

# Enterprise Budget:

# Popcorn

POPCORN (*ZEA MAYS EVERTA*) HAS BEEN the all-American snack food for years. Demand for popcorn has remained steady throughout years with a peak in the 1990s. In the 1980s, sales increased with the introduction of microwave popcorn and in 1999 microwave popcorn accounted for 72 percent of sales. In the 1940s Iowa was the number one producing popcorn state. Today the industry produces approximately 9 million pounds of corn in 25 states.

Popcorn is grown by less than 1 percent of U.S. farmers on less than 1 percent of the harvested acres. The majority of popcorn is grown by farmers with over 100 acres, so most popcorn is mechanically harvested. However, the numbers of farms and acres dropped by over one-third from 2002 to 2007, but the production increased by 9 percent over the same time period. Iowa is very similar to the rest of the country with respect to popcorn production. Less than 1 percent of the farms and harvested crop land is devoted to popcorn. From 2002 to 2007 Iowa had a decrease of almost 40 percent in the numbers



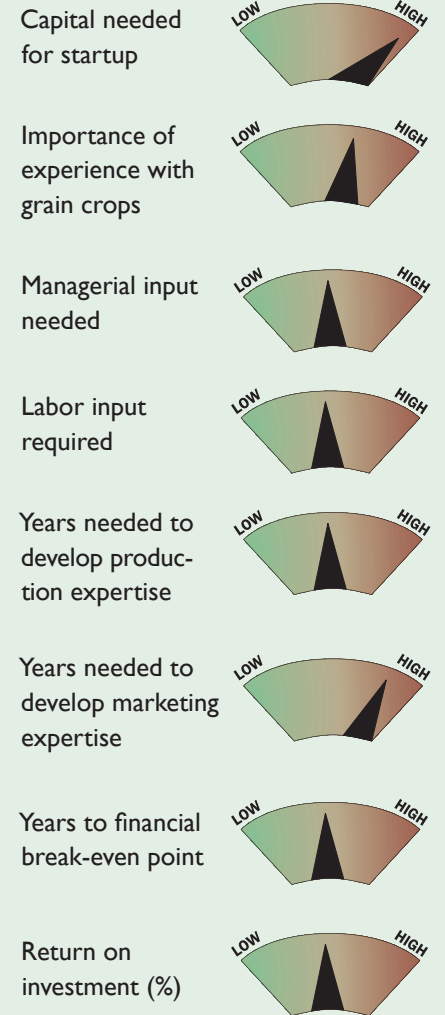
of farms and acres devoted to popcorn. Unlike the United States, however, Iowa's popcorn production declined from 2002 to 2007.

## Agronomic Characteristics

Seedbed preparation is very similar to regular corn with planting time in April through mid-May. Popcorn grows best in medium- to coarse-textured soils since it is a slow germinator. No-till is a common practice, especially with well-drained soils. Fertility requirements are also similar to field corn. Popcorn has a less extensive root system, less efficiency in utilizing nutrients, poorer stands, and also requires sulfur, zinc, and iron. You can expect nitrogen levels to be 15 percent lower than the rate for regular yellow dent corn. Yields do increase with higher nitrogen levels, but there is risk of lodging if levels are too high. For weed control, use the regular cultural methods of yellow dent corn.

Most popcorn is harvested with combines and mechanical machines. However, there can be some kernel damage, which reduces popping volume, so some farmers use hand harvesting as an alternative. The production costs and time are greater, but in return there will be higher quality popcorn with higher popping quality. In contracts the processor will normally contract for hand harvesting for better quality. If using a combine, harvest with moisture between 14 to 18 percent and hand harvest with 18 to 20 percent moisture. The popcorn harvested will need to be conditioned for the best quality kernel. Keep popcorn stored at 14.5 percent moisture when

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storing over the winter and 12.5 to 13.5 percent if storing for longer periods of time. If it is mechanically harvested, it can be dried with a drying system with 2 cubic feet drying air per minute per bushel of stored grain. Hand-harvested grain dried in high volumes needs a forced-air ventilation system. A natural ventilation system can be used in a bin 3 to 4 feet wide and with clean popcorn with minimal residue.

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## Potential Returns

### Yields

The Iowa state average yield in 2007 was 3,979 pounds per acre. With a conversion of 1 bushel corn = 56 lbs, this would be approximately 71.05 bushels to the acre. Popcorn is expected to yield about half of what regular dent corn would in a field.

Raising popcorn is very similar to raising field corn but application rates of fertilizer are not as high.

### Price

Popcorn prices are highly variable and can range from \$12.5 to \$16 per cwt. With the recent ethanol boom more farmers are planting regular corn and decreasing the number of popcorn acres. This has helped increase the market price of popcorn. The organic industry has also had increased demand, so there may be potential for added returns in that niche market.

### Labor

Popcorn requires the most labor in the spring during planting season and in the fall during harvest. The time distribution would be similar to corn except for the extra time at harvest for drying and storage. Every acre requires approximately four hours.

## Risks

The highest risk is finding a place to market your popcorn. Almost all of the popcorn grown in the United States is under contract with a processor. Other possible markets are packaging and marketing your own or selling at farmers markets if you can not get a forward contract. Production risks are very similar to field corn.

However, popcorn is not as rigorous and will not fare as well as regular corn in less than ideal conditions. There also is the risk of producing corn that does not meet the quality standards set by the processors. The biggest way to prevent this is to monitor moisture. Popcorn has a good popping ratio at 13.5 percent moisture. When selecting varieties, look at the expansion ratio as a measure of quality popcorn, which is the amount of increased volume when the kernel pops. A good ratio is between the ranges of 40 to 44. Anything lower results in chewy popcorn. Anything higher results in a brittle popcorn.

## Marketing

### Processor-contracted

Most popcorn is grown with a contract between the processors and producers. Processors normally choose the variety and number of acres of popcorn they want. Because the majority of popcorn is grown under contract, the market is fairly stable.

With a stable market, contracts can be based on dent corn price, which makes growing popcorn competitive and profitable. Some processors in Iowa include:

- Noble Popcorn Farms, Sac City
- Vogel Popcorn (ConAgra Foods), Hamburg
- Snappy Popcorn, Breda
- Jolly Time Popcorn, Sioux City

## Economic Considerations: Popcorn Production Budget

	Amount per acre	Price per unit (\$)	Total (\$)
<b>Recipients:</b>			
Popcorn	3400 lbs	0.1565	532.10
<b>Variable Costs:</b>			
Seed	10 lbs	2.50	25.00
Nitrogen	130 lbs	0.68	88.40
Phosphate	50 lbs	0.90	45.00
Potash	30 lbs	0.72	21.60
Lime	0.25 ton	14.00	3.50
Pesticides			20.00
Fuel, oil, and grease			20.00
Repairs			15.23
Miscellaneous			9.00
Interest on operating cap.	7 month	9%	13.01
<b>Total Variable Costs</b>			<b>260.74</b>
<b>Fixed Costs:</b>			
Operator	4 hours	11.00	44.00
Labor charge			
Machine and equipment charge			40.00
Land charge (rent)			175.00
<b>Total Fixed Costs</b>			<b>259.00</b>
Total costs			519.74
<b>Return Above Variable Costs</b>			<b>271.36</b>
<b>Return Above Total Costs</b>			<b>12.36</b>

Source: <http://ohioline.osu.edu/e-budget/99popc.html>

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## *Open market*

Producers can choose to sell on the open market. However, this can be a risky strategy because of the fluctuations in prices. The producer always needs to be aware of what is happening in the market and what can cause fluctuations. However, if you have good storage facilities, the popcorn may be stored until market prices improve.

## *Alternative outlets*

Producers willing to take more risk can process and package their own popcorn and sell it locally. This will take more time and resources to develop your product. Another alternative can be the livestock or poultry industry that can grind and feed popcorn. If your popcorn is not good quality, this also can be a way to sell it and avoid a total loss.

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## Management

Managing a popcorn enterprise would be very similar to growing regular yellow dent corn. The big difference would be marketing and selling the product, which will take some extra resources. When getting ready to harvest, you will have to consider labor availability, the market you are selling to, available storage, and other available resources. You want to produce high-quality popcorn that consumers will enjoy.

## Market Outlook

Although the U.S. consumption of popcorn has declined a little over the past several years, world demand has increased. Some leading importers include Mexico, South Korea, United Kingdom, Japan, and United Arab Emirates. Seventy percent of popcorn is eaten in the home and the other 30 percent in movie theatres and other venues.

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