MAIZE GENETICS COOPERATION

NEWS LETTER

5

January 25, 1934

Department of Plant Breeding
Cornell University
Ithaca, N. Y.

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CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION
ITHACA, N. Y.

DEPARTMENT OF PLANT BREEDING

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To maize geneticists :-

The inventory of genetic stocks which comprises the bulk of this letter is, of course, not complete but it will serve as a basis for future and more extensive lists. We wish to thank those maize geneticists who have cooperated in making this inventory possible. Its value should be apparent to everyone. In a plant such as maize where it takes several years to build up a required stock for a certain experiment, it is essential that the list of existing stocks be kept up to date and be available so that the investigator can make use of these stocks.

No attempt has been made to credit the stocks to different investigators. Those stocks which are marked with an asterisk are those which have not been received here at Cornell. It by no means follows that those stocks which are not marked by an asterisk were synthesized here at Ithaca. In the past we have received so many stocks from different cooperators that an attempt to trace the origin of the different stocks seemed a hopeless task. So we have purposely avoided listing the origin of any of the stocks. This does not give the credit due those investigators who have spent a great deal of time in building up good genetic strains. In the future we shall try to remedy this condition.

In order that this laboratory may serve efficiently as a distributing center for genetic strains, we urge those of you who have the stocks marked by an asterisk to send a small amount of seed to us so that it can be increased for distribution.

At the Boston meetings a system of nomenclature was agreed upon by representatives of the Drosophila and maize groups. This proposed system, as it applies to maize, is submitted in this report for your consideration and your criticisms and suggestions are requested. It was agreed that the needs and requirements of maize and Drosophila genetics were so diverse that it would be unwise to attempt to formulate an identical system of nomenclature. Yet in the matter of symbolizing genes, designating translocations, deficiencies, etc., it was felt that a uniform system could be employed with advantage, and the symbols which are used in the proposed system were agreed upon by the representatives of the two groups.

It should be clearly understood that the proposed system is only tentative. It can and will be modified in any way that will make for a better and more useful system.

The proposed nomenclatorial system for maize is as follows:

1. The linkage groups will be designated by Arabic numerals. Group 1 will include those genes which lie in the longest of the monoploid set of 10 chromosomes, etc. The longest chromosome will be called chromosome 1 and the shortest chromosome 10. Arabic numerals will be used for both linkage groups and chromosomes since the Roman numerals are too cumbersome.

2. Whenever biliteral symbols are used the second letter shall not be dropped as a subscript. Italicize gene symbols.

3. Literal superscripts shall be used to represent different members of an allelomorphic series, e.g., $\underline{R^r}$, $\underline{R^g}$, $\underline{r^r}$, $\underline{r^g}$.

4. Numeral subscripts shall be used to represent different genes which give phenotypically similar effects, e.g., $\underline{v_1}$, $\underline{v_2}$, $\underline{v_3}$, etc.

5. The normal allelomorph of a mutant gene shall be designated by the use of the + sign as a superscript, e.g., the normal allelomorph of sugary (su) will be su^+, and not Su or +. The plus sign alone may be used for normal allelomorphs in such genotypic formulae as $\frac{+\ +}{\underline{su}\ \underline{Tu}}$, but these allelomorphs should be designated as indicated above when the formula is written as $\underline{su^+}\ \underline{Tu^+}$ / $\underline{su}\ \underline{Tu}$.

   This suggestion was made by the Drosophila group and we believe it meritorious. It enables one to tell whether the mutant gene is dominant or recessive to the normal or average condition. And, too, the normal gene is nothing more than an allelomorph of the mutant one.

6. The letter $\underline{T}$ (italicized) shall denote reciprocal translocations or segmental interchanges. $\underline{T}(1\text{-}2)_1$ would represent the first case of a reciprocal translocation between chromosomes 1 and 2, $\underline{T}(1\text{-}2)_2$ the second, etc. Numeral subscripts instead of literal ones are recommended to denote the different translocations. There are several objections for using a, b, c, etc. to denote the different translocations. When more than 26 different translocations involving the same two chromosomes are found we should be forced to use biliteral subscripts, such as aa, ab, ac, etc. The letters of the alphabet have in the past been used for symbolizing genes. For example, we have designated the different virescents as $\underline{v_1}$, $\underline{v_2}$, $\underline{v_3}$, etc., and not as $\underline{v_a}$, $\underline{v_b}$, $\underline{v_c}$, etc.

7. The symbol $\underline{Df}$ (italicized) shall be used for Deficiency. For example, the first deficiency involving chromosome 10 will be represented as $\underline{Df}\ 10_1$; the second as $\underline{Df}\ 10_2$, etc.

8. The symbol $\underline{In}$ (italicized) shall stand for Inversion. An inversion involving chromosome 4 will be represented as $\underline{In}\ 4_1$; the second one as $\underline{In}\ 4_2$, etc.

9. It was decided that there was, as yet, no need to formulate a system of nomenclature for duplications.

This office will do all that it can to enable you to secure any of the stocks listed in this letter but it should be remembered that in several cases the amount of seed is small and we may not be able to fill your request.

Sincerely yours,

M. M. Rhoades

B.

MMR:B

M. M. Rhoades

ENCLOSURES

Linkage group 1

1. P br f_1 bm_2
2. p br f_1 bm_2
3. $\frac{P}{+}$ br f_1 bm_2
4. P an bm_2
5. p ad_1 bm_2
6. P gl_{10} f_1
7. p br f_1 ad_1 *
8. p br ad_1 *
9. f_1 an may seg. bm_2 *
10. p f_1 bm_2 *
11. ts_2 f_1 may seg. bm_2 *
12. ts_2 an may seg. f_1 bm_2 *
13. $\frac{P\ +\ +\ an\ bm_2}{P\ br\ f_1\ +\ bm_2}\ F_2$
14. $\frac{p\ br\ f_1\ ad_1\ +}{P\ br\ f_1\ +\ bm_2}\ F_2$
15. $\frac{P\ br\ f_1\ an\ +}{P\ br\ f_1\ +\ gs_1}\ F_2$
16. $\frac{P\ +\ +\ +\ +\ bm_2}{p\ ts_2\ br\ f_1\ an\ +}\ F_2$
17. $\frac{P\ gl_{10}\ f_1\ an}{p\ +\ +\ an}\ F_2$
18. $\frac{P\ br\ f_1\ +\ an}{p\ br\ f_1\ ad_1\ +}\ F_2$
19. $\frac{p\ ts_2\ br\ f_1\ +\ an}{p\ +\ br\ f_1\ ad_1\ +}\ F_2$
20. P sr

oooooo

Linkage group 2

1. lg_1 gl_2 b v_4
2. lg_1 gl_2 b v_4 seg. ts_1 *
3. fl v_4 *
4. lg_1 B v_4
5. lg_1 b v_4
6. lg_1 B ba_2 seg.
7. lg_1 b ba_2 seg.
8. gl_2 x sk F_2
9. gl_2 v_4 seg. ts_1 *
10. gl_2 fl v_4 *
11. gl_2 fl
12. lg_1 v_4 seg. ts_1 *
13. lg_1 b sk v_4
14. B sk
15. lg_1 B seg. ts_1

oooooo

Linkage group 3

1. a_1-na-ts_4
2. a_1-ts_4
3. $\frac{a_1\ na\ +}{+\ +\ cr}$
4. $\frac{a_1\ +\ d_1\ cr}{+\ Rg\ +\ +}$
5. a_1-na-cr
6. a_1-na-ts_4
7. $\frac{cr\ +}{+\ pg_2}$ F_2 *
8. $\frac{a_1\ ts_4\ +}{+\ +\ cr}$ F_2 *
9. a_1-na-ts_4-cr *
10. a? d_1-cr
11. lg_2-d_1
12. a_1-lg_2
13. a_1-cr *
14. a_1-Rg *
15. a_1-ba_1
16. cr_1-ms_3
17. pg_2-d_1 seg.
18. $\frac{a\ ts_4\ +}{+\ +\ ba_1}$ F_2
19. a_1 d_2

oooooo

Linkage group 4

1. su Tu gl_3
2. su gl_3
3. su Tu
4. su Ts_5
5. $\frac{su\ Ts_5\ +}{+\ +\ wl}$ F_2
6. $\frac{su\ Tu\ +}{+\ +\ wl}$ F_2
7. $\frac{su\ gl_3\ +}{+\ +\ wl}$ F_2
8. $\frac{su\ Tu\ +}{+\ +\ j_2}$ F_2
9. $\frac{su\ Ts_5\ +}{+\ +\ j_2}$ F_2
10. su j_2
11. Su j_2
12. su st *
13. su Tu Ts_5 *
14. F_2 seg. su and vp_3
15. su la *
16. Tu la *
17. $\frac{su\ +}{+\ lo}$
18. $\frac{su\ lo}{+\ +}$
19. $\frac{su\ sp}{+\ +}$
20. $\frac{su\ +}{+\ sp}$

oooooo

Linkage group 5

1. pr v_2
2. pr v_3
3. v_2 pr bm_1
4. pr bm_1
5. ys_1 pr bt
6. a_2-bt_1-pr
7. v_2 ys_1 pr *
8. pr bv bm_1 *
9. v_2 pr bv *
10. bt_1 bm_1 *
11. ys_1 pr bm_1 *
12. ys_1 pr bm_1 seg. v_2 *
13. pr v_{12} bm_1 *
14. pr v_3 bm_1 *
15. ys pr v_3 *
16. v_2-bv
17. pr v_{12}

oooooo

Linkage group 6[x]

1. y Pl py
2. Y Pl py
3. y pl py
4. y Pl py
5. po y Pl *
6. po Y Pl *
7. po y pl *
8. sm Py py ⊗ *
9. Y Bh Pl
10. y pl sm
11. y-si-pl seg.
12. v_7-y-pl
13. v_7-Y-pl
14. v_6-Y-pl
15. v_6-Yy-pl

[x] Stocks carrying al are not listed since there is considerable doubt that al belongs in this linkage group.

oooooo

Linkage Group 7

1. bn gl_1 v_5
2. Bn gl_1 v_5
3. gl_1 ij seg. fr_1 and fr_2
4. ra-gl_1-v_5
5. ra v_5
6. Bn gl_1 ra *
7. $\frac{+ \quad ra \quad +}{gl_1 \quad + \quad ij}$ F_2 *
8. Wh gl_1
9. ra sl
10. Bn gl_1 sl may seg. ra
11. bn gl_1 sl
12. gl_1 v_5 va_1 *
13. in gl_1 v_5 seg.
14. in ij
15. in gl_1
16. gl_1 ij
17. gl_1 sl ra

oooooo

Linkage group 8

1. $\frac{j \quad +}{+ \quad ms_8}$ F_2

oooooo

Linkage Group 9

1. yg_2 c sh wx
2. c sh wx v_1
3. c sh v_{15} wx
4. ARC wx homozygous terminal knob on 9 *
5. c sh bp wx *
6. ar pk sh *
7. c sh wx
8. da_1 au_1 au_2 sh
9. c sh wx w_{11} seg.
10. sh ms_2
11. g_4 sh ar
12. au_1 au_2
13. c sh wx d_3 seg.
14. yg_2 sh d_3 seg.
15. sh l_6
16. sh-wx-w_{11} F_2
17. $\frac{\text{c sh wx Au}_1}{\text{C sh Wx au}_1}$ F_2
18. da au_1 sh
19. I sh

oooooo

Linkage Group 10

1. r g_1
2. r g_1 nl_1
3. R g_1 nl_1
4. R g_1
5. g_1 li
6. l_2 r g_1 seg.
7. pg_1 g_1 r seg.
8. pg_1 l_2 seg.
9. g_1 l_4 seg.
10. d_7 r g_1 seg.
11. r tester stock which does not carry the inhibitor of the mottling allelomorph.
12. g_1-r mottled

oooooo

Multiple combinations involving two or more groups

A_1 C-sh-wx r-g Pr

A_1 C-sh-wx r-g pr

A_1 C-sh-wx R-g Pr

A_1 C-sh-wx R-g pr

A_1 C-sh-wx R-g-nl Pr

A_1 B-lg Y-Pl su-Tu

A_1 B-lg Y-Pl Su-Tu

A_1 B-lg y-Pl Su-Tu

A_1 B-lg y-Pl su-Tu

$\frac{A_1 \quad B\text{-}lg \quad y\text{-}Pl \quad su\text{-}Tu\text{-}+}{A_1 \quad + \quad + \quad y\text{-}+ \quad su\text{-}+\text{-}gl_3}$ F_1

BB-Lg lg Su-tu Yy-Pl pl wx *

Bb-lg Su su-tu Yy-Pl pl wx *

BB-Lg lg su-Tu tu Yy-pl Wx wx *

Bb-Lg lg su-Tu tu Yy-pl Wx wx *

b-Lg lg su-tu y-pl wx *

a_1 pr in wx y C R^g Su su

a_1 B Pl C R Pr Y

A_1-cr C R^g pr su y-pl b-lg j

a_1 B-lg Y-Pl Pr C R

A_1 B-lg y-pl Pr C R S

A_1 B Y-Pl Pr C R Su

A_1-cr C? r^r-g pr in-Bn bn
Su su y-pl b-lg bm_2
may seg. ts_2 d_1 j

A Cc R^g pr In in Su su y-pl
b-lg bm_2 j v? may seg.
g_1 d_1 cr ts_2

A_1 R^g c-Sh sh-wx pr in su y Pvv

a_1 r^r C B-lg Y-pl pr j

a_1 R C lg y pr j in Su

a_1 R c-wx Bb-lg Y-pl pr su

a_1 R c-sh-wx B-lg Yy-Pl Pr su

a_1 R^g C pr Y in b pl *

A_1 c R^g-g pr In Su su Y-pl
b-lg bm_2 j may seg.
cr ts_2 d_1

pr gl_1-v_5

pr lg in

lg gl_1-v_5

pr in-gl_1

pr in-ij

pr-bm_1 an *

pr f_1-(Br br)-(Bm_2 bm_2) *

pr lg-gl_2-b F_2 *

pr ts_4 *

pr a_1-na-ts_4 C R *

pr-bm_1 su Tu tu *

pr-bm_1 y *

pr gl_1-ra *

pr-bm_1 sh-wx *

pr-bm_1 wx *

pr-bm_1 sh-wx su *

pr-bm_1-v_3 wx F_2 *

bm_1-yg_1 wx *

A R c-sh-wx pr-bm_1-v_2 *

A R C-sh-wx-v_1 pr *

lg-gl_2-b wx F_2 *

a_1-ts_4 lg gl_2 F_2 *

a_1-na-ts_4 C-R B Pl F_2 *

bm_2 cr *

bm_2 lg_1 g_1 *

Ch j su *

su-gl_3 lg_1-v_4 *

a_1 B Pl c-sh-wx pr su-gl_3 *

a_1 B Pl c-sh-wx P^v su-Tu *

A c R pr lg_1 g_1 Su y Bn

br-li seg. bd (branched silkless)

g_1-li wx seg. bd.

cr li gi

ra g_1-li lg

A B Pl li lg_1 f_1

lg_1 g_1 f_1

lg_1 ad-f_1

ra_1 g_1 lg_1 br

wx lg_1 gl_1

cr ra_1 f_1

a_1 r C pr wx y Bn ? *

a_1 C r pr wx y Bn ?

a_1 C R^g pr in y wx Su su

A C r^g sh wx y pr Su su

a C R^g pr Y pl in b

A C R pr su Tu tu gl_3

a_1 P sh-wx su lg-b f_1

a_1 p sh-wx Su lg-b f_1

$$\frac{\text{A B pl lg } ts_1}{\text{A C R b pl pr } v_2} \; F_2$$

A C R pr-bm_1 wx may seg. v_2

A C R lg-B-v_4 pr bv Yy-pl F_2

A C r j Y

a_1-na-cr Y-pl gl_1-v_5

a_1-na-cr Y-pl b-lg gl_1-v_5

a_1-na b-lg Y-pl

a_1-na-cr b-lg Y-pl

a_1-Na na-Ts_4 ts_4 b-lg g_1

a_1-na b-lg Y-pl gl_1-v_5

A C R Pr gl_1-ra *

A C R so_1 so_2

Aa Rr-g_1 B Pl su

#2 trisome

#3 "

#5 "

#6 "

#7 "

#8 "

#9 "

#10 "

A C (Rr)? Pr (Bb)? pl Yy
tetraploid

A C r^g b pl y Su tetraploid

a_1 C R pr y Su

A_1 c R Pr y Su

A_1 C r pr y su *

A_1 C R pr y

A_1 C R pr sh

A_1 B pl lg_1 y

A_1 c R sh wx b pl y

Three inbred strains of Leaming selfed for 29 years. *

Strain resistant to physiological forms 1 and 3 of Puccinia sorghi.

Strain susceptible to physiological forms 1 and 3 of P. sorghi.

Strain resistant to physiological form 1 but susceptible to physiological form 3 of P. sorghi.

List of reciprocal translocations at Cal. Tech.

Pedigree No.	Chromosomes involved
A 11	1- 7
A 12	1- 3
A 13	4- 9
A 14	4- 5
A 15	3-10
A 16	8-10
A 17	2- 7
A 18	3-10
A 19	2- 3
A 20	5-10
A 21	5- 8
A 22	8-10
A 23	6-10
A 24	1- 5
A 25	2- 7
A 26	3-10
A 27	3- 7
A 28	3- 5
A 29	1- 2
A 30	3- 6
A 31	3- 9
A 32	1- 5
A 33	2- 6
A 35	1- 9
A 36	4- 6
A 37	4- 6
A 38	3- 8
A 40	1- 5
A 41	2- 6
A 42	2- 4
A 43	1- 9

Pedigree No.	Chromosomes involved
A 52	3- 5
A 58	1- 3
A 61	4-10
A 62	8-10
A 64	1-10
A 66	4- 5
A 69	2- 7
A 70	4- 6
A 73	1- 7
A 74	1- 3
A 75	2- 5
A 76	2- 9
A 77	1- 9
A 78	2- 8
A 79	4- 9
A 80	2- 6
A 83	8- 9
A 84	8-10
A 85	4-10
A 87	1- 3
A 88	2- 4
A 90	2- 3
A 94	9-10
A101	2- 4
A103	1- 7
A111	6- 8
A118	2- 3
A119	6- 9
A122	1- 4
A129	2- 4
A133	3-10
A136	5- 7
A137	4- 7
C & A 125	3- 6
A & C 6452	5- 6
A & C 6460	2- 9
A & C 6462	4- 5
A & C 6465	3- 9
A & C 6466	1-10
A & C 6467	4- 8
A & C 6468	3- 5
A & C 6470	6- 9
A & C 6471	2- 6
A & C 6472	4- 5
A & C 6473	2-10
A & C 6474	3- 7
A & C 6475	5- 7
A & C 6477	3- 8