Apple Introductions from Warmer Climates

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The U. S. Plant Introduction Station, Glenn Dale, Maryland, in its role as the principal quarantine center for the Crops Research Division, U. S. Department of Agriculture, serves as a holding area for newly introduced pome fruits until they are released by the U. S. Plant Quarantine Division. Following release, distributions are made to interested Federal and State Experiment Station pomologists, plant breeders, and pome fruit specialists.

In addition to this service, the Station maintains an orchard collection of apple introductions which now includes approximately 900 named varieties and a smaller number of unnamed clones of fruiting age.

The annual recording of various phenological characteristics, including fruit descriptions, is one of the more important phases in the preliminary evaluation of plant introduction materials. Studies in recent years have resulted in published reports on early ripening (1) and late blossoming apples (2). These were prepared primarily in response to inquiries by pome fruit breeders regarding new germ plasm possessing these traits.

Apple varieties potentially suitable for the far South, where efforts are being made to extend commercial production into areas previously considered too warm for this crop, has also been the subject of an increasing number of inquiries. The objective of this paper is to present information about a number of foreign apple introductions from subtropical and warm-temperate regions.

Fruit descriptive data for 35 introductions are presented in Table I. The introductions are presented in order by country, and alphabetically by variety name within the country. The city, state, and province within each country for each variety are given, if available.

Full bloom is considered as that time when approximately 75 percent of the blossoms on the tree have opened. Date Ripe represents the time when the fruit is ready to pick for eating.

Fruit characteristics are based on a minimum of six fruits selected as typical of the crop. Size measurements of the average fruit diameter were taken with a Vernier caliper. Because a shortage of labor prevented systematic thinning of the orchard fruits, size measurements are generally somewhat smaller than those which would be expected under commercial conditions. Shape, as described here, is principally the same as that of Hedrick[3].

Many of the introductions grown at Glenn Dale have displayed characteristics not readily tabulated, but which may be of interest to plant breeders. These are presented in narrative form as follows:

Australia

P.I. 81916 Tasma (Democrat). Received from Lalla, Tasmania. Widely grown in Tasmania, it is noted for its deep brilliant red color. At Glenn Dale, the fruits hang on the trees until after Thanksgiving, still retaining a very firm, crisp texture, with abund-

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ant juice and good flavor which resembles Stayman. The dark, solid, red-maroon skin color is like Mammoth Black Twig. It was still in excellent condition on February 7, following common storage.

P.I. 129820 Cole. Received from Emerald, Victoria. This variety, Tasma, and 10 others were the only varieties among some 900 introductions to hold their fruits in good condition until late November for several consecutive seasons. Skin color at that time was dark red; the quality was good to excellent and still slightly tart.

P.I. 129824 Foster. Received from Emerald, Victoria. The fruit has good dessert quality if eaten at right state of ripeness, but it loses flavor in storage, becoming rather tasteless after several months.

P.I. 129826 Granny Mac. Received Received from, Emerald, Victoria. Fine-textured fruit has a pleasant flavor and keeps well.

P.I. 129833 Swardlands. Received from Emerald, Victoria. Fruit is very tart until fully ripe, after which it attains good flavor and quality.

P.I. 133515 Frimley. Received from Carlingford, New South Wales. Has an attractive bright red skin. It is sweet, but the flavor and texture are fairly good.

P.I. 133565 Red Pomme de Neige. Received from Emerad,l Victoria. Similar to McIntosh in appearance, flavor, and texture, but is rather small.

P.I. 203226 Legana. Received from Launceston, Tasmania.

P.I. 242012 Legana. Received from Huon, Tasmania. The fruit of Legana (P.I. 203226 and 242012) is subject to scarf skin. Essentially it is a very mild flavored fruit.

P.I. 251567 Statesman. Received from Lenswood, South Australia. Exceptionally firm, even when fully ripe.

P.I. 276473 (no variety name). Received from Manjimup, W. Australia. Latest in this group to ripen at Glenn Dale.

Chinese Turkestan

P.I. 30326 and 30327. Received from Khotan, on the southern edge of the Takla Makon desert, north of Kashmir, which is said to be a very hot, dry area. Trees of these two varieties do not grow to very large dimensions, but are able to withstand drought, alkali, and neglect. They are considered to be promising for hot desert regions under irrigation.

P.I. 30326 Muz-alma. This very large fruited variety is tart when somewhat green, but most of the acidity disappears when it is fully ripe, making it quite mild.

P.I. 30327 Kizil-alma. The earliest of all apples in the Glenn Dale station collection to ripen, it is pinkish-red throughout the flesh. Red pigmentation is also present in the wood and bark of new growth.

Egypt

P.I. 187099 Baladi. Received from Giza. This is an early ripening, small apple which is of interest primarily because of its origin.

Israel

P.I. 280401 Ein Shemer. Received from Rehovoth. This variety is very precocious. Nursery trees at Glenn Dale 2½ years from the bud, and 6 feet high, bore heavy crops. The fruit is predominately yellow with some pink-red blush, and is similar to Golden Delicious in flavor.

Morocco

P.I. 117694 Belle de Mai. Received from Marrakech. This variety produces many seedless fruits. The trees have had good crops for several years, when other varieties were frosted out. It should be of value in breeding to escape frost damage.

New Zealand

All introductions received from Auckland.

P.I. 134431 Mobb's Royal. The fruit, not good in appearance or flavor, is slightly mealy.

P.I. 249925 King Cole. A very attractive, brightly colored fruit, which has a somewhat tart, but good flavor. However, the fruit is quite small.

P.I. 88571 Granny Smith. This is one of the best pie and cooking apples on the station. Although rather similar to Rhode Island Greening, it makes a better flavored pie.

Portugal

All introductions received from Porto.

P.I. 183955 Lindo Da Insua. The fruit shape is similar to York Imperial, but is rather tart, with somewhat tough flesh.

P.I. 183956 Coimbra. An attractive, bright crimson colored fruit, but only fair in quality.

P.I. 183957 Casa Nova De Alco Baca. A sweet-flavored variety with very fine, almost buttery, texture. It is very mild, but good eating.

P.I. 183958 Bravo De Esmolte. This fruit is compressed and very oblique. It has an attractive pink blush.

P.I. 183959 Melapio. A smooth, well shaped fruit with a very short, thick stem.

P.I. 183961 Canavial. The fruit has a poor appearance and heavy russeting, and is too tart for dessert.

Puerto Rico

P.I. 107426 (no variety name). This fruit was found in the highlands near Orocovis as a seedling from an imported American variety. It is juicy, but has only fair flavor.

Spain

P.I. 105498 Bella de Jardines. Received from Sabinan, Zaragoza. A mild, fine textured apple of good size.

P.I. 105505 Del Cirio. Received from Sabinan, Zaragoza. This mild-flavored fruit has a dull appearance and some water core.

P.I. 105519 Pero Pardo. Received from Sabinan, Zaragoza. This fruit shows considerable russet, especially on shoulders and at stem end. There is some shriveling in storage. The flesh turns brown quickly upon exposure.

P.I. 105531 Sensación. Received from Sabinan, Zaragonza. This fruit has heavy shoulders and is slightly ribbed. It has a good texture, is crisp, and slightly tart.

P.I. 244724 Mingan. Received from Asturias. The bland fruits do not have enough flavor for culinary purposes. Its poor appearance makes it undesirable as a dessert type.

P.I. 244726 Vigncole de Montan. Received from Asturias. A flattish, irregularly shaped fruit with slight ribbing.

Tunisia

P.I. 97300 Meski. Received from Sfax. This indigenous variety is of possible value to breeders in the South because of its low chilling requirement. It tolerates high, dry winds in summer. The trees have a drooping habit. Root-grafted test trees were rather small, with a strong tendency toward a semi-weeping, very spreading habit.

Union of South Africa

P.I. 209939 Sub Tropical. Received from Deepdale, Natal. This is a subtropical apple from the hot, frost-free coast of Natal, north of Durban. The large fruits resemble Rome Beauty in flavor and texture.

P.I. 226003 Caroline Hopkins. Received from Worcester, Cape Province. Very precocious, bearing heavy crops on nursery trees 2½ years from bud. The fruit has an attractive rose-pink blush. The flesh is slightly tart

Table 1. Fruit Descriptive Data, Time of Full Bloom, and Date of Ripening for 35 Apple Introductions from Warm Climatic Regions.

Country and P.I. Number	Variety	Date		Size diam. inches	Shape	SKIN			FLESH					
						Color		% Blush						
		Full Bloom	Ripe			Under	Over		Color	Tex.	Firmness	Flavor	Juice	Quality
AUSTRALIA														
81916	Tasma	5/2	10/12	3	2–3	1–2	4–6	95	1–3	1–2	3	3–4	1	3
129820	Cole	4/25	9/18	2⅞	1–6	2	2	85	1–3	1–2	3	3–4	1	3–4
129824	Foster	5/4	9/12	2⅝	3–6	2	2	90	1–3	1–2	2	2–3	2	3
129826	Granny Mack	4/25	9/13	2⅞	2–3–7	1	1–2	15	1	4	2–3	2	1	2–3
129833	Swardlands	4/27	9/14	3	3	2	2	85	1	1	3	3–4	1	3
133515	Frimley	5/1	8/28	2¾	1–3–6	2	1–2	90	1–3	1–4	2	2–3	2	2–3
133565	Red Pomme de Neige	4/30	8/26	2⅝	3–6	1	2–4	95	1	1–4	3	2–3	1	3
203226	Legana	4/25	9/16	2¾	3–6	1–2	2–4	95	1–3	1–2	3	2	1	3
242012	Legana	4/26	9/14	2⅝	3–5–6	1	1–2	50	1–3	1–4	3	2–3	2	2–3
251567	Statesman	4/27	9/14	3	3	1–2	2	65	1	1–2	3	2–3	2	2–3
276473	(no variety name)	4/26	10/19	2½	6	1–2	1	50	1–2	1–2	3	2–3	2	2–3
CHINA														
30326	**Muz-alma**	**5/4**	**9/8**	**3½**	**3–6**	**1–2**	**–**	**0**	**1–3**	**1–2**	**3**	**3–4**	**1**	**2–3***
30327	**Kizil-alma**	**4/14**	**6/25**	**1⅝**	**3–6**	**2**	**1**	**90**	**4**	**3**	**1–2**	**2**	**3**	**1**
EGYPT														
187099	**Baladi**	**4/21**	**7/26**	**2**	**6**	**2**		**0**	**1**	**1**	**2**	**2–3**	**2**	**2***

*Rating based on culinary value.

Table 1. Fruit Descriptive Data, Time of Full Bloom, and Date of Ripening for 35 Apple Introductions from Warm Climatic Regions. (Continued)

Country and P.I. Number	Variety	Date		Size diam. inches	Shape	SKIN			FLESH					
						Color								
		Full Bloom	Ripe			Under	Over	% Blush	Color	Tex.	Firm-ness	Fla-vor	Juice	Qual-ity
ISRAEL														
280401	Ein Shemer	4/27	8/24	2½	1–6	2	1–2	10–30	3	1–4	2	2	2	3
MOROCCO														
117694	Belle de Mai	4/22	9/11	2½	3	2	4	85	3		2	3		2
NEW ZEALAND														
134431	Mobb's Royal	4/28	8/16	3⅛	3–6	1–2	1	15	1	3–4	3	3		2
249925	King Cole	5/1	9/23	2⅛	3–6	2	2–4	75		1–2	3	3–4		2–3
88571	Granny Smith	4/30	9/12	3	3–6	1		0	1–2	1–2	3	4		3–4*
PORTUGAL														
183955	Lindo Da Insua	5/3	9/30	2¾	2–7	2	1–2–3	40–60	1	1	3	3–4		2
183956	Coimbra	4/20	7/19	2½	3	2	4	75	1	1–2	3	3		2
183957	Casa Nova De Alco Baca	4/24	9/9	2½	2–3–6	2	1–2	60	1	1–4	2	2		2–3
183958	Bravo De Esmolte	5/2	9/8	2⅜	1–2–6–8	2	1	25	1	1–2	3	2		2
183959	Melapio Fino	4/28	9/12	2½	3–6	2	2	40–60	1–3	1–2	3	3–4		2–3
183961	Canavial	4/19	9/17	2⅞	3–6	1–2	–	0	1	1–2	3	3–4		2 *
PUERTO RICO														
107426	(no variety name)	4/22	8/23	2¾	3–6	1–2	2–5	20	1–3	1–2	2	2–3		1–2

Table 1. Fruit Descriptive Data, Time of Full Bloom, and Date of Ripening for 35 Apple Introductions from Warm Climatic Regions. (Continued)

Country and P.I. Number	Variety	Date		Size		SKIN			FLESH					
						Color								
		Full Bloom	Ripe	diam. inches	Shape	Under	Over	% Blush	Color	Tex.	Firm-ness	Fla-vor	Juice	Qual-ity
SPAIN														
105498	Bella de Jardines	4/25	8/30	3¼	3–6	1–2	2–4	75	1–2–3	1–2	2	2–3	1–2	2–3
105505	Del Cirio	4/27	9/18	3	1–2–9	1–2	1	10	1–2	1	3	2	2	2
105519	Pero Pardo	4/25	9/10	2⅞	1–6	1–2	–	0	1–3	1	2–3	2–3	1	1–2*
105531	Sensacion	4/30	9/23	2⅞	1–3	1	1–2	50–60	1	1–2	3	3–4	1	2–3
244724	Mingan	4/25	9/3	2⅞	6	1–2	1	5	1–2	1–2	3	2–3	1	2
244726	Vigncole de Montan	4/28	9/30	2⅜	3	1	3	10	1	1–2	3	1–2	2	1–2
TUNISIA														
97300	Meski	4/17	8/25	2	4–7	2	4	90	1	1	3	2–3	2	2
UNION OF SOUTH AFRICA														
209939	Sub Tropical	5/1	9/18	3	2–7	1–2	1	40	1	1	3	2–3	2	1–2
226003	Caroline Hopkins	4/24	9/11	3	2–3–6	2	1–2	60	1	1–2	3	2–3–4	2	3

FRUIT DESCRIPTIVE KEY

SHAPE
1. conical
2. oblique
3. oblate
4. obovate
5. ovate
6. roundish
7. truncate
8. compressed
9. oblong

SKIN

Under Color
1. green
2. yellow

Over color
1. pink
2. red
3. orange
4. crimson
5. bronze
6. maroon

FLESH

Color
1. white
2. greenish
3. creamy
4. pink-red

Texture
1. crisp
2. breaking
3. mealy
4. melting

Firmness
1. soft
2. tender
3. firm

Flavor
1. insipid
2. sweet
3. sub-acid
4. sprightly

Juice
1. abundant
2. moderate
3. dry

Quality
1. poor
2. fair
3. good
4. excellent

for dessert, but has good flavor. The lower branches exhibit nodal swellings associated with adventitious root development, similar to that exhibited by several of the Malling rootstock series.

Literature Cited

1. Ackerman, W. L. 1962. Evaluation of Early Ripening Apple Introductions. Multilithed report, Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture.
2. Ackerman, W. L. 1963. Evaluation of Late Blossoming Apple Introductions. Multilithed report, Crops Research Division, Agricultural Research Service, U. S. Department of Agriculture.
3. Hedrick, U. P. 1925. Systematic Pomology. The McMillan Co.

Suggest Interplanting Richhaven Peach

The Richhaven peach has been producing well in some parts of the country, but not in others. It produced exceptionally well during a long trial period at the South Haven Experiment Station before it was introduced. It produced an ample supply of pollen, and was used successfully in making crosses with other varieties.

However, after being grown extensively in many areas, it is now evident that Richhaven will set a lighter crop as a result of minor variations in local climate at blossom time, which apparently interfere with normal pollination. It has been shown that the fruit set in Richhaven can be increased in years when unfavorable weather occurs during blossoming, if it is interplanted with another fertile variety.—*Stanley Johnston, Supt., South Haven Exp. Sta., South Haven, Michigan.*

Balsgard Fruit Breeding Institute

The Balsgard Fruit Breeding Institute is located near Fjalkstad, Sweden. It is very actively involved in the breeding of apple, sweet and sour cherry, plum, pear, strawberry, blackberry, raspberry, currant and gooseberry, and improved rootstocks.

The current objectives of the breeders of the Institute, by fruits, are as follows: *Apple*—high quality, attractive very early varieties. *Sour cherry*—dark juice, hardiness, productivity, suitability for mechanical harvesting. *Sweet cherry*—improved, late, firm-fleshed varieties. *Plum*—quality and earliness; and large fruit combined with late ripening. *Strawberry*—disease resistance mainly. *Raspberry*—aphid resistance. *Blackberry*—combination of hardiness, thornlessness, erect habit, berry size and quality. *Red currant*—improvement of crosses with Ribes multiflorum. *Gooseberry*—disease resistance and thornlessness.

Foliar Gland Characters in Identification of Peach and Nectarine Varieties

The kinds of glands on the petioles and basal margins of the leaf blade are varietal characteristics in peach and nectarine. This is pointed out by H. K. Wagnon et al in an article published in 1959 in The Bulletin of the California State Dept. of Agr. (Vol. XLVIII No. 1). Use of this information can be extremely valuable in identifying varieties of these fruits in the nursery. Gland types are described and a useful list of varieties classified by foliar gland characters are included in this article.