Soybean Genetics Committee Report

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Soybean Genetics Committee Report

Authors

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### III. SOYBEAN GENETICS COMMITTEE REPORT

#### Minutes of the Meeting

The Soybean Genetics Committee met Monday, 13 Feb. 1984 at the Airport Hilton, St. Louis, MO. This meeting was held in conjunction with the annual Soybean Breeders Workshop.

Committee members in attendance were R. L. Bernard, H. R. Boerma, T. C. Kilen, J. H. Orf, R. G. Palmer and J. R. Wilcox. Also present was E. T. Gritton. Drs. W. D. Beversdorf and J. R. Wilcox have been elected to new three-year terms on the committee, replacing Drs. Buzzell and Hadley whose terms expired at the close of the meeting. Present committee members and the expiration of their terms are as follows.

<table>
<thead>
<tr>
<th>Name</th>
<th>Term</th>
<th>Position/Institution</th>
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<tbody>
<tr>
<td>R. L. Bernard</td>
<td>Ex Officio</td>
<td>Curator of soybean genetics collection</td>
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<td></td>
<td></td>
<td>Department of Agronomy, University of Illinois</td>
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<td></td>
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<td>1102 South Goodwin, Urbana, IL 61801</td>
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<tr>
<td>W. D. Beversdorf</td>
<td>(1987)</td>
<td>Crop Science Department, University of Guelph</td>
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<td>Guelph, Ontario, Canada N1G 2W1</td>
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<td>H. R. Boerma</td>
<td>(1986)</td>
<td>Department of Agronomy, University of Georgia</td>
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<td></td>
<td></td>
<td>Athens, GA 31794</td>
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<td>T. E. Devine</td>
<td>(1986)</td>
<td>Department of Agronomy, Iowa State University</td>
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<td></td>
<td></td>
<td>Rm. 218, Bldg. 001, BARC-West, Beltsville, MD 20705</td>
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<td>T. C. Kilen</td>
<td>(1985)</td>
<td>Soybean Production Research</td>
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<td>P.O. Box 196, Stoneville, MS 38776</td>
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<tr>
<td>J. H. Orf</td>
<td>Chrm. (1985)</td>
<td>Dept. of Agronomy and Plant Genetics, University of Minnesota</td>
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<td></td>
<td>St. Paul, MN 55108</td>
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<td>R. G. Palmer</td>
<td>Ex Officio</td>
<td>Ed. of Soybean Genetics Newsletter</td>
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<td>Department of Agronomy, Iowa State University</td>
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<td>Ames, IA 50011</td>
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<tr>
<td>J. R. Wilcox</td>
<td>(1987)</td>
<td>Department of Agronomy, Purdue University</td>
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<td>West Lafayette, IN 47907</td>
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Dr. Orf was re-elected chairman of the committee for the coming year, so manuscripts concerning qualitative genetic interpretation and gene symbols should be sent to him for review.

At the request of the authors of the chapter on qualitative genetics and cytogenetics for the revised Soybean Monograph, a survey was taken of current and former members of the soybean genetics committee concerning the question of allowing gene symbol notation to be written in a computer-compatible format (all on a single line with no superscripts or subscripts). The result of the survey was 13 in favor of allowing this possibility, 2 against. This change will appear in the rules for genetic symbols.

The number of manuscripts received for review by the committee increased to 18 from 13 the previous year. Persons who are not members of the committee may be asked to review manuscripts when their area of expertise is needed and to spread the workload.
It was moved by Bernard, seconded by Boerma, to include a group of international scientists as international members of the Soybean Genetics Committee in order to foster better communication between U.S. and Canadian scientists and other scientists working on qualitative genetics. The motion was passed. A statement on the duties of international members and proposed international members will be made by the Soybean Genetics Committee.

It was suggested that anyone publishing articles that include the assigning of gene symbols send reprints of the articles to Dr. Palmer and/or Dr. Bernard.

A lengthy discussion was held concerning changes in the rules for genetic symbols. Specific changes concerning isozymes were debated. A revised list of rules that includes the changes discussed by the committee will be published in the Soybean Genetics Newsletter in 1985.

An updated list of gene symbols and T-lines will be published in the Soybean Genetics Newsletter. A note also will appear regarding the use of phytophthora gene symbols.

The committee also discussed the review of manuscripts and the assignment of gene symbols. The final choice of a symbol is up to the researcher involved provided the symbol has not been assigned previously. However, the committee hopes the rules for genetic symbols as published in the Soybean Genetics Newsletter will be followed.

Submitted by:

James H. Orf, Chairman
Soybean Genetics Committee

A) Organization of the Committee:

1) The Committee will be composed of six elected members, the editor of the Soybean Genetics Newsletter, and the curator of the soybean genetics collection.

2) The term of the elected members will be three years. After a member has been off for one year, he (she) can be reelected. The Committee will elect two new members each year; a simple majority is needed for election. The members will be elected prior to February 1 of each year, by a mail ballot conducted by the chairman.

3) At the annual meeting of the Committee (usually in February in conjunction with the Soybean Breeding and Genetics Workshop), the two new members and the two retiring members of the Committee are eligible to attend and vote.

4) The chairman will be elected at the annual Committee meeting and serve through the next annual meeting, and may be reelected.
B) The duties of this Committee include the following:

1) Maintain Genetic Collection.

The Genetic Collection is divided into four categories:

a) Type Collection includes all published genes of soybeans, preferably in the original strains (excluding U.S. and Canadian name varieties, which are maintained in a separate collection) plus certain mutants or strains that appear to the Committee to have potential genetic interest.

b) Isoline Collection includes adapted varieties Clark, Harosoy and Lee, into which have been backcrossed single genes or combinations of genes. Also included are certain genes or combinations with Chippewa, Wayne and Williams.

c) Linkage Collection includes linkage combinations and the various genetic recombinations.

d) Cytological Collection includes translocations, inversions, deficiencies, trisomics, tetraploids, etc.

Collections a, b, and c are maintained at Urbana, Illinois, with R. L. Bernard as curator. Collection d is maintained at Ames, Iowa, with R. G. Palmer as curator.

2) Manuscript review and genetic symbol approval.

The Soybean Genetics Committee requests that researchers submit all manuscripts concerning qualitative genetic interpretation and symbols to the Committee Chairman. This review by the Genetics Committee will serve to insure orderly identification and use of genetic nomenclature and to avoid conflict of symbols. This will also allow assignment of type collection designations (T-numbers) prior to publication, so that these T-numbers may be used in the journal article to identify parental lines.

3) Soybean Genetics Newsletter notes.

All notes for the Newsletter should be sent to the SGN editor, R. G. Palmer, who will ask the Soybean Genetics Committee to review those articles concerning qualitative genetic interpretation and symbols. Genetic symbols reported in the Newsletter will have the same status as those published in scientific journals.

C) The Committee will take the responsibility for publishing every five years, starting in 1983, in the SGN a list of all gene symbols, linkage groups, translocations, and trisomics in soybeans. Researchers who have references on the gene symbols and linkage groups are urged to send them to R. L. Bernard. Researchers who have references on translocations and trisomics are urged to send them to R. G. Palmer.

D) The function of the Committee was officially expanded to include genetics research in the entire Glycine genus rather than restricting its responsibilities to Glycine max.
E) Researchers submitting manuscripts on new gene symbols are urged to furnish R. L. Bernard with seeds of the line carrying the reported gene. From 50 seeds to 300 gms of seed of each line are needed to maintain the genetic type collection. When these seeds are received, the genetic type number can be assigned and can then be reported by the author in a manuscript.

Rules for Genetic Symbols

I) Gene Symbols

a) A gene symbol shall consist of a base of one to three letters, to which may be appended subscripts and/or superscripts as described below.

b) Genes that are allelic shall be symbolized with the same base letter(s) so that each gene locus will be designated by a characteristic symbol base.

c) The first pair of genes reported for a gene locus shall be differentiated by capitalizing the first letter of the symbol for the dominant or partially dominant allele. (Example: Ab, ab. Ab is allelic and dominant to ab.) If genes are equivalent, codominant, or if dominance is not consistent, the capitalized symbol may be assigned at the author's discretion.

d) When more than two alleles exist for a locus, the additional alleles or those symbolized subsequently to the pair first published shall be differentiated by adding one or two uncapitalized letters as a superscript to the base. (Example: R, R₁, r.) This shall be the only use of superscripts. The base for the additional alleles is capitalized only when the gene is dominant or equivalent to the allele originally designated with a capitalized symbol. The superscript may be an abbreviation of a descriptive term. When allelism is discovered for a gene previously assigned a symbol, the previous symbol may be used as the superscript.

e) Gene pairs with the same or similar effects (including duplicate, complementary or polymeric genes) should be designated with the same letter base differentiated by numerical subscripts, assigning 1, 2, 3, 4, etc., consecutively in the order of publication. (Example: The y series for chlorophyll deficiency.) This shall be the only use of subscripts. Letter subscripts should not be used. The subscript 1 is automatically a part of the first reported gene symbol for each base but may be omitted until the second symbol is assigned.

f) Base letters may be chosen so as to indicate apparent relationships among traits by using common initial letters for all loci in a related group of traits. Examples are P for pubescence type, R for disease reaction (plus two initials of the pathogen to complete the base), and L for leaf shape.

g) The distinction between traits that are to be symbolized with identical, similar, or with unrelated base letters is necessarily not clear cut. The decision for intermediate cases is at the discretion of the author but should be in accordance with previous practices for the particular type of trait. The following sections concern supplementary
symbols that may be used whenever desired as aids to presentation of genetic formulas.

h) A dash may be used in place of a gene symbol to represent any allele at the indicated locus. The locus represented should be apparent from its position in the formula. (Example: _A represents both AA and Aa.)

i) A question mark may be used in place of a symbol when the gene is unknown or doubtful, or it may be used as a superscript to the base symbol for the same purpose. (Example: a? indicates that the latter is an unknown allele at the A locus.)

j) Plus symbols may be used in place of the assigned gene symbols of a designated standard homozygous strain when this will facilitate presenting genetic formulas. The standard strain may be any strain selected by the worker, as long as the strain being used and its genetic formula are made explicit.

II) Linkage and Chromosome Symbols

a) Linkage groups and the corresponding chromosomes shall be designated with Arabic numerals. Linkage shall be indicated in a genetic formula by preceding the linked genes with the linkage group number and listing the gene symbols in the order that they occur on the chromosome.

b) Permanent symbols for chromosomal aberrations shall include a symbol denoting the type of aberration plus the chromosome number(s) involved. Specific aberrations involving the same chromosome(s) shall be differentiated by a letter as follows: The symbol Tran shall denote translocations. Tran 1-2a would represent the first case of reciprocal translocations between chromosomes 1 and 2, Tran 1-2b the second, etc. The symbol Def shall denote deficiencies, Inv inversions, and Tri primary trisomics. The first published deficiency in chromosome 1 shall be symbolized as Def 1a, the second as Def 1b, etc. The first published inversion in chromosome 1 shall be denoted as Inv 1a, etc. The first published primary trisomic shall be designated with the Arabic numeral that corresponds to its respective linkage group number.

c) Temporary symbols for chromosomal aberrations are necessary, as it may be many years before they are located on their respective chromosomes. Tran 1 would represent the first case of a published reciprocal translocation; Tran 2, the second case, etc. The first published deficiency shall be symbolized as Def A, the second as Def B, etc. The first published inversion shall be symbolized as Inv A, and second as Inv B, etc. The first published primary trisomic shall be designated as Tri A, the second as Tri B, etc. When appropriate genetic and/or cytological evidence is available, the temporary symbols should be replaced with permanent symbols, with the approval of the Soybean Genetics Committee.

III) Cytoplasmic Factor Symbols

a) Cytoplasmic factors shall be designated with one or more letters prefixed by cyt-. (Example: cyt-G indicates the cytoplasmic factor for maternal green cotyledons, cyt-Y indicates that for maternal yellow cotyledons.)
IV) Priority and Validity of Symbols

a) A symbol shall be considered valid only when published in a recognized scientific journal, or when reported in the Soybean Genetics Newsletter, with conclusions adequately supported by data which establish the existence of the entity being symbolized. Publication should include an adequate description of the phenotype in biological terminology, including quantitative measurements wherever pertinent.

b) In cases where different symbols have been assigned to the same factor, the symbol first published should be the accepted symbol, unless the original interpretation is shown to be incorrect, the symbol is not in accordance with these rules, or additional evidence shows that a change is necessary.

V) Rule Changes

a) These rules may be revised or amended by a majority vote of the Soybean Genetics Committee.