

Reviewed Research Paper

Pome Fruit Germplasm Resources Inventory

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A *Computerized Fruit Germplasm Resources Inventory*, reported in 1974 by Fogle and Winters (*Fruit Var.*, 28: 35-37, 1974) is available in 1977 and 1981 publications by the Agricultural Research Service, United States Department of Agriculture ARS-NE 76 and *Misc. Publ.* No. 1406, respectively). Listed varieties from various collection sources in North America and Europe, the latter added in the 1981 release, show a considerable increase in data accumulated over a four year period. The apple section contains nearly 1,000 entries in the 1977 inventory. Nearly 3,000 apple varieties appear in the 1981 inventory.

The Fruit Laboratory and the Plant Genetics and Germplasm Resources Institute at Beltsville will publish successive issues of the inventory with separate divisions of fruit and tree nut clones in North American germplasm collections. One division will be published each year, with three divisions projected: a division for pome fruit, a second for stone fruit, and a third for small fruits and grapes. Tree nuts may comprise a fourth division, or form a component within one of the other forementioned groups. Future issues will discontinue listings of European variety collections as the International Board for Plant Genetic Resources (IBPGR), in Rome, Italy, has assumed responsibility for reporting these data.

The inventory will be updated and re-issued in 1985 with a major revision of pome fruit, comprising about 3,000 apple (including crab) and half as many pear (including quince) clones.

A new section includes descriptions of numerous selections. Following the scheme of the 1977 and 1981 inventories, each clone will be identified uniquely for location and type of fruit, chronological accession number and name supplied by the collector, Plant Introduction number, if applicable, an indication of the size and/or condition of the specimen plant, virus status, and identification of each cooperator. These data are now available at USDA on worksheets received from cooperators over the last year.

The format for a descriptive entry is given in Table 1. This example represents the apple cultivar Priscilla, a complex recombinant cross incorporating major gene resistance to apple scab (*Venturia inaequalis* (Cke) Wint.) for a *Malus floribunda* donor. The generalized description would apply in most respects to clones of Priscilla fruited in the Midwest and North. It would differ in certain respects, for example were we to take into account inception of flowering, period after flowering to fruit maturation, possibly fruit texture, quality and storability of clones fruited beyond the suggested range of adaptation. Field experience is the benchmark of a good description. Evaluations of Priscilla are not yet complete at many reporting sites in the U.S. and Canada. Such data as are available suggest measures for comparison. The 1981 Inventory reports accessions of this variety at Geneva, New York, Byron, Georgia and Summerland, British Columbia, as vigorous, bearing specimens. Other sites report non-bearing or dead clones.

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Table 1. Variety Description. Data taken in part from *Fruit and Tree Nut Germplasm Resources Inventory, Misc. Publ. No. 1406, 1981, p. 113.*

Passport Line	Lafayette IN-SRB Co-op AES IN (E. B. Williams, J. Janick, F. E. Emerson) IL (D. F. Dayton, J. B. Mowry) NJ (L. F. Hough, C. Bailey) & USDA; intro 1972; fr 1966; TC CO-OP 4 & 1659-1; PAT pend (RD); (Starking Delicious x sdlg 610-2[610-2 complex = sibcross Rome Beauty x <i>Malus floribunda</i> Sieb. 821// x Golden Delicious + McIntosh])[x1961]
Fruit Line	6.25-6.75 cm diam [6.50 Gen]; slightly oblate, regular; RIPENS @ Sept 15-28 (+10 Prima, -7 Jonathan, -14 Delicious [+1 Delicious Gen]); COLOR light yellow ground covered 75-90% bright red blush; attractive; SKIN smooth, waxy, small white dots, medium thick, not tough, no russetting; FLESH §Delicious (flavor), crisp, sweet, texture medium grained [medium to firm Gen], quality very good [fair to good Gen], mild subacid, aromatic; USE dessert; keeps 2-3 mo (34°F); low drop tendency before maturity; named PRISCILLA Hovde, wife F. B. Hovde 7th pres Purdue Univ.
Tree Line	§Delicious (standard); moderately spreading; vigorous [mature Brg Gen]; pollen fertile, pollinizer (Prima); BLOOM @ (=/+McIntosh); productive; RESISTANT known races scab (<i>Venturia inaequalis</i> (Cke) Wint.); TOLERANT fireblight (<i>Erwinia amylovora</i> (Burr.) Winslow et al.), powdery mildew (<i>Podospaera leucotricia</i> Ell. & Everh.) Salm.); REGION @ midwest, northern.
Variance Line	Byron GA [IC 1011-0029 UNV: SC 1401]; 7.50 cm diam; RIPENS (-7 Delicious); attractive; texture medium, very firm; quality good. Summerland BC [Priscilla IRA72-3 IC 5604-0151 UNV: SC 4707]; 6.80 cm diam; RIPENS (+1 Delicious); attractive; texture medium to fine, medium firm; quality fair.
Explanation of codes, symbols and abbreviations	
Passport Line	Origin Lafayette, Indiana from Scab-Resistance Breeding Cooperative, Agricultural Experiment Stations, Indiana, Illinois, New Jersey and USDA; introduced 1972; first fruited 1966; tested as CO-OP 4 & 1659-1; patent applied for or pending, restricted distribution, Starking Delicious x seedling 610-2, seedling 610-2 having a complex pedigree being derived from a sibcross of Rome Beauty x <i>M. floribunda</i> 821 crossed successively to Golden Delicious and McIntosh, final cross made in 1961.
Fruit Line	Average size of 6.25-6.75 cm diameter, 6.50 at Geneva; shape slightly oblate, regular; ripens approximately Sept 15-18 in region, about 10 days after Prima, seven days before Jonathan and 14 days before Delicious, about the same time as Delicious at Geneva; yellow ground color, covered with 75-90% bright red blush, attractive; skin smooth, waxy with small white dots, medium thick, but not tough, no russetting; flavor resembles Delicious, crisp, sweet, texture medium grained, medium to firm fleshed at Geneva quality very good (average), fair to good at Geneva, mild subacid, aromatic; a dessert variety (fresh market); keeping quality 2-3 mo. at 34°F; little tendency to drop before maturity; named in honor of Priscilla Hovde, wife of Frederick Boyd Hovde, 7th President of Purdue University.
Tree Line	Standard type, resembling Delicious; moderately spreading form; vigorous, mature and bearing at Geneva; pollen fertile, a recommended pollinizer of Prima; flowers in region of adaptation approximately with, or just after McIntosh; productive; resistant to all presently known races of apple scab, tolerant to fireblight and powdery mildew; adapted to Midwest and Northern areas, to which the generalized description (@) refers. (The cultivar code indicates a description incorporating data from accession 0692 reported by the New York State Experiment Station, Geneva, and the description is unverified by Cooperator.)
Variance Line	Lists location, identity code and source code of accession (descriptive areas not verified (UNV) by cooperator(s)). Fields of description coded in identical manner with respect to order of description as fields in the standard.

The Geneva and Byron accessions were derived from the Cooperative Scab-Resistance Breeding Program, Purdue University. The Summerland accession (IRA72-3) was received from Interregional Project 2, Prosser, Washington. The data from Geneva and Byron show differences in fruit size, firmness and quality, whereas Geneva and Summerland specimens show nearly identical fruit characteristics.

Descriptions of each clone will be 'calibrated' to a known standard, the variety as evaluated in field trials. As seen in Table 1 the description of Priscilla is 'bridged,' that is, cross-coded to the accession description from the New York State Experiment Station at Geneva. Specimens as characterized at Geneva will be superimposed on most, if not all, of the apple descriptions. The reasons for this are (a) Geneva is the site of the National Clonal Germplasm Repository (CGR) for apples and American grapes; the CGR collections are intended to be maintained indefinitely, and even assuming that not all apples at the New York station are to be made part of the CGR inventory, the repository clonal germplasm will be evaluated under Geneva conditions; (b) standard descriptors for the National Germplasm Resources Information Network (GRIN) are based on the CGR inventory, such descriptors to follow schemes recommended as a uniform international code (e.g., *Descriptor List for Apple (Malus), Commission of European Communities: Committee on Disease Resistance Breeding and Use of Genebanks*, CES Secretariat, Brussels, 1982). Pear descriptions in the 1985 pome fruit inventory will be 'bridged' to clonal germplasm at Cor-

vallis, Oregon, the CGR site for pear, filbert and small fruits collections.

Simultaneous bridging of pome fruit inventory data with descriptions, on the one hand, and descriptions with CGR inventory data, on the other, now brings the pome fruit inventory into alignment with the objectives of the National Clonal Germplasm Repository system. It should be noted that all fields (areas within each 'line') of the descriptive record, as shown in Table 1, will accommodate descriptors for apple and pear recommended by advisory committees for the CGR program. The Pome Fruit Inventory Resource Descriptions in effect is made, among other purposes, a reference directory for clonal germplasm selection by the national repositories. The variance 'line' (illustrated in Table 1) permits any user of the inventory to readily compare characteristics of plant specimens at various sites with its Geneva (or Corvallis) standard.

The first run of the Pome Fruit Inventory will describe a subset of clonal germplasm (target: 1,000 varieties) validated by cooperators for standard descriptions and variance information. These cooperators will be contacted over the next year when descriptive protocols are compiled and collated. Forms to be encoded by cooperators resemble the format reproduced by Fogle in *Methods in Fruit Breeding* (Eds. J. N. Moore & J. Janick, W. Lafayette, Ind.: Purdue Univ. Press, 1983, p. 425). The assistance of these specialists will be sincerely appreciated.

The Pome Fruit Inventory will be issued by the Agricultural Research Service as a special publication to be announced at a later date.