

Don Bell's Table Egg Layer Flock Projections and Economic Commentary - 2002

(This report was written by Don Bell, University of California Poultry Specialist, emeritus, under the sponsorship of United Egg Producers)

Several Possible Scenarios Resulting From UEP's New Husbandry Guidelines

Introduction

Gene Gregory asked me to include the effects of the industry's potential reduction of cage densities on our projection of egg prices that we provide the industry each month. Our current method depends heavily on hatch data and historical relationships (monthly highs and lows). These are all documentable data. To incorporate the effects of an estimated cutback in the hatch would be very speculative and dependent upon many factors which are just not predictable at this point in time. The following discussion and tables illustrate the major effects resulting from added space allowances, but it also assumes that certain things will happen based upon historical records.

Background

United Egg Producer's has developed a set of cage space standards with the help of a scientific advisory committee and a producer animal welfare committee. The standards describe the step-wise introduction of increased space allowances along with deadlines for the industry's adoption of these standards. Due to the extreme economic impact of such changes, the producer's committee has advised that such changes should take place over a 7-year period from 2002 to 2008 in order to cause the least disruption in production and marketing processes. The recommended changes in space allowances along with their effective dates are listed in Table 1.

Table 1.

Date	Space allowance per hen	% Change from start	Flock size as a % of original
prior to April, 2002	53 sq.in. (Average)	n/a	n/a
Apr., '02 to Sep., '03	56	-5.7%	94.3%
Oct., '03 to Mar., '05	59	-11.3%	88.7%
*Apr., '06 to Sep., '06	61	-15.1%	84.9%
Oct., '06 to Mar., '08	64	-20.8%	79.2%
Apr., '08 & later	67+	-26.4%	73.6%

Industry-wide adoption of these guidelines is urged in order to comply with the animal husbandry recommendations of the two committees relative to minimum space allowances in cages. As of July 15, UEP has program commitments from 140 egg producers representing 190 million laying hens or 69% of the nation's 275 million laying hens. The program participants have agreed to meet the deadlines shown in Table 1 relative to all new flocks hatched after April 1, 2002. In other words, they have agreed to house their 1st flock as layers at no less than 56 square inches per hen (on the average). If the previous flock was housed at 53 square inches, this would represent a 5.7% reduction in chicks purchased for the new flock.

The USDA's National Health Monitoring System (NAHMS) survey conducted in 1999 showed that the average cage space allowance used by egg producers surveyed was 53 square inches. Table 2 lists the frequency of various space allowances.

Table 2

Space allowance per hen	% of sites surveyed:
Less than 48 square inches	16.6
48 to 54 square inches	45.1
54 to 60 square inches	16.7
More than 60 square inches	21.6

If the average space allowance were brought up to the standards in Table 1, the nation's monthly hatch would be reduced from 18.3 million pullets to 17.3 million. This would, of course, represent 100% compliance with the recommendations.

Analysis Procedures

Several industry options are possible when estimating the effects of these recommendations. These have been included in the model to be discussed.

1. The degree of compliance to the standards.

At present, the UEP program commitments represent approximately 70% of the nation's laying flock. The net effect of this on the hatch of members is uncertain as only new flocks are considered. Increases in hen counts by back-filling cages at "push-out" time or by utilizing previously un-used farms or houses may occur. In addition, there is no certainty that non-members will necessarily participate in the program. Our model includes 100%, 70% and 50% compliance by the entire industry until 2010.

2. The introduction of new houses or farms

As egg shortages increase, individual companies will find it necessary to replace the missing hens which will require new construction. By 2008, this may total 25 to 30% in order to meet the current demand plus the expected 1% increase per year in human population.

To offset the decrease in hatch, the industry will be expected to build new facilities. The rate and timing of the new construction will depend upon individual company determinations. Obviously, the net effect of the program will depend upon the rate of cut-back and the level of off-setting new construction.

The model looks at 0, 1, 3, 5, 10% growth rates beginning in 2002 through 2010. Different rates were chosen to “bracket” what we expect will happen, but the real pattern of growth will be delayed as industry funds are re-assembled and benefits of cut-backs begin to accrue. The industry has the ability to construct single new 2 million hen farms in less than 2 years. As the supply of eggs decreases and egg prices increase, the pressure to build will increase each year. Therefore, we believe we’ll see a variable growth rate rather than the fixed rate assumed in our model. It is hoped that the industry will be able to sustain an improved supply/demand relationship as a result of these major changes. More expensive housing (as a result of lower cage density) should delay start-up decisions and financing. Housing costs are likely to be closer to \$15 per bird than \$10. Only time will tell.

3. We’re entering un-charted waters

Much of what we know is based upon history. We know that within the last 5, 10, 20 or more years, certain relationships were present. We experience above and below cost periods every year, we have 3-4 year price cycles, and we expect increases in hatch to effect prices down the road. We also know that there are producers who always make money regardless of “average” industry conditions. As a result, we recognize that different producers can justify expansion during what are considered “terrible times”.

This model includes relationships that are recognized as being normal, however, the supply conditions being contemplated may be “outside” of the applicability of old relationships. Nevertheless, the data will be available for everyone to consider.

The major emphasis in the model is to predict the economic outcome of various flock sizes. This depends heavily on the “normal” relationship between the hatch and subsequent prices. Our previous studies of price vs hatch indicates that a reduction of one million pullet chicks over a 24 month period will increase egg prices the next year by \$0.0039 per dozen (about 4/10 of a cent per dozen or 8.6 cents per hen/year). The total impact on egg prices will depend on the amount of hatch reduction when we use this relationship. The resulting prices are estimates for Uner Barry Mid-west large white eggs. Prices for other regions would have to be adjusted from these.

Procedure

A model flock was analyzed using a computer spreadsheet (Lotus). The flock represents the entire US population of approximately 275 million laying hens. At the beginning, 18.3 million chicks were added each month until April, 2002 when the hatch was reduced by 5.7% down to 17.3 million. Future hatch reductions were calculated using the recommendation listed in Table 1 through 2010. Progressive 24 month chick hatch totals yielded egg prices based upon the relationship that a one million reduction in the chick hatch results in a 0.39 cent increase in egg price.

In order to demonstrate the effect of industry compliance, three levels were tested -100%, 70% and 50%. In order to test the off-setting effects of industry growth, 0, 1, 3, 5, & 10% increases in chick hatch were analyzed concurrently.

Results

Detailed results are shown in the two large tables on pages 5 & 6

We've listed below some of the more dramatic effects below:

1. With 100% compliance and no growth, chicks hatched in 2009 would be down 26.2%
2. This would represent 57.5 million fewer chicks.
- 3 The laying flock would change from 274.5 million to 202.5 in the same time period.
4. Even with only 50% compliance and at a 10% sustained growth rate, the nation's flock in 2009 would be at 266 million compared to 275 million today.
5. Mid-west Urner Barry egg prices (large, white) averaged 71 .0 cents per dozen in 2001. With 100% compliance and no growth, this price would increase to an estimated \$1.147 per dozen in 2010. With only 50% compliance and a 10% growth rate, prices are estimated to average 77.9 cents per dozen in 2010.
6. Total industry farm egg income (subtracting 35 cents per dozen from the above estimates) is estimated at \$2.174 billion in 2001. ***This is gross farm income from eggs and does not represent profit.***
7. Maximum industry income is estimated to be \$3.552 billion using the 100% compliance with no growth model. With 50% compliance and a 10% rate of growth, the total industry income would be reduced to \$2.511 billion - almost \$1 billion less total income, but still significantly more than in the base year, 2001..

Comments

This discussion is intended to demonstrate the effects of reducing cage density - with and without replenishment of the reduction of hatch. It, once again, illustrates the effects of changes in supply on prices. It does not measure other effects such as higher flock performance, lower mortality, improved house conditions, etc. We don't expect everyone to believe the precise numbers that are listed in the tables, but the general directions should be of interest to everyone in table egg production.

Table 3. Summary of results - 2002 through 2010												
		Annual hatch (millions)										
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
00% comply	growth (%)											
	0	219.6	219.6	210.6	204.3	194.4	188.1	183.0	174.0	165.0	162.0	162.0
	1			212.8	206.5	196.6	190.3	185.2	176.2	167.2	164.2	164.2
	3			217.2	210.9	201.0	194.7	189.6	180.6	171.6	168.6	168.6
	5			221.6	215.3	205.4	199.1	194.0	185.0	176.0	173.0	173.0
	10			232.6	226.3	216.4	210.1	205.0	196.0	187.0	184.0	184.0
70% comply	growth (%)											
	0	219.6	219.6	213.3	209.1	202.8	198.3	194.4	187.2	180.9	178.8	178.8
	1			215.5	211.3	205.0	200.5	196.6	189.4	183.1	181.0	181.0
	3			219.9	215.7	209.4	204.9	201.0	193.8	187.5	185.4	185.4
	5			224.3	220.1	213.8	209.3	205.4	198.2	191.9	189.8	189.8
	10			235.3	231.1	224.8	220.3	216.4	209.2	202.9	200.8	200.8
50% comply	growth (%)											
	0	219.6	219.6	215.1	212.1	207.6	204.0	201.3	196.8	192.3	190.8	190.8
	1			217.3	214.3	209.8	206.2	203.5	199.0	194.5	193.0	193.0
	3			221.7	218.7	214.2	210.6	207.9	203.4	198.9	197.4	197.4
	5			226.1	223.1	218.6	215.0	212.3	207.8	203.3	201.8	201.8
	10			237.1	234.1	229.6	226.0	223.3	218.8	214.3	212.8	212.8
Hatch reduction (%) (minus = hatch increase)												
100% comply	growth (%)											
	0			4.1	7.0	11.5	14.3	16.7	20.8	24.9	26.2	26.2
	1			3.1	6.0	10.5	13.3	15.7	19.8	23.9	25.2	25.2
	3			1.1	4.0	8.5	11.3	13.7	17.8	21.9	23.2	23.2
	5			-0.9	2.0	6.5	9.3	11.7	15.8	19.9	21.2	21.2
	10			-5.9	-3.1	1.5	4.3	6.6	10.7	14.8	16.2	16.2
70% comply	growth (%)											
	0			2.9	4.8	7.7	9.7	11.5	14.8	17.6	18.6	18.6
	1			1.9	3.8	6.6	8.7	10.5	13.8	16.6	17.6	17.6
	3			-0.1	1.8	4.6	6.7	8.5	11.7	14.6	15.6	15.6
	5			-2.1	-0.2	2.6	4.7	6.5	9.7	12.6	13.6	13.6
	10			-7.1	-5.2	-2.4	-0.3	1.5	4.7	7.6	8.6	8.6
50% comply	growth (%)											
	0			2.0	3.4	5.5	7.1	8.3	10.4	12.4	13.1	13.1
	1			1.0	2.4	4.5	6.1	7.3	9.4	11.4	12.1	12.1
	3			-1.0	0.4	2.5	4.1	5.3	7.4	9.4	10.1	10.1
	5			-3.0	-1.6	0.5	2.1	3.3	5.4	7.4	8.1	8.1
	10			-8.0	-6.6	-4.6	-2.9	-1.7	0.4	2.4	3.1	3.1
Est. laying hens (millions)												
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
100% comply	growth (%)											
	0	274.5	274.5	263.3	255.4	243.0	235.1	228.8	217.5	206.3	202.5	202.5
	1			266.0	258.1	245.8	237.9	231.5	220.3	209.0	205.3	205.3
	3			271.5	263.6	251.3	243.4	237.0	225.8	214.5	210.8	210.8
	5			277.0	269.1	256.8	248.9	242.5	231.3	220.0	216.3	216.3
	10			290.8	282.9	270.5	262.6	256.3	245.0	233.8	230.0	230.0
70% comply	growth (%)											
	0	274.5	274.5	266.6	261.4	253.5	247.9	243.0	234.0	226.1	223.5	223.5
	1			269.4	264.1	256.3	250.6	245.8	236.8	228.9	226.3	226.3
	3			274.9	269.6	261.8	256.1	251.3	242.3	234.4	231.8	231.8
	5			280.4	275.1	267.3	261.6	256.8	247.8	239.9	237.3	237.3
	10			294.1	288.9	281.0	275.4	270.5	261.5	253.6	251.0	251.0
50% comply	growth (%)											
	0	274.5	274.5	268.9	265.1	259.5	255.0	251.6	246.0	240.4	238.5	238.5
	1			271.6	267.9	262.3	257.8	254.4	248.8	243.1	241.3	241.3
	3			277.1	273.4	267.8	263.3	259.9	254.3	248.6	246.8	246.8
	5			282.6	278.9	273.3	268.8	265.4	259.8	254.1	252.3	252.3
	10			296.4	292.6	287.0	282.5	279.1	273.5	267.9	266.0	266.0

Based upon 275 million layers from 220 million hatched = 1.25 hens per 1 hatched

Table 4. Summary of results - 2002 through 2010

		Est. egg price (cents/doz) (UB MW large white)									
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
100% comply	growth (%)										
	0	71.0	71.0	74.5	80.4	86.8	93.1	97.5	103.0	110.1	114.7
	1		69.3	72.8	78.8	85.2	91.6	96.1	101.6	108.7	113.5
	3		65.8	69.4	75.6	82.1	88.6	93.2	98.9	106.1	110.9
	5		62.4	66.1	72.4	79.0	85.6	90.3	96.1	103.4	108.4
	10		53.8	57.7	64.3	71.2	78.2	83.1	89.1	96.8	102.0
70% comply	growth (%)										
	0	71.0	71.0	73.4	77.5	81.6	85.8	89.1	93.4	98.7	102.0
	1		69.3	71.7	75.9	80.0	84.3	87.6	91.9	97.3	100.6
	3		65.8	68.4	72.6	76.8	81.1	84.5	89.0	94.4	97.8
	5		62.4	65.0	69.3	73.6	78.0	81.4	86.0	91.5	95.0
	10		53.8	56.5	61.1	65.6	70.2	73.8	78.6	84.3	87.9
50% comply	growth (%)										
	0	71.0	71.0	72.7	75.7	78.6	81.7	84.2	87.0	90.5	92.9
	1		69.3	71.0	74.0	76.9	80.1	82.6	85.4	89.0	91.4
	3		65.8	67.6	70.7	73.7	76.9	79.5	82.3	86.0	88.4
	5		62.4	64.3	67.3	70.4	73.7	76.3	79.2	82.9	85.4
	10		53.8	55.8	59.0	62.2	65.7	68.4	71.5	75.3	77.9
		Est. farm egg income for all sizes (Million \$) -									
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
100% comply	growth (%)										
	0	2,174	2,083	2,218	2,430	2,678	2,923	2,992	3,087	3,343	3,552
	1		2,005	2,147	2,370	2,628	2,882	2,960	3,064	3,329	3,543
	3		1,842	1,998	2,244	2,522	2,795	2,890	3,013	3,296	3,519
	5		1,670	1,841	2,110	2,409	2,701	2,813	2,956	3,256	3,490
	10		1,205	1,413	1,742	2,093	2,434	2,590	2,782	3,129	3,389
70% comply	growth (%)										
	0	2,174	2,110	2,210	2,372	2,542	2,717	2,785	2,907	3,132	3,293
	1		2,030	2,135	2,304	2,482	2,664	2,738	2,867	3,099	3,264
	3		1,865	1,979	2,164	2,355	2,550	2,639	2,783	3,028	3,200
	5		1,691	1,815	2,016	2,221	2,429	2,532	2,691	2,950	3,130
	10		1,219	1,369	1,610	1,851	2,094	2,232	2,430	2,725	2,924
50% comply	growth (%)										
	0	2,174	2,128	2,201	2,321	2,445	2,587	2,662	2,750	2,913	3,035
	1		2,047	2,123	2,249	2,378	2,526	2,606	2,698	2,866	2,991
	3		1,880	1,963	2,100	2,239	2,397	2,486	2,590	2,766	2,897
	5		1,704	1,795	1,943	2,093	2,260	2,359	2,473	2,660	2,796
	10		1,229	1,337	1,515	1,691	1,884	2,009	2,150	2,360	2,511

Based upon 264 eggs per hen (22 dozen) and UB MW large white minus 35 cents/dozen (to equal farm price after discounts, blend egg price adjustment, processing and other costs.).