EC-1295

Field Pea and Lentil Marketing Strategies

George Flaskerud
Professor and Extension Crops Economist
Department of Agribusiness and Applied Economics

The United States is a small but growing producer of field peas and lentils relative to other countries in the world **(Figures 1 and 2)**, according to the Food and Agricultural Organization (FAO). In 2004, U.S. field pea production was 4.3 percent of world production and U.S. lentil production was 4 percent. In contrast, Canada produced 27.2 percent of the field peas and 24.4 percent of the lentils.

In 2004, Canada was the largest producer of field peas and the second largest producer of lentils. India was the largest producer and a major importer of lentils. Turkey also was a major importer, while Canada, Australia and the United States were exporters.

In the case of field peas, China and India were major importers, while major exporters included Canada, France, Russia, Germany, Australia and the United States. Additional information on production, trade and marketing is available in the "Pulse Crop Marketing Guide" by Janzen, Fisher and Bartsch.

The majority of field pea production in North America is exported or used domestically for livestock feed and seed (Janzen, Fisher and Bartsch). Very little is used domestically for human consumption. Conversely, lentils are used almost exclusively for human consumption in both the domestic and export markets.

Major World Field Pea Producers

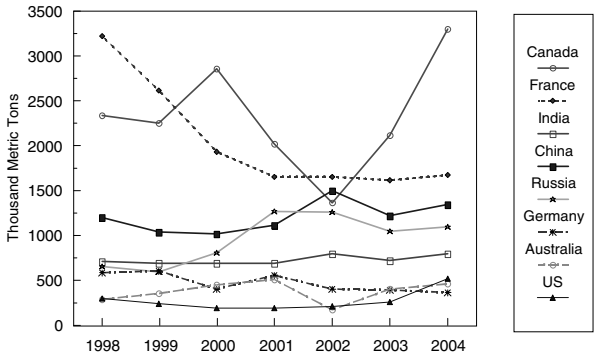


Figure 1.

Major World Lentil Producers

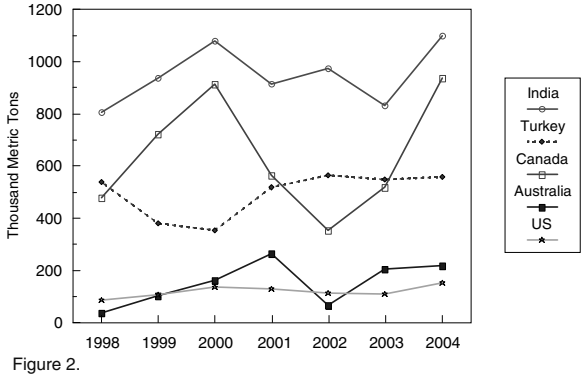


Figure 2.

North Dakota had the largest field pea and lentil acreage in 2004 in the United States **(Figures 3 and 4)**, according to the National Agricultural Statistics Service (NASS). For both crops, North Dakota experienced tremendous growth. In Idaho, Montana and Washington, acreages have been steady for field peas but growing for lentils, although the growth has been less than in North Dakota.

NDSU Extension Service
North Dakota State University
Fargo, North Dakota 58105

AUGUST 2005

Field Pea Planted Acres

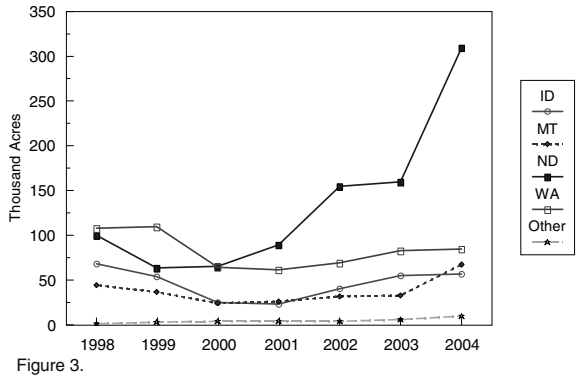


Figure 3.

Field Pea Yield Per Harvested Acre

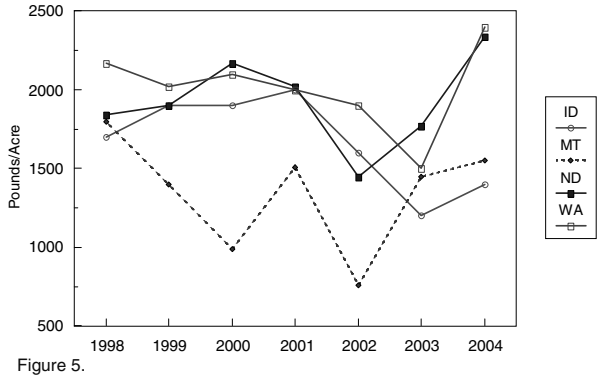


Figure 5.

Lentil Planted Acres

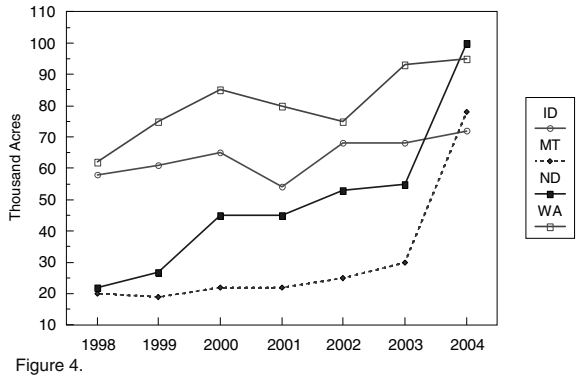


Figure 4.

Lentil Yield Per Harvest Acre

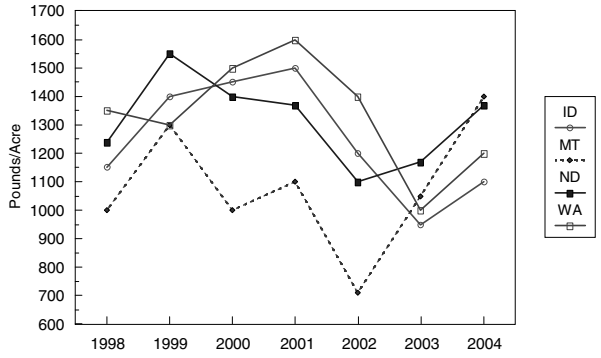


Figure 6.

The U.S. average yield per harvested acre in 2004 was 2,249 pounds per acre for field peas and 1,271 pounds per acre for lentils (NASS). Above-average yields were achieved in North Dakota and Washington for field peas and in North Dakota and Montana for lentils **(Figures 5 and 6)**.

Field peas and lentils compete well economically with other crops in North Dakota, especially in the northwestern part of the state (Swenson). In the 2005 budgets for northwestern North Dakota, lentils ranked first out of 17 crop budgets, with a projected return over direct costs of $88.16 per acre. Field peas ranked sixth with a return over direct costs of $49.45.

Producers usually market their field pea and lentil crops by selling in the cash market, although they may use a cash-forward contract for feed peas, and especially for lentils. Producers can sell field peas and lentils at harvest or later by taking the cash price that elevators offer. Producers can sell the crop prior to harvest, when the price is advantageous, by using the cash-forward contract, if available. The contract also assures the producer of a place and market for a portion of the crop.

The contract generally states that the producer is to deliver a specific number of pounds of a certain grade to the elevator at a specified time and price. The price is subject to discounts at delivery, depending on quality. The contractor usually has first right of refusal on overrun. The contract generally includes an "act of God" clause to protect growers from production failures beyond their control.

Using the cash-forward contract may be appropriate on a portion of the crop. Producers also may consider using other marketing tools, such as futures or options. Since a futures market does not exist for field peas or lentils, producers need to consider other closely related futures markets. Using the futures market of a different commodity for hedging is cross-hedging.

This publication analyzes price risk management strategies for field pea and lentil growers. It analyzes various time series of prices to identify patterns and relationships useful for developing marketing strategies and evaluates preharvest and harvest/postharvest marketing strategies. The focus is on North Dakota, but the results are applicable to other states.

Methods and findings from several studies in addition to the "Pulse Crop Marketing Guide" by Janzen, Fisher and Bartsch were reviewed to determine the appropriate design of the marketing analysis for field peas and lentils. The studies reviewed were for two other crops, sunflowers and canola.

Flaskerud and Shane examined the cash market, cash-forward contract and cross-hedging, all for sunflowers. The soybean oil futures contract was used for cross-hedging based on the oil content of the sunflowers. O'Brien, Stockton and Belshe examined four methods for selling sunflowers: cash sales, forward cash contracts, forward cash grower contracts and cross-hedges in soybean oil futures. They also presented oil sunflower cash price forecasting models and a sunflower marketing plan.

Flaskerud, Dahl and Wilson determined that the use of canola futures at the Winnipeg Commodity Exchange (WCE) is preferred to the use of futures for soybeans, soybean oil or soybean meal to manage price risk for canola. In a study of price risk management for NuSun sunflowers, Flaskerud (2005) found that canola cross-hedges have the most risk reduction, whereas soybean oil cross-hedges may be preferred when striving for profitability. Fundamental and technical features in both markets need to be evaluated when considering a cross-hedge.

Data and Methods

Data were gathered from several sources from April 1998 to April 2005. Cash prices were obtained from NASS, Agweek and USDA Dry Edible Bean Market News for all field peas, feed peas, No. 1 green peas, No. 1 yellow peas, all lentils and No. 1 lentils. Futures prices were obtained from USDA Grain Market News and the Great Pacific Trading Co. Web site.

Data were compiled as monthly averages. The marketing year used was September through August, as defined by USDA Dry Edible Bean Market News.

The data were analyzed using methods to identify patterns and relationships useful for developing marketing strategies (Flaskerud, Dahl and Wilson). Methods included seasonal distributions, correlations and historical simulations.

The analysis of seasonal distributions of prices (Flaskerud and Johnson) was limited to the most recent five marketing years, beginning September 1999 and ending August 2004. The seasonal distributions were reviewed by marketing year and summarized using the average derived after excluding the lowest and highest values. The standard deviation is used as an indicator of variability.

Hedging of commodities relies, in part, on the relationship or correlation between futures and cash prices. Correlations were calculated since they indicate the degree that prices tend to move in the same direction. Higher correlations, between cash and futures prices, would indicate that prices move similarly, thus hedging with futures can offset risk in cash prices.

Marketing strategies were evaluated on the basis of mean net returns that could have been received historically. They also were evaluated on the basis of net return variability, as measured by the standard deviation and range. The evaluations illustrate the trade-off among strategies between potential returns and risk. Strategies include preharvest sales, harvest sales, storage and marketing loans, which are explained in the next section. The strategies are described further in the "Marketing Strategies" section.

Marketing Loan

A marketing loan is a Commodity Credit Corp. (CCC) commodity loan with a provision that allows producers to repay the loan at less than the original value if market conditions warrant (Aakre). Producers can satisfy a loan either by repaying the loan plus interest, repaying the loan at the posted country price (PCP) and keeping the difference, or forfeiting their collateral and keeping the loan amount.

Producers can exercise a one-time 60-day lock on the PCP, which gives the producers 60 days to repay the loan at the PCP that was in effect on the day they initiated the 60-day lock. If the market price decreases (PCP decreases) during that time, producers can let the lock expire and repay the loan at the lower PCP. Producers also can forgo the loan in return for a loan deficiency payment (LDP). The LDP rate is the amount by which the loan rate exceeds the PCP.

Eligibility for a marketing loan or LDP requires the producer to have beneficial interest in the commodity. Producers who intend to haul directly from the field to the buyer need to complete form CCC-709 before harvest to be eligible for a LDP. The LDP rate on this application is the rate in effect on the date of delivery. For a crop in storage, producers need to complete form CCC-633 before hauling, and the LDP rate is the rate in effect on

the date of application. May 31 of the year following harvest is the deadline for receiving a marketing loan or LDP on field peas and lentils.

The marketing loan program for field peas and lentils began with the 2002 crop. Lentils have only a national loan rate and PCP. Field peas have an East Region and a West Region, and each has its own loan rate and PCP. Montana and North Dakota are in the East Region. Other state locations are identified at *www.fsa.usda.gov/dafp/psd/LoanRate.htm* . The loan rate and PCP applies to both the feed and edible peas. The PCP for field peas is based on the price for feed peas. The 2002 field pea crop had only a national loan rate and PCP. The PCP is updated on Friday of each week.

A history of the field pea and lentil loan rates is presented in **Table 1**. A history of the LDP rates for field peas in the East Region is presented in **Table 2** based on data from the North Dakota Farm Service Agency (FSA). A LDP did not exist for the 2002 field pea crop and none ever existed for the lentil crop, except at the very beginning of the program in 2002. The LDP rate for field peas ranged from 68 cents per hundredweight (cwt) to $2.68 per cwt for the 2003 crop and from $2.41 per cwt to $2.91 per cwt for the 2004 crop. LDP rate highs occurred during August to December for the 2003 crop and during February for the 2004 crop.

Table 1. Loan rates for field peas and lentils, effective Aug. 1 annually, $/cwt.

	2002	2003	2004	2005
Lentils				
National Avg	11.94	11.94	11.72	11.72
Field Peas				
National Avg	6.33	6.33	6.22	6.22
East Region		5.89	5.84	6.03
West Region		6.68	6.63	6.61

Table 2. Loan deficiency payment rates for field peas, East Region, $/cwt.

Month	2003	2004
Aug	2.68	2.41
Sept	2.68	2.42
Oct	2.68	2.53
Nov	2.68	2.73
Dec	2.68	2.86
Jan	1.98	2.90
Feb	2.06	2.91
March	1.56	2.73
April	0.68	2.63
May	0.93	
June	1.62	
July	1.98	

Prices

North Dakota seasonal average prices are presented in **Figure 7** for all field peas and all lentils during the 1998-2003 marketing years. For field peas, the seasonal average price range was $4.40 to $6.70 per cwt, with a mean of $5.28 per cwt. For lentils, the range was $9.10 to $14.70 per cwt, with a mean of $11 per cwt.

Monthly average feed pea prices at Ray and Valley City, N.D., from September 1998 to April 2005 are presented in **Figure 8**. Prices are presented in **Figures 9 to 11** for No.1 green peas, No. 1 yellow peas and No.1 lentils at Ray and in Idaho/Washington.

Feed pea prices at Ray ranged from $2.50 to $5.83, with a mean of $3.80. At Valley City, the range was $3.41 to $5.25, with a mean of $4.05, which was 7 percent higher than at Ray.

Green pea No. 1 prices at Ray ranged from $3.75 to $9.19, with a mean of $5.70. At Idaho/Washington, the range was $5.13 to $11.50, with a mean of $7.10. The price at Ray averaged 80 percent of the Idaho/Washington price.

North Dakota Seasonal Average Prices for Field Peas and Lentils

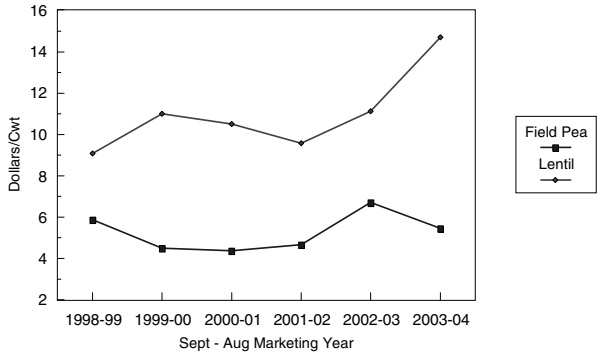


Figure 7.

Feed Pea Prices at Ray and Valley City, N.D.

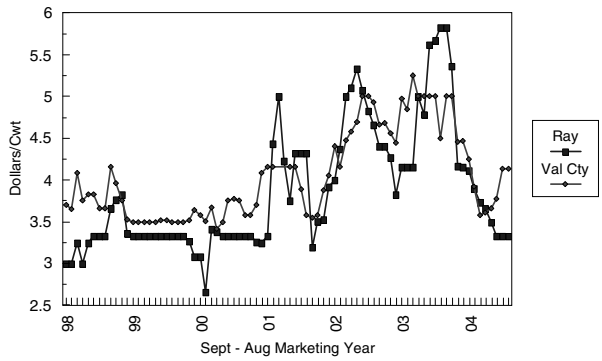


Figure 8.

Green Pea #1 Prices at Ray, N.D. and Idaho/Washington

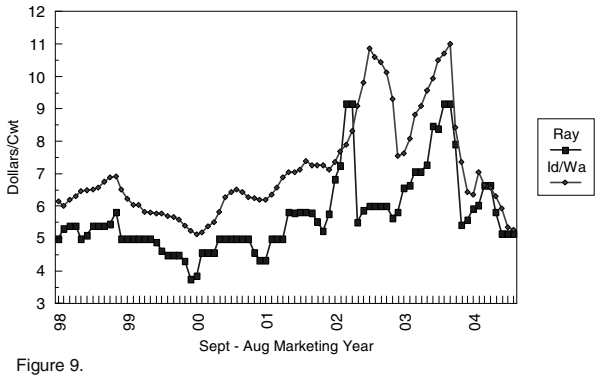


Figure 9.

Yellow Pea #1 Prices at Ray, N.D. and Idaho/Washington

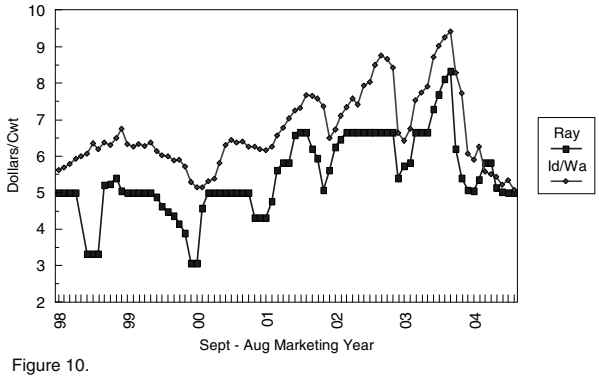


Figure 10.

Lentil #1 Prices at Ray, N.D. and Idaho/Washington

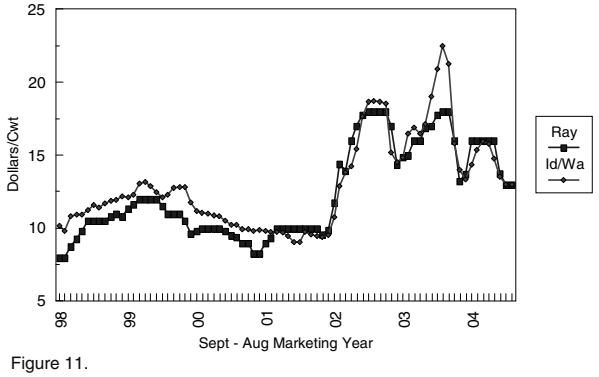


Figure 11.

Yellow pea No. 1 prices at Ray ranged from $3.08 to $8.33, with a mean of $5.43. At Idaho/Washington, the range was $5.08 to $9.42, with a mean of $6.67. The price at Ray averaged 81 percent of the Idaho/Washington price.

Lentil No. 1 prices at Ray ranged from $8 to $18, with a mean of $12.39. At Idaho/Washington, the range was $9.03 to $22.50, with a mean of $12.97. The Ray price averaged 95 percent of the Idaho/Washington price.

Correlations

Correlations were estimated among prices for feed peas, No. 1 green peas, No. 1 yellow peas, No. 1 lentils, corn futures, soybean futures and soybean meal futures. They were estimated during four time periods. The results are presented in **Table 3**. Primary focus was on the relationship that pea and lentil prices exhibited with futures prices.

At Ray, the best correlation for feed peas generally was with corn futures and it improved over time. The correlation increased from a weak .61 during April 1998 to April 2005 to a strong .97 during January 2004 to April 2005. Green peas had a stronger correlation with corn futures than did the feed peas during the earlier periods, but a weaker correlation later on. In contrast, the correlation between yellow peas and corn futures, while weaker than between green peas and corn futures during the first period, was stronger by the last period. The best correlation lentils had with any futures contract was a weak .66 with corn futures during the last period.

At Valley City, feed peas continued to show the best relationship with corn futures, although the relationship was weaker than at Ray. However, it did improve over time, as at Ray.

At Idaho/Washington, the green and yellow peas had the strongest relationship with corn futures and it improved over time. Lentils started out by exhibiting the strongest relationship with soybean futures, but ended up relating best with corn futures.

Correlations also were examined for four-month price changes (**Table 4**) and eight-month price changes (**Table 5**). Corn futures continued to provide the strongest relationship with peas (feed, green and yellow) and lentils and the best correlation with peas that improved over time.

These correlations suggest that corn futures may provide more risk reduction for cross-hedging pea prices, especially feed pea prices, than soybean futures and soybean meal futures. The feasibility of cross-hedging feed, green or yellow peas with corn futures, however, will depend on whether recent strong relationships can continue. Situations where a cross-hedge may be warranted will be discussed in the "Marketing Strategies" section.

Table 3. Correlations of prices during various time periods at Ray and Valley City, N.D., Idaho and Washington, and Chicago Board of Trade Futures.

	Ray Feed Pea	Ray #1 Green Pea	Ray #1 Yellow Pea	Ray #1 Lentil	Valley City Feed Pea	Idaho/ Wash. #1 Green Pea	Idaho/ Wash. #1 Yellow Pea	Idaho/ Wash. #1 Lentil	Corn Futures	Soybean Meal Futures	Soybean Futures
April 1998 – April 2005											
Ray Feed Peas	1.000	0.817	0.842	0.733	0.835	0.750	0.700	0.684	0.614	0.622	0.590
Ray #1 Green Peas		1.000	0.801	0.689	0.702	0.671	0.610	0.663	0.664	0.583	0.660
Ray #1 Yellow Peas			1.000	0.666	0.748	0.674	0.640	0.595	0.480	0.556	0.474
Ray #1 Lentils				1.000	0.708	0.738	0.570	0.930	0.526	0.602	0.646
Valley City Feed Peas					1.000	0.689	0.554	0.660	0.514	0.581	0.571
Idaho/Wash. #1 Green Peas						1.000	0.922	0.749	0.718	0.594	0.689
Idaho/Wash. #1 Yellow Peas							1.000	0.581	0.709	0.581	0.632
Idaho/Wash. #1 Lentils								1.000	0.607	0.694	0.763
Corn Futures									1.000	0.725	0.853
Soybean Meal Futures										1.000	0.874
August 2001 – April 2005											
Ray Feed Peas	1.000	0.705	0.789	0.557	0.682	0.759	0.729	0.618	0.719	0.569	0.623
Ray #1 Green Peas		1.000	0.750	0.560	0.465	0.572	0.537	0.610	0.734	0.578	0.690
Ray #1 Yellow Peas			1.000	0.560	0.502	0.836	0.832	0.614	0.657	0.547	0.583
Ray #1 Lentils				1.000	0.619	0.708	0.431	0.943	0.480	0.501	0.630
Valley City Feed Peas					1.000	0.730	0.584	0.665	0.649	0.606	0.661
Idaho/Wash. #1 Green Peas						1.000	0.898	0.772	0.689	0.584	0.623
Idaho/Wash. #1 Yellow Peas							1.000	0.526	0.676	0.570	0.563
Idaho/Wash. #1 Lentils								1.000	0.622	0.680	0.782
Corn Futures									1.000	0.780	0.852
Soybean Meal Futures										1.000	0.937
January 2003 – April 2005											
Ray Feed Peas	1.000	0.756	0.878	0.694	0.702	0.828	0.859	0.792	0.895	0.632	0.733
Ray #1 Green Peas		1.000	0.780	0.508	0.429	0.565	0.610	0.771	0.850	0.720	0.857
Ray #1 Yellow Peas			1.000	0.808	0.620	0.907	0.888	0.928	0.817	0.629	0.700
Ray #1 Lentils				1.000	0.430	0.864	0.751	0.843	0.503	0.214	0.281
Valley City Feed Peas					1.000	0.739	0.748	0.507	0.655	0.537	0.569
Idaho/Wash. #1 Green Peas						1.000	0.947	0.881	0.709	0.492	0.522
Idaho/Wash. #1 Yellow Peas							1.000	0.825	0.804	0.616	0.654
Idaho/Wash. #1 Lentils								1.000	0.780	0.597	0.651
Corn Futures									1.000	0.831	0.925
Soybean Meal Futures										1.000	0.933
January 2004 – April 2005											
Ray Feed Peas	1.000	0.934	0.913	0.763	0.842	0.957	0.970	0.878	0.967	0.800	0.924
Ray #1 Green Peas		1.000	0.965	0.888	0.652	0.941	0.881	0.953	0.887	0.685	0.840
Ray #1 Yellow Peas			1.000	0.830	0.661	0.964	0.900	0.979	0.897	0.769	0.879
Ray #1 Lentils				1.000	0.413	0.825	0.692	0.887	0.656	0.463	0.587
Valley City Feed Peas					1.000	0.768	0.849	0.553	0.864	0.760	0.865
Idaho/Wash. #1 Green Peas						1.000	0.963	0.938	0.926	0.813	0.902
Idaho/Wash. #1 Yellow Peas							1.000	0.852	0.962	0.856	0.944
Idaho/Wash. #1 Lentils								1.000	0.847	0.737	0.817
Corn Futures									1.000	0.884	0.986
Soybean Meal Futures										1.000	0.924

Table 4. Correlations of four-month price changes during various time periods at Ray and Valley City, N.D., Idaho and Washington, and Chicago Board of Trade Futures.

	Ray Feed Pea	Ray #1 Green Pea	Ray #1 Yellow Pea	Ray #1 Lentil	Valley City Feed Pea	Idaho/ Wash. #1 Green Pea	Idaho/ Wash. #1 Yellow Pea	Idaho/ Wash. #1 Lentil	Corn Futures	Soybean Meal Futures	Soybean Futures
April 1998 – April 2005											
Ray Feed Peas	1.000	0.634	0.609	0.577	0.520	0.590	0.518	0.597	0.477	0.343	0.447
Ray #1 Green Peas		1.000	0.658	0.384	0.197	0.348	0.331	0.452	0.462	0.274	0.419
Ray #1 Yellow Peas			1.000	0.362	0.276	0.471	0.419	0.464	0.307	0.261	0.310
Ray #1 Lentils				1.000	0.071	0.739	0.559	0.842	0.306	0.197	0.262
Valley City Feed Peas					1.000	0.165	0.030	0.169	0.215	0.124	0.237
Idaho/Wash. #1 Green Peas						1.000	0.876	0.838	0.534	0.476	0.559
Idaho/Wash. #1 Yellow Peas							1.000	0.636	0.531	0.527	0.585
Idaho/Wash #1 Lentils								1.000	0.459	0.443	0.533
Corn Futures									1.000	0.722	0.836
Soybean Meal Futures										1.000	0.886
August 2001 – April 2005											
Ray Feed Peas	1.000	0.630	0.741	0.665	0.536	0.645	0.598	0.641	0.562	0.417	0.536
Ray #1 Green Peas		1.000	0.736	0.466	0.120	0.397	0.409	0.507	0.550	0.361	0.509
Ray #1 Yellow Peas			1.000	0.684	0.141	0.782	0.761	0.725	0.485	0.417	0.521
Ray #1 Lentils				1.000	0.246	0.798	0.568	0.868	0.284	0.182	0.261
Valley City Feed Peas					1.000	0.308	0.206	0.261	0.433	0.328	0.428
Idaho/Wash. #1 Green Peas						1.000	0.874	0.907	0.564	0.538	0.617
Idaho/Wash. #1 Yellow Peas							1.000	0.691	0.564	0.605	0.663
Idaho/Wash, #1 Lentils								1.000	0.541	0.484	0.575
Corn Futures									1.000	0.744	0.887
Soybean Meal Futures										1.000	0.895
January 2003 – April 2005											
Ray Feed Peas	1.000	0.599	0.813	0.623	0.440	0.731	0.746	0.704	0.763	0.599	0.764
Ray #1 Green Peas		1.000	0.737	0.269	-0.051	0.355	0.412	0.464	0.702	0.484	0.648
Ray #1 Yellow Peas			1.000	0.728	0.157	0.853	0.814	0.869	0.762	0.593	0.743
Ray #1 Lentils				1.000	0.096	0.862	0.649	0.892	0.333	0.247	0.333
Valley City Feed Peas					1.000	0.357	0.357	0.223	0.394	0.459	0.542
Idaho/Wash. #1 Green Peas						1.000	0.890	0.946	0.643	0.568	0.656
Idaho/Wash. #1 Yellow Peas							1.000	0.770	0.762	0.667	0.756
Idaho/Wash. #1 Lentils								1.000	0.612	0.523	0.613
Corn Futures									1.000	0.817	0.936
Soybean Meal Futures										1.000	0.904
January 2004 – April 2005											
Ray Feed Peas	1.000	0.868	0.867	0.668	0.376	0.906	0.933	0.811	0.947	0.717	0.888
Ray #1 Green Peas		1.000	0.968	0.892	0.000	0.928	0.790	0.955	0.797	0.529	0.736
Ray #1 Yellow Peas			1.000	0.837	0.065	0.976	0.844	0.968	0.810	0.613	0.779
Ray #1 Lentils				1.000	-0.324	0.800	0.549	0.899	0.531	0.348	0.461
Valley City Feed Peas					1.000	0.147	0.417	-0.108	0.481	0.410	0.539
Idaho/Wash. #1 Green Peas						1.000	0.914	0.939	0.857	0.716	0.840
Idaho/Wash. #1 Yellow Peas							1.000	0.767	0.939	0.808	0.925
Idaho/Wash. #1 Lentils								1.000	0.753	0.599	0.710
Corn Futures									1.000	0.843	0.974
Soybean Meal Futures										1.000	0.888

Table 5. Correlations of eight-month price changes during various time periods at Ray and Valley City, N.D., Idaho and Washington, and Chicago Board of Trade.

	Ray Feed Pea	Ray #1 Green Pea	Ray #1 Yellow Pea	Ray #1 Lentil	Valley City Feed Pea	Idaho/ Wash. #1 Green Pea	Idaho/ Wash. #1 Yellow Pea	Idaho/ Wash. #1 Lentil	Corn Futures	Soybean Meal Futures	Soybean Futures
April 1998 – April 2005											
Ray Feed Peas	1.000	0.818	0.783	0.629	0.774	0.809	0.836	0.689	0.769	0.586	0.671
Ray #1 Green Peas		1.000	0.802	0.502	0.633	0.694	0.752	0.571	0.810	0.581	0.705
Ray #1 Yellow Peas			1.000	0.536	0.645	0.734	0.798	0.548	0.692	0.525	0.566
Ray #1 Lentils				1.000	0.640	0.782	0.670	0.931	0.588	0.411	0.503
Valley City Feed Peas					1.000	0.809	0.760	0.691	0.751	0.562	0.643
Idaho/Wash. #1 Green Peas						1.000	0.922	0.810	0.785	0.617	0.718
Idaho/Wash. #1 Yellow Peas							1.000	0.696	0.835	0.685	0.748
Idaho/Wash. #1 Lentils								1.000	0.681	0.611	0.689
Corn Futures									1.000	0.791	0.889
Soybean Meal Futures										1.000	0.932
August 2001 – April 2005											
Ray Feed Peas	1.000	0.734	0.775	0.494	0.644	0.782	0.843	0.601	0.731	0.551	0.666
Ray #1 Green Peas		1.000	0.791	0.335	0.341	0.565	0.682	0.463	0.827	0.580	0.718
Ray #1 Yellow Peas			1.000	0.452	0.499	0.780	0.889	0.521	0.718	0.562	0.646
Ray #1 Lentil				1.000	0.594	0.791	0.524	0.910	0.387	0.258	0.347
Valley City Feed Peas					1.000	0.821	0.688	0.681	0.549	0.534	0.607
Idaho/Wash. #1 Green Peas						1.000	0.891	0.836	0.668	0.540	0.632
Idaho/Wash. #1 Yellow Peas							1.000	0.606	0.703	0.624	0.685
Idaho/Wash. #1 Lentils								1.000	0.576	0.535	0.620
Corn Futures									1.000	0.757	0.883
Soybean Meal Futures										1.000	0.949
January 2003 – April 2005											
Ray Feed Peas	1.000	0.838	0.884	0.622	0.648	0.816	0.892	0.788	0.896	0.680	0.803
Ray #1 Green Peas		1.000	0.847	0.283	0.373	0.549	0.725	0.530	0.865	0.673	0.792
Ray #1 Yellow Peas			1.000	0.587	0.585	0.813	0.917	0.788	0.806	0.731	0.807
Ray #1 Lentils				1.000	0.702	0.886	0.669	0.919	0.384	0.236	0.314
Valley City Feed Peas					1.000	0.851	0.731	0.798	0.612	0.614	0.681
Idaho/Wash. #1 Green Peas						1.000	0.897	0.975	0.680	0.598	0.679
Idaho/Wash. #1 Yellow Peas							1.000	0.833	0.779	0.764	0.819
Idaho/Wash. #1 Lentils								1.000	0.635	0.533	0.616
Corn Futures									1.000	0.807	0.916
Soybean Meal Futures										1.000	0.953
January 2004 – April 2005											
Ray Feed Peas	1.000	0.932	0.931	0.709	0.716	0.944	0.953	0.916	0.970	0.810	0.906
Ray #1 Green Peas		1.000	0.956	0.698	0.666	0.912	0.880	0.942	0.952	0.806	0.914
Ray #1 Yellow Peas			1.000	0.751	0.613	0.955	0.924	0.960	0.909	0.804	0.881
Ray #1 Lentils				1.000	0.141	0.783	0.702	0.845	0.625	0.393	0.485
Valley City Feed Peas					1.000	0.641	0.718	0.481	0.806	0.790	0.861
Idaho/Wash. #1 Green Peas						1.000	0.970	0.941	0.918	0.793	0.876
Idaho/Wash. #1 Yellow Peas							1.000	0.884	0.931	0.847	0.903
Idaho/Wash #1 Lentils								1.000	0.887	0.740	0.823
Corn Futures									1.000	0.886	0.970
Soybean Meal Futures										1.000	0.955

Seasonal Price Patterns

Patterns were examined by marketing year during 1999-2003 for the cash prices at Ray, N.D. Cash prices included feed peas, No. 1 green peas, No. 1 yellow peas and No. 1 lentils. Patterns were also examined for 2000-04 September corn futures since corn futures exhibited the best correlation with pea prices and may be useful for preharvest marketing strategies.

Feed pea prices

The distribution of feed pea prices shows that the pattern, on average, was for lows to occur at the beginning of the marketing year and peak in February (although prices were nearly as high during November and December) before declining into the next marketing year (**Figure 12**). A wide range of price behavior occurred during individual marketing years. Prices generally were flat during 1999-2000. Highs occurred during November 2000-01 and 2001-02, January 2002-03 and May 2003-04. The highest monthly average price was $5.83 in 2003-04.

The range in the monthly average, excluding the low and high, was only 69 cents per cwt. When the low and high were included, the range was $1.19. The within-year variations varied considerably, from a low of 25 cents in 1999-2000 to a high of $1.80 in 2001-02. The within-year variation during the more volatile marketing years of 2001-03 was $1.66, on average.

Green pea No. 1 prices

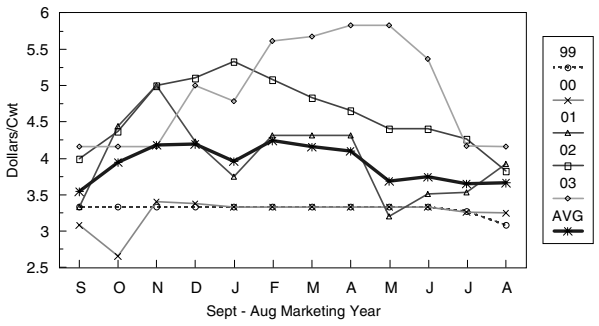
The green pea No. 1 price (**Figure 13**) was less volatile, on average, than the feed pea price, but the pattern was similar. However, the green pea price was considerably more volatile during some individual years. Highs occurred early in the marketing year during 1999-2000. They occurred during January to June 2000-01, March to April 2001-02, November and December 2002-03, and April and May 2003-04. The highest monthly average price was $9.17 in 2003-04.

The range in the monthly average, excluding the low and high, was only 61 cents per cwt, which was a little lower than for feed peas. When the low and high were included, the range was $2.26, which was considerably higher than for feed peas. The within-year variations ranged significantly, from a low of $1.15 in 2000-01 to a high of $3.75 in 2003-04. The within-year variation during the more volatile marketing years of 2002-03 was $3.71, on average.

Yellow pea No. 1 prices

The yellow pea No. 1 price (**Figure 14**) peaked during February to April, on average. Highs occurred early in the marketing year during 1999-2000, as for No. 1 green peas, and in November to June 2000-01, March and April 2001-02, November to July 2002-03 and May 2003-04. The highest monthly average price was $8.33 in 2003-04.

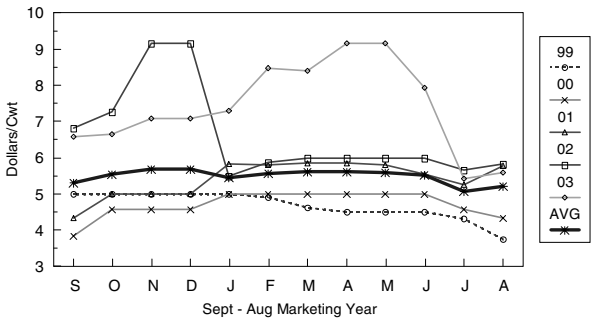
Seasonal Behavior of Feed Pea Prices at Ray, N.D.



AVG is an average of 1999-2003 excluding the low and high.

Figure 12.

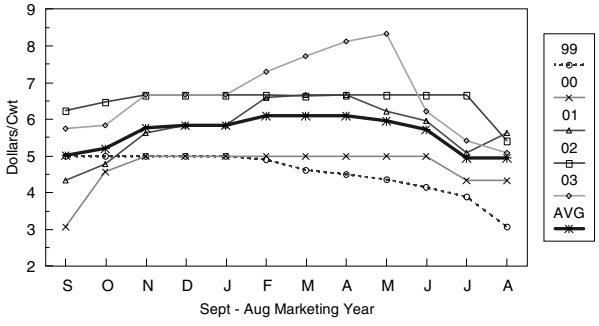
Seasonal Behavior of Green Pea #1 Prices at Ray, N.D.



AVG is an average of 1999-2003 excluding the low and high.

Figure 13.

Seasonal Behavior of Yellow Pea #1 Prices at Ray, N.D.



AVG is an average of 1999-2003 excluding the low and high.

Figure 14.

The range in the monthly average, excluding the low and high, was $1.17 per cwt, considerably higher than for feed peas and green peas. When the low and high were included, the range was $2.14, a little lower than for green peas. The within-year variations varied less than for green peas, from a low of $1.25 in 2002-03 to a high of $3.25 in 2003-04.

Lentil No. 1 prices

The lentil No. 1 price (**Figure 15**) peaked during March, on average, but was almost as high during January to May. Highs occurred during November to February 1999-2000, October to January 2000-01, November to June 2001-02, March to June 2002-03, and April and May 2003-04. The highest monthly average price was $18 in both 2002-03 and 2003-04.

The lentil price was considerably more volatile than the pea prices. The range in the monthly average, excluding the low and high, was $2.12 per cwt. When the low and high were included, the range was $3.22. The within-year variations varied from a low of $1 in 2001-02 to a high of $6.25 in 2002-03.

September corn futures

September corn futures were much above average during 2004 and peaked in April (**Figure 16**). On average, futures prices peaked during March and April when the low and high were included, and during January and February without the extremes.

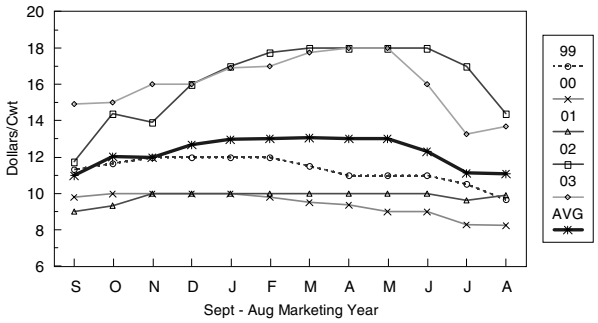
The range in the monthly average, excluding the low and high, was 19 cents per cwt. When the low and high were included, the range was 30 cents. The within-year variations ranged considerably, from a low of 30 cents in 2003 to a high of 94 cents in 2004.

Marketing Strategies

Preharvest and harvest/postharvest marketing strategies are evaluated. The specific strategies are identified at the beginning of each subsection: preharvest sales, storage and marketing loan. The various strategies are compared in the final subsection.

Historical simulations provide a systematic framework for analyzing marketing strategies. The illustrations indicate what could have happened if decisions were made as of certain dates. Those dates where selected according to the seasonal price patterns derived.

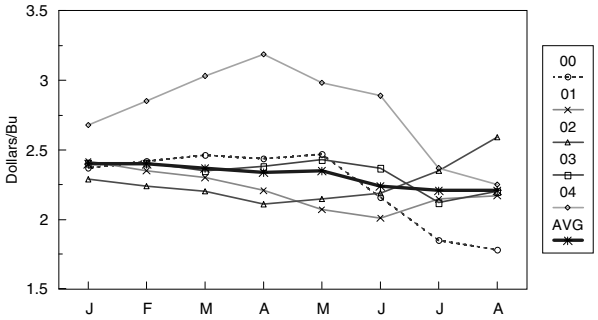
Seasonal Behavior of Lentil #1 Prices at Ray, N.D.



AVG is an average of 1999-2003 excluding the low and high.

Figure 15.

Seasonal Behavior of September Corn Futures



AVG is an average of 2000-04 excluding the low and high.

Figure 16.

In practice, producers would use the seasonal patterns as guides and select dates and strategies depending on current supply-and-demand conditions and price behavior. Also, producers may choose to diversify strategies and/or combine strategies.

Producers should exercise caution in generalizing about what might happen in the future based on the simulations since relatively few years were analyzed. Simulations matching expectations can be examined for possible strategy outcomes.

Preharvest sales

Producers should consider cash-forward contracts when they can realize prices that are above the historical average, and especially when they are in the upper third of the historical range. For pea producers, a cross-hedge in corn futures (best correlation in this study) using put options may be a low-risk alternative to cash-forward contracting when corn futures are well above average prior to harvest, such as during spring 2004.

Producers should use a put option because of the uncertainty of future price relationships between corn futures and peas since the risk in using put options is limited to the cost of the option.

Producers should use the September futures contract since it is the closest to field pea harvest. A 5,000-bushel put option in corn futures (56 pounds per bushel) might be used for each 5,000 bushels of anticipated field pea production (60 pounds per bushel) until relevant data denotes a more appropriate cross-hedge ratio.

An example put option strategy was initiated on April 30, 2004, by buying a $3.20 put option in September corn futures when the contract was trading at $3.18 per bushel. The cost of the option was 29 cents, plus 2 cents for commissions and interest. The option was offset on Aug. 13 when the September corn futures price was $2.17 for an option net return of 72 cents per bushel ($3.20 - $2.17- 29 cents - 2 cents).

Storage

For peas and lentils that are not cash-forward contracted, storage is an alternative. In this analysis, sales are made during the month with the highest price net of storage costs, excluding government payments, since a LDP existed only for field peas during 2003-04 and 2004-05. The analysis was done to determine if a particular length of storage is the most profitable. Sell or store decisions (Flaskerud, 1992) are difficult and require frequent evaluation of supply-and-demand factors, prices and storage costs.

On average, a sell-or-store strategy of selling feed peas during the month with the highest price net of storage costs was more profitable than a strategy of selling only at harvest during the 1998-2004 marketing years (**Table 6**). The net price averaged $4.20 per cwt from the sell-or-store strategy versus $3.50 from harvest sales only. However, the variability of net returns for the sell-or-store strategy was 40 cents greater than for the harvest sales strategy.

Although the sell-or-store strategy was profitable, the net price received would be difficult to achieve in practice because the most profitable period of storage varied considerably. On average, storage of feed peas into November was the most profitable, with a mean net price of $3.75, although variability was near the high end of the range at 70 cents. Based on the average price, December to April also were good months for making sales. For individual years, the most profitable sell-or-store strategy was to store the 1998 crop until July, sell the 1999 crop at harvest, store the 2000 and 2001 crops until November, store the 2002 crop until January, sell the 2003 crop in April and sell the 2004 crop at harvest.

For No. 1 green peas (**Table 7**), the net price averaged $6.35 per cwt from the sell-or-store strategy versus $5.04 from harvest sales only. The variability of net returns for the sell-or-store strategy was more than twice as high as for the harvest sales strategy. Storage into November was the most profitable, with a mean net price of $5.86, although variability was the highest at $1.49. December also was a good month for selling, based on the average price received.

Table 6. Feed pea price received net of storage costs, government payments excluded, $/cwt, 1998-99 to 2004-05.

Month	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	Average 1998-04	Standard Deviation 1998-04
Aug	2.92	3.36	3.08	3.25	3.92	3.83	4.16	3.50	0.43
Sept	2.81	3.14	2.89	3.14	3.81	3.97	3.93	3.38	0.46
Oct	2.80	3.12	2.45	4.23	4.15	3.94	3.68	3.48	0.65
Nov	3.03	3.10	3.19	4.77	4.76	3.92	3.49	3.75	0.70
Dec	2.76	3.08	3.14	3.96	4.84	4.73	3.40	3.70	0.77
Jan	2.99	3.06	3.07	3.46	5.03	4.50	3.22	3.62	0.75
Feb	3.05	3.04	3.05	4.01	4.75	5.30	3.03	3.75	0.88
March	3.03	3.02	3.03	3.98	4.46	5.31	3.01	3.69	0.85
April	3.01	3.00	3.01	3.96	4.27	5.44	2.99	3.67	0.88
May	3.32	2.98	2.99	2.81	3.99	5.41		3.59	0.90
June	3.40	2.97	2.97	3.10	3.97	4.92		3.55	0.70
July	3.45	2.88	2.88	3.11	3.80	3.68		3.30	0.36
Max	3.45	3.36	3.19	4.77	5.03	5.44	4.16	4.20	0.83

For No. 1 yellow peas (**Table 8**), the net price was $1.11 per cwt greater, on average, from the sell-or-store strategy than from harvest sales only, while the variability of net returns was only 20 cents greater. In contrast to the feed peas and green peas, storage of yellow peas into May was the most profitable, with a mean net price of $5.51, although variability was near the high end of the range at $1.26. November and December were other strong months for selling, on average.

For No. 1 lentils (**Table 9**), storage always was profitable. The net price received was $2.27 per cwt greater, on average, from the sell-or-store strategy than from harvest sales only, although the variability of net returns was 98 cents greater. Storage into January was the most profitable, with a mean net price of $12.52, accompanied by a variability of $3.07. November through April was a good period, on average.

Marketing loan

Four marketing loan strategies were analyzed for feed peas, No. 1 yellow peas and No. 1 green peas during 2003-04 and 2004-05. The analysis was limited to those two years since a LDP did not exist for the 2002 pea crop and none existed for the lentil crop during the study period. The four strategies are compared with a basic strategy of taking the LDP and simultaneously selling the crop at harvest. The term "net revenue" is used to reflect the LDP or marketing loan gain, plus the selling price net of storage costs.

In strategy one, the LDP is taken at harvest and the crop is sold during the month with the highest total revenue received net of storage costs.

In strategy two, the LDP is taken when the crop is sold during the month with the highest total revenue received net of storage costs.

Table 7. Green pea #1 price received net of storage costs, government payments excluded, $/cwt, 1998-99 to 2004-05.

Month	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	Average 1998-04	Standard Deviation 1998-04
Aug	5.01	5.00	3.75	4.33	5.77	5.83	5.58	5.04	0.72
Sept	4.80	4.80	3.66	4.13	6.63	6.37	5.73	5.16	1.04
Oct	5.08	4.77	4.37	4.78	7.02	6.42	5.80	5.46	0.91
Nov	5.15	4.74	4.34	4.75	8.87	6.80	6.39	5.86	1.49
Dec	5.12	4.71	4.31	4.72	8.82	6.76	6.35	5.83	1.48
Jan	4.68	4.68	4.71	5.52	5.11	6.93	5.48	5.30	0.74
Feb	4.75	4.56	4.68	5.47	5.45	8.06	4.78	5.39	1.14
March	5.03	4.25	4.65	5.46	5.54	7.96	4.75	5.38	1.13
April	5.00	4.10	4.62	5.43	5.51	8.66	4.72	5.43	1.39
May	4.97	4.07	4.59	5.37	5.47	8.61		5.51	1.46
June	4.98	4.05	4.56	5.07	5.44	7.30		5.23	1.02
July	5.32	3.83	4.11	4.74	5.05	4.76		4.63	0.51
Max	5.32	5.00	4.71	5.52	8.87	8.66	6.39	6.35	1.60

Table 8. Yellow pea #1 price received net of storage costs, government payments excluded, $/cwt, 1998-99 to 2004-05

Month	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	Average 1998-04	Standard Deviation 1998-04
Aug	4.44	5.05	3.08	4.33	5.62	5.41	5.08	4.72	0.80
Sept	4.80	4.80	2.89	4.13	6.05	5.54	4.86	4.73	0.94
Oct	4.77	4.77	4.37	4.56	6.24	5.59	5.14	5.07	0.61
Nov	4.75	4.74	4.77	5.37	6.38	6.39	5.57	5.42	0.68
Dec	4.72	4.71	4.74	5.55	6.34	6.35	5.54	5.42	0.68
Jan	3.02	4.68	4.71	5.51	6.31	6.31	4.83	5.05	1.06
Feb	3.00	4.55	4.68	6.25	6.27	6.90	4.68	5.19	1.25
March	2.98	4.25	4.65	6.28	6.22	7.28	4.61	5.18	1.36
April	2.96	4.10	4.62	6.24	6.19	7.65	4.58	5.19	1.46
May	4.81	3.94	4.59	5.75	6.15	7.81		5.51	1.26
June	4.83	3.71	4.56	5.46	6.11	5.64		5.05	0.79
July	4.96	3.41	3.86	4.55	6.07	4.80		4.61	0.85
Max	4.96	5.05	4.77	6.28	6.38	7.81	5.57	5.83	1.00

Table 9. Lentil #1 price received net of storage costs, government payments excluded, $/cwt, 1998-99 to 2004-05

Month	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	Average 1998-04	Standard Deviation 1998-04
Aug	8.38	10.80	9.65	8.25	9.88	14.38	13.70	10.72	2.26
Sept	7.72	11.04	9.53	8.72	11.46	14.59	15.69	11.25	2.75
Oct	7.67	11.27	9.66	9.00	14.04	14.60	15.60	11.69	2.85
Nov	8.38	11.57	9.60	9.61	13.47	15.51	15.50	11.95	2.71
Dec	8.83	11.50	9.54	9.56	15.48	15.42	15.41	12.25	2.86
Jan	9.32	11.43	9.48	9.50	16.39	16.20	15.32	12.52	3.07
Feb	9.97	11.36	9.26	9.44	17.04	16.23	12.97	12.32	2.98
March	9.90	10.79	8.87	9.38	17.18	16.88	12.14	12.16	3.23
April	9.84	10.23	8.69	9.32	17.08	17.02	12.07	12.04	3.32
May	9.78	10.16	8.26	9.26	16.97	16.92		11.89	3.62
June	10.02	10.10	8.20	9.21	16.87	14.81		11.53	3.16
July	10.16	9.53	7.45	8.75	15.76	11.97		10.60	2.68
Max	10.16	11.57	9.66	9.61	17.18	17.02	15.69	12.99	3.24

In strategy three, the crop is stored under loan and the loan is repaid at the lower of the PCP or the loan plus interest when the crop is sold during the month with the highest total revenue received net of storage costs.

In strategy four, the 60-day lock is initiated in August, the lower of the August or October PCP is taken, and the crop is sold during the month with the highest total revenue received net of storage costs.

The four strategies are analyzed first for feed peas, then for No. 1 green peas and finally for No. 1 yellow peas. Each analysis covers 2003-04 and 2004-05. The 2004-05 strategy goes through April, which was the end of the data set.

For feed peas during 2003-04 (**Table 10**), strategies one and four were the most profitable. They were not identical because interest was not charged on storage during the 60-day lock (strategy four) on the loan, which was repaid with the PCP, and the accumulation of interest on the marketing loan gain in strategy four started two months later than the interest on the LDP in strategy one. For both strategies, April was the best time to make sales and both strategies were considerably more profitable than selling at harvest. December and February were the best months to make sales in strategies two and three, respectively.

During 2004-05 (**Table 11**), selling the feed peas as soon as possible was the most profitable strategy since the cash price subsequently deteriorated.

For No. 1 green peas during 2003-04 (**Table 12**), April stood out again as the best time for sales, as for feed peas. Similarly, strategies one and four were the most profitable. Also, all strategies beat the basic strategy of selling at harvest.

During 2004-05 (**Table 13**), November/December was the best time to make sales for all No. 1 green pea marketing strategies, not at harvest as for feed peas. Strategy three was the most profitable followed by two, four and one.

Table 10. Total revenue received net of storage costs from alternative marketing loan strategies for feed peas during 2003-04, $/cwt.

Month	LDP at Harvest [a]	LDP During Year [b]	Store Under Loan [c]	60-Day Lock [d]
Strategy	1	2	3	4
Aug	6.51	6.51	6.51	
Sept	6.66	6.65	6.67	
Oct	6.65	6.62	6.67	6.67
Nov	6.65	6.60	6.67	6.66
Dec	7.48	7.41	7.51	7.49
Jan	7.25	6.48	6.60	7.27
Feb	8.07	7.36	7.51	8.09
March	8.10	6.86	7.05	8.11
April	8.25	6.12	6.34	8.26
May	8.23	6.34	6.59	8.24
June	7.75	6.53	6.82	7.77
July	6.53	5.66	5.98	6.54
Max	8.25	7.41	7.51	8.26

[a] In strategy one, the LDP is taken at harvest and the crop is sold during the month with the highest total revenue received net of storage costs.

[b] In strategy two, the LDP is taken when the crop is sold during the month with the highest total revenue received net of storage costs.

[c] In strategy three, the crop is stored under loan and the loan is repaid at the lower of the PCP or the loan plus interest when the crop is sold during the month with the highest total revenue received net of storage costs.

[d] In strategy four, the 60-day lock is initiated in August, the lower of the August or October PCP is taken, and the crop is sold during the month with the highest total revenue received net of storage costs.

Table 11. Total revenue received net of storage costs from alternative marketing loan strategies for feed peas during 2004-05, $/cwt.

Month	LDP at Harvest [a]	LDP During Year [b]	Store Under Loan [c]	60-Day Lock [d]
Strategy	1	2	3	4
Aug	6.57	6.57	6.57	
Sept	6.35	6.34	6.37	
Oct	6.11	6.21	6.26	6.26
Nov	5.94	6.21	6.29	6.08
Dec	5.86	6.26	6.35	6.01
Jan	5.70	6.11	6.23	5.84
Feb	5.52	5.93	6.07	5.67
March	5.51	5.73	5.89	5.66
April	5.51	5.62	5.79	5.66
Max	6.57	6.57	6.57	6.26

[a] In strategy one, the LDP is taken at harvest and the crop is sold during the month with the highest total revenue received net of storage costs.

[b] In strategy two, the LDP is taken when the crop is sold during the month with the highest total revenue received net of storage costs.

[c] In strategy three, the crop is stored under loan and the loan is repaid at the lower of the PCP or the loan plus interest when the crop is sold during the month with the highest total revenue received net of storage costs.

[d] In strategy four, the 60-day lock is initiated in August, the lower of the August or October PCP is taken, and the crop is sold during the month with the highest total revenue received net of storage costs.

Table 12. Total revenue received net of storage costs from alternative marketing loan strategies for #1 green peas during 2003-04, $/cwt.

Month	LDP at Harvest [a]	LDP During Year [b]	Store Under Loan [c]	60-Day Lock [d]
Strategy	1	2	3	4
Aug	8.51	8.51	8.51	
Sept	9.07	9.05	9.09	
Oct	9.13	9.10	9.17	9.17
Nov	9.53	9.48	9.59	9.57
Dec	9.50	9.44	9.59	9.54
Jan	9.68	8.91	9.10	9.73
Feb	10.83	10.12	10.35	10.88
March	10.75	9.51	9.80	10.79
April	11.47	9.34	9.68	11.51
May	11.43	9.54	9.93	11.47
June	10.14	8.92	9.36	10.18
July	7.61	6.74	7.23	7.65
Max	11.47	10.12	10.35	11.51

[a] In strategy one, the LDP is taken at harvest and the crop is sold during the month with the highest total revenue received net of storage costs.

[b] In strategy two, the LDP is taken when the crop is sold during the month with the highest total revenue received net of storage costs.

[c] In strategy three, the crop is stored under loan and the loan is repaid at the lower of the PCP or the loan plus interest when the crop is sold during the month with the highest total revenue received net of storage costs.

[d] In strategy four, the 60-day lock is initiated in August, the lower of the August or October PCP is taken, and the crop is sold during the month with the highest total revenue received net of storage costs.

Table 13. Total revenue received net of storage costs from alternative marketing loan strategies for #1 green peas during 2004-05, $/cwt.

Month	LDP at Harvest [a]	LDP During Year [b]	Store Under Loan [c]	60-Day Lock [d]
Strategy	1	2	3	4
Aug	7.99	7.98	7.99	
Sept	8.15	8.15	8.18	
Oct	8.24	8.33	8.40	8.40
Nov	8.84	9.12	9.22	9.00
Dec	8.82	9.21	9.35	8.98
Jan	7.96	8.38	8.56	8.13
Feb	7.27	7.68	7.90	7.44
March	7.25	7.47	7.72	7.42
April	7.24	7.35	7.62	7.41
Max	8.84	9.21	9.35	9.00

[a] In strategy one, the LDP is taken at harvest and the crop is sold during the month with the highest total revenue received net of storage costs.

[b] In strategy two, the LDP is taken when the crop is sold during the month with the highest total revenue received net of storage costs.

[c] In strategy three, the crop is stored under loan and the loan is repaid at the lower of the PCP or the loan plus interest when the crop is sold during the month with the highest total revenue received net of storage costs.

[d] In strategy four, the 60-day lock is initiated in August, the lower of the August or October PCP is taken, and the crop is sold during the month with the highest total revenue received net of storage costs.

For No. 1 yellow peas during 2003-04 (**Table 14**), the profitability ranking of the strategies was identical to the ranking for No. 1 green peas. The profitability of strategies one and four was nearly the same, followed by strategies three and two. May instead of April was the best month to sell. The profitability of strategies one through four far exceeded the basic strategy of selling at harvest.

During 2004-05 (**Table 15**), the profitability of the No. 1 yellow pea marketing strategies also ranked the same as for No. 1 green peas. Strategy three was best, followed by two, four and one. In addition, November and December were the best months for selling, as for green peas.

Strategies compared

The preharvest strategy, in combination with a marketing loan strategy, would have offered the best return for the pea crop in 2004, when prices generally were the strongest during the first half of the year. The put option strategy would have added an extra 72 cents per cwt to the net price. The put option was a low-risk strategy since corn futures were much above average during the spring.

No one marketing loan strategy performed best during both of the two crop years examined. In 2004-05, taking the LDP at harvest was the best strategy for feed peas, whereas storing under loan worked best for No. 1 green

Table 14. Total revenue received net of storage costs from alternative marketing loan strategies for #1 yellow peas during 2003-04, $/cwt.

Month	LDP at Harvest [a]	LDP During Year [b]	Store Under Loan [c]	60-Day Lock [d]
Strategy	1	2	3	4
Aug	8.09	8.09	8.09	
Sept	8.24	8.22	8.26	
Oct	8.31	8.27	8.34	8.34
Nov	9.12	9.07	9.17	9.15
Dec	9.09	9.03	9.17	9.13
Jan	9.07	8.29	8.47	9.11
Feb	9.68	8.96	9.18	9.71
March	10.07	8.83	9.09	10.10
April	10.45	8.33	8.63	10.49
May	10.63	8.74	9.09	10.66
June	8.47	7.25	7.65	8.51
July	7.66	6.78	7.22	7.69
Max	10.63	9.07	9.18	10.66

[a] In strategy one, the LDP is taken at harvest and the crop is sold during the month with the highest total revenue received net of storage costs.

[b] In strategy two, the LDP is taken when the crop is sold during the month with the highest total revenue received net of storage costs.

[c] In strategy three, the crop is stored under loan and the loan is repaid at the lower of the PCP or the loan plus interest when the crop is sold during the month with the highest total revenue received net of storage costs.

[d] In strategy four, the 60-day lock is initiated in August, the lower of the August or October PCP is taken, and the crop is sold during the month with the highest total revenue received net of storage costs.

Table 15. Total revenue received net of storage costs from alternative marketing loan strategies for #1 yellow peas during 2004-05, $/cwt.

Month	LDP at Harvest [a]	LDP During Year [b]	Store Under Loan [c]	60-Day Lock [d]
Strategy	1	2	3	4
Aug	7.49	7.49	7.49	
Sept	7.28	7.28	7.31	
Oct	7.58	7.68	7.74	7.74
Nov	8.02	8.30	8.39	8.18
Dec	8.00	8.40	8.52	8.16
Jan	7.31	7.73	7.89	7.47
Feb	7.18	7.59	7.78	7.33
March	7.12	7.34	7.56	7.28
April	7.11	7.21	7.46	7.26
Max	8.02	8.40	8.52	8.18

[a] In strategy one, the LDP is taken at harvest and the crop is sold during the month with the highest total revenue received net of storage costs.

[b] In strategy two, the LDP is taken when the crop is sold during the month with the highest total revenue received net of storage costs.

[c] In strategy three, the crop is stored under loan and the loan is repaid at the lower of the PCP or the loan plus interest when the crop is sold during the month with the highest total revenue received net of storage costs.

[d] In strategy four, the 60-day lock is initiated in August, the lower of the August or October PCP is taken, and the crop is sold during the month with the highest total revenue received net of storage costs.

and No. 1 yellow peas. In 2003-04, the LDP at harvest or 60-day lock worked well.

Similarly, no one month stood out as the best time for selling peas and lentils during the two years. Earlier generally was better than later in 2004-05, whereas the middle of the marketing year worked best in 2003-04.

Across all years, 1998-99 through 2004-05, November either was the best or second best time for selling field peas, on average, considering storage charges but excluding government payments. For lentils, January was the best, on average, even though it was not the best during any one year. Those months also reflected seasonally strong months for selling, although not necessarily the strongest.

Summary and Conclusions

The United States is a small but growing producer of field peas and lentils relative to other countries in the world. In 2004, U.S. field pea production was 4.3 percent of world production and U.S. lentil production was 4 percent.

Field peas and lentils compete well economically with other crops, although their profitability is dependent, in part, on how well producers manage price risk. Various time series of prices were analyzed to identify patterns and relationships useful for developing marketing strategies; preharvest and harvest/postharvest marketing strategies then were evaluated. The analysis was based on prices during April 1998 to April 2005 and CCC marketing loan data for the 2003 and 2004 crops.

The LDP for field peas ranged from 68 cents per cwt to $2.68 per cwt for the 2003 crop and from $2.41 to $2.91 for the 2004 crop. The highs occurred during August to December for the 2003 crop and during February for the 2004 crop.

The North Dakota seasonal average price range for field peas was $4.40 to $6.70 per cwt, with a mean of $5.28 during the 1998-2003 marketing years. For lentils, the range was $9.10 to $14.70, with a mean of $11.

Correlations indicate that corn futures may provide more risk reduction for cross-hedging pea prices, especially feed pea prices, than soybean futures or soybean meal futures. The feasibility of cross-hedging feed, No. 1 green or No. 1 yellow peas with corn futures, however, will depend on whether the recent strong relationships continue. Relationships were too weak to consider cross-hedging lentils.

The distribution of feed pea prices was for lows to occur at the beginning of the marketing year and peak in February. The pattern for No. 1 green pea prices was similar. The No. 1 yellow pea price peaked during February to April, on average. The No. 1 lentil price peaked during March, on average, but was almost as high during January to May.

Combining a preharvest strategy with a marketing loan strategy offered the best total net price for the pea crop in 2004, when prices generally were the strongest during the first half of the year. The put option strategy added an extra 72 cents per cwt to the total net price.

No one marketing loan strategy performed best during the two crop years examined. In 2004-05, taking the LDP at harvest was the best strategy for feed peas, whereas storing under loan worked best for No. 1 green and No. 1 yellow peas. In 2003-04, the LDP at harvest or 60-day lock worked well. Marketing loan payments did not materialize for lentils during the study period.

No one month stood out as the best time for selling field peas and lentils during the two years. Earlier generally was better than later in 2004-05, whereas the middle of the marketing year worked best in 2003-04.

Across all years, 1998-99 through 2004-05, November either was the best or second best time for selling field peas, on average, considering storage charges but excluding government payments. For lentils, January was the best, on average, even though it was not the best during any one year. Those months also reflected seasonally strong months for selling, although not necessarily the strongest.

References

Aakre, Dwight. *The Role of Government in Marketing*. Unpublished Manuscript. Fargo: North Dakota State University Extension Service, February 2000.

Agweek. "Field Pea and Lentil Prices." 1998-2005.

Flaskerud, George. "Impact of Basis and Storage Costs on Marketing Decisions." *Journal of the American Society of Farm Managers and Rural Appraisers*, 56 (1992):7-17.

Flaskerud, George. "Price Risk Management Strategies for Sunflowers." *Journal of the American Society of Farm Managers and Rural Appraisers*, 2005.

Flaskerud, George, Bruce L. Dahl and William W. Wilson. "Managing Canola Price Risk." *Journal of the American Society of Farm Managers and Rural Appraisers*, (2002):53-63.

Flaskerud, George, and Demcey Johnson. *Seasonal Price Patterns for Crops*. Publication No. EB-61. Fargo: North Dakota State University Extension Service, December 2000.

Flaskerud, George, and Richard Shane. *Sunflower Marketing Strategies*. North Central Extension Producer Marketing Committee Current Report No. 2. Fargo: North Dakota State University Extension Service, April 1994.

Great Pacific Trading Company. "Database." Available at: www.gptc.com/charts_quotes.htm

Janzen, Ed, Jay Fisher and Eric Bartsch. *Pulse Crop Marketing Guide*. Publication No. EC-1277. Fargo: North Dakota State University Extension Service, December 2004.

National Agricultural Statistics Service. "Database." Available at: www.nass.usda.gov:81/ipedb/

O'Brien, Daniel, Roger Stockton and Dana J. Belshe. *Sunflower Marketing in the High Plains*. Publication No. L-887. Manhattan: Kansas State University Extension Service, September 2001.

Swenson, Andrew. Projected 2005 *Crop Budgets North West North Dakota*. Farm Management Planning Guide. Fargo: North Dakota State University Extension Service, December 2004.

USDA-AMS. "Dry Edible Bean Market News." Available at: www.ams.usda.gov/mnreports/GL_GR851.txt

USDA-AMS. "Grain Market News." Available at: www.ams.usda.gov/lsmnpubs

USDA-FSA. "Loan Deficiency Payment Rate for Pulse Crops." North Dakota state office, Fargo.

USDA-FSA. "Price Support Program." Available at: www.fsa.usda.gov/dafp/psd/LoanRate.htm

Winnipeg Commodity Exchange. Canola Futures Price Historical Data. Winnipeg, Manitoba. http://exchanges.barchart.com/intra/wpg/wpgrs.htm

For more information on this and other topics, see: www.ag.ndsu.nodak.edu

EC-1295

NDSU Extension Service, North Dakota State University of Agriculture and Applied Science, and U.S. Department of Agriculture cooperating. Duane Hauck, Director, Fargo, North Dakota. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. We offer our programs and facilities to all persons regardless of race, color, national origin, religion, sex, disability, age, Vietnam era veterans status, or sexual orientation; and are an equal opportunity employer. This publication will be made available in alternative formats for people with disabilities upon request, (701) 231-7881.

1M-8-05