

IV. REPORT ON MAIZE COOPERATIVE

Extensive collections of Maize Cooperative genetic stocks have been grown for the past two summers at Urbana. The primary emphasis thus far has been on collecting and preserving valuable genetic traits and on increasing the seed supplies. Since many of the stocks are quite weak as a result of prolonged inbreeding and are in some cases poorly adapted to much of the corn belt, an effort was made in the summer of 1953 to cross all stocks to the inbred lines M14, W23, and Oh51A. It is planned that the stocks will be converted eventually to these lines. During the past summer, F_2 's from many of these crosses were obtained. With some of the multiple gene stocks, especially, it has been necessary to make various supplementary types of crosses to maintain supplies and to increase the vigor of the stocks until they can be extracted from crosses to the inbreds and their genetic constitutions can be confirmed. Many of the F_1 's from crosses of unplaced genes to chromosome rearrangements marked with closely-linked endosperm or seedling traits were selfed this past summer. Those F_2 's segregating for unplaced endosperm or seedling traits are being checked for linkages this winter.

During the past year about two dozen additional stocks have been added to the collection. We are especially anxious to receive additional chromosome tester stocks, multiple dominants, and multiple recessives, particularly those which have been selected for vigor. We would also appreciate obtaining stocks of new traits or more favorable combinations of traits already in the collection.

Requests for stocks should be sent to the Botany Department, University of Illinois, Urbana, Illinois. The available Cooperation stocks are as follows:

Chromosome 1 stocks

as
bm₂; probably seg v₁₉
Hm
Kn
lw₁
ms₁₇
P^{rr} ad₁ bm₂
P^{rr} an₁ bm₂; seg br₁, ad₁
P^{rr} bm₂; seg ad₁
Seg P^{rr} br₁ an₁ gs₁ bm₂ (in coupling)
p^w
P^{wr} gs₁ bm₂
P^{wr} bm₂
P^{ww} br₁ f₁ bm₂
P^{ww}; may seg ts₂, bm₂
P^{ww}; may seg ts₂, bm₂
P^{ww}; may seg ts₂, bm₂
P^{ww}; may seg zb₄, br₁
P^{ww}; seg zb₄ ts₂

sr P^{wr} an₁ bm₂
 may seg ts₂ P^{wv} br₁
 Ts₆
 Vg
 vp₅
 zb₄ ms₁₇ P^{wv}
 zb₄ P^{wv} bm₂
 may seg zb₄, P^{wv}, br₁, bm₂
 zb₄ ts₂ P^{wr}

Chromosome 2 stocks

al lg₁
 ba₂
 fl₁
 lg₁; seg al, gl₂
 lg₁; seg al, gl₂, v₄
 lg₁ gl₂; seg ws₃ B
 lg₁ gl₂ b; seg ws₃
 lg₁ gl₂ b; seg ws₃, fl₁, v₄
 lg₁ gl₂ b fl₁ v₄
 lg₁ gl₂ B sk v₄
 seg lg₁ gl₂ b sk v₄ (in coupling)
 lg₁ gl₂ b v₄
 lg₁ gl₂ b v₄ Ch; may seg sk

Chromosome 3 stocks

a₁ et; A₂ A₃ C R; seg Dt
 a₁ sh₂; A₂ A₃ C R dt
 a₁ sh₂; A₂ A₃ C R; seg Dt
 A^d-31; A₂ A₃ C R
A^d-31 Sh₂ ; A₂ A₃ C R; seg Dt
a₁ sh₂
A^d-31 ; A₂ A₃ C R
 a_{x-1}
 a^p et; A₂ A₃ C R; may seg Dt
a^p Sh₂ (et) ; A₂ A₃ C R; carries Dt
a₁ sh₂ Et
a^p (et) ; A₂ A₃ C R; may carry Dt
a_{x-1} (Et)
a_{x-1} -- ; A₂ A₃ C R; seg Dt
 a₁ sh₂
 cr₁ ts₄ na₁
 d₁
 d₁; seg Lg₃
 d₁; seg Lg₃, Rg (in repulsion)
 d₁; seg Rg
 d₁ ts₄ lg₂
 d₂
 g₂
 gl₆

gl₆ lg₂ a₁ et; seg Dt (C, R not homozygous)

gl₆ v₁₇

gl₇

lg₂ a₁ et; A₂ A₃ C R Dt

lg₂ a₁ sh₂ et; A₂ A₃ C R

lg₂ A^b et; A₂ A₃ C R

Lg₃

seg Lg₃, R

ms₃

pg₂

pm

ra₂

ra₂ lg₂; seg pm

Rg

rt

sh₂

ts₄ na₁

vp₁

Chromosome 4 stocks

bm₃

bt₂

de(1 or 16?)

Ga₁ Su₁

ga₁ su₁

gl₃

la su₁ gl₃

lo

lw₄; lw₃

o₁

sp₁ lo su₁

Sp₁ lo Su₁

sp₁ Su₁

Sp₁ Su₁

st

Su₁^{am}

Su₁ bm₃

su₁ gl₃

su₁ gl₄

su₁ Tu gl₃

su zb₆

seg su₁, zb₆, Tu, gl(3)

Ts₅

Tu gl₃

v₈

Chromosome 5 stocks

a₂ bm₁ bt₁ bv₁ pr; A₁ A₃ C R

a₂ bm₁ pr v₂; "

a₂ bt₁ pr; "

a_2 bt_1 pr; " ; seg bm_1 , bv_1 ; may seg ys_1
 a_2 pr; "
 bm_1 pr; $A_1 A_2 A_3 C R$
 bm_1 pr; seg ys_1
 bm_1 yg_1
seg bm_1 , ys_1
seg bm_1 , $ys_1 v_2$
 bt_1
Ga Bt_1
ga bt_1
 gl_5
 gl_8
 lw_2
 lw_3 ; lw_4
 ms_{18}
pr; $A_1 A_2 A_3 C R$
pr; "
pr; " ; seg bm_1 , v_2 ; probably seg ys_1
pr; " ; seg "sh₃", bm_1 , ys_1 , intensifier linked to "sh₃"
pr; " ; seg vp_2
pr; " ; seg ys_1
"sh₃" (allele of bt_1)
"sh₃" pr; $A_1 A_2 A_3 C R$
"Sh₃" pr; " ; seg intensifier linked to "sh₃"; carries ys_1
tn
 v_3 pr; $A_1 A_2 A_3 C R$
 v_{12}
seg vp_2 , gl_8 (in repulsion)
seg vp_2 , pr (in repulsion); $A_1 A_2 A_3 C R$
seg vp_7
 ys_1 ; seg bm_1
 ys_1 ; seg "sh₃", intensifier linked to "sh₃", bm_1 , pr; $A_1 A_2 A_3 C R$

Chromosome 6 stocks

seg Pl, sm, may seg py (all in coupling); $A_1 A_2 b$, seg P^{rr}
po
seg Y at si (all in coupling)
y, seg Pl, seg Bh; c sh₁ wx $A_1 A_2 A_3 R b$
Y, seg Pl, may seg py; $A_1 A_2 b P^{rr}$
Y, seg Pl sm py (in coupling); $A_1 A_2 b$, seg P^{rr}
y; seg w_1
y; seg w_1 , luteus on chromosome 6; carries P^{rr}
Y L₁₀ pl ; $A_1 A_2 b$
y L₁₀
y ms (1?)
Y Pl; $A_1 A_2 b P^{rr}$
y Pl, seg luteus on chromosome 6; $A_1 A_2 b$
Y pl, seg w_1
y Pl, seg w_1 ; $A_1 A_2 b P^{rr}$
y pl, seg w_1 ; seg yellow seedling (luteus?); $A_1 A_2 b$
y Pl, seg w_1 ; seg yellow seedling (luteus?); $A_1 A_2 b P^{rr}$

y Pl; seg w_1 , luteus on chromosome 6; $A_1 A_2 b$
 y su_2
 Y v_7
 y Pl Bh; $A_1 A_2 B sh_1 wx$
 y $pg_{11}pl$; $A_1 A_2 wx pg_{12}$
 y Pl (py); seg a luteus; $A_1 A_2 b$; carries P^{rr}
 Y Pl sm, may seg py; $A_1 A_2 b$; seg P^{rr}
 y Pl (sm), may seg py; $A_1 A_2 b P^{rr}$
 Y Pl sm py; $A_1 A_2 b$; carries P^{rr}

Chromosome 7 stocks

(Bn)
 gl_1 ; y $A_1 A_2 A_3 C R pr$
 gl_1 ; Y wx $A_1 A_2 A_3 C R Pr$
 seg $gl_1 sl$ (Bn)
 Hs
 o_2
 $o_2 ra_1 gl_1$
 $o_2 v_5 ra_1 gl_1$
 $o_2 v_5 ra_1 gl_1$; seg Hs
 $ra_1 gl_1$
 Tp_1
 va_1
 $vp_9 gl_1$; wx

Chromosome 8 stocks

$v_{16} j_1$, seg ms_8 ; l_1

Chromosome 9 stocks

$au_1 au_2$
 bk_2
 c; seg wx, bk_2 ; $A_1 A_2 A_3 R$
 c wx; y $A_1 A_2 A_3 R b Pl$
 c $sh_1 wx$, y $A_1 A_2 A_3 R b$, seg Pl
 c $sh_1 wx gl_4$ (Coop) $A_1 A_2 A_3 R$
 c $sh_1 wx gl^H$; $A_1 A_2 A_3 R$
 da_1 ; seg sa, ms_2 , wx; may seg ar
 Dt_1 (See chromosome 3 stocks)
 gl_{10} (Coop)
 gl_{10} (Sprague)
 I wx; $A_1 A_2 A_3 R Pr B pl$
 I wx; $A_1 A_2 A_3 R pr B pl$
 l_7
 ms_2
 ms_{20}
 $sh_1 l_7$
 $sh_1 ms_2$
 $sh_1 wx d_3$
 seg sh_1, d_3, l_6

sh₁ wx pg₁₂; y A₁ A₂ B pl pg₁₁
 Wc; seg bk₂, may carry ms₂₀
 Wc; may seg bk₂, ms₂₀
 Wc; carries ms₂₀, may carry bk₂
 wx^a
 wx da₁ (C, R may segregate); seg ar, sa; may seg ms₂
 wx g₄
 wx l₆
 wx pg₁₂; y A₁ A₂ B pl pg₁₁
 wx v₁; seg sh₁

Chromosome 10 stocks

a₃ g₁ R; A₁ A₂ C
 du₁
 g₁
 g₁ r^g; A₁ A₂ A₃ C
 gl₉ (Coop)
 l₁; v₁₆ ms₈ j₁
 li g₁ R; A₁ A₂ A₃ c
 li g₁ r; "
 li g₁ r; " ; may carry abnormal 10
 na₂
 nL₁ g₁ R; A₁ A₂ A₃ C
 Og R; A₁ A₂ A₃ C B Pl; may carry B chromosomes
 R^{mb}; A₁ A₂ A₃ C
 R^{nj}; "
 Rst; "
 v₁₈
 w₂
 zn

Stocks of unplaced genes

an₂
 at
 bk₁
 bk₂
 bm₄
 "bm₄" Singleton
 cl
 de₁₇
 du₂
 dv
 dy
 fl₂
 gl₁₁
 gl₁₂
 gl₁₃
 gl₁₄
 gl₁₅
 gl₁₆

gl₉
 h
 mn
 ms₅
 ms₆
 ms₇
 ms₉
 ms₁₀
 ms₁₁
 ms₁₂
 ms₁₃
 ms₁₄
 mottled aleurone
 new starchy gene
 pb₄
 "ra₃" Perry
 Rs₁
 rs₂
 "sh₄" Singleton
 "sh₅" Singleton
 Ts₃
 tw₁
 tw₂
 v₁₃
 v₁₇
 vp₆
 ws₁ ws₂
 zb₁
 zb₂
 zb₃

Multiple gene stocks

A₁ A₂ A₃ C R Pr
 (") Pr wx
 (") Pr wx y
 (") Pr wx Y gl₁
 (") pr
 (") pr wx
 (") pr wx y
 (") Pr su₁
 (") Pr B Pl; seg Og; may carry B Chromosomes
 A₁ A₂ A₃ c R Pr su₁
 (") y wx
 (") y sh₁ wx
 A₁ A₂ A₃ C r Pr su₁
 (") su₁ y g₁
 (") y wx
 (") y sh₁ wx
 wx lg₁ gl₂ b v₄
 y su₁ ra₁ gl₁
 y wx gl₁

lg₁ su₁ bm₁ y gl₁ j₁
su₁ y wx a₁ A₂ A₃ C R⁹ pr
colored scutellum

Combinations of endosperm genes

The combinations of genes affecting synthesis of endosperm starch listed in last year's News Letter are still available in our collection. However, Dr. Kramer, who is still working actively with this material in deriving new combinations and increasing vigor, has offered to supply improved stocks of these combinations to interested investigators. Requests should be addressed to Dr. Herbert H. Kramer, Agronomy Department, Purdue University, Lafayette, Indiana.

Stocks useful in studies of Ga factors

Hulless
South American
Ohio Yellow
Black Beauty
Red
Amber Pearl
Supergold

Exotics and varieties

Black Mexican Sweet Corn (without B chromosomes)
Black Mexican Sweet Corn (with B chromosomes)
Gourdseed
Maize chapolote
Papago Flour Corn
Parker's Flint
Tama Flint
Zapaluta chica

Stocks of primary trisomics

Stocks are available which will segregate for trisomics 3, 4, 5, 6, 7, 8, and 9. These stocks have been crossed once or twice by the inbred line W23. Thus far, trisomics 1, 2, and 10 have not appeared in the small number of plants examined.

Reciprocal translocations marked with closely-linked genes for endosperm or seedling traits

A selected series of chromosome translocations, whose breakpoints mark most of the regions of the ten chromosomes, is being maintained. The majority of the translocations are closely linked to wx, with the remainder linked to su₁, y or gl₂. The stocks are in general quite vigorous. In most cases, F₁'s with M14, W23, and Oh51A are available, and in a few instances F₂'s have been obtained. The list of translocations is as follows:

wx 1-9 c
wx 1-9 4995-5
wx 2-9 b
wx 3-9 c
wx 3-9 5775-1
wx 4-9 b
wx 4-9 5657-2
wx 4-9 g
wx 5-9 a
wx 5-9 c
wx 5-9 4817-7
wx 5-9 5614-3
wx 6-9 a
wx 6-9 b
wx 6-9 4505-4
wx 8-9 d
wx 8-9 6673-6
wx 9-10 b
gl₁, wx 7-9 4363-1
 su 1-4 a
 su 1-4 d
 su 4-5 j
 su 4-8 a
y, su 4-6a
 y 1-6 c
 gl₂ 2-3 a
 gl₂ 2-3 5304-3

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