Black Cherry Seed Germination:

a comparison of seeds collected at different stages of maturity

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Black cherry *(Prunus serotina* Ehrh.) fruit matures unevenly as the result of sequential flower opening. When fruit begins to ripen there is a mixture of black, mature; red, nearly mature; and green, immature fruit on each raceme. The *Woody Plant Seed Manual* (1948) states that somewhat greenish fruits (probably those that are green but show a red tinge) can probably be collected if seed coats within the stones are tan to brown. Huntzinger (1968) found that embryos are usually mature in cherries with red skin. He also found that green fruit collected in bulk from several trees did germinate satisfactorily under certain conditions, but tree-to-tree differences were not determined. This article reports on a study made to identify germination differences among seeds collected at three stages of maturity and to determine whether mother tree and/ or time of seeding affects this germination.

Materials and Methods

Fruit came from four trees near Gainesville, Fla. Seed was cleaned by soaking in water (no fermentation allowed) at room temperature for 48 hours and then mascerating on a screen until all pulp was removed.

Half the cleaned seed from each fruit-color group within each tree was fall planted without stratification; the other half was soaked in a 0.1 percent citric acid solution for 48 hours, stratified in refrigerated moist vermiculite for 120 days, and spring planted (Jones, 1963).

Plots consisted of 50 seed rows arranged in a randomized complete block design with three replications. Nursery flats filled with a 50/50 mixture of sand and vermiculite and covered with window screen to prevent pilferage by birds served as replications. Fall seeded lots were covered with pine straw for mulch. All seed was planted about 1/2 inch deep. Appearance of an epicotyl was considered evidence of germination. Counts were made at different intervals ranging from 3 to 15 days.

Analysis of variance of arc sin transformed percent germination counts was first conducted, followed by comparison of significantly different effects using Duncan's new multiple-range test.

Results and Discussion

The analysis of variance showing only significant differences is presented in table 1. Total germination percent by parent tree, maturation stage, and planting season is found in table 2.

Seed from green fruit accounted for all of the significant differences among seed types. The significant difference among trees was due to the good performance of tree 3 and the poor germination of tree 1. Fall planted seed germinated better than spring planted except in the case of seed from green fruit.

TABLE 1.—*Analysis of variance (significant differences only)*

Source	*df*	*ms*	*F*
Trees	3	1,591.75	87.75**
Types	2	3,920.25	46.30**
Dates	1	3,532.34	346.91**
Trees x types	6	1,368.36	19.71**
Trees x dates	3	1,631.64	73.26**
Types x dates	2	1,696.69	231.74**
Trees x types x dates	6	197.79	3.25*

*5 percent level
**1 percent level

The significant difference in interactions involving trees, types, and dates is an indication of the need for seed lot testing, especially with high value lots. The significant tree x type interaction was caused by tree 2 seed germination decreasing from black to red to green fruit, tree 1 doing the same in red and green but failing in black, and trees 3 and 4 showing no differences in black and red but a large drop in green. The significant tree x date interaction was caused by seed from trees I and 4 germinating equally well when fall or spring seeded, while seed from trees 2 and 3 were much superior when fall planted. The significant type x date interaction was brought about by black and red seed germinating best when fall seeded as contrasted to green which performed best when spring seeded. The significant three-way interaction shows that seed from different trees is likely to perform differently according to seed type and planting date.

TABLE 2.—*Percent germination of seed collected at different maturation stages from four trees in the Gainesville, Fla. area by time of planting*

	Maturation Stage						
	Black		Red		Green		
Tree	Spring	Fall	Spring	Fall	Spring	Fall	Total
1	0.0	4.0	36.0	38.7	20.0	10.0	18.1
2	34.7	98.7	8.0	59.3	0.6	30.7	38.7
3	32.0	91.3	36.7	88.0	19.3	4.7	45.3
4	47.3	57.3	39.3	62.7	32.7	3.3	40.4
Sub-total	28.5	62.8	30.0	62.2	18.2	12.2	
Total		45.7		55.3		15.2	35.6

Literature Cited

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