

# Impact on carcass iodine value due to holding pigs discussed

**T**HE COVID-19 pandemic has created several new and unprecedented challenges for the livestock industry. One of those challenges has been the lack of ability to harvest market animals at rates that match the output of the swine production system.

For the first third of May, U.S. pork packers were operating at approximately 60-65% of capacity, which varied by geographical area. Those shortfalls, which began in mid-April, have caused producers to implement changes in their production systems to delay marketing time frames.

Several production- and nutrition-related changes can be implemented to achieve the goal of delaying marketing. It should be noted that all of these interventions increase the cost of production, so while they may be optimal for a period of time, returning pig flow back to normal will be important once the packers return to operating at full capacity.

During this time, it is important to maintain pork quality for high-value markets both domestically and internationally. Pork quality comprises multiple factors, one of which is fat quality.

A common measurement for fat quality is iodine value (IV). Carcass IV is a value reflecting whether the fatty acids within the carcass are more saturated or unsaturated. Saturated fatty acids are more desirable and are represented by lower carcass IV levels.

A multitude of factors can influence carcass IV. The Table provides a meta-analysis of the independent correlations between carcass IV and those factors (Bergstrom et al., 2010). Dietary factors such as iodine value product (IVP) are positively correlated with carcass IV. Growth rate and final bodyweight are negatively correlated with carcass IV, which would suggest that as pigs grow faster or end at a heavier weight, they will have a lower and more desirable carcass IV than their slower-growing or lighter-weight counterparts.

It may be important for certain producers to consider how some of these “slowdown” interventions affect carcass IV during both the limited marketing period and the follow-up period in which they are normalizing pig flow due to altered placement to add extra days for pigs in late finishing. The goal here is to highlight those potential interventions

## Bottom Line

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and discuss what magnitude of change they may have on carcass IV.

During the limited marketing window, some producers may elect to minimize interventions and simply market pigs at a heavier weight, depending on their packer agreements.

Independent of any other changes, as market weight increases, carcass IV will improve, particularly if the last dietary ration does not contain added fat. During late finishing, pigs are depositing a large amount of fat daily, and most of that comes from *de novo* synthesis (fatty acids manufactured by the animal), which tends to be more saturated and monosaturated fat compared to depositing fat from dietary sources that contain higher levels of polysaturated fatty acids.

There are no published studies that clearly define the magnitude of change in IV, but it would be expected that IV might be lowered in the range of a half to three points, depending on the increase in market weight.

As the Table suggests, the dietary fatty acid profile can have the greatest impact on carcass IV of any particular trait.

Many systems are feeding lower-energy diets this year by adding less dietary fat in the finishing diet programs. Feeding diets with lower dietary fat will improve carcass IV, where the magnitude is dependent on the change in inclusion levels and fat source (corn oil, choice white grease, tallow, etc.). Multiple data sets have been published on this topic, and a producer’s nutrition team should be able to characterize the magnitude of the impact on carcass IV based on the producer’s unique conditions.

Some systems are marketing an entire

barn at once instead of at multiple time points. This allows a producer to slow growth rates and utilize space within the system more effectively for placement of new pigs into a barn.

Researchers at Purdue University demonstrated that, at thermo-neutral temperatures, going from 10 sq. ft. to 7 sq. ft. per pig for the last 35 days of finishing had no impact on carcass IV; however, in a heated environment (90°F), going from 10 sq. ft. to 7 sq. ft. per pig increased carcass IV by approximately four points (White et al., 2008). Therefore, depending on the producer’s individual constraints, it is reasonable to expect that changing marketing schedules and space allocation could result in a range from no change in carcass IV to a four-point increase in carcass IV.

Another option some producers have deployed to decrease growth rate is adding calcium chloride to late-finishing diets to inhibit feed intake. If a producer were to utilize calcium chloride to extend the target marketing window by 14 days, finishing average daily gain (ADG) closeouts would be expected to drop by approximately 0.20.

There are no published studies that indicate the magnitude of the effect on carcass IV, but prediction equations (Bergstrom et al., 2010) that utilize ADG as a predictor for carcass IV suggest an increase of 1.0-2.5 points in carcass IV.

Multiple other factors can be implemented in late finishing to reduce feed intake or reduce growth rate, such as reducing feeder space or reducing the amino acid density of the diet. With no published data examining the impact of those factors on carcass IV, the prediction equations suggest that each day that is added to the finishing cycle to reach the target market weight increases carcass IV by approximately 0.15.

Up until this point, the focus has been solely on the impact in the short term and the impact of interventions on slow-

### Meta-analysis correlation coefficients for variables with backfat iodine value (95 observations)

Independent variable	Correlation coefficients	Significant level, P <
Diet IVP	0.765	0.0001
Diet C18:2*, %	0.689	0.0001
ADG, kg	-0.242	0.02
Final bodyweight, kg	-0.318	0.01
Backfat depth, mm	-0.245	0.02

\*C18:2 is linoleic acid.

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ing down pigs' carcass IV. However, at some point, packers will return to normal capacity, and producers may need to reduce animal density within their system to return to their normal pig flow. This could include interventions such as increasing dietary fat levels to drive growth rate or marketing pigs at lighter weights to turn barns faster. Both of these interventions, as discussed earlier, would result in higher carcass IV.

### **The Bottom Line**

Carcass IV can be influenced by both

dietary and performance factors, and while data are available on the dietary factors, little to no information is available directly on the other interventions.

For producers who have an IV constraint, the likelihood that they are exceeding their IV constraint without the use of dried distillers grains plus solubles or high levels of dietary fat may be low, but these interventions will have an impact on carcass IV.

As packers begin to reach capacity again and producers look to push pigs ahead to normalize their pig flow, carcass IV will likely become a more important consideration.

### **References**

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