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Estimate of Economic Losses by Contract Growers in the Poultry Sector due to COVID-19

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Executive Summary

The sudden and severe losses in the poultry sector have raised legitimate concerns about the financial viability of many contract grower operations. The purpose of this project is to provide an objective assessment of aggregate losses attributable to COVID-19 in the poultry industry, focusing primarily on assessing losses at the farm level in the broiler sector.

In the broiler sector, production losses in the 2nd through 4th quarters of 2020 are forecast to reach 2.58 billion pounds of live weight. Total loss in broiler industry value of production is anticipated to be $7.86 billion. Assuming an average grower payment of $0.0625 per pound produced, ***total losses to contract growers from this decline in production are predicted to be $161.8 million***. Estimating approximately 797 million square feet of barns in production, the $161.8 million in total damages equates to $0.20 per square foot in grower damages.

In the turkey sector, total production losses were forecast to be 125 million pounds of live weight. Assuming a $0.1025 payment per pound produced, the ***total losses to contract growers are projected to be $12.84 million***. Estimating approximately 45.6 million square feet of houses in production, the $12.84 million in total damages equates to $0.28 per square foot in grower damages.

A disaster assistance payment delivered on a flat rate per-square-foot, while straightforward to calculate and administer, would raise legitimate concerns about equitable treatment of growers. Considerable variation exists across growers in contract terms (e.g., rate of compensation) and key production parameters (e.g., bird weights, stocking density, average out-time between flocks). A single flat-rate compensation would amount to substantially different levels of support when considered as a percentage of lost farm-level revenue. For example, a grower with newer houses (typically implying a higher pay rate) attached to a complex supplying large birds to the food service sector is probably experiencing much higher losses than a grower with older houses attached to a complex supplying smaller birds for grocery retail. In the former case, compensation of $0.20/square foot would probably fall far short of making the grower financially whole while in the latter case it might more than cover actual losses.

There are other compensation methods that would lessen the equitability concerns but also present significant calculation and implementation challenges. In particular, accurate aggregate loss calculations would not be feasible with publicly available data. For example, a per diem calculation would provide a more direct method for compensating grower losses. This method would establish a net pay per day value for grower operations. Growers would then be compensated for lost days of production based on this value. The per diem approach to compensation is more complicated than a flat per-square-foot payment; however, it would better match compensation to actual grower experience and could be adapted to fit any situation in which a break in the normal production cycle causes extended out times. We have provided discussion and considerations for possible compensation methods.

Estimate of Economic Losses by Contract Growers in the Poultry Sector due to COVID-19

COVID-19 has created unprecedented disruptions in consumer markets for meat and poultry as well as in the supply chain delivering these products. These disruptions have resulted in significant economic losses for all industry participants, including for farmers.

The purpose of this project is to provide an objective assessment of aggregate losses attributable to COVID-19 in the poultry industry, focusing primarily on assessing losses at the farm level in the broiler sector. The sudden and severe losses in the poultry sector have raised legitimate concerns about the financial viability of many contract grower operations. Many grower farms are highly leveraged due to the high capital requirements of the enterprise. Even modest reductions in income or disruptions in cash flow can compromise the ability of the operation to meet its financial obligations. Since much of the financing for these operations is guaranteed through either the Small Business Administration (SBA) or the USDA Farm Service Administration (FSA), the prospect of widespread business failures in the sector has significant federal budget implications, even before considering the possibility of disaster relief. In fact, it seems likely that if grower defaults do materialize, federal agencies will not only absorb significant losses but will also, in short order, be asked to take on new loan guarantees in order to rebuild needed capacity in the sector. In light of this very real possibility, it seems prudent to consider policy alternatives that will help growers weather the current crisis, avoid defaults on guaranteed loans, and maintain the existing productive capacity in the sector.

This task of estimating COVID-19-related losses in the poultry sector, particularly down to the grower level, is complicated by a couple of key factors.

First, the COVID-19 event is obviously ongoing. Economics losses from the event will continue to mount for some time. Thus, some portion of the economic damages herein estimated reflect forecasts that are necessarily made with incomplete information and in an environment of heightened uncertainty due to the unprecedented nature of unfolding events. Care will be taken to use the best, most objective data currently available and to fully describe the basis of all forecasts, clearly identifying underlying assumptions.

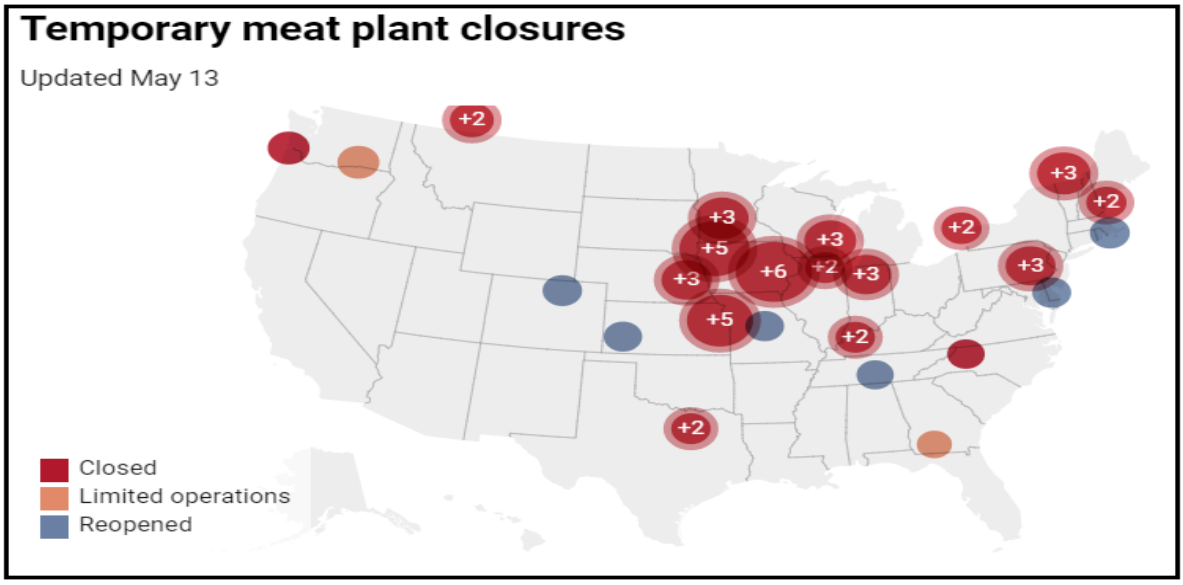
Second, the vast majority of production in the poultry industry takes place under contract. Farmer-growers contract with integrators who provide birds, feed, veterinary products, and technical expertise. Farmers provide facilities and equipment, labor, management, utilities, and other necessary inputs. Due to the proprietary nature of these contractual arrangements, as well as to the fact that such arrangements can vary considerably from one poultry company to another and often even within companies, accurately determining how losses are shared among companies and growers is difficult. Again, this work will rely on reasonable assumptions about typical contractual arrangements in the industry, and such assumptions will be clearly identified where they are significant to the results presented.

Finally, a substantial share of COVID-19-related losses in the poultry sector have been due to the loss of food service business. The supply chain in the broiler sector for grocery retail and food service retail do not completely overlap. Because of differences in preferred bird size, packaging, and related characteristics, some production systems (either entire companies or units within companies) are optimized for grocery sales while others are optimized for food service sales. Those participants in production systems optimized for food service sales have likely experienced the most severe disruptions

and, consequently, the greatest economic loss. Thus, parsing aggregate economic losses among industry participants may not be a straightforward exercise.

To this point, there have been two significant events that have caused economic stress to contract growers. The first was limitations placed on restaurants and other food service outlets as stay-at-home directives and restrictions of movement began to surface throughout the country. Based on the latest information available from the National Chicken Council, broilers sales to food service represents 45 percent of total sales or demand. Therefore, the restrictions placed on that industry segment quickly created a significant reduction in demand to a vital component of overall demand structure for broiler production. And while demand from the retail grocery segment has been much more stable, there are longer term concerns regarding demand from that segment as additional consequences from a downturn in the overall economy begin to materialize.

The other major event that occurred was the reduction in the industry's processing capacity (Figure 1). The COVID-19 virus began to impact the workforce of several processing facilities throughout the



Source: https://www.meatpoultry.com/articles/22993-covid-19-meat-plant-map

Figure 1. Temporary Meat Plant Closures

country. This caused either a temporary reduction in processing ability for those facilities or, in some cases, caused a complete shutdown of the facility. With processing capacity impacted, the normal movement and flow of broilers through the production system was significantly altered. In some cases, integrators were forced to euthanize birds on contract growers' operations. While most contract growers were compensated for the birds euthanized, proper disposal of the birds on site creates a significant lag between those growers can obtain a new flock of birds. Since contract growers are only compensated for their birds being grown in their facility, the increased time between flocks means less overall revenue being generated by the contract grower.

In addition to having to euthanize birds, other strategies implemented by integrators to adjust production to coincide with reduced processing capacity are to increase out-times (the time between when the birds in a contract grower facility are marketed and when the grower receives a new flock of

chicks to replace those marketed), reduce density (the amount of birds housed in a growing facility), and reducing the target end weight of the birds. Each potential strategy has the effect of reducing the total pounds of production that contract grower can generate in a given year. And, again, since the grower is paid based on the number of birds and the pounds of production that is run through their facilities, this reduction results in overall lower gross revenue generated by the operation.

A final implication of the reduction in processing capacity and reduced demand from the food service segment of the industry is the disruptions caused in other segments of the integrated production system. Pullet operations provide young hens to breeder flocks for egg production. These breeder flocks, in turn, provide the eggs that become the broiler chicks that feed into the broiler operations. With the reductions in broiler placement and production, there have been cases already reported of integrators destroying millions of dozens of eggs in breeder flocks. Since contract breeder flock growers are paid per dozen eggs produced and the hatch rate of those eggs, the downturn in demand caused by the lower need for broiler chicks has and will likely continue to impact their overall revenue levels. Also, with the reduction in the demand for eggs, the demand for young breeder hens from the pullet operations is also impacted. Breeder operations could retain hens longer in their operations therefore reducing the demand for replacement hens coming from pullet growers. And since contract pullet growers are paid by the number of birds moved through their operations, their overall revenue has and will likely continue to be impacted.

Overview of the Broiler Industry

The broiler industry is a significant component of the total agriculture economy in the United States. Based on data from the USDA Economic Research Service (ERS), total cash receipts for the broiler industry equaled $27.4 billion in 2019 and was originally estimated at $27.6 billion for 2020 prior to the COVID-19 situation. These values represent more than 7 percent of the total cash farm receipts generated in the United States from all commodities.

While the importance and relevance of the broiler industry is evident at the national level, it is even more apparent at the state level. For many of the top broiler production states in the United States, broiler production represents a top ten agricultural industry for that state. Table 1 shows every state in which cash receipts for broiler production was reported in 2018. For each of the top ten states, broiler production represented a significant component of total farm cash receipts for the state and resulted in it being ranked as a top five commodity in the state in terms of cash receipts. In fact, broiler production for 9 out of the top 10 states ranked as the single largest commodity in that state. Even for states with overall smaller broiler industries, broiler production still represents a significant component of those state's total agricultural industry.

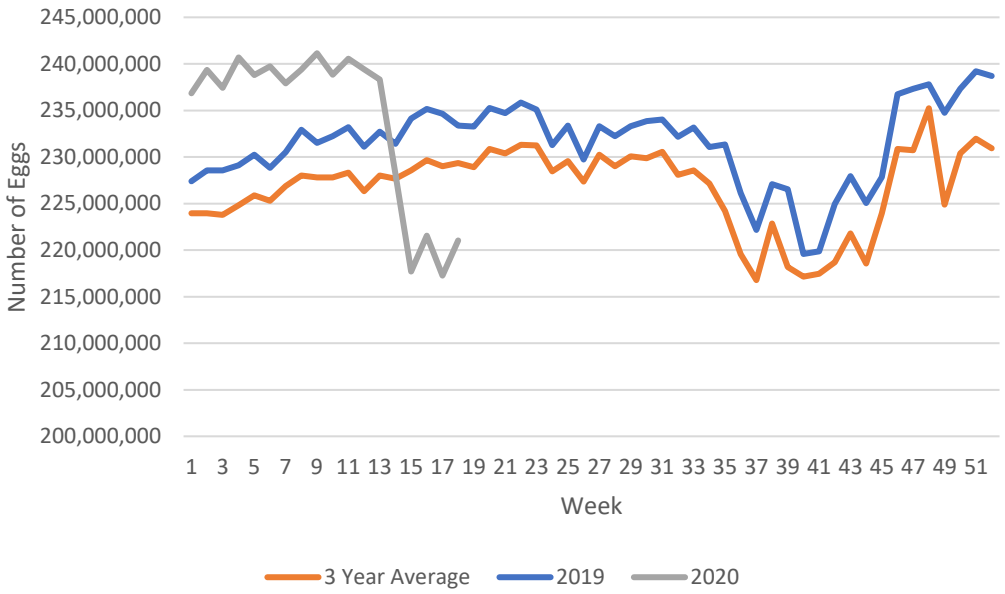
It is obvious that the broiler industry and the integrated production system that it entails is a significant contributor to the overall agricultural economy both at the state and national level. The disruptions being experienced both in typical demand outlets and throughout the normal production process have both immediate and potential long-term impacts. Since contract growers are dependent on movement of birds in and through their operations, the disruption of that normal flow has direct and significant impacts on their revenue generating ability.

Table 1. Cash Receipts for Broiler Production, 2018

State	Cash Receipts (1,000 Dollars)	Percent of Total State Cash Receipts	Broiler Production State Rank
Georgia	$4,566,136	50.19%	1
Arkansas	$4,089,868	45.26%	1
North Carolina	$3,857,883	34.82%	1
Alabama	$3,454,844	59.67%	1
Mississippi	$2,633,505	48.16%	1
Texas	$2,374,520	10.80%	3
Kentucky	$1,102,069	18.68%	1
Delaware	$1,075,684	76.37%	1
South Carolina	$1,010,281	40.19%	1
Maryland	$970,648	43.39%	1
California	$965,340	1.94%	6
Virginia	$935,431	26.57%	1
Missouri	$819,215	8.08%	4
Oklahoma	$737,097	10.91%	3
Pennsylvania	$637,595	9.51%	4
Tennessee	$525,292	14.97%	3
Louisiana	$524,060	16.80%	2
Ohio	$313,655	3.48%	8
Florida	$215,718	2.95%	6
Minnesota	$201,520	1.17%	12
West Virginia	$176,924	25.84%	1
Indiana	$150,373	1.43%	10
Wisconsin	$127,899	1.17%	9
Washington	$90,840	0.96%	10
Iowa	$73,680	0.27%	10
Oregon	$55,190	1.12%	10
Michigan	$29,727	0.40%	14
Nebraska	$22,744	0.11%	13
New York	$5,650	0.11%	15
Illinois	$2,842	0.02%	16

Source: USDA, Economic Research Service

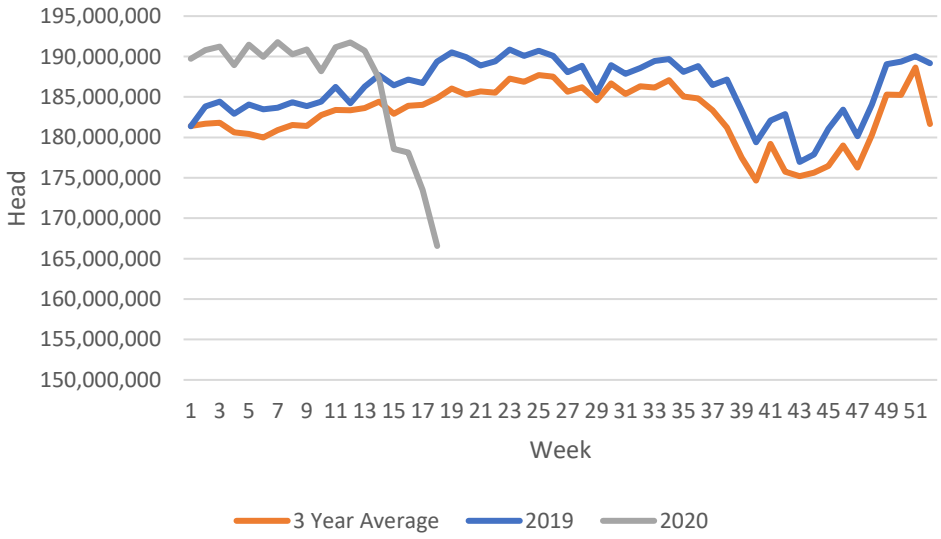
Evidence of this disruption of the normal product flow throughout the integrated production process is evident. Figure 2 shows weekly egg set over the previous three years, last year, and thus far in 2020. As shown, weekly egg set experienced a significant downturn in the middle of April 2020. This reduction in the number of eggs in inventory to produce the next group of broilers shows the industries reaction to both reduced processing capacity and uncertainty regarding demand. Lower egg set has implications for all segments of the production system. Contract breeder flock growers are producing fewer eggs and generating lower revenues. In turn, there is less demand or need for young hens going into breeder flock operations from the pullet operations. And finally, lower egg set means fewer broiler chicks moving through contract broiler operations in the future.



Data Source: USDA National Agricultural Statistics Service.

Figure 2. Weekly Broiler Egg Set

Similarly, Figure 3 shows weekly broiler placements. The reduction in broiler placements coincides nearly identically with the reduction in egg set. Starting in the middle of April 2020, the number of broilers placed declined significantly and remains at those low levels. As mentioned before, contract broiler growers are only able to generate revenue when birds are moved in and through their facilities. Fewer birds being placed into their facilities means fewer dollars available for those operations to service their existing cost structure.



Data Source: USDA National Agricultural Statistics Service.

Figure 3. Weekly Broiler Chick Placements

While information available from USDA on pullet placements is only reported on a monthly basis, similar patterns can be seen in that data. Monthly pullet placements in February and March 2020 (the most recent data available) show that placements in both months were down roughly 2 percent from the three-year average. This is another indication of the overall disruption being experienced not only in the broiler production segment of the industry but the entire integrated production process.

Finally, while available monthly slaughter data from USDA does not show similar reductions for total slaughter as seen in some of the other production indicators, it does show sharp decreases for certain classes of broiler slaughter, which may reflect the slowdown in demand from the food service sector (see data in Appendix A). Also, monthly data from USDA was only available through March 2020 at the time of this report which would not fully represent the impacts being experienced from the COVID-19 pandemic.

Sources of COVID-19 Losses

Similar to most industries in the current pandemic, the poultry sector has suffered from significant disruptions in normal operations over the last three months, with disruptions likely to continue for months to come. Coronavirus outbreaks led to closing of many restaurants, cafeterias, and schools, which greatly altered demand for poultry products as not only total demand declined somewhat but the mix of products demanded has been greatly impacted because the food service industry buys different products in different packaging formats than supermarkets. Further, several processing plants have reduced their output or temporarily closed due either to the decline in demand for specific products or to infections within their workforce. While many plants have been largely unaffected, even staying at full capacity, other plants are running well below capacity or have been closed for a time.

On the surface the poultry industry would appear to face many of the same complications as the rest of the agricultural and food industry (a sudden, moderate decrease in total demand and a large shift in the mix of products demanded), but poultry is different because it is a vertically integrated industry. This vertical integration means one company, called the integrator, owns an entire chain of supply. This supply includes the flocks which are raised by individual chicken farmers. These farmers, called contract growers, are paid to raise the chickens to be ready for processing, but they do not ever own the birds. Integrators are organized into complexes, consisting of breeding operations that supply chicks, contract growers that raise the birds using feed supplied by the integrators and water, utilities, and houses paid for by the grower, and processing plants that turn out a variety of products and packages. A problem anywhere up or down this supply chain impacts all stages of poultry production. That means a disruption in the market, like the current sudden collapse of demand for food service products, leads to economic losses that are shared by both the integrators and contract growers.

There are four main channels through which revenue losses flow back to contract growers: depopulation of flocks, longer out-times, reduced flock sizes, and lower target weights. The impact of each of these sources of loss on growers will be discussed in turn.

Since some processing plants have been shut down due to COVID-19 outbreaks among workers, some of the growers who would have supplied those plants have had to depopulate their flocks. Depopulation, or euthanasia, of some flocks – as well as the subsequent composting of those birds – is a major loss of revenue for these farmers, since they potentially lose the payment they would have received for raising that flock after already having incurred some or all of the cost of raising the birds. While some

companies have tried to compensate their growers for depopulated flocks, not all growers are being compensated; and no growers are being paid the full amount they would have made from those flocks. The amount of depopulation has been significant in some regions of the country, with some states having as many as 3 million birds euthanized. Those numbers are expected to increase. Disposal of carcasses is also a concern. Currently, some companies are requiring birds to be composted in-house due to local health regulations, meaning the chicken houses cannot be used for another flock for a minimum of 4-6 weeks.

This increase in out-time, or the time between flocks to be grown for processing, is the second cause of serious revenue losses for contract growers, whether the time between flocks is increased because the processing plant is closed or simply as a way for the integrator to try to match supply to the current level and mix of demand. The out-time between flocks has increased in some regions to almost double the usual period of 14-21 days between flocks, to an average of 30 days in affected areas and with some of the hardest hit areas reporting triple the normal out-time, or up to 60 days. Since growers are only paid when they are growing birds, it is easy to see how this delay between flocks can severely impact farm revenues. While growers can reduce utility costs somewhat on an empty house, any payments on loans taken to build and maintain their houses and equipment continue whether flocks are placed in their houses or not.

The other two sources of loss for contract growers are similar to each other. With plants unable to maintain a normal volume of production, poultry companies can limit their losses by reducing the number of birds per house (i.e., lowering stocking density) or reducing the target weight at which these birds are taken for processing. These two strategies, while perhaps necessary for integrators to manage their supply chains, have similar negative impacts on grower revenues, as growers are paid per pound produced. Thus, any decrease in the size of a flock or the birds will result in lower revenues and profits for growers. Growers are currently experiencing reductions of about ten percent in flock size in affected areas. It is also important to note that having five or ten percent fewer birds in a house doesn't significantly reduce the grower's costs. The major variable expenses items, feed and medicine, are supplied by the integrator (and are not paid for by the grower) while the building and utility costs are essentially unchanged if a slightly smaller flock is placed in a house.

The rest of the supply chain for live birds has also been affected by COVID-19, although not as severely as the grow-out sector. The breeder operations which supply eggs and chicks for the industry have slowed production and even had to destroy eggs with the lag in demand for chicks at pullet, or young female chicken, farms. The pullet farms likewise have seen a decrease in demand for birds as less demand for birds to be grown out for processing means smaller demand for breeders to produce those chicks.

To put these sources of loss in context, suppose a contract grower averages 5 flocks per year. If the increase in out-times results in this farm receiving one fewer flocks per year, that equates to a 20% reduction in annual revenue. Suppose that our grower delivers 218,750 pounds per house per flock (31,250 birds at 7 pounds per bird) at a pay rate of $0.0625 per pound. The lost gross revenue from one flock amounts to almost $15,000 per house. Under these same assumptions, a decrease in target weight of one pound would result in a loss of almost $2,000 dollars per flock per house – or close to $10,000 per house on a year's worth of flocks. For a grower with eight houses, that is $80,000 in annual lost revenue – from a one-pound smaller bird. As for reductions in flock sizes, a ten percent reduction in

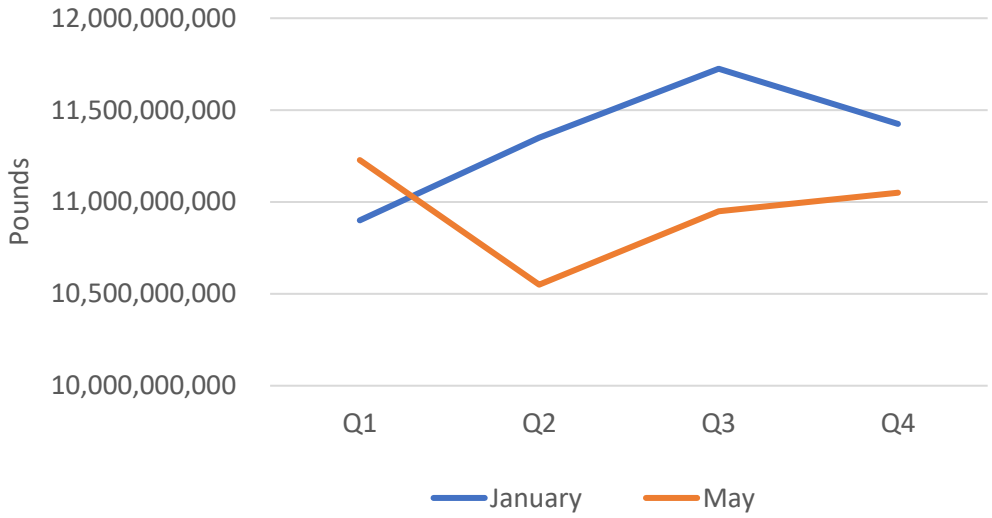
flock size would result in 3,125 fewer birds per flock, or a loss of about $1,500 per flock meaning $7,500 lower revenue per house per year.

Estimates of Industry Aggregate Losses

Broiler Growers

A sharp deterioration in the broiler industry financial situation has occurred as restaurant dining rooms have shut down, processing plants have slowed operations, and the economy has fallen into recession. In response, major integrators have sharply reduced the number of chicks placed for broiler grow-out in the last few weeks (see Figure 3 above).

Estimated losses are developed using the May 2020 *World Agricultural Supply and Demand Estimates* (*WASDE*) report (released on May 12, 2020) and the January 2020 *WASDE* from USDA World Agricultural Outlook Board as a baseline (Figure 4). Baseline expectations were for broiler production to exceed that of 2019. This analysis counts industry losses to have begun in earnest at the beginning of the second quarter of 2020. Actual production in the first quarter was greater than expected in the January *WASDE* report. Restaurant shutdowns and retail orders began in March, late in the first quarter. Losses are expected to ease in the 4th quarter of the year.



Data Source: USDA World Agricultural Outlook Board.

Figure 4. Quarterly Broiler Production Forecasts: January and May *World Agricultural Supply and Demand Estimates* (*WASDE*) Reports

Production losses in the 2nd through 4th quarters of 2020 are estimated to total 2.58 billion pounds of live weight. Total loss in broiler industry value of production is estimated to be $7.86 billion. Assuming an average grower payment of $0.0625 per pound produced, total losses to contract growers from this decline in production are estimated to be $161.8 million. Industry production losses and grower financial losses by quarter from 2020.Q2 through 2020.Q4 are summarized in Table 2.

Table 2. Expected Broiler Grower Live Weight Production Losses and Producer Damages

	January 10th *WASDE* Live Weight Equivalent	May 12th *WASDE* Live Weight Equivalent	Expected Production Losses (pounds)	Expected Producer Damages
Q2	15,067,813,088	14,005,764,588	(1,062,048,500)	($66,378,031)
Q3	15,565,648,322	14,536,788,838	(1,028,859,484)	($64,303,717)
Q4	15,167,380,134	14,669,544,900	(497,835,234)	($31,114,702)
Total	**45,800,841,544**	**43,212,098,326**	**(2,588,743,218)**	**($161,796,451)**

While acknowledging the substantial variation in grower-level losses most likely existing now, disaggregating this estimate of industry losses provides useful context for policy considerations. To simplify, we assume a stocking density of 0.85 square feet per bird, 5.8 flocks per year, and a 14-day normal out-time between flocks. We also consider the 2019 average monthly broiler production of 768 million head obtained from the USDA *Poultry Slaughter* report. These assumptions and data suggest approximately 797 million square feet of barns in production. The $161.8 million in total damages equates to $0.20 per square foot in grower damages.

Turkeys

The same methodology using the January and May *WASDE* reports was employed to estimate losses to the turkey industry. Total production losses were estimated to be 125 million pounds of live weight. Assuming a $0.1025 payment per pound produced, the total losses to contract growers are estimated to be $12.84 million (Table 3). To disaggregate this estimate, we assume a stocking density of 2.0 square feet per bird, 3 flocks per year, and 14 days normal out-time. We also consider the average 2019 monthly turkey production of 18.97 million head obtained from the USDA *Poultry Slaughter* report. These assumptions and data suggest approximately 45.6 million square feet of houses in production. The $12.84 million in total damages thus equates to $0.28 per square foot in grower damages.

Table 3. Expected Turkey Grower Live Weight Production Losses and Producer Damages

	January 10th WASDE Live Weight Equivalent	May 12th WASDE Live Weight Equivalent	Expected Production Losses (pounds)	Expected Producer Damage
Q2	1,816,633,488	1,810,369,234	(6,264,253)	($642,085)
Q3	1,835,426,248	1,804,104,981	(31,321,267)	($3,210,429)
Q4	1,941,918,556	1,854,219,008	(87,699,548)	($8,989,203)
Total	**5,593,978,292**	**5,468,693,224**	**(125,285,068)**	**($12,841,719)**

A Caveat

A number of caveats are in order and are addressed later in this report. One seems especially important to note here. The computation of grower losses per square foot implicitly assumes that losses are evenly distributed across all contract growers. That is clearly an oversimplification. It is inherently difficult to assess the distribution of losses across growers. Even in normal times, there can be considerable variation across growers in contract terms (e.g., rate of compensation) and key production parameters (e.g., bird weights, stocking density, average out-time between flocks). During this COVID-19 event, that variability has been amplified due to differences in the degree of supply chain disruption. The food service supply chain has been more severely disrupted than the grocery retail chain. Growers raising birds for food service have thus experienced more substantial losses than growers raising birds for grocery retail. Even growers contracting with the same integrator may be experiencing widely divergent outcomes right now depending on the supply chain that their particular production complex is tied to. The bottom line is that a one-size-fits all compensation program will lead to some inequities. For example, a grower with newer houses (typically implying a higher pay rate) attached to a complex supplying large birds to the food service sector is probably experiencing much higher losses than a grower with older houses attached to a complex supplying smaller birds for grocery retail. In the former case, compensation of $0.20/square foot would probably fall far short of making the grower financially whole while in the latter case it might more than cover actual losses.

Farm Level Compensation Possibilities

A number of possible payment mechanisms for contract poultry growers could be devised.

Compensation for Longer Out-Times

Per Diem Payment: Arguably, the most direct method for compensating grower losses is with a per diem calculation based on lost days of production. The benchmark for days in production and for the value of that production could be the grower's own past settlement history or a running average based on settlements across all farms in a given production complex. Regardless of how payments are calculated, distributions should be made on a per-affected-contract basis since a single grower may have multiple contracts.

To calculate a per diem payment, the grower's total net pay per day would be calculated for some number of past flocks (for example, four to six, representing a typical year of production) by dividing the grower's total settlement by the number of days birds were in the house and reducing that gross amount by a fixed percentage to represent variable costs (e.g., 30%).

1) $NPD = (TS / DB)(1-VC\%)$

Where
NPD = Total Net Pay per Day for the baseline period,
TS = total value of settlement received by the grower over the baseline period,
DB = total number of days of that year with birds in house, and
VC% = variable costs of production as a percent of total settlement.

Lost days of production could be compensated at the calculated *NPD* rate.

Example:
Suppose a grower's one-house average placement rate is for 31,250 birds with an average flock length of 49 days, an average pay weight of 7 pounds, and a pay rate of $0.06 per pound of live weight.

With variable costs assumed to amount to 30% of the grower's gross settlement, the grower's *NPD* would be calculated as follows:

2) *NPD* = {(31,250 birds * 7 lb * $0.06/lb) / 49 days} * 0.7 = $187.50.

If COVID-19 impacts result in a total of 30 days of above-baseline out-time, the grower's payment would be:

3) $187.50/day * 30 days = $5,625/house, or $22,500 on a 4-house contract.

The per diem approach to compensation would fit any situation in which a break in the normal production cycle causes extended out times. This approach could also be readily adapted to compensate growers of breeder hens and pullets based on their typical settlement terms and variable expense ratios.

Per Square Foot Payment: As illustrated in the previous section, it is possible to convert estimated losses to a per-square-foot basis for grower payment. Using the example above, if the grower losses of $22,500 were incurred on 4 houses totaling 100,000 square feet of floor space, the one-time per-square-foot payment to the grower would be about 22.5 cents. The appeal of this method is that it provides a reasonably straightforward method of decomposing aggregate losses to a single farm-level payment rate, as illustrated in the previous section using a handful of basic assumptions. While this simplicity is appealing, there are a couple of problems with this approach. First, obtaining an estimate of industry square footage is not necessarily a straightforward process. It is unlikely that such data could be obtained directly, and any method for estimating it will require assumptions that would be difficult to validate. Second, this approach raises legitimate concerns about equity among growers. As noted, not all growers are paid at the same rate. Many integrators pay a higher rate to growers with newer, more productive houses. These are also the growers most likely to need assistance as a result of lost revenue in order to continue to service debt on their facilities and equipment. A common payment rate per square foot would actually result in substantially different levels of compensation among growers as a percentage of lost revenue.

Compensation for Slower Grow-Outs or Reduced Weights

For production losses caused by slowing down birds or early catch, a similar formula to 1) could be used but with no adjustment to remove variable costs. This calculation would account for differences in total number of birds delivered and/or bird weights between the defined baseline period and the period over which losses are calculated. It is worth noting, however, that these types of changes in operations occur often in a normal year as integrators decide to catch early or late according to market forces or local plant issues. These limited changes are normally part of the contract. If a grower can illustrate in their specific situation that they have been damaged by the integrator's decisions, they have redress pathways in the contract.

Compensation for Flock Depopulation

Some farms will be unable to deliver birds to processing plants in a timely manner so that those flocks must be euthanized. Compensation for the birds grown but not delivered for processing per normal

operation is generally handled through the contract with the integrator. Common practice in the industry is for growers in this circumstance to be paid according to a complex average or according to the grower's previous 5-6 flock average. Thus, growers should not generally suffer total losses of income for such flocks. If in some specific cases growers are not compensated, the per diem formula presented above provides an appropriate method for calculating compensation for birds. Alternatively, growers could simply be paid for a lost flock (or proportion of a lost flock) according to their average payment for past flocks.

Growers facing flock depopulation may also have to deal with additional costs associated with bird disposal. Mortality disposal is typically the contractual responsibility of the grower regardless of the cause of mortality. In a mass euthanasia event, in-house composting and litter disposal is often the only practical method. In some cases, integrators may help with this expense. If not, a fixed payment to the grower based on a square footage rate could be offered to cover disposal costs. Finally, depopulation events, especially with in-house composting, will almost certainly result in extended out-times for affected growers. Lost income due to these extended out-times could be covered by a per diem payment as discussed earlier.

Cost for litter disposal could be incurred in some areas, as well as long-term litter storage costs. These costs would fall mostly on the individual growers. A set amount per affected contract would be the most efficient method to deliver relief in this area. Litter storage or disposal costs will vary greatly by region; therefore, a locally generated average cost should be considered.

Complicating Factors

Integrator Compensation: One factor complicating the development of equitable compensation programs for contract poultry growers is the varied experience of growers with their integrators. Approximately half of integrators already have some contractual form of emergency grower compensation in place. These payments may come in many forms. They typically only apply to losses that the grower suffered due to no fault of their own and that ultimately originated somehow within the operations of the integrator. However, some contracts are more liberal than others in designating the causes of loss. In the present crisis, this means that some integrators will liberally characterize losses and will thus compensate their growers as a matter of good faith. Others will determine that they have no responsibility in causing the business interruption/losses for the grower and will thus not compensate their growers. Moreover, the economic reality of the current situation is that some integrators are also absorbing massive losses and may not be financially able to assist growers. In any case, when compensation is offered by integrators, it will most likely resemble something like the per diem payment illustrated earlier.

Small Business Administration Loan Forgiveness: A significant number of loans to contract poultry growers are now originating with or, more commonly, guaranteed by the Small Business Administration (SBA). Those loans now qualify for SBA's debt relief efforts under the Coronavirus Aid, Relief, and Economic Security (CARES) Act. This means that contract growers with SBA loans will have six months of principal, interest, and any associated fees on their loans paid directly by SBA. By contrast, contract growers with unguaranteed commercial loans or with loans or guarantees through USDA Farm Service Administration (FSA) will not, at this point, be receiving similar debt relief. Of course, debt relief from any source would not impact growers whose facilities and equipment are already paid off.

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Appendix A

Monthly Chicken Slaughter Data, USDA-NASS

CHICKENS, MATURE, HEAVY, SLAUGHTER, FI - SLAUGHTERED, MEASURED IN HEAD

Month	2017	2018	2019	3 Yr Avg	2020	% of Avg.
JAN	6,087,000	6,587,000	6,968,000	6,547,333	6,970,000	106.5%
FEB	5,627,000	5,783,000	6,132,000	5,847,333	6,289,000	107.6%
MAR	6,308,000	6,210,000	6,335,000	6,284,333	7,077,000	112.6%
APR	5,537,000	6,233,000	6,490,000	6,086,667		
MAY	6,352,000	6,862,000	7,046,000	6,753,333		
JUN	7,073,000	7,238,000	6,947,000	7,086,000		
JUL	6,244,000	7,160,000	6,179,000	6,527,667		
AUG	7,392,000	8,099,000	7,404,000	7,631,667		
SEP	6,392,000	6,312,000	7,173,000	6,625,667		
OCT	7,269,000	7,528,000	7,050,000	7,282,333		
NOV	6,673,000	6,684,000	6,468,000	6,608,333		
DEC	6,074,000	5,399,000	6,228,000	5,900,333		

CHICKENS, MATURE, LIGHT, SLAUGHTER, FI - SLAUGHTERED, MEASURED IN HEAD

Month	2017	2018	2019	3 Yr Avg	2020	% of Avg.
JAN	4,993,000	3,601,000	3,392,000	3,995,333	3,126,000	78.2%
FEB	4,910,000	3,631,000	2,576,000	3,705,667	2,931,000	79.1%
MAR	5,719,000	4,221,000	3,068,000	4,336,000	3,301,000	76.1%
APR	5,054,000	4,290,000	3,159,000	4,167,667		
MAY	5,570,000	4,288,000	3,068,000	4,308,667		
JUN	5,248,000	3,987,000	2,608,000	3,947,667		
JUL	4,349,000	3,997,000	2,889,000	3,745,000		
AUG	4,778,000	3,898,000	2,800,000	3,825,333		
SEP	4,139,000	3,306,000	2,641,000	3,362,000		
OCT	4,089,000	4,183,000	3,085,000	3,785,667		
NOV	4,490,000	3,477,000	2,570,000	3,512,333		
DEC	4,252,000	3,432,000	2,730,000	3,471,333		

CHICKENS, MATURE, SLAUGHTER, FI - SLAUGHTERED, MEASURED IN HEAD

Month	2017	2018	2019	3 Yr Avg	2020	% of Avg.
JAN	11,080,000	10,188,000	10,360,000	10,542,667	10,096,000	95.8%
FEB	10,537,000	9,414,000	8,708,000	9,553,000	9,220,000	96.5%
MAR	12,027,000	10,431,000	9,403,000	10,620,333	10,378,000	97.7%
APR	10,591,000	10,523,000	9,649,000	10,254,333		
MAY	11,922,000	11,150,000	10,114,000	11,062,000		
JUN	12,321,000	11,225,000	9,555,000	11,033,667		
JUL	10,593,000	11,157,000	9,068,000	10,272,667		
AUG	12,170,000	11,997,000	10,204,000	11,457,000		
SEP	10,531,000	9,618,000	9,814,000	9,987,667		
OCT	11,358,000	11,711,000	10,135,000	11,068,000		
NOV	11,163,000	10,161,000	9,038,000	10,120,667		
DEC	10,326,000	8,831,000	8,958,000	9,371,667		

CHICKENS, SLAUGHTER, FI - SLAUGHTERED, MEASURED IN HEAD

Month	2017	2018	2019	3 Yr Avg	2020	% of Avg.
JAN	760,368,000	782,455,000	798,458,000	780,427,000	830,281,000	106.4%
FEB	690,221,000	703,202,000	706,552,000	699,991,667	726,073,000	103.7%
MAR	783,661,000	753,248,000	740,331,000	759,080,000	818,309,000	107.8%
APR	700,938,000	741,597,000	768,091,000	736,875,333		
MAY	794,438,000	805,212,000	813,274,000	804,308,000		
JUN	775,332,000	756,015,000	749,607,000	760,318,000		
JUL	736,363,000	786,195,000	823,511,000	782,023,000		
AUG	821,855,000	834,864,000	815,546,000	824,088,333		
SEP	738,887,000	728,624,000	776,646,000	748,052,333		
OCT	794,358,000	831,667,000	859,145,000	828,390,000		
NOV	739,470,000	739,229,000	721,361,000	733,353,333		
DEC	714,811,000	698,602,000	766,727,000	726,713,333		

CHICKENS, YOUNG, SLAUGHTER, FI - SLAUGHTERED, MEASURED IN HEAD

Month	2017	2018	2019	3 Yr Avg	2020	% of Avg.
JAN	749,288,000	772,267,000	788,098,000	769,884,333	820,185,000	106.5%
FEB	679,684,000	693,788,000	697,844,000	690,438,667	716,853,000	103.8%
MAR	771,634,000	742,817,000	730,928,000	748,459,667	807,931,000	107.9%
APR	690,347,000	731,074,000	758,442,000	726,621,000		
MAY	782,516,000	794,062,000	803,160,000	793,246,000		
JUN	763,011,000	744,790,000	740,052,000	749,284,333		
JUL	725,770,000	775,038,000	814,443,000	771,750,333		
AUG	809,685,000	822,867,000	805,342,000	812,631,333		
SEP	728,356,000	719,006,000	766,832,000	738,064,667		
OCT	783,000,000	819,956,000	849,010,000	817,322,000		
NOV	728,307,000	729,068,000	712,323,000	723,232,667		
DEC	704,485,000	689,771,000	757,769,000	717,341,667		