

Economic Issues in Onions Cost of Production and Break Even Points

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Introduction

Onion markets show a high level of price volatility. Wild price swings characteristic to the industry are well documented by monthly USDA-NASS prices for the 2006 and 2007 marketing years. Washington storage onion prices jumped 338 percent from \$9.90/cwt in August 2006 to \$43.40/cwt by March of 2007. This historically high year was followed by a historically low year where the August 2007 price of \$4.70/cwt marked the peak price of the season, followed by prices below \$3.50/cwt for the remainder of the marketing year. This window in time illustrates the joy, pain, and resilience of those involved in the onion industry.

Growers must do their best to market their onions in a way that stabilizes returns. The first step in development of a solid marketing plan involves knowing your costs. If you know what it takes to break-even then you are better able to make decisions regarding what portion of the crop to contract, sell on the open market, or store.

Types of Costs

There are two categories of costs, variable and fixed. Variable costs are cost that are only incurred if the crop is produced, and vary with the amount of production. Typical variable cost categories include: seed, fertilizer, chemicals, fuel, hourly labor, and irrigation expenses. Fixed costs are best remembered by the acronym DIRTI-5 (depreciation, interest, rent, taxes and insurance), and are incurred whether or not a crop is produced. Total costs are calculated by adding fixed and variable costs.

Variable Cost Break Even

The variable cost breakeven price is calculated by dividing total variable costs by the expected yield. The breakeven yield is calculated by dividing total variable costs by the expected sale price. The variable cost break even points are especially important because if you are not able to at least cover the cost of inputs in the production process then every onion you produce increases your loss.

$$\text{BEP} = \frac{\text{Variable Cost}}{\text{Expected Yield}}$$

$$\text{BEY} = \frac{\text{Variable Cost}}{\text{Expected Sale Price}}$$

Total Cost Break Even

The total cost break even points give you the necessary price or yield required to cover both fixed and variable costs. The breakeven price needed to cover total costs is calculated by

dividing total costs (variable costs + fixed costs) by expected yield. The breakeven yield required to cover total costs is calculated by dividing total costs (variable + fixed) by the expected sale price. Once you know the breakeven points you should always be asking yourself the questions of “What is the breakeven price at a given yield?” and “What is a break even yield at a given price?”

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Storage costs break even

One more layer of onion marketing complexity involves calculation of storage costs. To estimate the monthly breakeven price needed to justify storing, start with an estimate of total costs of production per cwt or ton. Then estimate the fixed costs (DIRTI-5) of the storage facility as well as the variable costs of operating the storage (such as electricity). Spread these costs over the number of cwt or tons stored to generate per unit fixed and variable cost estimates. The value of accumulating shrink must also be considered on a per unit basis. Its important to recognize the price required to break even will increase as each month that the onions are held.

Factors contributing to price volatility

An analysis of USDA-NASS marketing year average prices from 2000-2015 for storage onions in the Columbia Basin shows prices never stay above \$11/cwt two years in a row. Incremental increases in yields over time due to better varieties and improved management practices play a role in creating a supply effect that can lead to lower prices. Another factor worthy of consideration is the role high prices play in fueling enthusiasm for the industry. As with many commodities a high price year is often followed by a very low price year. The fallacy of composition is often to blame. It's important to remember that what is good for an individual is not good for the group. Following high price years each individual tries to profit by planting a bit more, the result is oversupply and a price drop for all.

Pest Management

One of the biggest cost categories in onion production is thrips management. Four active ingredients commonly used for thrips management in the Columbia Basin include Methomyl (Lannate), Spirotetramat (Movento), Spinetoram (Radiant), and Abamectin (Agrimek). When considering product costs alone one application of Agrimek costs about \$22/acre, while a single application of Lannate will run about \$33/acre. Movento is in the \$37/acre cost range, while Radiant is estimated to cost about \$53/acre. When the aggregate costs of a four spray regime that considers product cost alone (two applications of Movento and two applications of Lannate) is considered the estimated expense is \$140/acre. When moving from a 4 to 6 spray regime the

per acre costs increase by about 75% from \$140/acre to \$246/acre, (two applications of Movento, two applications of Lannate, and two applications of Radiant). An 8-spray regime is estimated to increase costs by an additional 18% above the 6-spray regime to \$290/acre (two applications of Movento, two applications of Lannate, two applications of Radiant, and two applications of Agrimek).

If a separate application charge is added to the costs of each product applied, a four spray regime (consisting of two applications of Movento and two applications of Lannate) is estimated to cost \$180/acre. When application costs are considered in the context of, the six spray regime (consisting of two applications of Movento, two applications of Lannate, and two applications of Radiant) costs are estimated at about \$306/per acre. The 8-spray regime that includes dedicated application charges (consisting of two applications of Movento, two applications of Lannate, two applications of Radiant, and two applications of Agrimek) is estimated to cost \$370/ acre.

Onion Outlook

The outlook for onion consumption appears bright. Long run trends show impressive growth in popularity of onions in the American diet. According to the USDA's Economic Research Service, in 1970 onion consumption was estimated at about 10.1 pounds per capita, by 2008 consumption doubled to an estimated 20.2 pounds per capita. Recent statistics suggest onion consumption has plateaued but there may be factors on the horizon that will once again push consumption upward.

Onions have earned a positive reputation because of their vitamin C content, dietary fiber, antioxidant levels, as well as potassium content. Fast casual restaurants catering to consumers with busy lifestyles may help provide consumers more venues for consuming fresh onions. Chipotle is one example, Subway another. Both chains proudly promote where they source their onions, helping consumers make a connection with where their food is grown. This promotion can also help to build regional brand equity by connecting quality onions with the location in which they are produced.