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NEW YORK STATE COLLEGE OF AGRICULTURE
AT CORNELL UNIVERSITY
ITHACA, NEW YORK

CORNELL UNIVERSITY AGRICULTURAL
EXPERIMENT STATION

ALBERT R. MANN, DEAN

DEPARTMENT OF BOTANY

May 12, 1931.

Dear Charlie,

My greenhouse ears are just finishing up. It took a long time for maturity. I used a light for the first month & I expect this increased the time of growth before flowering.

I have grown trisomic material of #5 (6-th smallest) & believe it is the pr-v_2 chromosome. I have v_2 counts to get from ⊗. The ⊗s show a 9:1 ratio for pr but the color segregation was not perfect. The trisomics of #8 (3rd smallest) shows clearly that pr is not involved in this case & had good segregations. I imagine that the other chr. involved in $\boxed{}_2$ is su-Tu or gl_1-v_5. Rhoades is taking care of #7 for chocolate perhaps counts. He has the F_1 which he is going to b.c. this summer. I have #7 ⊗ for gl_1-v_5 counts but want to grow for counts this summer so as to get the % of trisomics at the same time without making root-tip counts. All my material has been sent off to Missouri. I expect to leave here in around the first of June.

Concerning the trisomic counts I have been wanting to send to you.

B 11 (13) +1 × B 83 (3) = Mc 270.

25-30% sterile. Wx ux ux : Sh Wx

AcR sh ux

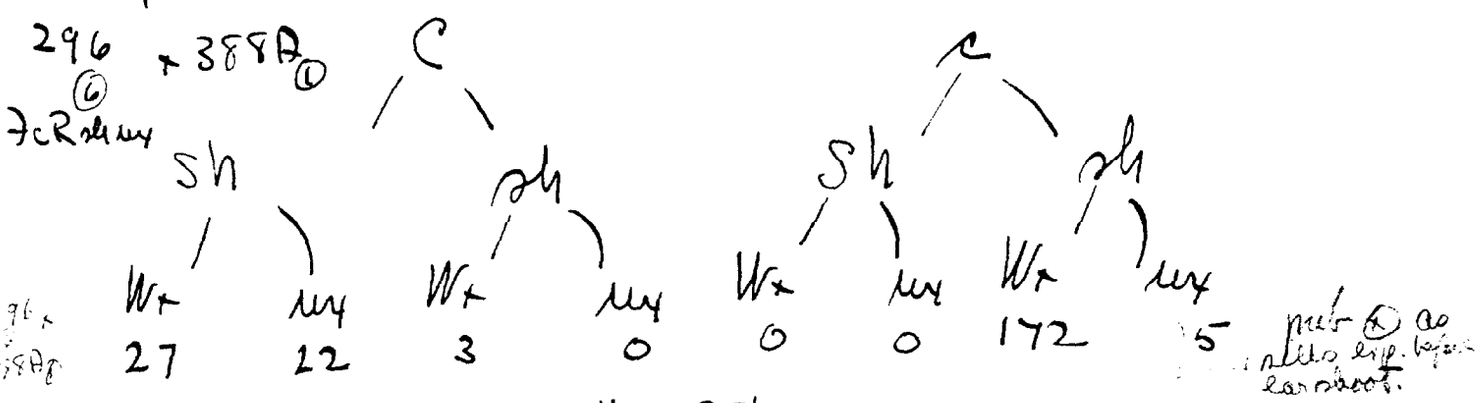
→ could give 5 types of trisomes.

2n+1 plants of 270 = 4 plants examined. 2 were 25 & 30% sterile. 1 was 12-15% sterile & 1 8.3% sterile. The one that was 12-15% sterile (270 (11)) was (x). It gave 11 Purple Sh Wx : 8 purple Sh ux : 1 purple sh Wx : 25 colorless Sh Wx : 5 colorless Sh ux : 9 colorless sh Wx : 2 colorless sh ux. Some of these kernels were planted in the field last summer & gave rise to my culture 388. 8 were 2n & 13 were 2n+1. 12 of the 2n+1 plants were 12-15% sterile; 1 (possessed 2n + long interchange chr.) possessed the 3rd-smallest chromosome (388 F (1)).

388 A (1), D (1) + (2) were from C Sh Wx seeds & were trisomic. Pollen counts were made on 388 A (1) giving 1415 Wx : 69 ux : 347 bad. which is 21.5 Wx : 1 ux or 4.6% ux. Sterility 16.3%. When this pollen was used on c-sh-ux plants:

296 (6) × 388 A (1)

AcR sh ux

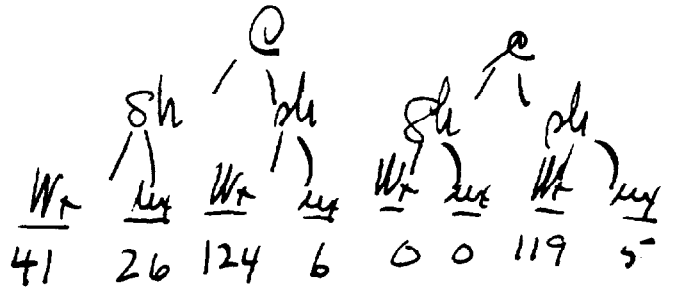


prob (x) as sells exp. before ear shoot.

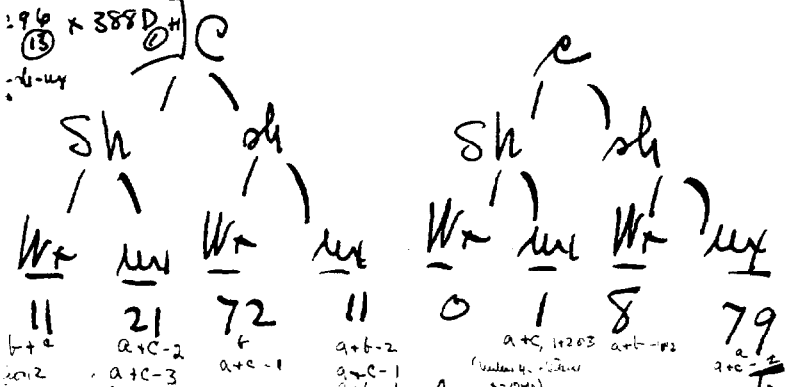
Therefore 388 A (1) = $\frac{\text{c sh Wx}}{\text{c sh Wx}}$ $\underline{\text{C Sh ux}}$ ux

389 $C_{①}$ zu × 388 $A_{①}$

$\frac{C\ sh\ wx}{e\ sh\ wx}$ $\frac{e\ sh\ Wx}{e\ sh\ Wx}$ $\underline{C\ Sh\ wx}$ zu =



388 $D_{①}$ +1 partial sterile was crossed to e-sh-wx:



Therefore 388 $D_{①}$ =

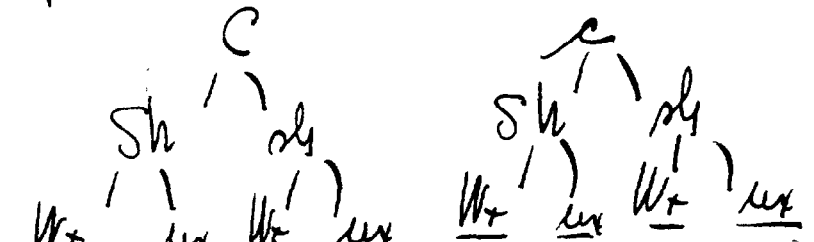
a $\frac{e\ sh^2\ wx^3}{C\ sh\ Wx}$ $\underline{e\ Sh^2\ wx^3}$ zu

+

388 $D_{②}$ +1 partial sterile was crossed to e-sh-wx.

Therefore 388 $P_{②}$ =

$\frac{e\ sh\ Wx}{C\ Sh\ Wx}$ $\underline{C\ Sh\ wx}$ zu



	Wx	wx	Wx	wx	Wx	wx	Wx	wx
196 × 388P ②	197	18	3	2	3	0	150	5
196 × 388D ②	194	34	2	0	5	0	130	4
388P ② + × 9D ③ zu e-sh-wx	108	3	3	0	1	0	38	0

possible root position drain + ...

It is assumed that ~~zu~~ +1 grains did not function.

388 $A_{①}$ $\frac{c\ sh\ Wx}{e\ sh\ Wx}$ $\underline{C\ Sh\ wx}$ zu was crossed to your a 125 (65) +69 which was homozygous for the knob. 9 Wx wx 2 heterozy. 20 plants were grown. Of these, 9 were zu + 10 were zu+1. The results were as follows:

416 A.

① 21 chr. partial sterile Wx Wx ux
② 21 chr. " " Wx Wx ux
③ 21 " " " Wx Wx Wx Wx Wx
④ 20 " no sterile $\mathrm{Wx}\,\mathrm{Wx}$
⑤ 21 " no sterile $\mathrm{Wx}\,\mathrm{Wx}$ #8
⑥ 20 " " "
⑦ 21 " " " 1 Wx : 1 ux #8
⑧ 20 chr. " "
⑨ 21 chr. partial sterile Wx Wx ux
⑩ 20 chr. no sterile Wx ux
⑪ 20 chr.
⑫ 20 chr.
⑬ 21 chr. no sterile (prob.) $\mathrm{Wx}\,\mathrm{Wx}$ (Wx)
⑭ 21 " no sterile Wx - all
⑮ 20 chr.
⑯ 21 chr. partial sterile Wx ux ux
⑰ 20 chr.
⑱ 20 chr. $\mathrm{Wx}\,\mathrm{Wx}$
⑲ 21 chr. partial sterile Wx Wx ux
[⑳ 20 chr prob. poor count.]

Prophase in ③ + ⑨ showed as diagrammed above. ⑤ + ⑦ showed trisomes but not knob chromosome.

6 of the trisomes came from n + long interchange eggs. 2 came from n + #8 + 2 from n + #8 or #9.

Pollen counts were made on several:

416 $A_{①}$ = 665 Wx : 26 ux : 113 bad = 23.8 Wx : 1 ux or 3.7% ux

14% sterility. This count is similar to the parent 388 $A_{①}$.

The ux pollen grains are n grains due to x-over or n+1 due to cross-over assortment at MI giving 2 #8 + 1 #9 with ux.

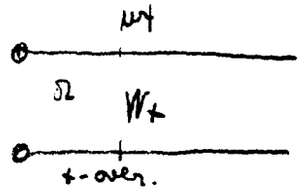
Distribution at MI depends somewhat on synapses. I have a few counts.

416 $A_{③}$ 26 Tris: 13 5-m-group : 9 could not tell : 2 10"+1'. No lagging seen.

The tri can be 8-8-I or 9-9I. The gametes resulting are as follows:

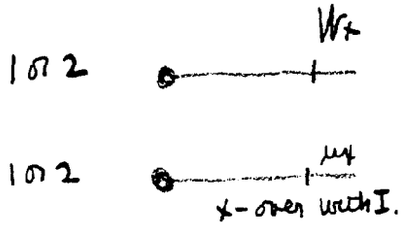
Gametes from 388 $A_{①}$ or 416 $A_{②}$:

n spores (or gametes)



– dies
– dies

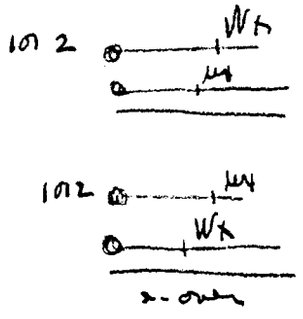
15% (minus normal sterility).

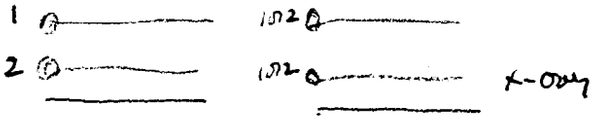


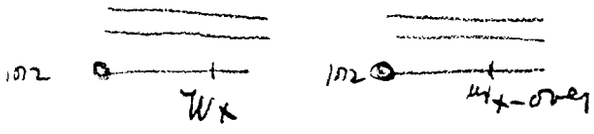
viable n gametes

Fewer n gametes than n+1 is reason why 2n + I produces more 2n+1 individuals than 2n (reverse of usual trisome condition).

n+1 spores







The % of the 3 types of trisomes should tell something about the distribution. More study is needed. I think I have included many all the necessary information for you to work on. There are some interesting things to do but the value may not be worth the effort in most cases.

Tell Beadle I have it forgotten to write him but I have a number of things to discuss so have postponed. I shall see him next year any way. I assume he was reappointed. What have you heard? If you do not get a renewal what are you expecting to do?

Harriet is coming fine with her problem. I am very sorry I am not going to be with her in the work. I think the 2 of us would do much better than either alone.

Let me know what is new & what you are doing. You can reach me at Waters Hall, c/o L. J. Stadler, University of Missouri, Columbia, Mo. after June 1.

Too bad about Marion & Beadle. I think it is for the best, tho.

As ever,

Bart.

P.S.

Would you care to write up the order of the genes of the e-sh-w linkage group with me? I think it ought to be done soon & should go in the Proc. Nat Acad-Sci. Your unpublished data is as essential as mine. Let me know what you think