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FOOD TECHNOLOGY FACT SHEET

Using Contracts to Reduce Marketing Risk: Applied Study of Oklahoma Onion Production

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Introduction

Fruit and vegetable production as an alternative crop in Oklahoma is a promising interest, particularly in the southern region. Some producers may discontinue their interest when faced with the complexities of horticultural production and marketing. Complications such as market transformations, risk components of production, and price volatility generate higher levels of difficulties than experienced in traditional Oklahoma production such as grains or livestock. Before attempting production, growers must understand the risks associated with production of a particular commodity[1]. This fact sheet addresses a strategy that, when used properly, will alleviate market risk and uncertainty such as price volatility.

Contracting may be a useful marketing strategy for the fruit and vegetable industry. Producers wishing to forgo market risk, such as sales volume and price volatility, can use a system of contracts. Sometimes a contract is established before planting so the amount to be sold is known and the producer can plant accordingly. However, establishing an early contract may result in under-pricing of the contracted commodity. If a contract is under-priced, revenues from the contracted commodity may be much less than if the commodity is sold on the open market. Nevertheless, no one knows what the future price may be and in exchange for price uncertainty, many farmers may be willing to initiate a possibly under-priced contract.

In this study, sweet onions are an example of an alternative cropping system to which a marketing strategy such as contracting can be applied. A previous study indicates that sweet onion production is a profitable venture, but can be risky. Simulation was used to determine levels of net income and risk associated with producing and marketing sweet onions with and without contracts in the southern Oklahoma region. Contracting principles applied to onion marketing within this study may be useful throughout many fruit and vegetable marketing scenarios.

Table 1. Simulation data distributions

	Price(50-lbs.)/Production Levels		
	Low	**Average**	**High**
Open Market Price	$0.00	$10.34	$21.75
Contract Price	$8.00	N/A	$22.00
Yield lbs. per acre	7,046	8,300	9,112

Procedure

With the cooperation of a producer in Southeast Oklahoma, an onion budget was created to aid in a feasibility analysis. The budget in conjunction with a program called Simetar uses historical data to simulate production scenarios (Table 1). In this study, simulations represent onion marketings using open market sales, contract marketing, and a combination of the two options. At the open market, current market price prevails and the seller assumes all price risk. When initiating contracts, determining the fixed quantity and fixed price of delivery is the objective. Contracting can alleviate some price risk, but the contract usually states that delivery of the product must occur, even if the producer has experienced less than expected yields. Simulation of several contract rates at different contract prices provides results indicating a level of net income risk involved with different contracting scenarios. The scenarios include:

1. Marketing fresh sweet onions in an open market (no contract) as a price negotiator/taker[2].
2. 50 percent of expected production is contracted at one of four prices and 50 percent is sold on the open market.
   a. $8.00 contract price per 50 pounds.
   b. $10.35 contract price per 50 pounds.
   c. $12.50 contract price per 50 pounds.
   d. $22.00 contract price per 50 pounds.

[1] *Contact your local extension office for production information.*
[2] *Historical data from the Dallas, Texas terminal market is used to represent sweet onion price in the Oklahoma region.*

3. 100 percent of expected production is contracted at one of four prices.
   a. $8.00 contract price per 50 pounds.
   b. $10.35 contract price per 50 pounds.
   c. $12.50 contract price per 50 pounds.
   d. $22.00 contract price per 50 pounds.

Results

With apparent increases in demand, onion production is a potentially profitable addition to the farmers' crop mix in the southern Oklahoma region. This study established profit and risk estimates for a 40-acre Southeast Oklahoma farm producing sweet onions on owned and irrigated land. However, this study does not consider effects of increased production in the area or the overall market, transportation lengths further than 120 miles to the Dallas terminal market, variations in weather, or level of production experience[3].

When a contract is not used, the producer is exposed to a greater probability of loss. An income analysis supports this fact and indicates an absolute loss of almost $1,500.00 per acre (not included in Tables) is possible. A loss of this magnitude deserves strong consideration. Table 2 implies, among other things, that an indifference price occurs at $10.35 per 50 pounds of Oklahoma sweet onions. For example, if the producer cannot contract at or above $10.35 per 50 pounds then the producer would, based on long run income projections, consider selling in the open market. Please note that the indifference price is unlike a breakeven price. The breakeven generated from this study is $9.82 per 50 pounds of sweet onions. A producer will at least breakeven when choosing to contract above a price of $9.82 per 50 pounds, however, choosing to contract below the indifference price of $10.35 per 50 pounds of sweet onions will lessen long run net income.

A risk assessment tool used in this study, called a stoplight analysis, indicates the likelihood of net income range for each contract rate. When contracting 100 percent[4] of production at $10.35 per 50 pounds of Oklahoma sweet onions, an income between $0.00 and $1,000.00 per acre 20 out of 20 years is possible. In contrast, in the open market (0 percent contract) a net income between $0.00 and $1,000.00 per acre is probable 10 out of 20 years and less than breakeven ($0.00 dollars per acre) 8 out of 20 years is evident from 500 simulations. Tables 3, 4, and 5 illustrate the risk distributions. Table 6 illustrates the required contract price to breakeven at a given contract rate.

Fresh sweet onion production can be profitable in the southern region of Oklahoma. However, as with most agriculture products, price risks escalate during high volume harvest periods. Contracting provides an obvious avoidance of risk, but what level of price and contracting rate provides a harmonious situation for individual producers? Each producer has many variables to oversee; this fact sheet intends to facilitate marketing decisions that are best for each enterprise.

Table 2. Average per acre net income from 500 simulations when contracting sweet onion production

Price/50 lbs.	Open Market	50% Contract Rate*	100% Contract Rate*
$8.00	$193.00	$3.00	($186.00)
$10.35	$193.00	$193.00	$193.00
$12.50	$193.00	$366.00	$541.00
$22.00	$193.00	$1,143.00	$2,076.00

*Contract percentages are based on "expected" production.

Table 3. Expected net income per acre: open market

	Less than $0.00	$0.00 to $1,000.00	Greater than $1,000.00
Open Market	8 of 20 years	10 of 20 years	2 of 20 years

Table 4. Expected net income per acre: 50% open market and 50% contracted

	Less than $0.00	$0.00 to $1,000.00	Greater than $1,000.00
$8.00 Contract	10 of 20 years	10 of 20 years	
$10.35 Contract	5 of 20 years	15 of 20 years	
$12.50 Contract	2 of 20 years	18 of 20 years	
$22.00 Contract		7 of 20 years	13 of 20 years

Table 5. Expected net income per acre: 100% contract rate

	Less than $0.00	$0.00 to $1,000.00	Greater than $1,000.00
$8.00 Contract	20 of 20 years		
$10.35 Contract		20 of 20 years	
$12.50 Contract		20 of 20 years	
$22.00 Contract			20 of 20 years

Table 6. Required contract price to breakeven, given the contract rate

Contract Rate	Breakeven Price 50/lbs.
25%	$34.05
50%	$17.25
75%	$12.25
100%	$9.82

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[3] *The producer is assumed an experienced onion producer.*
[4] *Contract percentages are based on "expected" production.*

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