I. GENETIC NOMENCLATURE IN MAIZE

The International Committee on Genetic Nomenclature will submit its recommendations on nomenclature and symbolization to the forthcoming International Congress at Montreal. So far the Committee has not agreed upon its recommendations and some feel that no attempt should be made at this time to establish a rigid system. In order to aid the International Committee I have been asked to obtain the views of maize geneticists with respect to certain suggestions. Given below is a summary of the nomenclatorial system now used by maize geneticists.

1. The linkage groups and chromosomes are designated by Arabic numerals. Linkage group 1 includes those genes which lie in the longest chromosome, etc. The longest chromosome of the monoploid set of 10 is called chromosome 1 and the shortest chromosome 10.

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

3. Literal or numeral superscripts shall be used to represent different members of an allelic series, e.g. R^r, R^g, r^r, r^g. Superscripts in italics.

4. Numeral subscripts shall be used to represent different (polymeric) genes which give phenotypically similar effects, e.g. v_1, v_2, v_3, etc. The subscripts are also italicized.

5. The normal allele of a recessive mutant gene shall be designated as has been customary in the past, i.e. either by a + sign or by a capital letter; e.g. the normal allele of su can be either Su or +, depending upon which is the most convenient to use. The normal allele of what are commonly considered dominant genes can be designated, as in the past, by either a + sign or by small letters, i.e. the normal allele of Tu can be either + or tu.

6. The letter T shall denote translocations. T 1-2a would represent the first case of reciprocal translocation between chromosomes 1 and 2, T 1-2b the second, etc. A reciprocal translocation involving one of the normal A set of chromosomes and a B chromosome shall be designated TB. TB-9a would represent the first case of a reciprocal translocation between chromosome 9 and a B chromosome. All symbols are in italics and on the same line -- i.e. no subscripts are used.

7. The symbol Df shall be used for deficiency. The first deficiency involving chromosome 10 will be represented as Df 10a; the second as Df 10b, etc. All parts are italicized and are on the same line. In practice this has not been followed since some maize workers use numerals to designate different deficiencies. Agreement is needed here.

8. The symbol In shall stand for inversion. An inversion involving chromosome 4 will be represented as In 4a, the second case as In 4b, etc. All parts are italicized and are on the same line.

9. The symbol K shall be used to designate chromosome knobs. A knob on chromosome 9, for example, would be K9, one of chromosome 10 would be K10. When more than one knob is found on a specific chromosome arm the proximal one would be designated by the letter p, the more distal one by the letter d, and a terminal knob by the letter t. If it is necessary to denote the arm of the chromosome this can be done by using the letter S for the short arm and the letter L for the long arm. On this scheme the terminal knob on the short arm of chromosome 9 would be designated K9St. All parts are italicized.

10. X-ray induced mutants are indicated by the letter x. For example, the recessive mutations at the A_1 locus found by Stadler and Roman are represented by the symbols $a\text{-}x_1$, $a\text{-}x_2$, $a\text{-}x_3$. All parts are italicized.

An unresolved problem confronting maize workers is the symbolization of the different sources of male sterile cytoplasm and of fertility restoring genes. At recent Southern and North Central Corn Conferences approval was given to the following recommendations:

Different sources of male sterile cytoplasm be designated as cms_1, cms_2, etc. The symbol Rf be used for fertility restoring genes (Rf_1, Rf_2, etc.).

However, the Committee on Nomenclature at the Northeastern Corn Conference had the following recommendations:

(1) Capital letters be used to designate the source of sterile cytoplasm--e.g. the letter T for the Mexican June source from Texas, the letter S for the U.S.D.A. source, etc.

(2) Preference was indicated for the use of R or F for fertility restoring loci but they are willing to accept Rf if this meets with general approval.

(3) When an inbred such as C103 has been converted to type in a sterile cytoplasm it could be represented as C103T if the Texas source was used, etc. If such a sterile inbred as C103T is restored to fertility it is written C103TF (if F represents fertility restoration).

It has been the common practice in genetic literature to designate cytoplasmic differences or factors by Greek letters. This appears singularly inappropriate for maize where it is conceivable that numbers of different cytoplasms will exceed the number of letters in the Greek alphabet.

Although no consensus has yet been reached by the corn breeders it is to be hoped that some definite system can be agreed upon which can be transmitted to the International Committee. I do not believe an attempt will be made to insist on adherence to a rigid nomenclatorial system but maize workers may be called upon to examine their system in the hope that it may be brought into closer agreement with that used for other plants and animals.

I believe that the maize nomenclatorial system agrees on the whole with that used by most other investigators but there is a difference on several points. For example, there is considerable sentiment for the use of Roman rather than Arabic numberals to designate linkage groups and chromosomes. Personally I feel this is undesirable. The designation T7-8a is unquestionably to be preferred to TVII-VIIIa. A second point of difference is the designation of the normal allele of a mutant locus. The suggestion has been made to represent the normal allele by the mutant symbol with the + sign as a superscript (i.e., the Wx allele would be wx^{+}).

I would appreciate any comments or criticims which you may care to send me and I will attempt to fairly present your views to the International Committee.

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