

**Quantitative  
Genetics**  
WITH SPECIAL REFERENCE TO  
**Plant  $\frac{D}{R}$  Animal  
Breeding**

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**RALPH E. COMSTOCK**

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WILEY

To  
L. M. Winters,  
Gertrude Cox,  
and  
H. F. "Cotton" Robinson



Ralph E. Comstock, professor emeritus, Department of Genetics, and Biological Sciences Department, University of Minnesota, St. Paul, received his BS, MS, and PhD degrees from the College of Agriculture, Forestry, and Home Economics, University of Minnesota, St. Paul. Dr. Comstock spent his professional career doing research in and teaching animal breeding, applied statistics, and quantitative genetics. He was also a statistical consultant to researchers in agricultural science. Dr. Comstock has published extensively in scientific journals such as *Journal of Animal Science*, *Agronomy Journal*, *Crop Science*, *Genetics*, *Theoretical and Applied Genetics*, and *Bionetrics* and in *Proceedings* of various national and international conferences.

### Quantitative Genetics

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# Contents

Preface, xiii

## 1 Introduction, 3

- 1.1. Frame of reference, 3
- 1.2. Quantitative genetics, 4
- 1.3. Breeding, eugenics, and selection, 5
- 1.4. Total value and value traits, 5
- 1.5. The critical role of theory, 6
- 1.6. General purposes, 7
- 1.7. Content of Appendix 1, 7
- 1.8. Some aspects of book organization, 7
  - 1.8.1. Symbol system for variances and covariances, 8

## 2 Genetic Background, 9

- 2.1. Genetic model—the assumptions, 9
  - 2.1.1. Summary relative to models and assumptions employed, 11
- 2.2. Populations, 11
  - 2.2.1. Random mating, 12
  - 2.2.2. Migration, 13
- 2.3. Allele frequency, 13
- 2.4. Genotype frequencies in random mating diploid populations, 16
  - 2.4.1. Single-locus genotypes, 16
  - 2.4.2. Probabilities vs. frequencies, 17
  - 2.4.3. Two-locus genotypes, 18
- 2.5. Inbreeding and its effects on expected frequencies of genotypes, 21
  - 2.5.1. Computing the coefficient of inbreeding, 22
- 2.6. Temporal change in allele frequencies, 23
  - 2.6.1. Selection, 24
    - 2.6.1.1. Alternative symbolism, 27
  - 2.6.2. Mutations, 28
    - 2.6.2.1. Deleterious mutations, 28
    - 2.6.2.2. Mutant alleles superior to the ones from which they arose, 29
  - 2.6.3. Chance and random drift, 29
    - 2.6.3.1. Variance from the sampling of individuals,  $\sigma^2(d_c)$ , 31

- 2.6.3.2. Variance due to the random nature of mutation,  $\sigma^2(d_m)$ , 33
- 2.6.3.3. Summary, 34
- 2.7. Effective population size, 34
- 2.8. Probability of fixation, 34
- 2.9. Epistasis, 37
  - 2.9.1. Categories of epistasis, 39
  - 2.9.2. Symbolic representation of genotypic value, 39
- 2.10. Composition of variance among genotypes, 40
- 2.11. Inbred lines, 41
  - 2.11.1. Terms and definitions, 41
  - 2.11.2. Probabilities of single locus genotypes, 42
- 2.12. Inbreeding depression and heterosis, 42
- 2.13. Genotype, environment, and phenotype, 46

### 3 Breeding Programs, 51

- 3.1. Terminology for description, 52
- 3.2. The breeder's goal—ideal genotypes, 54
- 3.3. Recurrent selection, 55
- 3.4. The logic of recurrent selection, 56
- 3.5. Complete dominance and the utility of systems for exact reproduction of genotypes, 58
- 3.6. Special issues relating to potential success via recurrent selection, 59
  - 3.6.1. Overdominance, 60
  - 3.6.2. The selection criterion, 61
  - 3.6.3. Population size, 62
  - 3.6.4. Epistasis, 62
  - 3.6.5. Change in the values of genotypes, 62

### 4 Comparisons of Breeding Procedures, 63

### 5 Responses to Artificial Selection, 65

- 5.1. Change in average value of genotypes—a preliminary form, 65
- 5.2. Primary assumptions in development of more analytic expressions, 66
- 5.3. The composition of value of genotype, 67
- 5.4. The derivative of  $\bar{Y}$  with respect to  $q_i$ , 68
- 5.5. The expected change in allele frequency, 69
- 5.6. The expected change in average value of genotype, 72
- 5.7. Genotypic superiority of selections, 73
- 5.8. Summary of assumptions, 74

### 6 Mass Selection, 77

- 6.1. Response expectations, linkage equilibrium assumed, 77
- 6.2. Response expectations given linkage disequilibrium, 79
- 6.3. Information and insights provided by response expectations, 82
  - 6.3.1. Effects of linkage disequilibrium, 82
  - 6.3.2. Rates of response, 83
    - 6.3.2.1. Allele frequency changes, 83

- 6.3.2.2. Genotypic mean of the selection criterion, 87
- 6.3.3. Total response possible, 89
  - 6.3.3.1. Infinite effective population size, 89
  - 6.3.3.2. Finite effective population size, 91
- 6.3.4. Correlated responses in the absence of linkage disequilibrium, 93
- 6.4. Reminders concerning assumptions, 95

### 7 Mass Selection—Assumptions and Validity of Theory, 97

- 7.1. The assumption that  $\sum_i (\Delta q_i)(\partial \bar{Y} / \partial q_i)$  is an adequate approximation to  $\Delta \bar{Y}$ , 97
- 7.2. The assumption that the regression of  $\hat{q}$  on  $\hat{X}$  is linear, 98
- 7.3. The no epistasis assumption, 104
  - 7.3.1. Simple epistasis, 105
  - 7.3.2. Multiple-peak epistasis, 106

### 8 Progeny Test and Family Systems of Recurrent Selection, 109

- 8.1. Progeny test selection systems, 109
  - 8.1.1. Justification for using  $E(\hat{y})$  in derivation of  $\sigma(\hat{q}_i, \hat{y})$ , 111
  - 8.1.2. Response expectations when selection unit individuals are not inbred (no assumption concerning linkage equilibrium), 111
  - 8.1.3. Response expectations when selection unit individuals are inbred, 115
- 8.2. Family systems, 117
  - 8.2.1. Half-sib families, 119
    - 8.2.1.1. Identity or partial identity between selection and criterion units, 119
    - 8.2.1.2. Selection units and criterion units composed of different individuals, 121
  - 8.2.2. Full-sib families, 122
    - 8.2.2.1. Identity or partial identity between selection and criterion units, 122
    - 8.2.2.2. Selection units and criterion units composed of different individuals, 123
  - 8.2.3.  $S_n$  families, 123
  - 8.2.4. Selection among individuals within families, 124
    - 8.2.4.1. Intrafamily selection in the absence of selection among families, 125
    - 8.2.4.2. Intrafamily selection as a supplement to selection among families, 125
- 8.3. Summary and comments, 126

### 9 Selection for Performance in Crossbreds, 129

- 9.1. Relevance of overdominance, 130
- 9.2. Selection for specific combining ability (RSSC), 131
- 9.3. Reciprocal recurrent selection (RRS), 132
  - 9.3.1. Allele frequency changes promoted by RRS, 133
    - 9.3.1.1. Overdominance loci, 133
    - 9.3.1.2. Complete dominance loci, 134
    - 9.3.1.3. Partial dominance loci, 135
  - 9.3.2. Full-sib reciprocal recurrent selection, 135
  - 9.3.3. RRS using pure line testers, 137
- 9.4. Selection based on performance in S populations (RSP), 138

- 9.5. Ultimate allele frequencies and genotypes, 139
- 9.6. The inbred-hybrid (IH) system, 142
- 9.6.1. General considerations, 143
- 9.6.1.1. Need for recurrent selection, 143
- 9.6.1.2. The two phases of the IH system, 144
- 9.6.1.3. Effective population size, 144
- 9.6.1.4. Genotype distributions in the source population, pure lines, and single crosses, 145
- 9.6.1.5. The case for two-population, as opposed to single-population, programs, 145
- 9.6.1.6. Lethal alleles and natural selection, 145
- 9.6.1.7. Multi-stage selection, 145
- 9.6.2. Theoretical approach, 146
- 9.6.3. Selection within and among lines—the first phase of the IH system, 147
- 9.6.3.1. The consequence of eliminating lethal alleles (natural selection), 147
- 9.6.3.2. Artificial selection among lines, 150
- 9.6.3.3. Artificial selection within lines, 152
- 9.6.3.4. Comments, 153
- 9.6.4. Selection among line crosses—the cultivar search phase of the IH system, 154
- 9.7. Summary comments, 155

## 10 The Variance, $\sigma^2(\hat{X})$ , of the Selection Criterion, 157

- 10.1. The formulation of statements concerning the composition of  $\sigma^2(\hat{X})$ , 157
- 10.2. Models for plants, 158
- 10.3. Models for animals, 163
- 10.3.1. Adjustments for tangible sources of non-genetic variation, 167
- 10.3.2. Covariances between effects, 167
- 10.4. The composition of  $\sigma^2(\hat{X})$  and comparisons of procedures, 168
- 10.4.1. Full-sib vs half-sib reciprocal recurrent selection, 168
- 10.4.2. The number of random parents in progeny test selection, 169
- 10.4.3. Optimum design of field trial comparisons, 170
- 10.5. The actual magnitudes of variances, 171

## 11 Effective Population Size in Recurrent Selection Programs, 173

- 11.1. Probability of fixation,  $P_f$ , 174
- 11.1.1. Effective population size, 175
- 11.1.2. Effective selective values in artificial selection, 176
- 11.1.3. Initial allele frequency ( $q_0$ ), 178
- 11.1.3.1. Populations from the cross of two pure lines, 178
- 11.1.3.2. Populations formed by intercrossing  $n$  lines, 178
- 11.1.3.3. Broad-based foundation populations, 179
- 11.1.3.4. Old populations, 179
- 11.2. Comments concerning non-validity of assumptions, 180
- 11.2.1. Change in  $q$  when  $-1.0 \leq a_x \leq 1.0$ , 181
- 11.2.2. Variation in  $s'$  not from change in  $q$ , 183
- 11.2.2.1. Progeny test selection—variation in  $s'$  from variation in  $v$ , 183
- 11.2.2.2. Variation in  $s'$  from variation in test environments, 184

- 11.2.3. Overdominance, 187
- 11.2.4. Independent assortment, 188
- 11.2.5. Epistasis and multiple alleles, 189
- 11.2.6. Summary, 189
- 11.3.  $E(\Delta\hat{Y})$  as a function of  $N_e$ , 190
- 11.3.1. General formulas, 198
- 11.3.1.1.  $E(\Delta\hat{y})_t$ , in the target population when  $T=S$ , 199
- 11.3.1.2.  $E(\Delta\hat{y})_t$ , in the target population when  $T=S_1 \times S_2$ , 199
- 11.3.2. Discussion and summary, 200
- 11.3.3. Applications—choice and design of short term programs, 201

## 12 Choice of the Selection Criterion, 203

- 12.1. Expected change per cycle in genotype values, 203
- 12.2. The Smith-Hazel selection index (criterion) that maximizes genetic improvement per cycle, 205
- 12.3. Definition of total value, 207
- 12.4. The selection criterion that maximizes the total genetic improvement that can be made via recurrent selection, 209
- 12.5. The decrease in  $E(\Delta\hat{Y}_w)$  associated with using total value as the selection criterion, 212
- 12.5.1. When  $\sigma_{mm} = AG_{mm}$  and  $\sigma_{mm'} = AG_{mm'}$  for all values of  $m$  and  $m'$ , 212
- 12.5.2. Other situations, 214
- 12.6. Phenotypic information from two or more sources, 217
- 12.7. Summary and practical problems, 219

## 13 The Design of Breeding Programs, 223

- 13.1. Introduction, 223
- 13.2. Criteria and procedure for the comparative evaluation of recurrent selection programs, 224
- 13.2.1. Primary criteria, 224
- 13.2.2. Secondary criteria, 224
- 13.2.3. Procedures, 225
- 13.2.3.1. Long term programs, 226
- 13.2.3.2. Short term programs, 228
- 13.3. Foundation populations, 228
- 13.4. The target population of environments, 229

## 14 Comparison of Selection Systems, 231

- 14.1. Long term programs, 232
- 14.1.1. An example, 233
- 14.1.2. Comparison of programs, 236
- 14.1.3. Discussion, 243
- 14.2. Short term, single population programs, 246
- 14.2.1. Impact of effective population size, 250
- 14.2.2. Variations of parameter magnitudes, 258
- 14.3. Short term, two population programs in which  $T=S_1 \times S_2$ , 262
- 14.3.1. Single population ( $T=S$ ) vs. RSP programs, 262
- 14.3.1.1. When there is no dominance ( $A=0$ ), 263
- 14.3.1.2. When the favorable allele is in some degree dominant ( $A>0$ ), 264
- 14.3.2. RSP vs. RRS programs when  $a \leq 1.0$ , 268
- 14.4. Discussion and summary, 269

- 14.4.1. Short term programs, 270
- 14.4.2. Long term programs, 273
- 14.4.3. Comparison of probabilities of fixation and  $E(\Delta q)$  in long term and short term programs, 278

## 15 Methods in Quantitative Genetics, 279

- 15.1. Variances and covariances, 279
  - 15.1.1. Analyses of variance and covariance—plant family comparison data, 280
    - 15.1.1.1. Estimation of variances, 280
    - 15.1.1.2. Estimation of covariances, 283
    - 15.1.1.3. Sampling errors of estimates, 284
  - 15.1.2. Genetic content of family variances and covariances, 286
    - 15.1.2.1. Genetic variances among families when there is no epistasis, 287
    - 15.1.2.2. Genetic variance among  $S_n$  families when there is no epistasis, 289
    - 15.1.2.3. Epistatic variance within family genetic variances, 292
  - 15.1.3. Covariance between parent and offspring, 294
    - 15.1.3.1. Regression of offspring on parent, 297
    - 15.1.3.2. Realized heritability, 297
- 15.2. Estimation of additive genetic variances and covariances, 298
- 15.3. The effect of inbreeding, 299
- 15.4. Level of dominance, 300
  - 15.4.1. Heterosis and effect of inbreeding as sources of information, 301
  - 15.4.2. Response to recurrent selection applied to an  $F_2$  source population, 301
  - 15.4.3. Comparison of phenotypes associated with single-locus genotypes, 301
  - 15.4.4. Effects of genotypes at marked and linked loci, 303
  - 15.4.5. Functions of genetic variances, 304
    - 15.4.5.1. Inference from estimates of additive and dominance variances, 304
    - 15.4.5.2. Design III, 308
    - 15.4.5.3. Genotype x environment interaction variance and the estimation of genetic variances, 311
  - 15.4.6. Opinions concerning heterosis and levels of dominance, 312
- 15.5. Numbers of genes and the magnitudes of their effects, 314
  - 15.5.1. Comparison of groups with different single-locus genotypes, 314
  - 15.5.2. Response to recurrent selection, 316
    - 15.5.2.1. One way selection, 323
    - 15.5.2.2. Consequences of epistasis, 324
- 15.6. Comments, 325

## 16 Looking Ahead, 329

- 16.1. Molecular genetics and breeding methodology, 330
  - 16.1.1. Marker-assisted selection (MAS), 330
    - 16.1.1.1. The limit of increased response via MAS, 330
    - 16.1.1.2. What portion of the conceptual promise of MAS can be realized?, 332
  - 16.1.2. Transgenes for improvement of gene pools, 333
- 16.2. Limits of response, 333

- 16.3. Large recurrent selection programs in the context of world population growth, 334
  - 16.3.1. Potential for genetic improvements, 336
  - 16.3.2. Considerations—practical and philosophical, 336
  - 16.3.3. Program dimensions, 337
- 16.4. Quantitative genetics in relation to genetic improvement of agricultural species—looking ahead, 339
  - 16.4.1. High priority research, 341
    - 16.4.1.1. Tests of theory for comparison of selection systems, 341
    - 16.4.1.2. Assays of the genetic improvement potential of new alleles arising by mutation, 341
    - 16.4.1.3. Plateaus, 342
  - 16.4.2. Personnel, training programs, and cooperation, 343

## Appendixes, 345

- Terminology, Symbols, and Elements of Statistics, 345
  - A1.1. Terminology, 345
  - A1.2. Distributions, 346
  - A1.3. Symbols and Statistics—Univariate Distributions, 348
  - A1.4. Symbols and Statistics—Bivariate Distributions, 348
  - A1.5. Expectations, 348
    - A1.5.1. Linear Functions, 349
    - A1.5.2. Variance and Covariance of Linear Functions, 350
      - A1.5.2.1. Applications, 350
- 2.1. Wright's Coefficient of Inbreeding, 353
- 2.2.  $\Delta_x$  in the Case of Autosomal Genes in Dioecious Species, 356
- 5.1. The Effect of Test Environment on  $E(\Delta q)$ , the Expectation of Allele Frequency Change in Response to Selection, 357
- 6.1. Algebra in Derivation of 6.14, 359
- 6.2. The Rate at which Linkage Disequilibrium Decreases in Large Random Breeding Populations, 359
- 8.1. The Covariance between  $\hat{q}$  and  $\hat{y}_{ij}$  (A) in Progeny Test Selection when Selection Unit Individuals Have Been Produced by One or More Generations of Self-Fertilization and (B) in Selection Among  $S_n$  Families, 361
  - A8.1.1. Progeny Test Selection, 361
  - A8.1.2. Selection among  $S_n$  Families, 362
- 9.1. Probabilities of Two-Locus Genotypes in Pure Lines Derived by Successive Self-Fertilizations and without Selection from a Random Mating, Linkage Equilibrium Source Population, 362
- 9.2. Linkage Disequilibrium within  $S_n$  Families, 363
- 11.1. Variations of Effective Population Size ( $N_e$ ), 364
  - A11.1.1. Variance of Allele Frequency (Random Mating Diploid Populations), 365
  - A11.1.2. Special Cases, 366
    - A11.1.2.1. Selection among half-sib families (two-generation cycles), 366
    - A11.1.2.2. Selection among full-sib families (two generation cycles), 367
    - A11.1.2.3. Selection within full-sib families, 367
    - A11.1.2.4. Selection among families produced by self-fertilization, 368
  - A11.1.3. Cycles Extended by One or More Extra Generations of Random Mating in the Population, 369
- 11.2. Recent Mutations and Superior Alleles at Low Frequencies, 369

- 11.3. Derivations of  $E(\Delta q)$  and  $E(\Delta y)$  as Functions of  $N_e$ , 372
- A11.3.1. Generalizations from Appendix 1, 372
- A11.3.2. Expected Change in Frequency of the B Allele, 373
- A11.3.2.1. When selection units are S population individuals or families composed of on-inbred S population individuals, 373
- A11.3.2.2. When selection is among  $S_n$  families on the basis of their own performance, 373
- A11.3.3. Expected Change in the Average Value of Single-Locus Genotypes When the T Population Is the S Population, 373
- A11.3.3.1. When selection units are non-inbred individuals or families of non-inbred individuals, 375
- A11.3.3.2. When selection is among  $S_n$  families on the basis of their own performance, 375
- A11.3.4. Expected Change in the Average Value of Single-Locus Genotypes when the T Population is the Cross between Two S Populations, 375
- A11.3.4.1. When selection units are non-inbred individuals or families of non-inbred individuals, 376
- A11.3.4.2. When selection is among  $S_n$  families on the basis of their own performance, 377
- A11.3.4.3. When  $T = S_1 \times S_2$  and selection is based on performance of test cross progenies, 377
- A11.3.5. Reciprocal Recurrent Selection, 378
- 12.1. Selection Criterion Weighting Coefficients That Maximize Genetic Improvement per Cycle, 378
- 12.2. Total Value Discussed in Terms of Maize and Swine, 380
- 14.1. Allele Frequency ( $q$ ) and the Magnitude of  $q(1-q)$ , 383
- 14.2. Algebra, 385
- 15.1. Total Genetic Variance, 385
- 15.2. Effects of Genotypes at Marked and Linked Loci—Theory, 387
- 15.3. The Genetic Variances of Design III Data, 389
- 15.4. Biased vs. Unbiased Estimates of Genetic Variances from Design III Data, 393
- 15.5. Average Genotype Value Difference between the  $F_1$  and  $F_2$  Generations from a Cross of Pure Lines, 396
- 15.6. The Standard Error of  $[\Delta \bar{Y}_x - E(\Delta \bar{Y}_x)]$ , 397
- A15.6.1. Additive Genetic Variance, 397
- A15.6.2. The Estimate of  $\Delta \bar{Y}_x$ , 398
- A15.6.3. The Variance of  $[\Delta \bar{Y}_x - E(\Delta \bar{Y}_x)]$ , 399
- A15.6.4. Discussion, 399

Notes, 401

References, 413

## Preface

The content of this book reflects in many ways the background and experiences that shaped my enduring special interests. I was raised on small farms in southern Minnesota. In the period between high school graduation and enrollment at the University of Minnesota I was an apprentice on our home farm, and during those four years I was a 4H Club member with swine and maize projects. My 4H experience kindled a beginning awareness of (a) the contributions of research relating to the husbandry of agricultural species and (b) opportunity inequalities associated with economic stratification. The former motivated the choice of agriculture as my major field at the university.

Undergraduate and graduate courses that most excited me were Principles of Genetics, Animal Breeding, Principles of Economics, Biometry, and Applied Statistics. It was my good fortune to be influenced by both L. M. Winters and Jay Lush—two of the early leaders in Animal Breeding. I worked for and later with Professor Winters during the 1934-43 years, first as an abstractor of literature pertaining to animal breeding and genetics and as a caretaker of research project animals and later with responsibility for records and analysis of data from his extensive swine breeding investigations. My contacts with Professor Lush derived from the Minnesota and Iowa participations in the U.S.D.A. Regional Swine Breeding Laboratory in the years when I worked as an assistant to Professor Winters. I well remember critiques by Dr. Lush of drafts of my earliest literature contributions.

A later era very significant for me were the ten years, 1947-57, in which as a member of the Department of Experimental Statistics of the North Carolina State University I was charged by Gertrude Cox with statistical consultation in the area of genetics. This wonderful opportunity provided the open door through which I learned about plant breeding methods and problems from H.F. "Cotton" Robinson, Walton Gregory, Paul Harvey, E.B. Morrow, and T.J. Mann among others. It was during those years that I was senior author of the papers that described Design III for investigation of levels of dominance and reciprocal recurrent selection as a system of choice if overdominance was found to be an important feature of the genetics of any economically important quantitative trait. It was also during those years that I began teaching "Statistical Concepts in Genetics," the embryo from which this book emerged.



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