Glossary (L - Z)

Plant Breeding Methods (CS, GN, HS 741)

LAND RACE
: Mixture of genotypes of an inbred crop locally adapted as a population; now largely superseded in most areas of crop culture but used and useful in less developed countries.

LEPTOKURTIC
: Flattopped, bell-shaped curve of frequency distribution.

LETHAL GENE
: A gene that renders inviable an organism or cell possessing it.

LINE BREEDING
: A system of breeding in which a number of genotypes which have been progeny tested in respect to some character or group of characters are composited to form a variety.

LINE VARIETIES
: One or more lines of self- or cross- fertilizing plants and single-line facultative apomicts with largely the same genetic background (a theoretical coefficient of parentage of 0.87 or higher and 95% apomixis for the single-line facultative apomicts, except in cases in which it is not possible to achieve 95% apomixis; a level as low as 80% may be classed as line varieties even though the variant plants present may differ in morphological characteristics) which are similar in essential and distinctive characteristics and are maintained or reproduced by controlled self- or sib-fertilization or line crossing of the plants (for self- or cross-fertilizing plants) and by close generation control (for single-line facultative apomicts). Examples of line varieties from normally self-fertilized crops: `Gaines' wheat, `tendercrop' snap bean, `Wayne' soybean; of line (inbred) varieties for normally cross-fertilized crops: `MSU-713-5' gynoecious cucumber, `WF9' corn, `Nittany Lion Red' geranium, ` B2108A x B2108B' (line cross of onion, `B2215C' onion; of single-line facultative apomicts meet 95% apomixis requirement): `Penstar' Kentucky bluegrass, `Merion" Kentucky bluegrass; below 95% apomixis; Adelphi Kentucky bluegrass and Bristol Kentucky bluegrass.

LINKAGE GROUP
: SEE Linkage.

LINKAGE MAP
: Map of position of genes in chromosomes determined by recombination relationships.

LINKAGE VALUE
: Recombination fraction expressing the proportion of crossovers versus parental types in a progeny. The recombination fraction can vary from zero to one half.

LINKAGE
: Association of characters in inheritance due to location of genes in proximity on the same chromosome.

LOCUS
: The position occupied by a gene in a chromosome.

M1, M2, M3..
: Symbols used to designate first, second, third,...generations after treatment of the original plant material (M0) with a mutagenic agent.

MALE STERILITY
: Absence or nonfunction of pollen in plants.

MASS SELECTION

A form of selection in which individual plants are selected and the next generation propagated from the aggregate of their seeds.

MASS-PEDIGREE METHOD

A system of breeding in which a population is propagated in mass until conditions favorable for selection occur, after which pedigree selection is practiced.

MATERNAL INHERITANCE

Inheritance from the female parent to offspring unaffected by inheritance from the male parent.

MATING SYSTEM

Any of a number of schemes by which individuals are assorted in pairs leading to sexual reproduction. RANDOM, assortment of pairs is by chance

GENETIC ASSORTATIVE MATING, mating together of individuals more closely related than individuals mating at random

GENETIC DIASSORTATIVE MATING, mating together of individuals less closely related than individuals mating at random

PHENOTYPIC ASSORTATIVE MATING, mating individuals more alike in appearance than the average

PHENOTYPIC DISASSORTATIVE MATING, mating of individuals less alike in appearance than individuals mating at random.

MATROCLINAL

Plant that exhibits certain characters inherited from the female parent as in certain banana (Musa) hybrids, which more nearly resemble the female parent rather than having intermediate characters.

MEAN

The arithmetic average of a series of observations.

MEDIAN

The value of the variate on each side of which there is an equal number of larger and smaller variates.

MEIOSIS

A double mitosis occurring in sexual reproduction which results in production of gametes with haploid (n) chromosome number. Reduction division; the process by which chromatin material (chromosomes) is reduced qualitatively and quantitatively to half the somatic number (i.e., from 2n to 1n); it is completed in the two divisions, meiotic mitosis, that precede the formation of gametes (spores).

MERICLINAL

Periclinal form in which the outer layers of tissue occupy only a sector rather than completely enclosing the inner layer.

MEROGONY

An individual with the egg cytoplasm from one parent and the egg nucleus from the other parent.

METAPHASE

The stage of cell division in which chromosomes are arranged in an equatorial plate or plane.

METAXENIA

Influence of pollen on maternal tissues of the fruit. SEE xenia.

METRIC TRAIT

A characteristic that shows continuous variation and may be determined by the interaction of polygenes and environments and in some cases by one of the monogenes when the environmental effect on the expression of the trait is large.

MICTON

A species of wide distribution, the result of hybridization of two or more species; all inndividuals are interfertile and have ancestral genotypes; apomixis is not present.

MITOSIS

The process by which a nucleus is divided into two daughter nuclei; the daughter nuclei are identical, qualitatively and quantitatively, in somatic mitosis, barring certain aberrations; spores in higher plants and gametes in animals are produced in two successive nuclear divisions in meiotic mitosis or meiosis.

MIXOPLOID

Chimera having different ploidy levels in the L1, L2, and L3 layers, as in 2-4-4, 4-4-2, and the like.

MIXTURE (= blend)

Consists of seed of more than one kind or variety, each present in excess of 5% of the whole.

MODE

The value of variate in the class of greatest frequency in a frequency distribution.

MODIFIER OR MODIFYING GENE

A gene that affects the expression of another nonallelomorphic gene.

MODIFYING GENES

Genes that affect the expression of a nonallelic gene or genes.

MONOCOTYLEDONS

Plants herbaceous, less commonly woody; stems with scattered vascular bundles, not arranged in a single cylinder (minor exceptions), leaves usually parallel-veined with margins nearly always entire; flowers with parts three's or multiples therof, rarely numerous; embryo with one cotyledon.

MONOECIOUS

A plant having staminate and pistillate flowers. SEE androecious, andromonoecious, dioecious, gynoecious, gynomonoecious, hermaphroditic, trimonoecious.

MONOHYBRID

Heterozygous with respect to one gene.

MONOPLOID

An organism with the basic (x) chromosome number
SEE haploid.

MONOSOME

An organism lacking one chromosome of the diploid complement, hence, having 2n-1 chromosomes.

MONOSOMIC, MONOSOME

Diploid organism that lacks one chromosome of its proper complement; "monosome" refers to a single chromosome, "disome," to two chromosomes of a kind, and "trisome" to three chromosomes of a kind.

MULTILINE VARIETIES

Two or more isogenic lines of normally self-fertilizing plants that are similar in most characteristics but differ in a limited number of describable physiological, morphological, or other essential or distinctive characteristics; derived by growing the component lines separately and compositing the lines to constitute the breeder class of seed. Examples: `Multiline E-69' oat, `Miramar-63' wheat.

MULTIPLE ALLELE (ALLELOMORPH)

A member or a series of more than two alternative forms of a gene.

MULTIVALENTS

SEE univalent.

MUTATION

A sudden variation that is inherited; the term is used loosely to include "point mutations" of a single gene and chromosomal changes.

N

The symbol representing the haploid or gametic chromosome number, which is half the diploid or somatic (2n) number.

NICK

Two different meanings: (1) a slight cut; (2) when two inbreds bloom at the same time so that they can pollinate one another and produce a good yield of seed.

NONALLELIC

Two different genes that occupy different loci on the chromosomes of the genome.

NOVEL VARIETY

May be represented by seed, transplant, or plants, subject to (1) "Distinctness" in the sense that the variety clearly differs by one or more identifiable morphological, physiological, or other characteristics (which may include those evidenced by processing or product characteristics, e.g., milling and baking characteristics in the case of wheat) to which a difference in genealogy may contribute evidence, from all prior varieties of public knowledge at the date of determination; (2) "uniformity" in the sense that any variations are describable, predictable, and commercially acceptable; and (3) "stability" in the sense that the variety, when sexually reproduced or reconstituted, will remain unchanged with regard to its essential and distinctive characteristics with a reasonable degree of reliability

commensurate with that of varieties of the same category in which the same breeding method is used.

NULL HYPOTHESIS

Hypothesis that there is no discrepancy between observation and expectation based on some set of postulates.

NULLIPLEX

The condition in which a polyploid is recessive in all chromosomes in respect to a particular gene. Simplex denotes recessiveness at all loci except one, duplex two, triplex three, quadriplex four, etc.

NULLISOME

An otherwise 2n plant tht lacks both members of one specific pair of chromosomes, hence, with 2n-2 chromosomes.

OFF-TYPE

A plant or seed that deviates in one or more characteristics from that described as being usual for the strain or variety. Any seed or plant not a part of the variety in that it deviates in one or more characteristics of the variety as described and may include seeds or plants of other varieties; seeds or plants resulting from cross-pollination by other kinds or varieties; seeds or plants resulting from uncontrolled self-pollination during production of hybrid seed; and segregates from any of the above plants.

OLIGOGENIC

A major gene, one or a few mendelian determinants.

OPEN-POLLINATED POPULATIONS

Outbreeding mating system that involves annual, biennial, or perennial seed-propagated material; heterogeneous, heterozygous constructed by changing gene-frequencies by selection (population improvement) or by making synthetics via parental lines or clones; verges on polygenotypic; examples are cacao, coconut, oil palm, maize, tea, onions, beet, carrot, cabbage, cauliflower, asparagus, and spinach.

OPEN-POLLINATED VARIETIES OF CROSS-FERTILIZING CROPS.

Consist of normally cross-fertilizing plants selected to a standard that may show variation but have one or more characteristics by which a variety can be differentiated from other varieties. Examples: `Kenland' red clover, `Nordan' cressted wheatgrass, `Yellow Bermuda' onion, `Elbon' rye, `Thumbelina' zinnia, `Poinsett' cucumber, `Golden Bantam' sweet corn.

OPEN-POLLINATION

Pollination that occurs naturally, as opposed to controlled pollination, by detasseling, cytoplasmic male sterility, self-incompatibility, or similar processes.

OPERON

A set of structural genes controlled by an adjacent site on a strand of DNA; their activity is manifested in the controlled synthesis (transcription) of mRNA; may be catabolite-sensitive or insensitive.

ORTET

Original ancestor of a vegetative clone.

OUTBREEDING

Outcrossing; the random mating of individuals.

OUTCROSS

Mating of a hybrid with a third parent; also an offtype plant resulting from pollen of a different sort contaminating a field of usually self-pollinated plants.

OUTCROSSING

SEE Outbreeding.

OVERDOMINANCE

The heterozygote is superior to either homozygote.

P1, P2, P3..

First, second, etc., generations from a parent. Also used to designate different parents used in making a hybrid or series of hybrids.

PACHYTENE

The double-thread or 4 strand stage of meiosis.

PALEOPOLYPLOID (PALAEOPOLYPLOID)

Early or primitive polyploid; e.g., one of ancient origin.

PANMIXIA

Random mating without restriction (usually extended to include random mating under the restrictions of sex or incompatibility).

PANMIXIS, panmixia, panmixy
: A high degree of random mating within a breeding (wild) population; promiscuous interbreeding uninfluenced by selection.

PARAGENEON
: A species in which apomixis is not present and with little morphological or genetic variation but contains some aberrant genotypes; all individuals are infertile.

PARAMETER
: A numerical quantity which specifies a population in respect to some characteristic.

PARTHOGENESIS
: Development of an organism from a sex cell but without fertilization.

PEDIGREE BREEDING
: A system of breeding in which individual plants are selected in the segregating generations from a cross on the basis of their desirability judged individually and on the basis of a pedigree record.

PEDIGREE
: A record of the ancestry of an individual, family, or strain.

PENETRANCE
: The frequency with which a gene produces a recognizable effect in individuals which carry it.

PERICLINAL
: Concentric or parallel layers of genetically different tissues; several forms - EPIDERMAL MUTANT: DIECTICHIMERA (A secondary change that involves the middle layer as well as the outer one), ECTOCHIMERA (The primary mutant involves the outer layer only), SUBEPIDERMAL MUTANTS: ENDOCHIMERA (The primary mutant involves the inner layer only), MESOCHIMERA (The primary mutant involves the intermediate layer only), REVERSION (The primary endochimeral mutant is lost, SOLID (A secondary change from a mesochimera that involves the outer and intermediate layers), SECTORIAL (Genetically different tissues are situated side by side)

PHENOGEN
: A morphologically indistinguishable segment of a species which is intrafertile but intersterile.

PHENON
: A phenotypically homogeneous species whose individuals are sexually reproduced (i.e., apomixis is not present) but has intersterile segments.

PHENOTYPE
: The observed character of an individual without reference to its genetic nature; individuals of the same phenotype look alike but may not breed alike (compare with Genotype).

PHENOTYPIC PLASTICITY
: The degree to which phenotypic expression is exhibited in a plant community under various environmental conditions.

PHYSIOLOGICAL RACES
: Pathogens of the same species with similar or identifcal morphology but differing pathogenic capabilities.

PLANT PATENTS
: Two statutes, the Plant Variety Protection Act of 1970 for sexually produced plants and the U.S. Patent Law of 1930 for asexually reproduced plants, provide for exclusive rights to propagation and collection of royalties for a 17-year period following the issuance of a U.S. Department of Agriculture certificate; general requirements under either law are a "novel variety" as defined therein; e.g., those for sexually produced plants are as follows:

PLASMON
: Genetic elements contained in the cytoplasm.

PLASTOME
: Inheritance of plastids by maternal cytoplasm of the egg.

PLEIOTROPHY
: The property of a gene by which it affects two or more characters.

POINT MUTATION
: SEE Mutation.

POLYAPLOID
: A haploid from a polyploid; i.e., a di-, tri-, or tetra-haploid.

POLYCROSS

Open pollination of a group of genotypes (generally selected) in isolation from other compatible genotypes in such a way as to promote random mating *inter se*.

POLYGENES
: Genes whose effects are too slight to be identified individually but which, through similar and supplementary effects, can have important effects on total variability.

POLYMORPHISM
: The occurrence together in the same population of two or more distinct forms at frequencies too great to be explained by recurrnet mutation.

POLYPLOID
: Organism with more than two sets of a basic or monoploid number of chromosomes; e.g., triploid, pentaploid, hexaploid, heptaploid, and octaploid.

POLYPLOTYPE
: Race or form of plant that differs from another in chromosome number, usually in ploidy. An increasing number of wild species have been ascertained to consist of two to several races that differ in ploidy level and are intersterile. Such species are better termed "species-complexes".

POLYSOMATY
: Chromosome condition of a plant such as olive in which 2n = 55 instead of the usual 2n = 2x = 46 for the genus.

POPULATION
: In genetics, a community of individuals which share a common gene pool. In "statistics", a hypothetical and infintely large series of potential observations among which observations actually made constitute a sample.

PREPOTENCY
: The capacity of a parent to impress characteristics on its offspring so they are more alike than usual.

PRIMARY GENE POOL
: Corresponds to the traditional concept of biological species; crossing is easy, hybrids are generally fertile with good chromosome pairing, gene segregation is approximately normal, and gene transfer is generally simple among forms of this gene pool; almost always includes spontaneous races (wild and/or weedy, as well as cultivated races); the latter considered subspecies A and the former subspecies B.

PROBABILITY
: The proportion of times in which an event occurs in an infinitely large and hypothetical series of cases, each capable of producing the event.

PROGENY TEST
: A test of the value of a genotype based on the performance of its offspring produced in some definite system of mating.

PROMISCUOUS
: Heterogeneous or haphazard mixture.

PROPHASE
: The stages in mitosis or meiosis from the appearance of chromosomes to metaphase.

PROTANDRY
: Maturation of anthers before pistils.

PROTOGYNY
: Reverse of protandry.

PROVENANCE
: Origin, source, or place where found or produced, as a cultivar or selection of a taxon.

PURE LINE
: A strain of an organism that is comparatively pure genetically (homozygous) because of continued inbreeding or by other means.

PURITY
: The name or names of the kind, type, or variety and the percentage or percentages thereof; the percentage of other agricultural or crop seed; the percentage of weed seeds, including noxious-weed seeds; the percentage of inert matter; the names of the noxious-weed seeds and the rate of occurrence of each.

PUTATIVE
: Supposed, commonly thought or deemed, reputed, as a taxon of (presumed) hybrid origin.

QUADRIPLEX
: SEE nulliplex.

QUADRIVALENT
: SEE univalent.

QUALITATIVE CHARACTER
: A character in which variation is discontinuous.

QUANTITATIVE CHARACTER
: A character in which variation is continuous so tht classificaiton into discrete categories is not possible.

RACE
: A group or assemblage of organisms that exhibits general similarities but is not sufficiently distinct from other forms to constitute a species (e.g., the three races of avocado (Persea Americana), Mexican, Guatemalan, and West Indian, of which the first is sometimes designated as a separate species, although it hybridizes freely with the other two); sometimes used for individuals of a particular geographical area, in this sense then equivalent to an ecotype (which is not a botanical term).

RAMET
: Individual member of a clone.

RANDOM
: Arrived at by chance without discrimination.

RANDOMIZATION
: Process of making assignments at random.

RECESSIVE
: The member of an allelic pair which is not expressed when the other (dominant) member occupies the homologous chromosome.

RECIPROCAL CROSSES
: Crosses in which the sources of male and female gametes are reversed.

RECOMBINATION
: Observed new combinations of characters different from those exhibited by the parents; percentage of recombinations equals percentage of crossing-over only when the genes are relatively close together; cytological crossing-over refers to the process, whereas recombination or genetic crossing-over refers to the observed genetic result.

RECURRENT PARENT
: The parent to which successive backcrosses are made in backcross breeding.

RECURRENT SELECTION
: A method of breeding designed to concentrate favorable genes scattered among a number of individuals by selecting in each generation among the progeny produced by matings inter se of the selected individuals (or their selfed progeny) of the previous generation.

REDUCTIVE DIVISION OR HETEROTYPIC DIVISION
: Terms formerly applied to one of the two meiotic mitoses at which a particular author thought reduction and segregation occurred; contrasted with "homotypic division"
: SEE Fruit setting.

REGISTERED SEED
: A class of certified seed that is the progeny of Breeder or Foundation seed and is produced and handled under procedures established by the certifying agency..for the purpose of maintaining genetic purity and identity.

REGRESSION, C`FFICIENT OF
: A numerical measure of the rate of change of the dependent on the independent variable.

RESTORER LINE
: An inbred line that, when crossed on a male-sterile inbred, causes the resulting hybrid to be male fertile.

RHEOGAMEON
: A species composed of segments with marked morphological divergence but gene exchange takes place between them; contiguous segments are interfertile; apomixis is not present.

ROGUE
: A variation from the standard type of a variety or strain. ROGUING, removal of undesirable individuals to purify the stock.

S^1, S^2, S^3…
: Symbols for designating first, second, third, etc., selfed generations from an ancestral plant (S^0).

SAMPLE

A finite series of observations taken from a population.

SAMPLING ERROR

Deviation of a sample value from the true value owing to the limited size of sample.

SECONDARY GENE POOL

Includes all biological species that will cross with the crop; approximates an experimentally defined cenospecies; gene transfer is possible; hybrids tend to be sterile, chromosomes pair poorly or not at all; some hybrids may be weak and difficult to bring to maturity and recovery of desired types in advanced generations may be difficult.

SEGREGATION

Separation of paternal from maternal chromosomes at meiosis and consequent separation of genes leading to the possibility of recombination in the offspring.

SELECT-CROSS, SELECT-CROSSING

Similar to backcrossing except that a different recurrent parent is chosen each generation or each time a cross is made; used in tomato breeding (among others) for obtaining resistance to certain diseases, such as brown root rot.

SELECTION

Choice of a plant (or group of plants) that possesses a desired criterion (or criteria); note that the word is used in two senses; (1) it refers to the actual act of making a choice and (2) the plant or plants chosen (prior to being designated as a cultivar).

SELECTIVE GAMETICIDE

A treatment that inactivates certain gametes, like one that produces male sterility but does not affect the female gametes.

SELF-FERTILITY

Capability of producing seed upon self-fertilization.

SELF-FERTILIZATION

Fusion of male and female gametes from the same individual.

SELF-INCOMPATIBILITY

Genetically controlled physiological hindrance to self-fruitfulness.

SEMIDWARF

Dwarfed vegetative characteristics in a plant without dwarfing the reproductive characteristics (i.e., fruit size).

SEX CHROMOSOME

Chromosomes that are particularly connected with the determination of sex.

SEX-LIMITED

Expression of a character in only one sex.

SEX-LINKAGE

Association or linkage of a hereditary character with sex because its gene is on a sex-chromosome.

SEXUALLY REPRODUCED

Includes any production of a variety by seed.

SIB-MATING

Crossing of siblings or of two or more individuals of the same parentage (brother-sister mating).

SIBS (SIBLINGS)

Progeny of the same parents derived from different gametes. HALF SIBS, progeny with one parent in common.

SIGMOID

S-shaped (growth curve).

SIGNIFICANCE, TEST OF

Statistical test designed to distinguish differences due to discrepancy between observation and hypothesis.

SINGLE CROSS

A cross between two different genotypes, usually two inbred lines, in plant breeding.

SOMATIC

Referring to body tissues; having two sets of chromosomes, one set normally coming from the female parent, the other from the male; contrasted to germinal tissue (gametophyte) which will give rise to germ cells (gametes or spores).

SOMATOPLASTIC STERILITY

Collapse of zygotes during embryonic stages due to disturbances in embryo-endosperm relationships.

SPECIES-COMPLEX

SEE Polyplotype.

SPECIES
: A category of classification lower than a genus or subgenus and above that of a subspecies or variety; a group of plants that possesses one or more characters in common distinguishing is from other groups and does or may interbreed and reproduce its characters in offspring, exhibiting only minor variations bridged over by differences ascribable to age, sex, polymorphism, individual peculiarity, or accident or selective breeding by man; species in a small genus will be separated by relatively large differences in characters, whereas species in a large genus are usually separated on the basis of very small differences that would be ignored in the former; interpretation of species limits depends largely on individual judgement; opinions among botanists differ widely in regard to polymorphic taxa or apomicts which have disparate morphological characters but bybridize freely; classical, or Linnaean, species are based on morphological (presumably constant) differences, biological species, or reproductive isolation.

SPECIES
: The unit of taxonomic classification into which genera are subdivided. A group of similar individuals different from other similar arrays of individuals. In sexually reproducing organisms, the maximum interbreeding group isolated from other species by barriers of sterility or reproductive incapacity.

SPECIFIC COMBINING ABILITY
: SEE Combining ability.

SPERMATOPHYTA
: A division that includes gymnosperms and angiosperms; now included in the *Tracheophyta*, vascular plants.

SPORT
: SEE Bud sport.

STAMINAL CARPELLODY
: The transformation of stamens into fleshy carpel-like structures during the early development of the flower, as in papaya.

STANDARD DEVIATION
: A measure of variability. Mathematically, the distance along the abscissa from the mean to the point of inflection of a normal curve.

STANDARD ERROR
: A statistic which is the estimated value of the standard deviation (a parameter).

STATISTIC
: Estimate of a parameter made from a sample. Statistic is to sample what parameter is to population.

STRAIN BUILDING
: Improvement of cross-fertilizing plants by any one of a number of methods of selection.

STRAIN
: A term incorrectly applied to selections of cultivars (=varieties); designation of a selection of a cultivar as a strain or equivalent term is not permitted under the International Code of Nomenclature of Cultivated Plants; any selection that shows sufficient variation from the parent cultivar to render it worthy of a name is to be regarded as a distinct cultivar; use of the term for a cultivar of hybrid origin, e.g., Lilium Olympic strain, is not recommended; such assemblages are more correctly termed "group". Note that the Guidelines for Classifying Cultivated Plant Populations (1978) stipulate that variety and cultivar are considered exact equivalents.

SUBSPECIES
: A subdivision of a species commonly used to designate a group with more or less unstable characters and connected with some similar group by individuals with intermediate characters.

SYNAPSIS
: Conjugation at pachytene and zygotene of homologous chromosomes.

SYNTHETIC VARIETY
: A variety produced by crossing *inter se* a number of genotypes selected for good combining ability in all possible hybrid combinations, with subsequent maintenance of the variety by open pollination.

SYNTHETIC
: Two distinct meanings: (1) an artificially produced material distinguished from that made by a living organism (although the precursor may come from a living organism); (2) an interbreeding population derived from the propagation of multple hybrids.

TAXON
: A general term applied to a taxonomic group of any rank or category.

TELOPHASE
: The last stage in cell division before the nucleus returns to a resting condition.

TERTIARY GENE POOL
: Crosses can be made with the crop but hybrids tend to be anomalous, lethal, or completely sterile; gene transfer is either not possible with known techniques or extreme or radical measures are required (e.g., embryo culture, grafting or tissue culture to obtain hybrids, doubling chromosome number, or using bridging species to doubling chromosome number, or using bridging species to obtain some fertility); value chiefly informational, defines extreme outer limit of genetic distance potential; likely to be ill-defined until information is accumulated.

TEST CROSS
: A cross made for the purpose of determining the genotype (hetero- or homozygosity of a given locus) of one of the parents; e.g., tghe unknown (either AA or Aa) crossed with a tester (aa, i.e., recessive for the particular gene) will have all Aa or half Aa and half aa in the progeny according to whether the unknown is AA or Aa.

TETRAD
: The quadruple group of chromatids formed by the association of split homologous chromosomes to form bivalents during meiosis; also used with the same meaning as the term "quartet". SEE also Microspores.

TETRAPLOID
: An organism with four basic (x) sets of chromosomes.

TETRASOMIC
: An organism whose cells contain four chromosomes of one type; the rest of the chromosome complement is diploid (chromosome formula: 2n + 2). SEE Trisomic.

THREE-WAY CROSS
: A first generation hybrid between a single cross and an inbred line.

TOPCROSS
: A cross between a selection, line, clone, etc., and a common pollen parent which may be a variety, inbred line, single cross, etc. The common pollen parent is called the top cross or tester parent. In corn, a top cross is commonly an inbred-variety cross.

TOTIPOTENT
: The potential of any living cell in a plant to reproduce the entire plant in tissue culture.

TOTIPOTENTIALITY
: The ability of a somatic cell to reproduce an entire plant somatically.

TRAIT
: A synonym of character with respect to furnction and performance.

TRANSGRESSIVE SEGREGATION
: The appearance in the F2, or later generations of individuals, showing a more extreme development of character than either parent.

TRANSLOCATION
: Change in position of a segment of a chromosome to another part of the same chromosome or of a different chromosome.

TRIMONOECIOUS
: A plant having staminate, perfect, and pistillate flowers. SEE androecious, andromonoecious, dioecious, gynoecious, gynomonoecious, hermaphroditic, monoecious.

TRIPLEX
: SEE nulliplex.

TRIPLOID
: An organism whose cells contain three basic sets of chromosomes.

TRISOME
: SEE Monosomic.

TRISOMIC
: An otherwise diploid organism that has an extra chromosome of one pair (chromosome formula: 2n + 1).

UNIVALENT
: An unpaired chromosome in meiosis. Bivalents, trivalents, quadrivalents, etc. are associations of 2, 3, 4... homologous chromosomes held to gether by chiasmata.

VARIANCE
: Mean squared deviation of a population of variates from their mean. The square of the standard deviation. The

corresponding statistic is the mean square.

VARIANTS

(1) seeds or plants that are (a) distinct within the variety but occur naturally in it, (b) stable and predictable with a degree of reliability comparable to other varieties of the same kind, within recognized tolerances, when the variety is reproduced or reconstituted, and (c) were originally a part of the variety as released; variants are not to be considered off-types; (2) the Breeder should identify variants as a part of the variety description but the expected rate of occurrence of the variant to be an aid in identifying the variety; (3) tolerances in Table 4, Section 201.62, Part 201 of the Federal Seed Act should be applied to those variants that are described by the Breeder as useful in identification of that variety.

VARIATE

A single observation or measurement.

VARIATION

The occurrence of differences among individuals due to differences in their genetic composition and/or the environment in which they were raised.

VARIETY (cultivar)

A subdivision of a kind that is distinct (in the sense that the variety can be differentiated by one or more identifiable morphological, physiological, or other characteristics from all other varieties of public knowledge), uniform (variations in essential and distinctive characters are describable),and stable (the variety will remain unchanged to a reasonable degree of reliability in its essential and distinctive characteristics and its uniformity when reproduced or reconstituted as required by the different categories of varieties). (Note that here "variety" and "cultivar" are considered exact equivalents in accordance with the International Code of Nomenclature of Cultivated Plants, 1969.

VARIETY (botanical variety)

A group of plants related by descent but distinguished from other similar groups by characters too inconsistent or too trivial to entitle it to recognition as a species or whose distinguishing characters are dependent on breeding controlled by man for their perpetuation; may be a morphological variant, geographical variant, a variant comingled with others of the same species, or a color or habit phase; now largely abandoned as a botanical category because of its indefiniteness and confusion with horticultural varieties. SEE Variety.

VIRULENCE

Capacity of a pathogen to incite a disease.

x

Basic number of chromosomes in a polyploid series.

X^1, X^2,X^3…

Symbols denoting first, second, third...generations from an irradiated ancestral plant (X^0).

XENIA

Effect of pollen on the embryo and endosperm. SEE metaxenia.

XENOGENESIS

Fancied or supposed reproduction of an organism unlike the parents.

ZYGOTE

Cell formed by the union of two gametes and the individual developing from this cell.

ZYGOTE

Cell formed by the union of two gametes and the individual developing from this cell.

ZYGOTENE

A stage in the meiotic process when the threadlike chromosomes pair.

Box 7609 North Carolina State University Raleigh, NC 27695-7609 (919) 515-5363

Created by T.C. Wehner and C. Barrett 5 September, 1996; design by C.T. Glenn;
maintained by T.C. Wehner; last revised on 30 August, 2005