1	4	2	1	= 26 ✓
110	5	1	1	4	3	2	4	2	1	= 23 ✓
225	5	1	4	3	4	3	2	1	2	= 25 ✓
120	5	1	4	3	4	3	2	1	1	= 24 ✓

Quadrat 5

164	5	3	4	4	4	1	2	2	1	= 26 ✓
97	5	3	1	4	3	1	3	2	1	= 23 ✓
224	5	1	4	1	1	2	2	1	2	= 19 ✓
103	5	2	1	4	1	1	2	2	1	= 19 ✓
277	5	3	4	4	1	1	2	2	1	= 23 ✓
231	5	2	1	4	1	1	2	2	1	= 19 ✓
281	5	3	4	4	4	3	2	2	1	= 28 ✓
124	5	1	2	4	4	1	4	1	1	= 23 ✓
245	5	1	2	3	1	1	2	2	1	= 18 ✓
293	5	1	4	4	3	1	1	1	2	= 22 ✓
163	5	2	3	4	4	1	2	2	1	= 24 ✓
193	5	2	3	3	1	3	1	2	1	= 21 ✓
132	5	1	1	4	4	2	4	1	2	= 24 ✓
292	5	2	3	3	3	1	1	2	1	= 21 ✓
250	5	1	4	1	1	1	1	2	1	= 17 ✓
202	5	3	1	1	2	1	2	2	1	= 18 ✓
93	5	3	2	4	2	1	4	2	1	= 24 ✓
91	5	3	2	1	4	1	2	2	1	= 21 ✓
234	5	1	4	4	1	1	2	2	1	= 21 ✓
301	5	1	4	3	4	1	2	2	2	= 24 ✓
114	5	1	2	4	4	2	4	1	2	= 25 ✓
191	5	3	2	4	4	3	2	2	1	= 26 ✓
261	5	3	4	3	2	3	3	2	1	= 26 ✓
282	5	3	4	4	4	1	4	2	1	= 28 ✓
101	5	2	4	4	1	1	2	2	1	= 22 ✓
172	5	1	2	4	4	1	2	2	2	= 23 ✓
155	5	1	3	4	4	3	1	1	2	= 24 ✓
82	5	3	1	4	3	1	3	2	1	= 23 ✓
116	5	1	2	4	1	1	1	2	3	= 20 ✓
298	5	1	4	4	4	1	2	2	2	= 25 ✓

Quadr. 5

279	5	1	1	4	4	1	4	2	1	=23 ✓
90	5	3	1	1	4	2	2	2	1	=21 ✓
159	5	2	2	3	2	3	2	2	1	=22
108	5	2	1	4	4	1	4	2	1	24 ✓
252	5	3	4	1	1	1	1	2	1	=19 ✓
302	5	1	2	3	4	1	1	2	2	=21 ✓
113	5	3	4	4	1	3	2	2	2	=26 ✓
123	5	1	2	4	4	1	2	1	3	=23 ✓
258	5	1	2	1	4	1	2	2	1	=19 ✓
264	5	3	4	1	4	1	2	2	1	=23 ✓
165	5	2	3	1	2	2	1	2	1	=19 ✓
268	5	3	1	4	4	1	2	2	1	=23 ✓
153	5	2	1	4	1	1	2	2	1	=19 ✓

Quadr. 6

109	6	2	1	1	4	1	2	2	1	=20 ✓
283	6	3	4	1	3	3	2	2	1	=25 ✓
151	6	2	1	4	4	1	2	2	1	=22 ✓
257	6	1	3	4	4	1	2	2	1	=24 ✓
144	6	1	4	3	4	1	2	1	2	=24 ✓
199	6	3	1	4	4	1	2	2	1	=24 ✓
156	6	3	4	4	2	1	2	2	1	=25 ✓
133	6	1	4	3	4	1	2	1	2	=24 ✓
173	6	3	1	4	4	1	2	2	1	=24 ✓
211	6	1	1	1	1	1	1	1	2	=15 ✓
80	6	4	1	4	4	1	2	2	1	=25 ✓
166	6	2	1	2	1	1	2	2	1	=19 ✓
75	6	4	3	4	4	1	2	2	1	=27 ✓
176	6	3	4	3	2	1	2	2	1	=23 ✓
210	6	1	1	1	1	1	1	1	1	=14 ✓

Quads. 6

189	6	4	1	1	4	1	1	2	1	= 21 ✓
141	6	4	2	1	2	1	2	2	1	= 21 ✓
170	6	1	1	3	1	1	1	1	2	= 17 ✓
174	6	1	3	3	4	3	2	1	1	= 24 ✓
148	6	1	4	3	4	1	2	1	2	= 24 ✓
200	6	1	3	4	1	1	1	1	2	= 20 ✓

Quads. 7

254	7	1	4	3	2	1	2	1	2	= 23 ✓
238	7	4	1	1	2	1	2	2	2	= 22 ✓
236	7	3	4	3	4	1	2	2	1	= 27 ✓

Quads. 8

244	8	1	2	3	2	3	2	2	1	= 23 ✓
134	8	1	1	4	4	1	2	1	2	= 24 ✓
222	8	3	4	3	3	1	2	2	1	= 27 ✓
122	8	1	1	4	1	1	2	1	2	= 21 ✓
232	8	1	2	3	3	1	2	1	2	= 23 ✓
226	8	3	4	1	4	1	4	2	1	= 28 ✓
241	8	3	4	1	2	1	2	2	1	= 24 ✓
100	8	2	1	1	4	1	2	2	1	= 22 ✓
243	8	2	4	1	2	1	2	2	1	= 23 ✓
84	8	3	4	1	4	2	4	2	1	= 29 ✓
221	8	3	4	4	4	3	2	2	1	= 31 ✓
145	8	3	4	4	4	1	2	2	1	= 29 ✓
101	8	3	2	4	4	1	2	2	1	= 26 ✓
204	8	1	4	4	1	1	2	1	1	= 23 ✓
186	8	3	4	4	4	1	2	2	1	= 29 ✓
138	8	1	4	3	4	3	2	1	3	= 29 ✓

Quads. 9

265	9	3	1	4	4	1	2	2	1	= 27 ✓
218	9	4	1	4	4	1	1	2	1	= 27 ✓
209	9	3	4	1	2	1	2	2	1	= 25 ✓
216	9	4	2	4	4	1	1	2	1	= 28 ✓
140	9	4	2	1	1	1	2	2	1	= 23 ✓
185	9	2	1	1	4	1	1	2	1	= 23 ✓
139	9	2	1	4	4	1	1	2	1	= 25 ✓
137	9	1	4	4	4	3	1	1	2	= 29 ✓
143	9	1	2	4	4	3	2	1	1	= 27 ✓

Glaucous condition - scale 1-6, increasing in intensity

Spec no.	rate	%		o/o	"	"
49	3	40	72	6	100	
50	6	100	CB.2. C.2	4	60	
51	6	100		4	60	
52	3	40		5	80	
53	4	60		5(v.p.)	80	
54	5	80		4	60	
55	2	20		5	80	
56	6	100	2069			
57	1	0	Valence	2	20	
58	2	20		2	20	
59	3	40		2	20	
60	4	60		2	20	
61	5p	80	Venils	6	100	
62	4g	60	(no p)	6	100ø	
63a	2	20		6	100	
63b	2.5	30		6	100	
63c	2	20		6	100	
63d	2.5	30		6	100	
63e	2-	15		6	100	
63f	2.5	30	100	6g	100	
63g	2	20	98	5+ p	85	
63h	2.5	30		5	80	
63i	2	20	55	6g	100	
64	4	60		6g	100	
65	6	100	56	6g	100	
66	6	100	57	6g	100	
67	1.5	10		6g	100	
68	6	100	196	6p	100	
69	4	80	197	6p	100	
70	3	60		5p	80	

198	6p	100
	6p	100
147	4	60
3683	6	100
3684	6sp	100
3685	6sg	100
3686	6sp	100
3687	6g	100
3688	6sp	100
3689	6sp	100
3690	6sg	100
3691	6sp	100
CB No 1 C.R.	3-4 vg	50%
	3-4 vg	50
	2-4	40
	2-3	30
	2-3	30
Higuenilla C.R	5bp	80
	5bp	80
	5bp-rp	80
	5pp-rp	80
	5bp	80
	5 rp-g	80
	5	80
	5bp	80

1 none, green
2 a little, green
3 more , green
4 much green
5 some purple
6 much purple

g green
p purple
s slightly
v very
r red
b blue

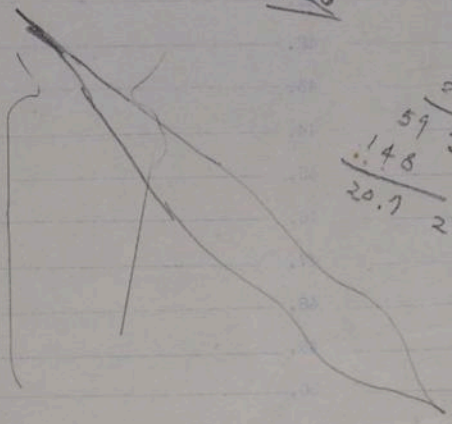
Stipules

yellow Saunders B		3	
yellow Saunders Sarg.		3	
Richmond Sticks		2	
Yellow Saunders 5		2	
Richmond Stick Sarg.		2	
Richmond Stick		2	
Yellow Saunders (Sarg.)		2	
Richmond Stick B		1	
1		2	2
2		2	2
3		1	3
4		2	2
5		2	2
6		2	2.5
7		2	2.5
8		1.5	2.5
9		2	3
10		1	3
11		1.5	3
12		2	2
13		2	1.5
14		1	1
15		1	1
16	Yellow Saunders	1	1
17		1	1
18		2	1
19		1	1.5
20		1	2
21		1	2
22		1	2
23		1	1
24		1	2
25		1	3
26		1	2
27		1	3
28		1	2
29		1	2
30		1	2
31		1	2
32		1	2.5
33		1	2.5
34		1	2
35		1.5	1.5
36		1	2.5
37		2	3
38		1	3
39		1	3
40		1	2
41		1	2
42		1	1
43		1	2
44		1	3
45		1	2
46		2	2
47		2.5	2
48		1	2

characters to be scored and/or recorded

1. Ratio - L/W of middle leaf lobe
2. Surface of (underside) of leaf - See scale - Shape of lobe Margin Dis
3. Branching pattern - 1-4 { 1: 0-1 branches; 2: 2-3 x branched; 3: 4-5 x "; 4: 6-9 x "

~~3~~. No. lobes of mature leaf
6. Stem color
5. Bud color + pubescence - slight, pubescent, heavily pub. (includes upper part of stem)
4. Petiole color
8. Root surface (R or S)
9. Root color (ext.)
10. " " subepid.
11. Root shape + arrangement on pkt, if possible
12. Any unusual characters (i.e. prominence of leaf scars, unusual stem color,)



Record of plants examined -

70 - 80	90 - 100	110 - 120	130 - 140	150 - 160	170 - 180	190 - 200
		128	142	160	179	190
		129	146	155	170	193
		127	130	158	174	192
		124	144	154	175	194
		117	133		177	195
		110	148			200
		114	134			204
		112	143			207
		121	139			
		116	131			
		123	132			
		119				

210 - 20	230 - 40	250 - 60	270 - 80	290 - 300	3
210		257	287	291	
211			271	294	
213			289	298	
214				300	
220				302	
				301	
				291	
				293	
				296	

7. 1st after Direct Summaries

Call Number

22
32
7
9
11

6. Bunch of Kelp

Call Number

12
13
21
24
26
33
34
35
36 large mature leaf
37
14
14

5. Richmond Stick
Jamaica

Call Numbers

20
20
29
30
36 young inflorescent leaf
8
10

4 yellow bowles
Jamaica

Call Number

23
27
31

3.C.B #1
CR

Call Number

2 Zapilota
C.R.

Call Number

T. = Hofao Sweet
Jamaica

Rough root surface

Call Number:

115 219
~~115~~
73
75
76
92
100
107
115
256
259
290
292
233
250
141
150
156
188
189
202
205

#6.
Bunch of Keys
Jamaica

Call No.

269	90	281
267	93	282
266	94	284
264	95	221
265	99	222
263	101	238
82	102	241
93	103	140
94	105	152
95	106	162
96	108	[illegible]
97	109	166
77	135	168
78	136	169
79	255	173
80	258	176
81	272	181
82	273	183
84	275	[illegible]
85	276	198
87	277	203
88	278	209? (4)
89	279	216

5. Richmond Stick
Jamaica

Call Numbers:

257
280
295

No 4
Yellow Sawkus
Jamaica

Call Number:

268	163
139	164
74	165
83	167
86	172
91	180
104	182
260	185
285	186
227	187
231	191
239	196
243	197
249	199
251	201
253	Sta No. # 2787-3
145	206
147	208
149	212
151	215
153	217
157	218
159	
161	

300

3. C. B #1
E. R.

Call Number:

No 2
Topilote
C.R.

Call Number:

No 1
C. B # 2
C. R.

Coll Number:

270
261
[illegible]
[illegible]
98
226
228?
230?
236
246
253 - Two of them (4)
184?
304

7. Hofar Sweet Jama.

Smoothroot surface

Number

178
127
126
125
211
210
224
225
289

6. Bunch of Keys
Jam.

Number

Call No. 177
154
155
171
124
123
223
235
296
301

5. Richmond Stock
Jamaica

Number

Call No 193
Call No 190
144
148
119
138
134
133
131
132
137
112
143
195
248

4. yellow
Saunders Jamaica

Number (Call)

174
170
158
128-6
139
130
213
204
229
234
303

3. C B #1
C. R.

Number (call)

175
146
129
120
117
113
297

2. Zopilota
C.R.

Number (call)

111
118
271
114

1. CB#2

CR

Number

137

116
192
194
200
122
121
220
214
207
232
240
242
244
245
247
254
237
286
293

Nos. Recorded for IBIN

~~84~~

80
81
82
83
84
85
86
87
88
89

70
73
74
75
76
77
78
79

90
91
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100
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147
148
149

150 160 170 180 190 200 210
151 161 171 181 191 201 211
152 162 172 182 192 02 212
153 163 173 183 193 03 13
154 164 174 184 194 04 14
155 165 175 85 195 05 215
156 166 176 86 196 06 216
157 167 177 87 197 07 217
158 168 178 88 98 08 18
159 179 89 99 09 19

220 230 240 250 260 270
221 231 41 251 261 271
222 32 42 252 262 272
33 43 253 263 273
224 34 44 254 264 274
225 35 45 255 265 275
226 36 46 256 266 276
227 37 47 257 267 277
228 38 48 258 268 278
229 39 49 259 269 279

potherb

SENECIO

Branching

1 – unbranched
2 – ¼
3 – ½
4 – ¾
5 – top

96,

500 94, 80, 89,

265, 285, 136, 268, 73, 259

290, 107, 79

400

258.

109

281, 78, 269

135

300 302, 121,

289

276

119, 133, 131, 122

292,

200

269

114, 296, 125, 114,

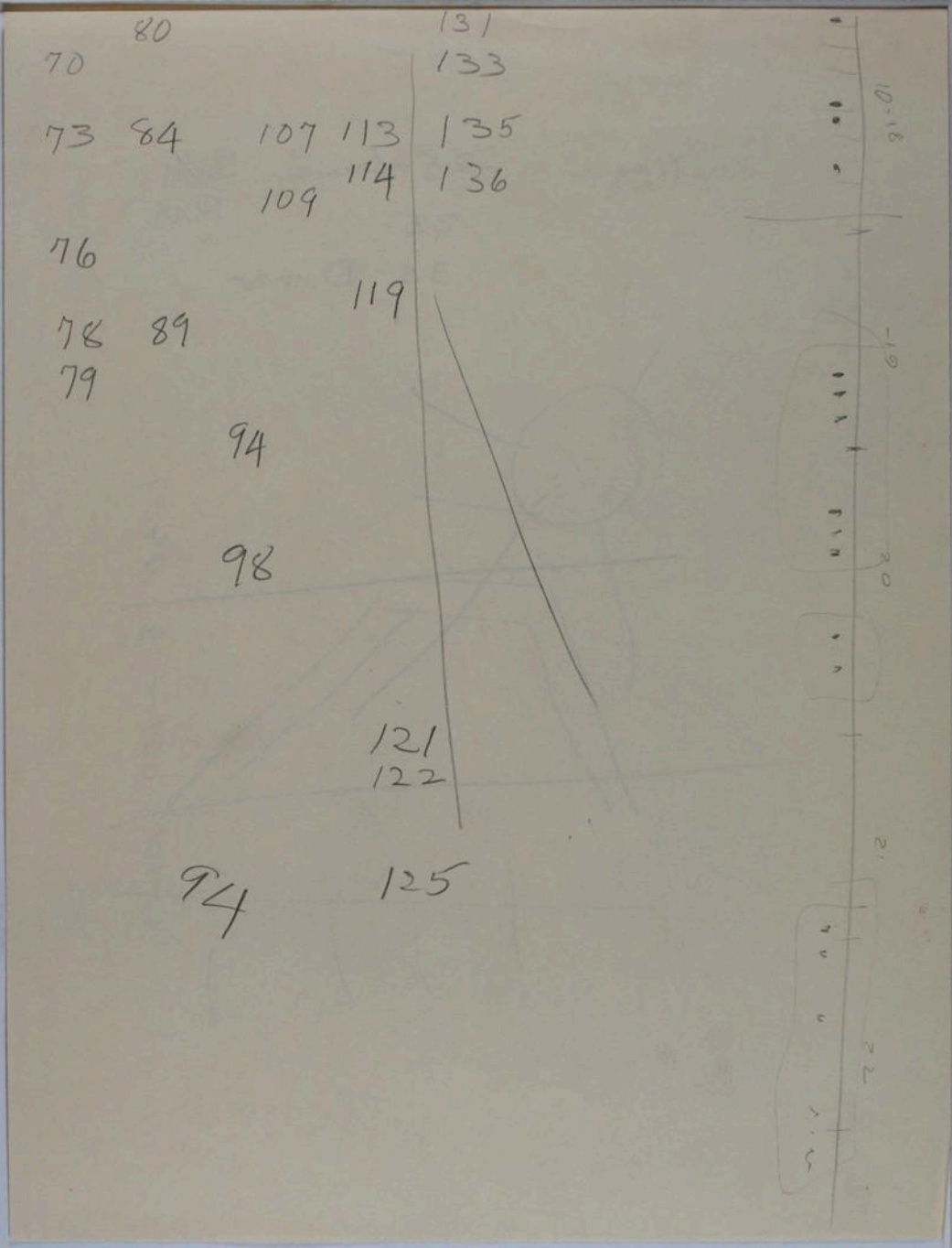
113

291

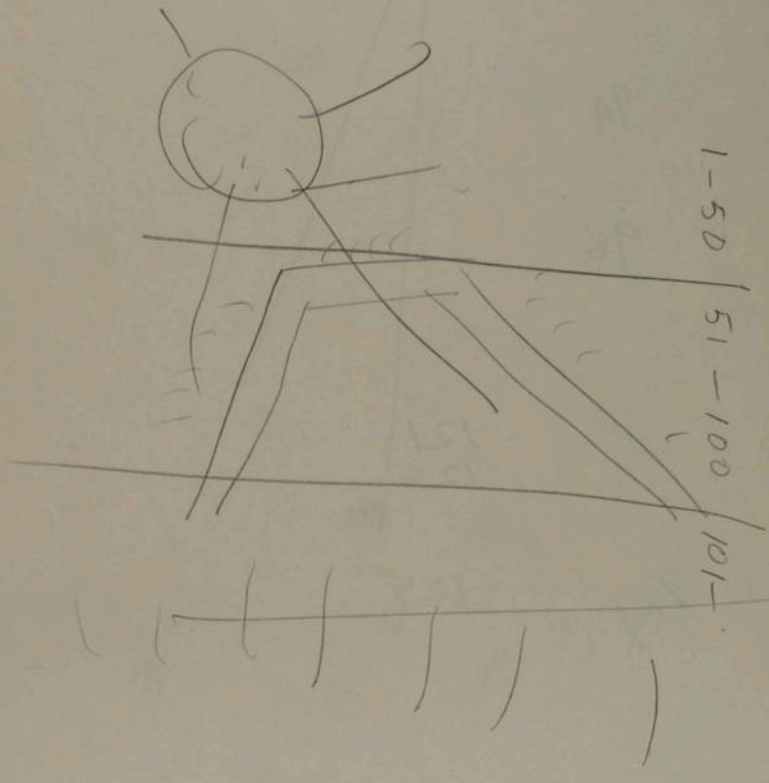
293

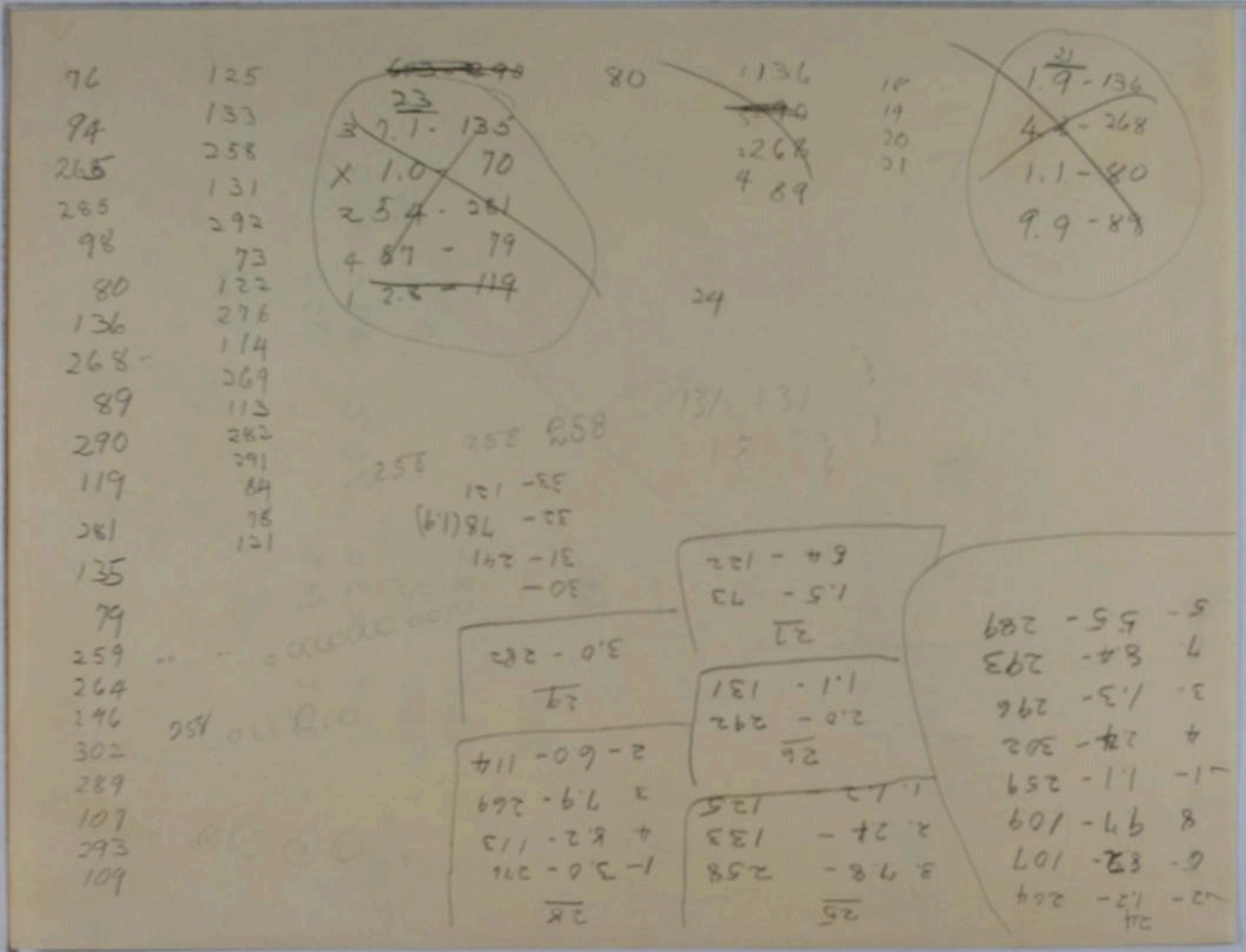
100

269, 282, 84

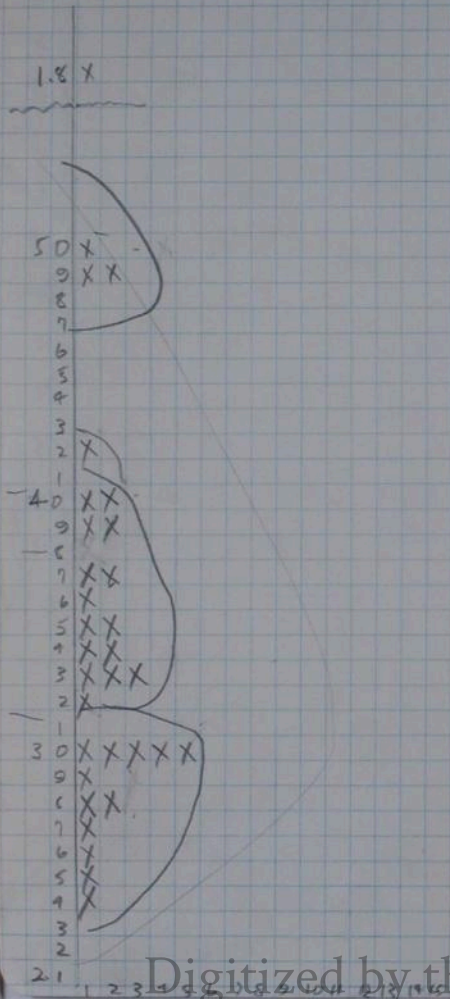


Mrs. Magee -25-Lunch S.M
25- " P.M.
35- Dinner

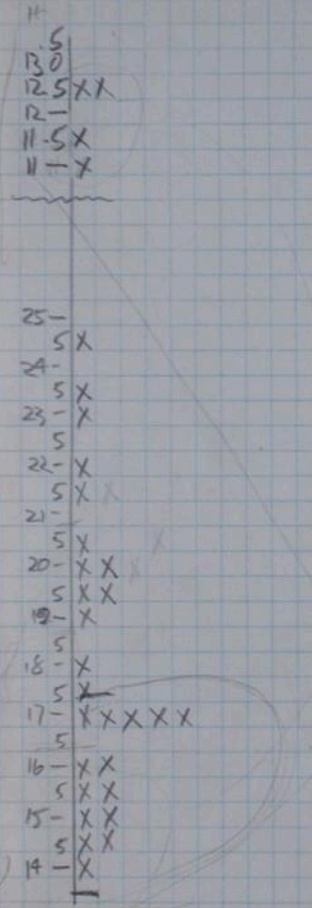




Width at widest Point of Largest Lobe



Length of leaf lobe (longest)



less than 14 cm 1

14 - 17 cm 2

more than 17 cm 3

Recording for IBM cards

I Stem character
A Color of stem
1. Silver
2. Interm. silver-brown
3. brown
4. yellow

B. Internal stem color
1. DY
2. Y
3. LY
4. YG
5. C
6. LC
7. W
8. LGY
9. LG
10. VY
11. GW

C. Branching of plant
1= 0
2 = 1/4
3 = 1/2
4 = 3/4
5 = top

II. Leaf characters
A. Color of young foliage
1. RB
2. RG
3. BG
4. G

B. Petiole color
1. R
2. RG
3. GR
4. G

C. Leaflet lobe shape
1 = obovate
2 = dumbell
3 = linear

D. No. lobes/leaf
1 = 5
2 = 6
3 = 7
4 = 8
5 = 9

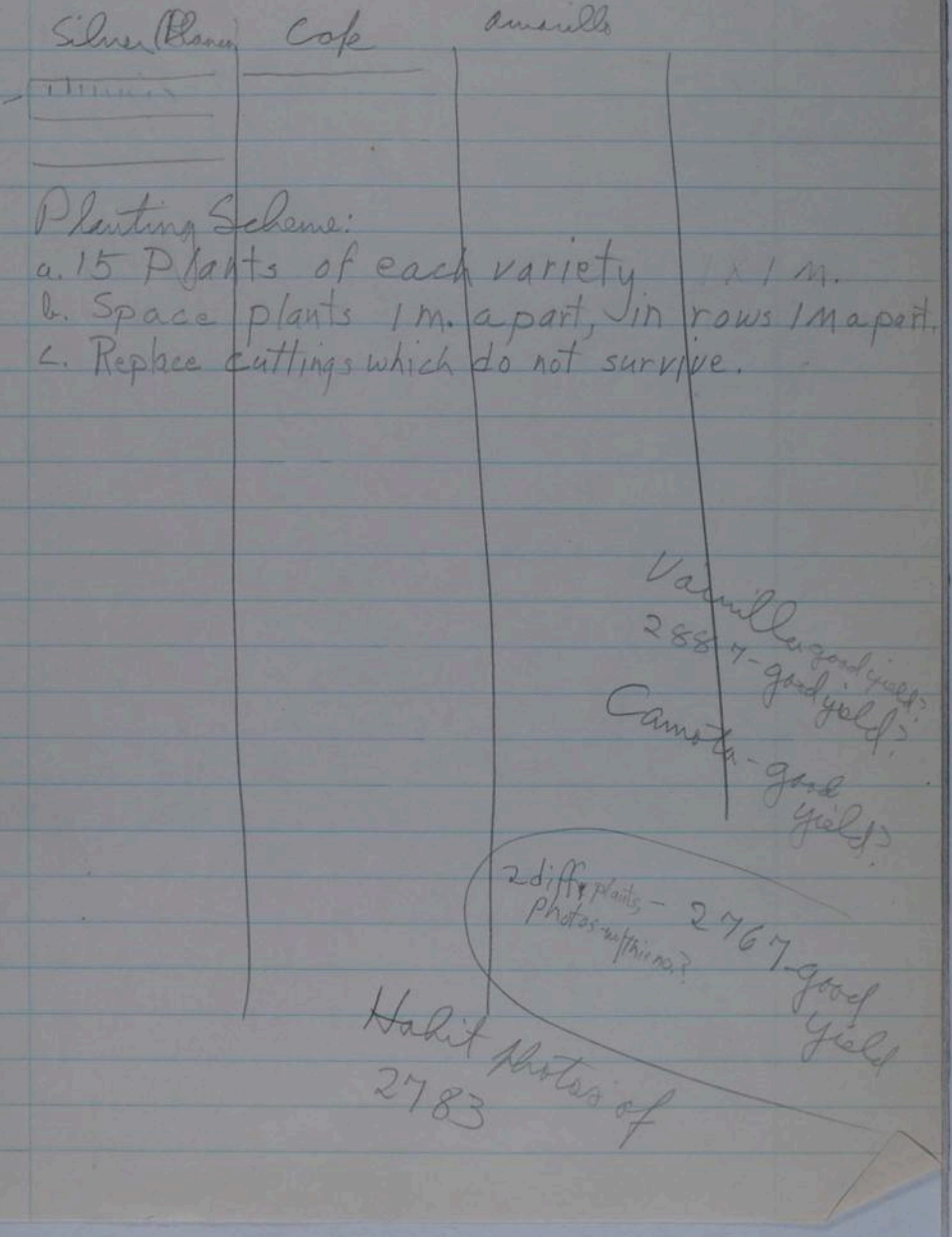
E. Median lobe length
1.= less than 14 cm.
2 = 14-17 cm.
3 = greater than 17 cm.

III. Root characters
A Color, external
1. DB
2. B
3. LB
4. PB
5. T
6. PT
7. LT
8. PW
9. LP
10. P
11. RB
12. LBY

B. Internal, cortex, color
1. VW
2. W
3. VLC
4. LC
5. C
6. CY
7. LY
8. Y
9. PY
10. PW
11. CW

C. Surface of root
1. = smooth
2. = rough

D. Subepidermis color
1. Pink
2. White
3. White-yellow
4. Light yellow-brown
5. Light brown.



Vars. of Chinchona 1 yr.-

1. Mechon de Cera - obscura (brown stem)
2. Chola - roots w inside amarillo
3. Pico de Paloma - light brown, root subepid red.
4. Borona negra - dark brown,
5. Yuca Japonesa - dark yellow - best in collection -
6. Calita blanca -
7. Jorona negra - brown, ba
8. Calita verde -
9. Borona blanca - amarillosa
10. Calita colorada - skin of root red
11. Chorola - (like Japonesa)
12. Palentina - negri. carga + mature at 12 mos.
amarilla -
13. Peñaranda - pink skin in roots - 1 yr good
14. Gustica - poco raises - amarilla -
15. Orobota - silver stems - largo raises
1 meter long.

Manioc –

1. History:

   Cultiv. before Spanish

   Prehistoric record – picture + data from John Sauer

   Early Spanish documents

   Spread to other parts of world –

   Africa, Indonesia, Asia,

2. Characteristics of plant –

   General Habit – ~~cultivated only, can't compete on its own.~~ –

   Length of time for growth – 8 – 18 – mos.

   1. 8–10 – not at best dev. for high starch content (like sw. corn) but better for consuming as vegetable

   Root ~~is source~~ of structure

   Position – laterally from central part, ~~varying~~

   Shape + connection to main plant.

   Stem + leaf

   Flower, Fruit + Seed.

~~3. Distrib~~

   HCN content – Largest conc. in outer peel of root, lesser interior.

   ~~Yield of starch~~

   Chem. constituents of edible portion.

method of cultivation – as for many root crops

veg. – variety in no fruit = clones

3. Distribution – imperfectly known

   "Sweet" vs. Bitter distribution

   In some areas both, but sweet seems to be found at more extremes of alt. (alt + latitude.

Distribut - contin.
Pres - world wide Tropics - does well in dry + moist regions - diff. varieties
Past - Portug. + Span infl. of spread -

4. Names -
   a. Scientific -
      1. Question of how many of -
      2. Manihot - M. aipi, dulcis, esculenta, utilissima, etc, but most commonly, M. utilissima used for all, bitter or sweet, since difficult to establish any significant differences -
   b. Common - a subject of some confusion -
      Three generally used in New World -
      Yuca - in Spanish areas } translitertion of Indian
      Mandioca - in Brazil } languages
      Cassava in English speaking countries -
      Old world has developed some of its own names, but ~~mostly~~ manioc most common -

Any of these may refer either to whole plant, the root itself, or to one product.

Tupi Guarani
Caribs?

5. Uses - as a food
   a. Largest amount in home consumed - as a starchy vegetable
   b. The treatment for bitter manioc - grating, washing, squeezing out of moisture, baking in flat cakes,
      (2) Same as above, grating, + placing in H_2O for leaching of HCN, fermentation (natural) and conversion of starch to sugars - then heating.

(3) Cassava wafers
(4) other uses -
(5) no. of recipes

   c. The "sweet" manioc - necessary only to peel + boil the young more tender roots.

5- cont. uses -

d. Tapioca - desserts in temperate regions - pudding or thickening in cherry pies.
little used in areas of growth - too complicated

~~f~~ Non food uses
1. Stamp glue
2. Starch for sizing in cloth
3. various industrial products - ethyl alcohol, paper from stems, et. al. but not too much here

(e) Use of leaves - in Afr. + some parts Asia - none or seldom in N.W.
1. High crude protein assay in some vars.
2. Possibility as a dried meal for cattle
3. Some nutrition + yield studies show value - milk prod., chicken, ~~hogs~~ pork, ~~cattle~~.

6. Problems - if so much known, what value to study?
a. ~~[illegible]~~ Basic studies very few
b. No inclusive work - sectional and specialist (~~[illegible]~~ Belgians in Africa, Dutch in Indonesia, others of lesser ~~[illegible]~~ general importance in ~~[illegible]~~ the Americas) except Zehntner -
c. No. of varieties - clones -

Re-Planting scheme for Bodles, 1955

1. Plant at same distances as usual.
2. One number (or variety) for each row.
3. Plant Twelve (12) plants of each variety. Be sure this # of plants grow.
4. Check uniformity of cuttings (at present, some rows have 2 different varieties). Be certain that the cuttings are all from the same variety in a row.
5. Follow same cultivation procedures as used before.
6. Take extreme care to maintain variety numbers. These numbers are the only record of the origin and common name of the islands cassava varieties.
7. ~~For purposes of the~~
8. If a number from the present plot is omitted in the following list, this is an indication ~~that~~ that number has been combined with another, and considered as the same variety.

9. Do not remove present planting until given permission of Dr. Taylor or other officer in charge

19 Plants with yellow (or red) stem color

Variety no.

1
3
8
34
2
7
18

Plants with Brown stems; green bud, green petiole, 1 or 2 Branches.

11
14
43
30
39
31
57

Brown stem, green bud, green petiole, 3-6 Branches

52
46
17
42
22

20 Plants with Brown stems, green buds, red petioles,
35
45
13
27
41
38
Brown stems, Blue-green bud
20
25
12
Brown stem Red-blue buds
48
33
16
44
Plants with intermediate silver-brown stems-
47
34
49
56
Plants with silver stems, green bud, green petiole
62
51
28

10 Silver stem, green bud, yellow-green petiole
78
67
Silver stem, green bud, red petiole
59
55
Silver stem, blue-green bud, green petiole
53
69
70
72
Silver stem, red-blue bud
50
58