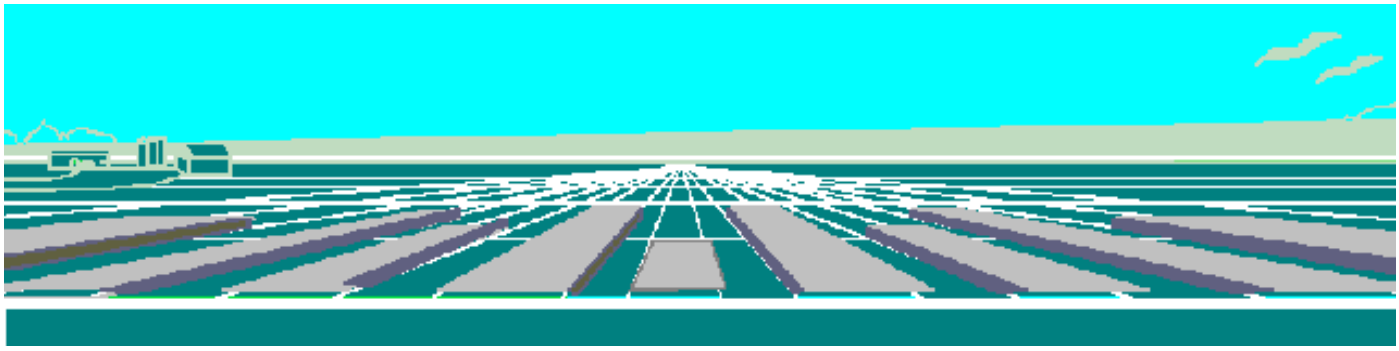

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FEEDLOT DESIGNS - COSTS AND CONSIDERATIONS

Adding on to your feedlot may not be as difficult or expensive as you thought. In fact, with a little planning and research, you can get the most for your money.

Pat Murphy, a state leader in the Biological and Agricultural Engineering Department at Kansas State University, who spoke recently at *Cattle Feeding in Iowa for the 21st Century* held Nov. 1 and 2 at Iowa State University, said by carefully considering all aspects of feed lot usage, producers will be much happier with the results. "Basically, you want to minimize worker and animal stress during handling, feed cattle adequately and efficiently, provide well-drained cattle space, maintain efficiency and profitability across the entire operation and protect the environment," Murphy said. "If you fulfill these goals, plus the ones you've already set for your operation, then your satisfaction with the end product will be greater."

Site evaluation. Preliminary site evaluation must consider land topography, present and future cattle numbers and accessibility. A good rule of thumb to use is approximately one acre of land is necessary to accommodate 100 head of cattle, which includes pen space, alleys and feed roads.

Pen size. Anywhere from 60 to 150 cattle can be placed in each pen. Smaller pens are suggested for custom feeders or if cattle are bought and then placed together, otherwise pen space usually can handle one to two semi trailers of animals. Receiving pens should be large enough for only one semi load, as it is easier to identify stressed animals in smaller groups.

Bunk space. Backgrounding feedlots (500 to 700 lbs.) should have about 10 inches of bunk space per head. Younger cattle prefer to eat together, so they often require more bunk space than finishing cattle. Finishing cattle operations typically allow 9 to 12 inches of bunk space per head. Feeding frequency also has an impact on bunk space. Once-a-day feeders may require more space for feeding than two or more times per day feeders, and receiving pens should have 24 inches per head of bunk space to avoid crowding and ensure feed intake upon arrival.

Concrete apron. A concrete apron adjacent to the fence line bunk gives cattle a firm area to stand on while eating. A 12-foot wide apron is recommended for the cattle side of the bunk, which allows enough space for a tractor to scrape along the bunk's side. If the bunks sit directly on the apron, then total apron width must be at least 15 feet. "We also suggest placing gravel screening 10 to 20 feet wide and 8 to 12 inches thick along the back side of the apron. This just allows additional solid ground for cattle to stand on during wet weather," Murphy said.

Waterers. Frost-free waterers in the pen are a good selection, however, you must follow the manufacturer's recommendations for installation and number of head per opening.

Mounds. Mounds are areas for cattle to rest away from mud. Proper mound construction requires 20 to 40 square feet of space per head on each side of the mound. An entire pen of cattle should be able to rest on one side of the mound without lying on each other, and mounds should not impede natural pen drainage.

Fencing and gates. No single fence type is better than another – each producer must choose fencing based on his individual operation. Access to pens may require one or two gates. Producers should consider the frequency that cattle are moved, when and how pens are cleaned, manure removal and accessibility to downed cattle when planning gate size and number.

Wind protection. Windbreaks protect an area approximately 10 times their height, and should be placed on the north and west sides of pens. There are also plastic windbreak fences now available that can be removed in summer months.

Environmental considerations. Feedlots with fewer than 1,000 head of cattle are required to settle all solids out of manure in a settling basin before releasing the effluent from the lot. It's recommended that those liquids be filtered through grass strips or other types of natural filtering systems to protect the waters of the state. Even a small amount of manure entering an Iowa waterway can result in a fish kill and a large fine for the offending feedlot.

Feedlots with more than 1,000 head need to apply to the Iowa Department of Natural Resources (DNR) for an operations permit. These permits are relatively inexpensive themselves, but may require additional investment by the feedlot to meet the current standards. They are also required to settle solids, as well as retain all liquids in a detention basin for land application later.

Cost. "Perhaps the best way to compare the different feedlot designs is at the bottom line," said John Lawrence, director of the Iowa Beef Center, who presented feedlot cost analysis to the group. "Each design includes the initial investment, operating costs and animal performance, plus meets current environmental requirements. This analysis raises the question, 'Where should a producer invest his money?' By thoroughly looking at all the numbers, you can get a good grasp of which direction to go."

The Iowa Beef Center compared four systems, open feedlot with a windbreak, open feedlot with a shed, total confinement with a concrete floor and total confinement with a slatted floor in increments of 750, 1,500 and 5,000 head.

Animal performance varied across the systems. The open lot with a windbreak generally had the poorest feed efficiency, but the feed intake was better than slatted-floor confinement. Average daily gain was higher in the open lot without shelter than the slatted confinement, but worse than the other systems.

Total confinement with slatted floors produced animals with the lowest feed intake and average daily gain, but moderate feed efficiency. The open lot with a shed, concrete lot with a shed and total confinement with a solid floor performed comparably to one another and had the best feed efficiency and average daily gain.

Initial investment per head was similar between the 750 and 5,000 head lots and slightly higher for the 1,500 head lot. The difference in investment is driven by the cost of environmental compliance. Feedlots with more than 1,000 head are required to have a runoff detention basin. The 5,000 head feedlot is able to spread these costs over more cattle than the 1,500 head lot and the smallest lot does not incur this expense.

Adding the shed to the earthen lot more than doubles the initial investment for the 750 head lot and increases it 80 to 90 percent in the larger lots. The earthen lot is approximately one-third the cost of total confinement with slatted floors. The earthen lot with shed and concrete lot with shed have comparable initial investment. The concrete lot has higher animal density and less runoff to control than the earthen lot and thus has a lower cost of environmental compliance.

Overhead and operating costs including the facility, manure hauling, fuel, utilities and labor range from $32.85 for the earthen lot with windbreak to $59.53 for slotted floor confinement. Costs for the 1,500 and 5,000 head earthen lots are 35 percent and 30 percent higher than the 750 head earthen lot because of the detention basin. Over half of the added cost is related to pumping out the basin. This study assumed commercial pumping rates, but producers who own their own equipment may be able to empty their basins at a lower cost.

The difference between the systems declines when compared on a cost-of-gain basis which incorporates animal performance. For feedlots with fewer than 1,000 head capacity, the earthen feedlots

Wendy Miller joined the Iowa Beef Center team as a Communications/Media Specialist in September. The newest member of IBC will be responsible for providing leadership in promotional and marketing efforts for the Center and will also prepare educational and informational materials for beef producers.

Prior to joining IBC, Miller was a communications writer for National Farmers Organization at their headquarters in Ames. While with the organization, Miller assisted in several successful marketing campaigns, including coordination of exhibitor outreach and retention for two national conventions.

A graduate of Upper Iowa University, Fayette, Iowa, in 1995, Miller has a BA in Communications and Graphic Arts. A native of northeast Iowa, Miller relocated to the Ames area in 1998. She and her husband Glen have two children, Hallie, 2 and Keatyn, two months.

have the lowest cost of gain followed by the concrete lot. The larger feedlots which require additional environmental structures have a slightly higher cost-of-gain and the concrete lot is the lowest cost system.

This analysis of alternative beef feedlot systems indicates that new facilities in environmental compliance can be built and operated profitably. While it appears that feedlots with fewer than 1,000 head capacity have a cost advantage, regulations requiring feedlots with as few as 300 head to adhere to the same standards as the large feedlots have been proposed. Larger feedlots have an incentive to reduce the amount of runoff that they must hold in a detention basin. In addition to the added engineering and construction costs, the costs of emptying the basin are significant.

Wendy Miller

NOVEMBER CROP REPORT: U.S. CORN DOWN 1.4%, SOYBEANS DOWN 1.6%

Overview

Several developments have kept corn and soybean futures prices in a narrow trading range in the last few weeks. USDA's November 10 crop report at first glance appeared to be positive for the corn market, while soybean price implications were neutral to slightly bullish. However, bullish impacts were diminished by: (1) seriously lagging corn exports and sales, (2) uncertainty about impacts of Starlink corn on export potential, (3) rain in U.S. winter wheat areas, and (4) indications of substantially increased South American soybean production next spring. China currently is selling corn to Japan and South Korea, which historically have been our No. 1 and No. 2 corn export markets. These countries seek Srarlink-free corn supplies. However, the amount of China's exportable corn supplies is uncertain because of last summer's drought and corn borer problems. China's 2000 corn production is estimated to be down 900 million bushels from last year.

U.S. corn production now is estimated to be 6.5% above last year but 0.5% below the 1994 record. The U.S. soybean crop is estimated to set a new record high, 5% above last year and 1.3% above the 1998 record. U.S. corn production is placed at approximately half a billion bushels above that of last year. Utilization is expected to increase by a similar amount, thus holding carryover stocks about constant next summer. A big part of the anticipated increase in utilization is due to the sharp weather and insect-induced drop in Chinese corn production. Thus, this year's anticipated surge in U.S. corn exports should not be expected to continue in the 2001-02 marketing year.

Demand prospects for spring and early summer suggest higher cash corn prices are likely at that time because the market provides incentives for farmers and elevators to increase marketings of corn. Low subsoil moisture in the western one-third of the Corn Belt also will contribute to potentially higher corn prices next spring as the market worries about possible widespread drought in 2001. The average seasonal price pattern for the last 20 years shows that Iowa cash corn prices on average peaked out in May, at about 23 cents per bushel above the October average. An increase of at least slightly more than that appears likely this year. For soybeans, the long-term seasonal increase from October to May was 39 cents. Prospects for a similar or slightly larger increase this year look good.

Watch Wheat Market

Wheat crop prospects in the U.S. from Nebraska and Colorado to Texas, as well as crop reports from Argentina and Australia, will be important market indicators to watch for in the weeks ahead. Strength in wheat prices would likely bring higher corn and soybean prices.

Winter wheat condition reports from Europe and the former Soviet Union will be important during February, March and April. Australia's crop estimates have gradually declined in the last three months due to dry weather. Its crop is harvested from late November through January. ***World wheat carryover stocks are projected to be at a record low 18.6% of annual use next summer, slightly lower than in 1995-96 when wheat prices exceeded $7 per bushel and the stocks/use ratio was 19.7.*** If no major widespread crop problems develop, the wheat market may be able to balance supplies and demand with only modestly higher cash wheat prices into spring. But if the crop looks to be in serious trouble over a large part of the U.S. central and southern plains, or in Europe or the FSU, a sharp increase in wheat prices would be possible. Western Europe has experienced heavy rains and flooding this fall, which appear to have dimmed winter wheat and rapeseed harvest prospects for next summer. Higher wheat prices would tend to reduce wheat feeding, thus strengthening corn demand.

One caution in the wheat crop condition reports is to note that failed wheat might be replanted to soybeans and grain sorghum next spring, thus bringing a negative impact on corn and soybean prices in the fall. Recent rains have improved wheat prospects in Oklahoma and Texas; some areas of Kansas and Nebraska still need moisture to put the crop in good condition as it goes into dormancy.

Corn Export Markets and Starlink

Japan normally imports around 600 million bushels of U.S. corn per year, along with 125 to 255 million bushels sold to South Korea in the last two years. ***Japan's food regulatory standards prohibit the import and use of Starlink corn for both human and animal consumption. Penalties for violators include fines and jail sentences.*** That, along with consumer protests, is causing both countries to go much slower than normal in purchasing U.S. corn. The U.S. has worked with the Japanese government to arrange testing for Starlink before shipping, in hopes of being able to supply Starlink-free corn to Japanese users. However, details of how this will be implemented and how costs will be paid have not yet been revealed. When details of this system are developed, corn export sales may begin to increase.

The U.S. is projected to supply about 78% of the total world corn exports this season, up from 68% last year. Total world corn exports are projected to be up only 0.3% from1999-00, while U.S. exports are projected to rise 16%. ***This is a caution for corn growers not to be overly optimistic for next year. The sharp increase in U.S. corn exports expected this season is not due to accelerated growth in world demand, but is primarily due to serious foreign weather problems. Past patterns of world feed grain exports suggest the anticipated surge in exports is a large temporary component that is likely to disappear next year.***

Alternative sources of corn for Japan and South Korea include China, Argentina, South Africa, and possibly small amounts from the Ukraine, Hungary and Romania. The latter two countries suffered from severe drought last summer, and their exportable supplies are expected to be relatively small (down 28% from the previous year). China's supplies will be sharply below those of last year, as noted earlier. Current USDA Foreign Agricultural Service projections indicate the combined corn exports from these countries will be about 590 million bushels. Japan and Korea likely will use corn from these sources mainly for direct processing into food products along with a small amount for feed, since the volume of available corn will be well below the feed needs of these two countries. Feed wheat from Canada and Western Europe, as well as Canadian and Australian barley, will be viewed as alternatives to corn for feed. Canada and the European Union have relatively large supplies of feed wheat due to a rainy harvest season. Sugar may be used more than usual in Far East processed foods as an alternative to corn sweeteners. The projected corn exports from Argentina and South Africa should be viewed as highly tentative. It is corn-planting time in both countries and harvesting will take place from late April through early June. Soil moisture and recent rainfall provide reason to think final export numbers from these countries could be a little larger. Even so, combined exports of alternative corn suppliers is virtually certain to fall well below import requirements of our major Far East corn markets. Other alternatives include grain sorghum from the U.S., Argentina and Australia. Combined exportable supplies from the latter two countries are projected at 33 million bushels, down 35% from last season. Barley from the U.S., the European Union, Canada, Turkey, the Ukraine and Australia is another alternative. Combined exportable supplies from the non-U.S. countries in this list total about 445 million bushels, corn equivalent.

Long-term impacts of the Starlink development on U.S. corn exports are uncertain. For this year, foreign buyers will be forced (in part against their will) to buy supplies from the U.S. because of a lack of alternative supplies. There is some risk that due to GMO concerns, foreign customers will seek to develop alternative supplies, as happened in soybeans in response to past U.S. political and short-supply export embargoes. ***Areas where alternative supplies could be developed include Brazil, Manchuria, and China. For Brazilian corn to be competitive, yields would need to be increased substantially. In China, large potential exists to increase yields through improved technology.*** In all three countries, normal corn yields are only slightly more than half of the U.S. level. On a trip to China last spring, officials there told us that China is using GMO varieties only for cotton and tobacco, and not for food or feed crops. Major factors holding down Chinese corn yields include varieties, poor weed control, and improperly balanced fertilizers. China also is seeking to expand its export markets for "Green" crops, those grown organically from non-

GMO varieties. Japan and Korea are two areas where demand for these crops is expected to grow substantially in the years ahead.

Balance Sheets

My projections of corn and soybean supplies, utilization, carryover stocks and prices for the current September-August marketing year are shown in Tables 1 and 2, using USDA's November crop estimates. Supply estimates will be updated again in mid-January after USDA releases its last crop estimate for the current growing season. The balance sheets also show alternative projections for 2001-02, using low, normal, and slightly above normal U.S. average yields. The low-yield alternative, representing weather conditions that historically have occurred about 20% of the time over a long period of years, brings dramatically tighter corn and soybean supplies next season. In that case, harvest-delivery futures price for corn and soybeans are projected to be above $3 and $7 per bushel, respectively, to ration limited supplies. Normal and slightly above normal yields point to a supply-demand balance for corn similar to that of this year, along with substantially increased soybean carryover stocks and lower bean prices. That would be the market's way of signaling to soybean producers to plant fewer acres of soybeans. In addition, it would reflect the "clearance sale" mechanism stemming from the LDP program.

Export Sales

USDA's November 9 export sales report placed U.S. corn exports since September 1 and outstanding unshipped export sales to date at 11% below those of last year. Much of the decline occurred in the Pacific Rim. The comparable figure for soybeans was up 5%, along with declines of 30% and 69% percent, respectively, for soybean meal and soybean oil. The total for grain sorghum was up 2%, along with a 126% increase for barley. For all wheat, the total was up 0.03% from a year ago.

Other alternatives include grain sorghum from the U.S., Argentina and Australia. Combined exportable supplies from the latter two countries are projected at 33 million bushels, down 35% from last season. Barley, from the U.S., the European Union, Canada, Turkey, the Ukraine and Australia, is another alternative. Combined exportable supplies from the non-U.S. countries in this list total about 445 million bushels, corn equivalent.

Global grain markets are relatively fluid. If Japan and Korea increase imports from these various countries, some of the other areas to which their grain normally goes will likely buy more U.S. corn. GMO does not appear to be a major issue so far in northern Africa and the Middle East where drought has again reduced local feed supplies. At this point, a major reduction in U.S. corn exports as a result of Starlink is not anticipated.

Robert Wisner

U.S. SOYBEAN BALANCE SHEET

11/14/00						*PROJ.*	PROJ. 2001-02		
SUPPLIES:	1994-5	1995-6	1997-8	1998-9	1999-00	*2000-01*	A	B	C
HARV. A.,MIL.	60.9	61.6	69.1	70.4	72.5	73.0	73.4	73.5	73.5
BU./A.	41.4	35.3	38.9	38.9	36.5	38.0	35.0	39.5	41.5
PRODUCTION	2,517	2,174	2,689	2,741	2,643	2,777	2,569	2,903	3,050
IMPORTS	5	4	5	4	3	3	4	4	4
CARRYOVER	209	335	132	200	348	288	333	333	333
TOTAL	2,729	2,514	2,826	2,945	2,994	3,068	2,905	3,239	3,386
UTILIZATION:									
CRUSH	1,405	1,370	1597	1590	1,580	1,595	1,590	1605	1615
EXPORTS	838	851	870	801	980	970	990	1020	1035
OTHER DOMESTIC	151	109	158	205	147	170	180	170	170
TOTAL	2,395	2,330	2,626	2,596	2,707	2,735	2,760	2,795	2,820
CARRYOVER	335	183	200	348	288	333	145	444	566
U.S. AVG. PRICE, $/Bu.	5.48	6.72	6.47	4.93	4.65	4.65	6.60	4.40	4.20
IA. AVG. PRICE, $/Bu.	5.38	6.67	6.37	4.83	4.55	4.55	6.50	4.30	4.10
N.C.IA.HARV.PRICE	4.90	6.75	6.05	4.80	4.35	4.35	6.50	4.05	3.95
MEAL DECATUR, $/T 48%	$163	$236	$186	$139	$148	165	227	$154	$145
MEAL, 44%	$153	$222	$174	$129	$140	$153	$213	$144	$135
SOY OIL, DECATUR	27.5	24.7	25.8	19.9	15.6	15.0	19.0	15.0	15.0
NOV. FUT. AT HRV., $/ Bu	5.28	7.15	6.50	5.30	4.95	4.95	7.10	4.65	4.55
Probability							20%	60%	20%
CARRYOVER/USE %	14.0%	7.9%	7.6%	13.4%	10.6%	12.2%	5.3%	15.9%	20.1%

CORN BAL.SHEET (MIL.BU.)					Proj.	*Proj.*	PROJ.2001-02		
11/14/00	1994-95	1995-96	1997-98	1998-99	1999-00	*2000-01*	A	B	C
Plant. A(mil.)	79.2	71.2	79.5	80.2	77.4	79.6	79.6	79.4	79.6
Harv.A.(mil)	72.9	65.0	72.7	72.7	70.5	73.0	72.6	73.0	73.4
Bu./A.	138.6	113.5	126.7	134.4	133.8	137.7	112.0	139.0	141.5
Production	10,103	7,374	9,207	9,759	9,437	10,054	8,131	10,147	10,386
IMPORTS	7	16	9	19	15	10	10	10	10
Carryover	850	1,558	883	1,308	1,787	1,715	1,729	1,729	1,729
Total	10,960	8,948	10,099	11,086	11,239	11,779	9,870	11,886	12,125
UTILIZATION:									
Feed & resid.	5,533	4,711	5,505	5,496	5,679	5,800	5,350	5875	5890
Food, ind. & seed	1,693	1,583	1,782	1,822	1,920	1,975	1,955	1990	1990
Exports	2,177	2,228	1,504	1,981	1,925	2,275	1,950	2075	2100
Total	9,402	8,522	8,791	9,299	9,524	10,050	9,255	9,940	9,980
Carryover	1,558	426	1,308	1,787	1,715	1,729	615	1,946	2,145
U.S. FARM PRICE	$2.26	$3.95	$2.43	$1.94	$1.80	$1.80	$2.95	1.60	1.50
IOWA AVE. PRICE	2.2	$3.85	$2.33	1.84	1.70	1.70	2.85	1.50	1.40
HARV. PRICE, C.IA	1.80	2.90	2.40	1.75	$1.40	$1.50	$2.85	1.35	1.25
DEC. FUT. @ HARV.	2.20	3.35	2.80	2.10	$1.95	$2.02	$3.40	$1.90	$1.85
LONG-TERM PROBABILITY							20%	60%	20%
Carryover: % of total use	16.6%	5.0%	14.9%	19.2%	18.0%	17.2%	6.6%	19.6%	21.5%

Total corn/soybean supply: % of 1999-00	104.3%	89.8%	106.3%	109.0%