

SPECIALTY CROPS PROFILE: POPCORN

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Popcorn is a niche crop often seen in various direct market settings. Usually marketers buy pre-packaged shelled product or sell the small ears as an ornamental along with the other types of Indian corns on the market. A number of these such as 'All Blue', 'All Pink', 'Miniature Colored', 'Wampum' and 'Strawberry' boast bright colors, but can also be shelled and popped like standard yellow types. Savvy marketers focus on package appearance for shelled sales, and when possible promote locally grown product.

Popcorn growing, making and eating has new world continental beginnings, and is believed to have been utilized by Central and South American Indian tribes long before the coming of Columbus. Popcorn is a good source of calcium, iron, niacin and phosphorus, and is high in fiber and low in calories. Nebraska, Illinois and Indiana are the three leading states in popcorn production, with Indiana producing nearly 55% of all commercial popcorn. The United States exports 90% of the world's popcorn, and is considered to be the best quality on the world market.

Popcorn is one of five varietal types of corn (others: dent, flint, flour, sweet). The exact physiology and chemistry underlying popping is still unknown, though starch/moisture relations as well as hull integrity are the key elements affecting popping quality. These factors interrelate to create a literal explosion and everting of internal tissues of popcorn when exposed to heat above 350 F. Ideal popping temperature is achieved at 450 F, while above 520 F, scorching occurs. Individual kernels begin popping in 80-90 seconds, and finish a minute later. When popping, an indication of too high kernel moisture content is "chewy" popcorn, and if too dry, kernels remained un-popped. Moisture may be increased by adding a few drops of water to stored popcorn, shaking the container, and allowing it to sit for a couple of weeks to allow even moisture absorption. Ideal moisture for popping is around 12 -13%. Popcorn may be kept without a reduction in quality for up to 3 years, provided it is stored in an airtight container. Beyond this period popping quality gradually declines.

Like any other corn crop, during the growing season, attention should be paid to provision of adequate nitrogen, good weed control, and earworm protection. For ornamental sales, particular care should be taken with the latter, with worm control thresholds similar to sweetcorn. Warm, dry fall weather provides ideal conditions for popcorn dry-down and maturation on the stalk. If possible, popcorn should be harvested below 20% moisture, though levels as high as 30% are acceptable if the corn is mature. Indications of harvest-readiness include dry stalks and shucks, and the presence of the "blacklayer" abscission material that forms at the kernel attachment on the cob. Small samples of kernels can be weighed, dried at 175-200 degrees F overnight, and re-weighed for exact percent moisture determination. Frost should not harm the crop provided the internal moisture is below 35%. A hard freeze can lower popping quality if moisture is above 20%. Popcorn growers can expect yields of 3000 lbs/acre, and nearly double this if the crop is irrigated.

Virginia's climate rarely allows for ideal on the stalk drying, especially given our repeated damp, hurricane cycles. Growers with limited production can hand harvest and cure ears indoors under warm, dry ventilated conditions. Once dry, kernels can be left on the ear or shelled by hand, and stored in airtight containers. Excessive drying and re-hydrating should be avoided to prevent seed coat stress cracks that can reduce expansion volume.

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