

FEED INGREDIENT PRICE OUTLOOK

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The purpose of this presentation is to examine the economic factors affecting the price and availability of principal Pacific Northwest livestock feed ingredients in the months ahead. My approach as an economist will be to discuss underlying supply and demand conditions, incorporating crop projections and demand estimates that ultimately define the feed ingredient market.

Livestock feeders and feed manufacturers are naturally interested in the availability of feed; the crop size, yields, acreage, quality, and price. Technically, price outlook should reflect the expected equilibrium between the market supply and demand for individual feed ingredients. The supply considerations focus on crop production, but are also affected by related factors such as carryover, transportation, storage, and government policies. Likewise, demand variables include other uses such as domestic food consumption and export markets, as well as economic returns within the feed consuming livestock sectors.

I will explain the role these related variables play in determining prices, and make some price projections based on current outlook. This will better enable you to modify or update the market outlook in the months ahead as the underlying conditions change.

For purposes here, feed ingredients are grouped into three categories: 1) feed grains (corn and other coarse grains); 2) protein sources (soybeans and cottonseed); and 3) forage crops (alfalfa and other hays). There are many more feed ingredients available to livestock feeders in this region, but these three categories typically represent the bulk of the ration in terms of both volume and value. Moreover, the price and economic feasibility of alternative ingredients is often tied to markets for these three ingredient groups.

Feed Grains

Corn. Grain corn is the barometer of crop agriculture in the United States. It accounts for the greatest share of both crop acreage and farm income nationwide. Farmers' decisions about corn directly and indirectly influence a wide range of substitute crops that might be produced. Accordingly, market forecasters closely watch the acreage, growing conditions, and yield expectations for the corn crop.

As of early September, the 2000 U.S. corn crop is expected to set an all time record production output, reaching about 10.4 billion bushels. If realized, this crop would exceed 1999 production by nearly a billion bushels—a 9.9% increase. Despite early spring concerns of a dry summer, favorable weather prevailed across the Corn Belt to create near ideal growing conditions on top of expanded corn acreage. Adverse weather may conspire to reduce the crop and/or quality from current projections, but as harvest approaches the prospect of a huge corn crop is a major feature of U.S. agricultural outlook, in general.

Lost, perhaps, in the attention given to the record crop size is the projection for also achieving record use of corn in the 2000/01 crop year (September to October). Corn use is forecast to increase 3 to 4%, reflecting greater consumption in all categories including food, feed, and exports. A projected 225 million bushel (11%) increase in corn exports accounts for the majority of expanded corn use, supported by a modest 75 million bushel growth in feed and residual use.

The overall 340 million bushel rise in corn disappearance in 2000/01 does not match the 900 million bushel increase in production. The net result is likely to be a further increase in ending stocks next year, and continuing pressure on farm-level prices for corn. The USDA forecasts seasonal average corn prices in a range of \$1.45 to \$1.85/bu, compared to \$1.80 in 1999/00. In perspective, the farm level price for corn is at its lowest level since the 1986/87 marketing year.

Table 1. Corn: marketing year supply and disappearance, in million bushels

year	supply				disappearance				ending stocks
	beginning stocks	imports	production	total supply	food & industrial	feed & residual	exports	total use	
1998/99	1,308	19	9,759	11,085	1,846	5,741	1,981	9,298	1,787
1999/00	1,787	15	9,437	11,239	1,920	5,625	1,900	9,445	1,794
2000/01	1,794	10	10,369	12,174	1,960	5,700	2,125	9,785	2,389

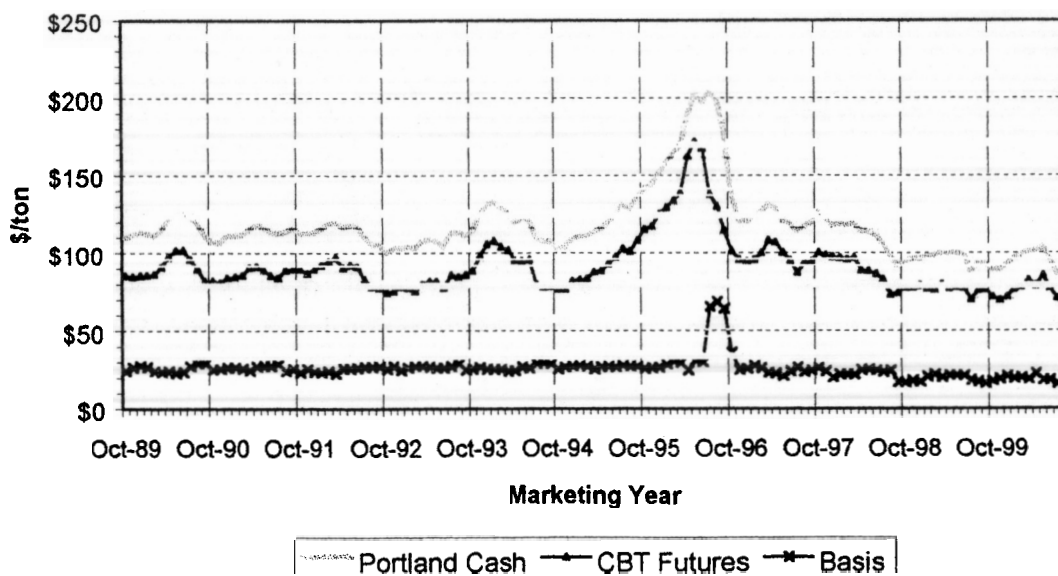
Economic Research Service, U.S. Department of Agriculture. August 15, 2000. *Feed Outlook*.

As shown in Table 1, the disposition of the U.S. corn crop is divided among domestic food use, feed, and export markets. Roughly 60% of annual use goes to feed and residual use, such that feed markets comprise the largest share of total disappearance (excluding ending stocks). Grain corn exports have reached as high as 2.4 billion bushels in the early 1980's, and while exporter bids influence the Portland price, it would take a significant increase in overseas sales to remedy the underlying oversupply conditions. In the past, large corn carryover stocks have been erased by increases in feed use or subsequent reductions in corn production,

rather than dramatic changes in exports. USDA projections indicate a modest increase in corn feeding during 2000/01 in consideration of low feed grain prices. Modest production increases are anticipated for the beef, poultry, and milk sectors proportional to gradual increases in U.S. population and the strong economy.

The Pacific Northwest (PNW) is a relatively minor supplier of grain corn, accounting for less than one percent of national output. Imports from the Midwest are fundamental to the PNW regional feed market. The relationship between midwestern farm level corn prices and PNW markets is therefore important to our price outlook. Figure 1 illustrates the Portland single car domestic, monthly average price for #2 yellow corn over the past ten years, along with the Chicago Board of Trade corn futures price. Note in the lower portion of this figure the “basis” relationship between Portland cash prices and Chicago futures. The basis is the simple difference between the Portland price and the nearest expiring (nearby) corn futures price. Aside from a one-time aberration in prices and the basis during the 1995/96 crop year, the Portland-Futures basis relationship has remained relatively stable, averaging about \$24/ton. Over the ten-year period shown, the basis has edged slightly lower to its current level of \$18 to \$22/ton above the nearby Chicago corn futures.

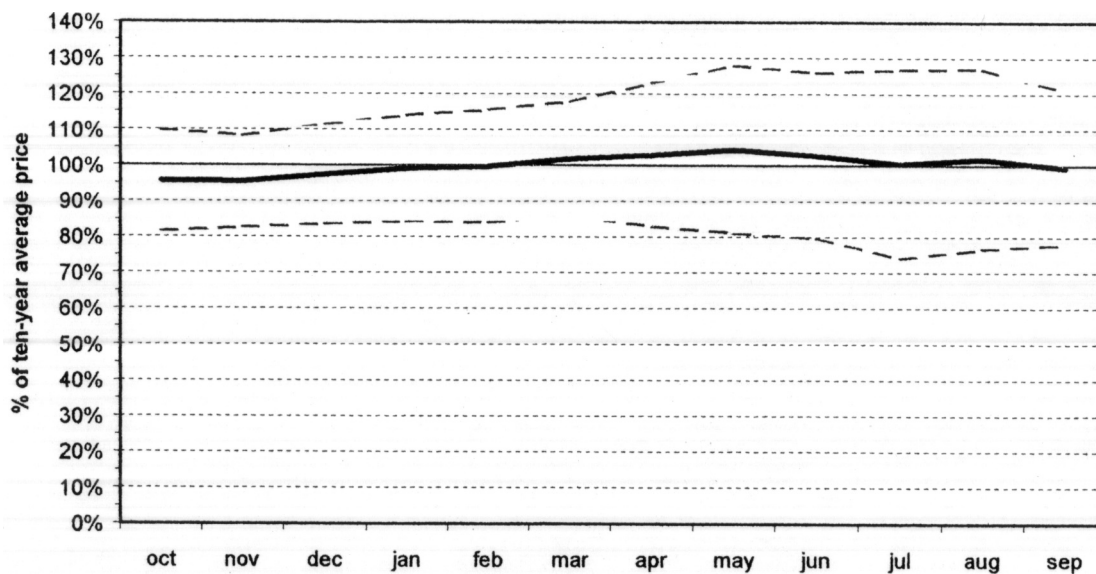
Figure 1. Monthly Portland corn cash-futures price relationship, 1989/90-99/00



In years of large crop production, it is typical for a storage or “carrying charge” market to develop, where future prices increase marginally based on storage and interest costs of carrying the inventory. The seasonal pattern in Portland corn

prices over the past ten years is shown in Figure 2, where the percentages along the vertical axis refer to the proportion of long term seasonal average price. The heavy line in Figure 2 indicates a seasonally lower price during harvest, gradually strengthening over the marketing year followed by a gradual decline starting in late spring in anticipation of the new crop. The seasonal pattern is modest, accounting for changes in price of less than 10% between the seasonal low during harvest, and subsequent highs in the spring. The dashed lines above and below the seasonal index indicate the variation in the index; prices typically become more volatile as the marketing year progresses, as indicated by the widening band around the index.

Figure 2. Season price index of Portland #2 yellow corn, 1989/90 – 1999/00



With the record large U.S. corn crop depressing farm level prices, both Chicago futures and Portland cash corn markets are at 12-year lows. Corn prices are expected to remain weak through harvest in the range of \$85 to \$95/ton in the Portland market, then increase consistent with normal seasonal patterns.

The Chicago futures price currently reflects a carrying charge of about \$.035 to \$.04/bushel/month (\$1.35/ton/month). Typically, this carrying charge would build through the marketing year and then decline in late summer as the new crop year approaches as shown. Contrary to the typical seasonal pattern shown in Figure 2, futures quotes for the 2000/01 marketing year presently do not indicate a seasonal decline in corn prices next fall, suggesting instead that corn prices may continue to rise into the 2001/02 marketing year.

Using the basis relationship shown in Figure 1, the Chicago corn futures prices for the 2000/01 marketing year can be translated with some reliability into Portland price projections by adding a basis adjustment to the futures prices. Thus, a December 2000 futures price of \$1.96/bushel (\$70/ton) implies a Portland price of around \$94/ton, using a conservative long-term basis estimate of \$24/ton over the futures.

According to the basis relationship over the past ten years, there is a slight seasonal pattern to the Portland corn basis, as well. The basis increases (strengthens) gradually from a low around harvest up through July and August and then falls just prior to the new crop year. The magnitude of this seasonality is fairly small, however, ranging from about 5% under the yearly average at harvest, to about 5% over in late summer. The implication of the basis seasonality is that Portland corn prices are likely to become relatively more expensive as the marketing year progresses, compared to Chicago futures.

Barring unforeseen production problems or abnormal logistic difficulties, the large corn crop and associated low price will fuel domestic livestock feeding and modest expansion in meat and dairy production. A large carryover corn inventory is projected into the 2001/02 marketing year, but uncertainty over grower production adjustments, exports, and national farm policies create lingering expectations that corn prices may begin to rise gradually in 2001 and beyond.

Other Feed grains. Midwestern corn dominates national feed grain markets, but localized availability of other feeds such as barley, oats, feed wheat, including locally grown grain corn makes these inputs important substitute ingredients, particularly when midwestern corn is in short supply.

Given the large supply of corn projected for the 2000/01 marketing year, other feed grains are likely to be less important PNW ingredients in the coming year, except in specialized rations. The price depressing effect of surplus midwestern corn may also discourage production of substitute feed grains such as barley in the PNW.

U.S. barley production declined significantly in 1999, but showed a slight rebound in 2000 (Table 2). Total supply is expected to remain comparable to last year, but with a modest increase in feed demand, ending stocks will decline. Relative scarcity of world barley stocks has maintained export demand and prices, creating situations of near parity in Portland prices for corn and barley. The price ratio will encourage the substitution of corn, likely pressuring domestic feed barley prices.

Table 2. Barley: marketing year supply and disappearance, in million bushels

year	supply				disappearance				stocks
	stocks	imports	production	supply	industrial	residual	exports	total use	
1998/99	119	30	352	501	170	161	28	360	142
1999/00	142	28	282	451	172	137	30	339	112
2000/01	112	30	308	450	172	145	30	347	103

Economic Research Service, U.S. Department of Agriculture. August 15, 2000. *Feed Outlook*.

Within the PNW region, the 2000 barley crop is projected to be up 6% in Idaho, Oregon, and Washington, but down over 20% in Montana due to abandoned acreage and lower yields in that state. Overall, regional production is forecast to be down about 5% from 1999.

Oat production is forecast to increase nationally by about 4.5% in 2000, due largely to a 25% increase in the Minnesota and North Dakota crops, the nation's largest producers. The 2000 oat crop in the PNW is down from year-earlier levels due largely to a decline in Montana production. For the entire U.S., domestic food and feed demand for oats is projected to remain comparable to the 1999/00 marketing year, resulting in a slight increase in year end stocks. Unlike most other feed grains, the farm level price of oats is expected to change little from this past year, averaging between \$.95 - \$1.35/bushel (\$60 - \$84/ton).

Protein Sources

Soybean Meal. U.S. growers are expected to harvest a record large 2.99 million bushel soybean crop in 2000. As with corn production, ideal growing conditions in the Midwest and north central states more than offset dry weather in the South. Smaller beginning stocks in the 2000/01 marketing year will offset some of the soybean production gains, as will increased use fueled by strong import demand from China. Still, total soybean supplies in this marketing year (production plus beginning stocks) will be up nearly 10% from year earlier levels, and farm level prices are expected to decline into the fall harvest period.

Despite the larger supply, the 2000/01 domestic soybean crush is projected to increase only about 3.5%, and meal production is expected to be up only 3.2% for the coming year. As shown in Table 3, increased feeding and exports will propel total meal use to 38.7 thousand tons. At this level of use, ending stocks for the 2000/01 marketing year are projected to decline by 50 thousand tons (down 15%).

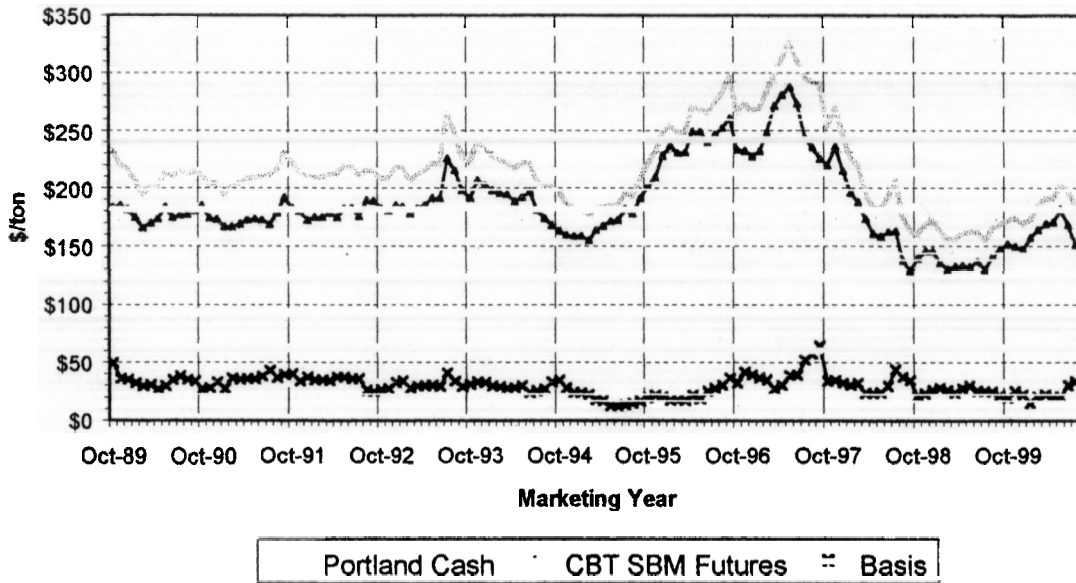
Table 3. Soybean meal: marketing year supply and disappearance, in 1,000 tons

year	supply			total supply	disappearance			ending stocks
	beginning stocks	imports	production		domestic	exports	total use	
1998/99	218	100	37,792	38,110	30,662	7,117	37,780	330
1999/00	330	60	37,335	37,725	30,400	7,000	37,400	325
2000/01	325	65	38,535	38,925	31,250	7,400	38,650	275

Economic Research Service, U.S. Department of Agriculture. Aug 14, 2000. *Oil Crops Outlook*.

The Portland market for 47% soybean meal peaked just at over \$200/ton this past spring, and has trended only slightly lower in the \$180 - \$200/ton range during the summer, even in the face of larger soybean crop prospects. The ten-year monthly price levels for both Portland cash 47% protein meal and Chicago soybean meal futures are illustrated in Figure 3, along with the Portland basis.

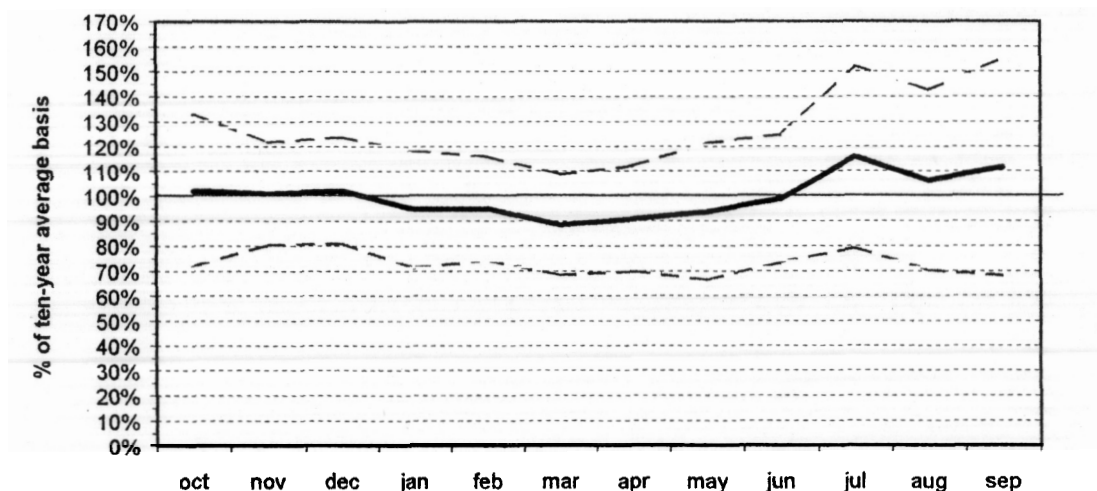
Figure 3. Portland 47% soybean meal cash-futures relationship, 1989/90-99/00



Historically, Portland soybean meal markets have borne a somewhat predictable relationship to the nearby futures. The greatest aberrations in the soybean meal basis occur during periods of high soybean meal prices, at which time the basis widens temporarily (Portland prices rise relative to the futures).

There is just a slight seasonal pattern in Portland soybean meal prices, expressed as a minor decline in relative prices between January and March, followed by an opposite increase in the summer months. The total magnitude of this seasonal movement is only about 5% of average value. The basis, however, exhibits a more pronounced, if somewhat erratic pattern in seasonality, as shown in Figure 4. The pattern indicates that, on average, the Portland soybean meal basis trends 10% lower during the late winter and spring months, then raises 10% to 15% above the average basis during the summer months. Variability also increases proportionately as the basis widens late in the marketing year.

Figure 4. Seasonal price index, Portland SBM cash-futures basis, 1989/90-99/00



The implication of this basis seasonality is that Portland soybean meal will be less expensive during the late winter and spring, and more expensive (and variable) during the summer, relative to the nearby Chicago soybean meal futures. The Portland basis has averaged around \$30/ton over the Chicago nearby futures during the past ten years, exhibiting a slight downward trend since 1997. Looking into the 2000/01 marketing year, current CBOT futures quotes suggest a gradual strengthening of Portland meal prices into the marketing year from a low of around \$185/ton in early fall, rising to a high in the range of \$200 to \$210/ton by late summer 2001, then falling seasonally into the new 2001/02 crop year. These projections are based on current futures prices and historical basis relationships.

Cottonseed. Production of cottonseed is projected to increase by 855 thousand tons (up 13%) in 2000 despite adverse growing conditions in parts of the South. U.S. supply and disappearance figures for whole cottonseed are shown in Table 4.

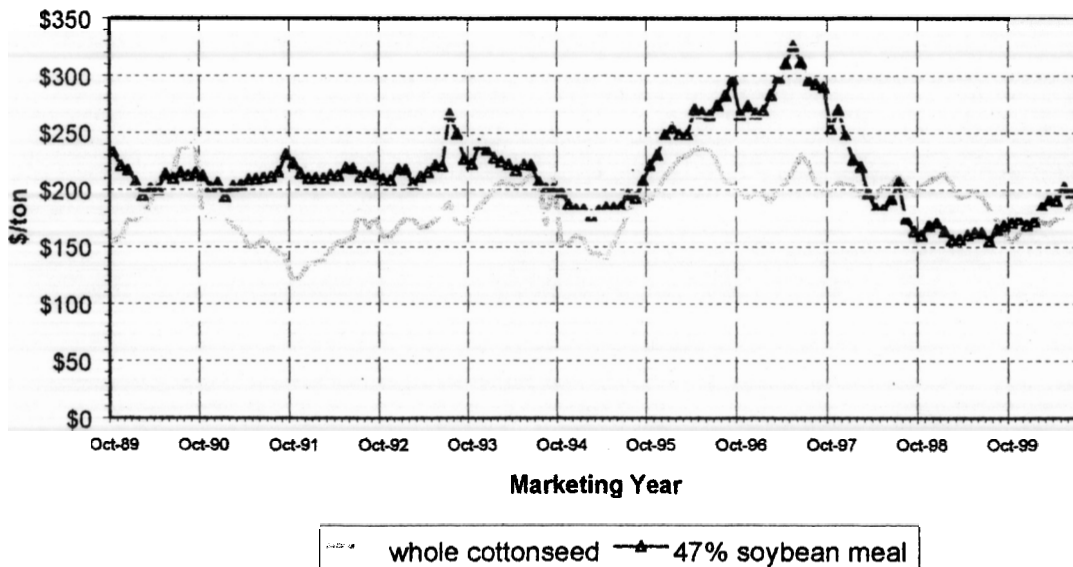
Table 4. Cottonseed: marketing year supply and disappearance, in 1,000 tons

year	supply				disappearance				ending stocks
	beginning stocks	imports	production	total supply	crush	exports	other	total use	
1998/99	563	207	5,365	6,135	2,719	68	2,955	5,746	393
1999/00	393	130	6,354	6,877	3,125	190	3,377	6,652	225
2000/01	225	46	7,209	7,480	3,200	180	3,600	6,980	500

Economic Research Service, U.S. Department of Agriculture. Aug 14, 2000. *Oil Crops Outlook*.

Large supplies of competing oilseeds will temper cottonseed demand. Total disappearance will continue to increase, but at a more moderate pace, leading to a projected doubling of cottonseed ending stocks next year. The relatively short carryover stocks from 1999/00 have supported cottonseed prices this summer, but some weakening in the price is likely into the new marketing year as new crop seed becomes available. Imported cottonseed has also become a factor in the Portland market, tempering offers for domestic product.

Figure 5. Portland monthly prices for whole cottonseed and 47% soybean meal

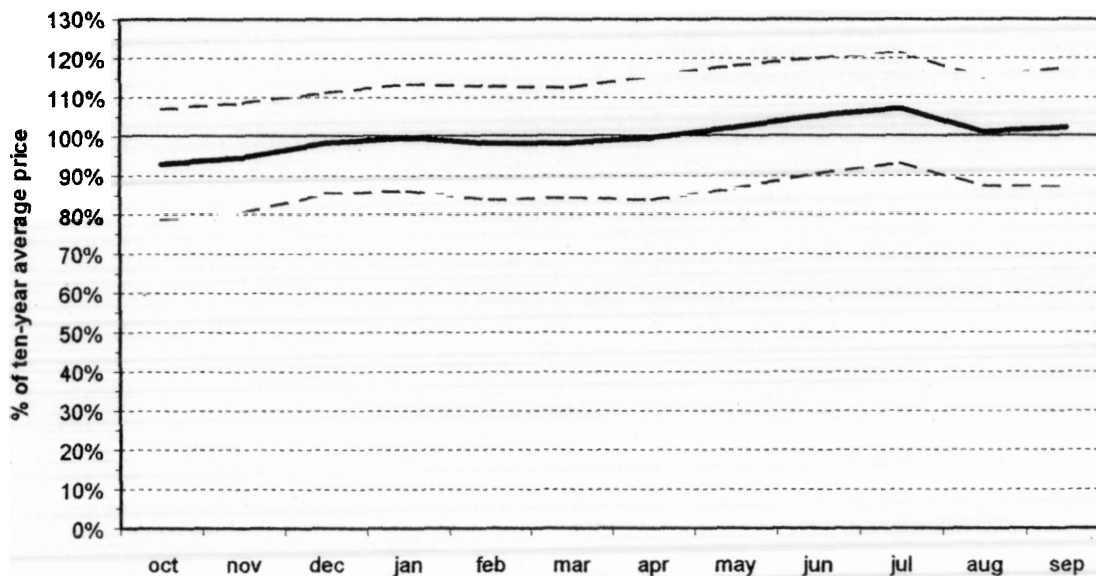


For much of the previous ten years, whole cottonseed has sold at a \$25 to \$200/ton discount to soybean meal in the Portland market. This relationship changed in 1997/98 marketing year, continuing through 1998/99 and periodically into the 1999/00 marketing years when soybean meal prices moved below

cottonseed, as illustrated in Figure 5. Both cottonseed and soybean meal prices are low relative to ten-year averages, and there are indications that low soybean meal prices ultimately erode cottonseed values. Thus, the increased 2000/01 supply of soybeans will continue to exert downward pressure on cottonseed markets, such that whole cottonseed will likely trade at a discount to soybean meal in the coming marketing year.

Figure 6 shows the seasonal price index for Portland whole cottonseed averaged over the past ten years. The price is at a seasonal low early in the marketing year, strengthening by about 15% through the spring and early summer, then declining by late summer into the new marketing year. There appears to be relatively little change in the variability of cottonseed prices over the course of the season, as indicated by the steady range in upper and lower bands around the seasonal price index in Figure 6.

Figure 6. Seasonal price index, Portland whole cottonseed, 1989/90-99/00



Forage Crops

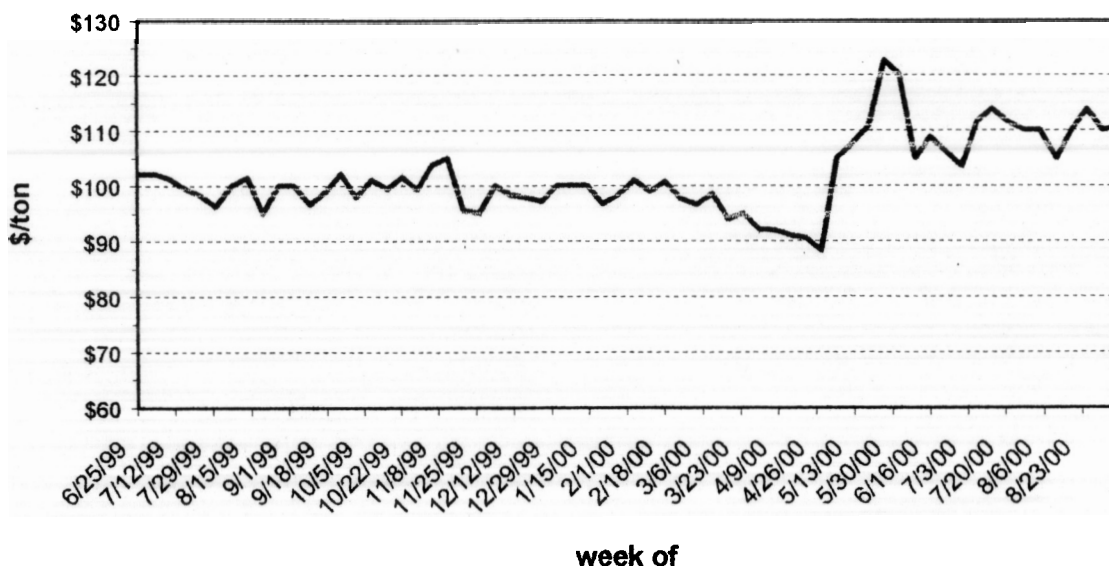
Projections of bumper feed crops do not extend to forage, at least not in the Pacific Northwest. Static to declining acreage in the combined Idaho, Montana, Oregon, and Washington region, along with a significant drop in Montana yields results in a projected 2000 alfalfa crop down 970 thousand tons (a drop of 8.5%) from 1999. Most of the decline will occur in Montana production. Slight increases

in Idaho and Washington production is expected (up 1.4% and 2%, respectively), but with a 5% decline in the Oregon alfalfa crop.

Lower PNW alfalfa production this year is compounded by a significant reduction in carryover stocks from last year. May 1, 2000 hay stocks of all kinds in the 4-state region totaled 1,561 thousand tons, down 55% from comparable 1999 levels. The greatest drop in stocks occurred in Idaho and Washington.

The decline in regional alfalfa production combined with active feed demand created a distinct increase in prices beginning with new-crop 2000 alfalfa, as illustrated in Figure 7. Current (late summer) alfalfa prices are in the \$110/ton range, averaging \$10/ton higher than comparable 1999 quotes. The price series in Figure 7 is the USDA Market News weekly hay report for Columbia Basis (Washington-Oregon) premium alfalfa in 2-3 tie bales for domestic use, which is dairy quality product priced at the high end of the scale.

Figure 7. Columbia Basin premium quality alfalfa price, 1999-00



The alfalfa price outlook for the balance of the 2000/01 marketing year is also directly impacted by past and future weather conditions. The hot, dry conditions this past summer with accompanying fires throughout the PNW reduced forage availability, and led to instances of early movement of grazing animals onto fall and winter range. A relatively mild winter will lessen overall forage demand to the extent wintered livestock have open grazing pasture available, whereas a harsh, cold winter typically increases overall hay demand and prices. With lower

hay and alfalfa supplies available coming into the winter, there is a greater probability of localized or even regional forage shortages, and accompanying higher prices.

Other Factors Influencing Feed Ingredient Price Outlook

Livestock feed demand. The preceding analysis of key feed ingredients has focused on supply conditions and expected availability in the coming marketing year. Feed demand, on the other hand, is an aggregation of different livestock sectors. This demand can be viewed in terms of livestock inventories, along with market prospects for the resulting outputs (beef, milk, broilers, and so forth).

The national index of grain consuming animal units (GCAU) this year is expected to be up by 2% from 1999, and the grain consumption per animal unit is up 4%. Low feed prices this past year have encouraged demand. The feed-price ratios for beef, hogs, and poultry have been high relative to historic averages and would be even higher in most instances were it not for subsequent product price weakness due to increased output.

Beef cattle numbers are down cyclically, but feedlot placements remain large and animals are being fed to heavier weights. Record beef production is expected in 2000, up 2% from 1999. By 2002, production may ultimately decline cyclically due to diversion of replacement breeding animals into feedlots. Improved consumer demand has fueled the beef sector over the past year, and feeder cattle prices have been bid up in response to low feed costs.

Lower product prices for pork, poultry and milk have slowed or reduced expansion in feeding activities, but feed use is expected to remain strong in these industries. In the case of dairy, the milk/feed price ratio has declined significantly from 12-year highs in late 1999 due to falling milk prices. Still, increasing productivity per cow will encourage greater feed use by the dairy industry in the months ahead despite lower milk prices. Price weakness in dairy products appears more a factor of oversupply, given higher consumer incomes and robust demand.

Domestic food demand. Domestic food demand for grain and oilseed products is a significant market force, but expansion is generally restricted by the basic growth in U.S. population, which is less than 1% per year. Year-to-year change in domestic food use is reasonably predictable, and a less likely source of unforeseen short-term changes in feed ingredient demand. The overall health of the economy does play an important role in domestic food demand. In these prosperous times, food manufacturers are jockeying for favor among an increasingly diverse

consumer market by targeting attributes such as convenience, quality, novelty, and food safety, rather than simply lowest cost. Industry and consumer acceptance of efficient, low cost genetically modified foods remains a major unknowns facing the agricultural industry in general.

Export demand. The strong U.S. dollar and weak Asian economies stifled U.S. feed exports during 1998 and 1999, but there is evidence of recovery in foreign demand as economic conditions improve in Asia. China, in particular, with a large population, large agricultural production, and a centrally planned economy can quickly impact world feed markets with changes in policy. Japan, provides the largest, and in some regards most consistent cash market for U.S. feed. But China is challenging Japan as the largest importer of U.S. soybeans this year, increasing purchases six-fold in the first half of 2000 from the previous year. China's pending application for entry into the World Trade Organization seems to promise many opportunities for U.S. agricultural exporters, but also creates near term uncertainty about the magnitude and consistency of export demand. To the extent the U.S. serves as a major, but residual supplier of agricultural exports to the world, year-to-year variation in exports is likely to impart greater variability in domestic commodity prices.

In summary, principle PNW feed ingredients are expected to remain in ample supply with the possible exception of alfalfa. This will result in continued low feed prices on into the 2000/01 marketing year. Feed demand has been strong at current prices, but this is also encouraging increased production in associated output markets, pressuring dairy, poultry and pork prices. Gradual, long term tightening of feed supplies can be anticipated as a consequence of increasing exports, low grower returns, and pressure to change federal farm policy.

Market outlook projects recent trends into the future, supported by simplified assumptions. This approach generates forecasts characterized by gradual changes in prices, supply, and demand consistent with basic economic forces. Arguably, this perspective overlooks the economic lightning bolts that create dramatic shocks to the market, unanticipated in the forecast assumptions. Keep in mind the less predictable but potentially strategic variables that could emerge to change market conditions over the coming year. This includes factors such as governmental policies, changes in the general economy, environmental regulations, international politics, natural disasters, energy costs, transportation, and consumer perceptions—just to name a few. These forces can change quickly, and impact product price and availability in the short term. The challenge here is not so much forecasting these random events, as having contingency plans should the situation change suddenly.