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GERMINATING POKEBERRY SEED (*Phytolacca americana* L.)

Abstract. The seeds of pokeberry (*Phytolacca americana* L.) can be germinated successfully by storing them dry over winter and then nicking them with a needle to break the seed coat, followed by germination treatment at about 75°F.

In northern Kentucky and southern Ohio, growers of pokeberry, which is used as a vegetable green and is canned commercially by several firms as "poke salet", have reported difficulty in getting the seeds to germinate.¹

My studies have shown that the seedcoat of pokeberry (*Phytolacca americana* L.) is impermeable to water, and that germination will not occur until the hard seedcoat has been opened or softened to permit the entrance of moisture. When this occurs, germination is prompt and satisfactory.

Harvesting the Seeds

The pokeberry fruit—clusters of dark purplish berries (fig. 1) that begin to ripen in late August and September—are best harvested in September and October.

The seeds can be separated from the fruit inexpensively and rapidly by mashing in an ordinary hand-operated kitchen colander (fig. 2). After the seeds are fairly free of berry residues, the mash is poured into a bucket of cold water to float off the berry skins and pulp, which then can be poured off along with the water, leaving the heavier seeds on the bottom. The seeds are best dried at room temperature in shallow pans, stirring occasionally until dry.

¹ Barton, Lela V. SEED PRESERVATION AND LONGEVITY. 216 pp. Leonard Hill Books, Ltd., Interscience Publishers, Inc., New York. 1961.



Figure 1.—Ripe pokeberry fruit.

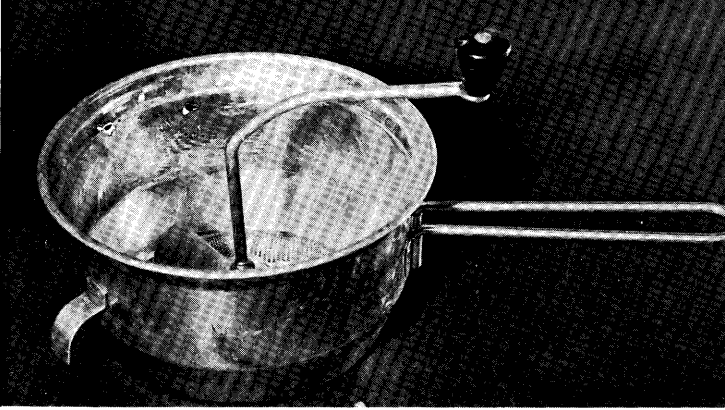
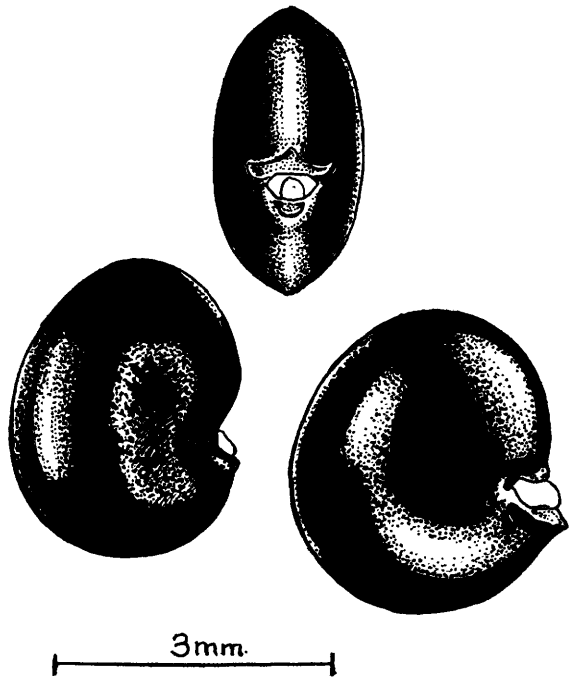


Figure 2.—An ordinary kitchen colander can be used to separate the seeds from the fruit.

Figure 3.—Pokeberry seeds.



The seeds—dark, shiny, and blue-black, averaging about 2.7 mm. x 3.1 mm.—are disk-shaped and have a prominent hilum (fig. 3).

Experimental Procedure

Seeds were tested in lots of 100 on paper towelling, in darkness, in a seed germinator.

Initially, lots of freshly harvested seeds were dipped in concentrated sulfuric acid, boiling water, and 5-percent hydrogen peroxide. No germination resulted from these treatments.

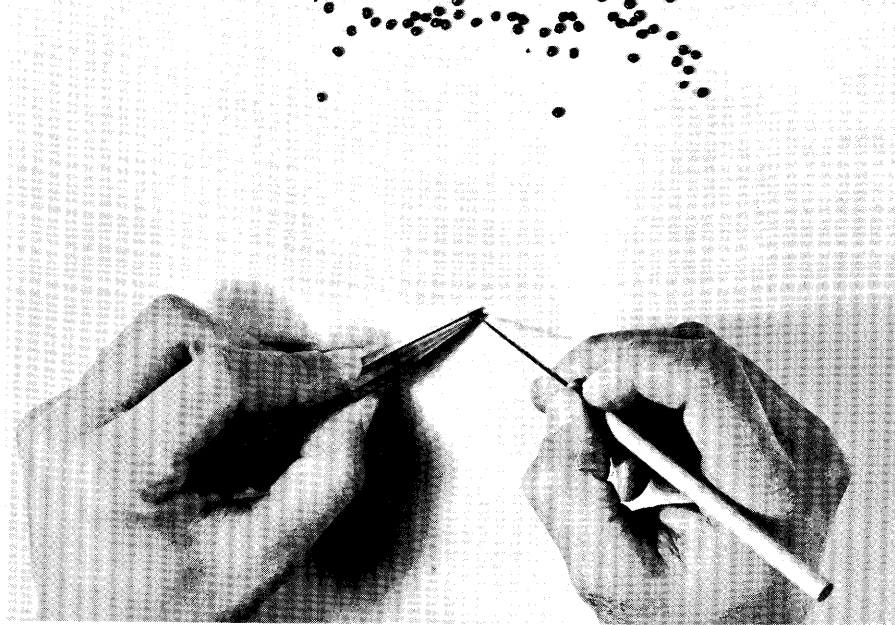


Figure 4.—Nicking the seedcoat promotes germination.

Five lots of freshly harvested seeds were scratched with a needle (fig. 4), just enough to break the seed coat and show white color, and were placed in the germinator at two different temperatures. At 75°F., mean germination was 78.8 percent. At 60°F., germination was less than half—32 percent (table 1).

Four lots of year-old seed, scarified and germinated at 75°F., had germination of 79.2 percent (table 1), almost the same as fresh seed.

Table 1.—Percent germination of 1968 and 1969 pokeberry seed after 10 days

Seed lot no.	1968		1969	
	75°F		75°F	60°F
	SCARIFIED			
1	64		88	34
2	84		56	36
3	76		80	34
4	100		90	20
5	—		80	36
Mean	79.2		78.8	32.0
	NOT SCARIFIED			
Control	0 ¹		2.0 ²	2.0 ²

¹ Three lots of seed.

² Two lots of seed.

Table 2—Percent germination of unscarified pokeberry seed after 5 months storage under different conditions

Storage treatment	Germination
At room temperature	8
At 42°F. for 5 months in air	0
At 42°F. for 5 months in wet sand	54
At 42°F. for 5 months in sphagnum moss	68

Earlier research has shown that pokeberry seeds retain viability for long periods of time.²

Unscarified seeds stored under different conditions at 42°F. (table 2) and then placed in the 75°F. germinator showed different germination: in wet sand 54 percent; in wet sphagnum moss 68 percent. Dry storage at room temperature and at 42°F. resulted in poor germination (table 2).

In an attempt to reproduce commercial scarifying conditions, a pint screw-top jar was lined with medium sandpaper and seed were shaken in it 25, 50, 100, and 200 times. No germination resulted from these seeds, which suggests that this type of scarification is inadequate.

Conclusion

This work shows quite clearly that pokeberry seeds have an impermeable seedcoat and that good germination can be achieved only when the seedcoat is made permeable.

Best germination can be achieved by storing seeds over winter in dry conditions at room temperature and then nicking or scarifying them with a needle, followed by germination treatment at about 75°F.

When germination occurs, the small seedlings can be transferred to a rich soil mix in a seed flat.

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² Personal communication from C. R. Roberts, Extension Horticulturist, University of Kentucky, Lexington.