Evaluation of Apple Varieties and Comments Made by Students in the Stockbridge School of Agriculture Deciduous Orchard Class

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Articles that are routinely published in Fruit Notes are often based upon results from applied research. However, the results gatherer from a laboratory taught in the Stockbridge School of Agriculture collected during one of the laboratories in the class seemed that it would be of interest to commercial apple growers.

During the first two months in the fall I conduct laboratories where student can be intimately involved in various aspect of tree fruit production including several orchard visits, fruit maturity evaluation, integrated pest management, and apple variety evaluation. One of the most popular laboratories is variety evaluation. In this laboratory I attempt to present apple varieties that are close to optimal maturity and represent different tastes, textures, sizes, and cosmetic appearance. In the laboratory in the fall of 2019, I selected 14 varieties. The evaluation was done on October 6. Unfortunately, varieties that ripen in early September are often not in prime condition, and late maturing varieties are cannot be selected, because they are not mature enough.

In the apple variety laboratory, I have two objectives that I hope to accomplish: 1) show students that there are a wide variety of apples available that can create interest beyond what they may normally be exposed to in grocery stores; 2) show that individuals vary considerably in their taste preference for apples. I selected 14 varieties that appear listed in Table 1. Each student was given one apple to evaluate. They were asked to assess the appearance, texture, and taste. The instructions were to evaluate each apple and rate each one using the overall scale 1= Poor, 4=Fair, 7= Good and 10=excellent. Student were then given the opportunity to comment on each apple, and then their scores were collected and recorded. After students had made their assessment of the apple, information about each variety was distributed, including the parentage, the potential uses, problems, attributes, and normal time of ripening. The scores for each variety were given orally and the results were put on a blackboard for later calculation. Each student was asked to write a report on the lab.

Results & Discussion

A summary of the variety evaluation by students is presented in Table 1. Varieties are presented in the order of student preference (highest to the lowest). Equally important is the range in student responses. The order in which they were presented was random (appears in the last column), and it appears that the order did not affect evaluation scores.

Honeycrisp. Honeycrisp is probably the most popular apple for sale at roadside stands in New England, so the number one ranking is certainly not surprising. The range of 5-10 indicates clear acceptance of this apple.

SweeTango. This variety was essentially tied with Honeycrisp for the best apple. Sale of this variety is restricted, and we have a limited number of trees. However, I included this in the tasting for two reasons. First, it does have a taste different from other apples, and second after harvesting them on October 5, over 3 weeks after they would normally be harvested, they were the best tasting SweeTango I have ever had. Students agreed. "The SweeTango apple had the perfect amount of crunchiness and sweetness." This is another example where a delay in ripening of some varieties using 1.5 to 2 pouches of ReTain can lead to a vast improvement in taste and overall eating experience.

Hudson Golden Gem. We have been growing and selling this variety for over 20 years. It is a large russetted apple that is somewhat elongated. The skin is a little tough and the taste of the apple is very reminiscent of a pear. It is not a very attractive apple but among the others it certainly stands out. Students liked it.

Gala. This just became the most heavily produced

Table 1. Evaluation of apple varieties by Stockbridge School of Agriculture the Deciduous Orchards class.

Cultivars	Ranking (1-10)	Average student response[1]	Range of student responses	Order in which presented
Honeycrsip	1	8.0	5-10	8
SweeTango	2	7.8	3-10	14
Hudson Golden Gem	3	7.1	3-9	10
Gala	4	6.9	4-8	1
Silken	5	6.6	5-7.5	2
Ambrosia	6	6.5	3-8.1	4
Empire	6	6.5	4-8	6
Macoun	8	6.2	5-8	9
Spencer	9	6.1	4-8	7
Shamrock	10	6.0	4-7.5	10
Cortland	11	5.2	3-9	13
Roxbury Russet	12	4.5	2-9	3
McIntosh	13	4.5	1-7.2	5
Delicious	14	2.7	1-6.8	11

[1]1= Poor 4=Fair 7= Good 10=Excellent

variety in the US. It is a very popular variety nationally and apparently it popular locally as well.

Silken. This is a beautiful, crisp, and juicy apple that is russet-free. It bruises very easily, so it is only useful for local sales. Normally, it ripens at the end of the first week in September. These fruit were treated with 1.5 pouches of ReTain, and they were harvested on October 5. They were incredibly juicy and crisp, and it is quite obvious that student liked them.

Ambrosia. This variety originated from British Columbia, and it just came off patent protection. It is a very good apple that is moderate in size, has a nice blush red color over green, and ripens about the first of October. I recommend this apple.

Empire. This apple has been available for a number of years. Although it was rated quite high by the students, it has not been one of the more popular apples recently.

Macoun. I was surprised to see that Macoun was not rated higher, since it is generally one of the varieties that is very popular. A reoccurring theme in this tasting was that several of the student rated any apple with McIntosh as a parent relatively low.

Spencer. This is a cross between Golden Delicious and McIntosh. It is not one of the varieties that is normally sold at roadside stands. It has a loyal following at Cold Spring Orchard; however, it softens quite fast and popularity wains when this happens.

Shamrock. This is an apple that we normally harvest early when it is still green (middle of September). When harvested green, it tastes quite similar to a Granny Smith. There are some customers who like tart green apple and this is popular with them. The parents are Golden Delicious and McIntosh. When fully ripe, it tastes like a very good McIntosh, but it lacks and red color. There is a limited marketing period for Shamrock.

Cortland. The range in evaluation scores show that there is a diverse opinion about Cortland as a dessert apple. These apples did not receive 2 pouches of ReTain, which we often like to do at the UMass Cold Spring Orchard. If ReTain-treated Cortland were presented, I think that the score would have been higher.

Roxbury Russet. This is a russsetted heirloom variety. Opinion was quite divided with this apple. There is a segment of the customer base that like it, but opinion is quite divided.

McIntosh. It was quite surprising to see the ranking of McIntosh. For years it was the most popular apple in New England. One student stated "A lot of apples that I didn't like had parental genes from McIntosh. I feel the McIntosh are too mealy and flavorless." This is trend that we are seeing now, indicating that the popularity of McIntosh is definitely on the decline especially with younger consumers.

Delicious. This variety caused the most visible and verbal display of emotion of any in the tasting. Clearly, there was a strong dislike for Delicious by a

majority of the class. The samples presented were good apples, and they were ready to eat and attractive. One very perceptive student commented on Delicious. "The Delicious we tested in the lab was much tastier than I remember of the favor profile of the same variety in my elementary school, but even now I would not consider it to be especially delicious. When we received prepared paper bag lunches on field trips, it was guaranteed that most would end up in the garbage. Schools preach healthy eating and a balanced diet, yet the apples they provided are disingenuous to the values that make fruit delicious. It is foolish to provide children with such a bland apple, especially in such young years where a broad range of new experiences are crucial for child development."

Summary and Take Home Message

1. Student who evaluated these apples represent and important segment of future apple consumers. These students were 18-22 years old. Their preference and comments should be taken very seriously when planning and selecting apple varieties that you will sell at your farm in the future.
2. Three of the most popular apples that were grown in New England for many years were rated at the bottom and were the least popular.
3. Students like the diversity and the choice of not only different tastes but different colors and textures. One student agreed. "It was interesting to see the range of differences in people's personal preferences when it came to many of the apples we tasted. That is why it is important to have a variety of selections offering different flavors, textures, and colors."
4. Apple appearance did not appear to play an important role the rating of apples. For example, Hudson Golden Gem is not a very attractive apple but it was rated well, because it had very different texture, taste, and appearance.
5. The use of relatively high rates of Retain to delay ripening enhanced the flavor of some apples that ultimately resulted in a higher rating. Growers should consider using elevated rates of ReTain (1.5 to 2 pouches per acre) on some traditional varieties to see if the harvest season can be extended and fruit quality may be improved.
6. Students were quite surprised at the difference in taste preference others had. A prevalent comment was that a relatively large selection of different colors, tastes, and appearances may be a key to attracting a broad spectrum of the consumer public.

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