

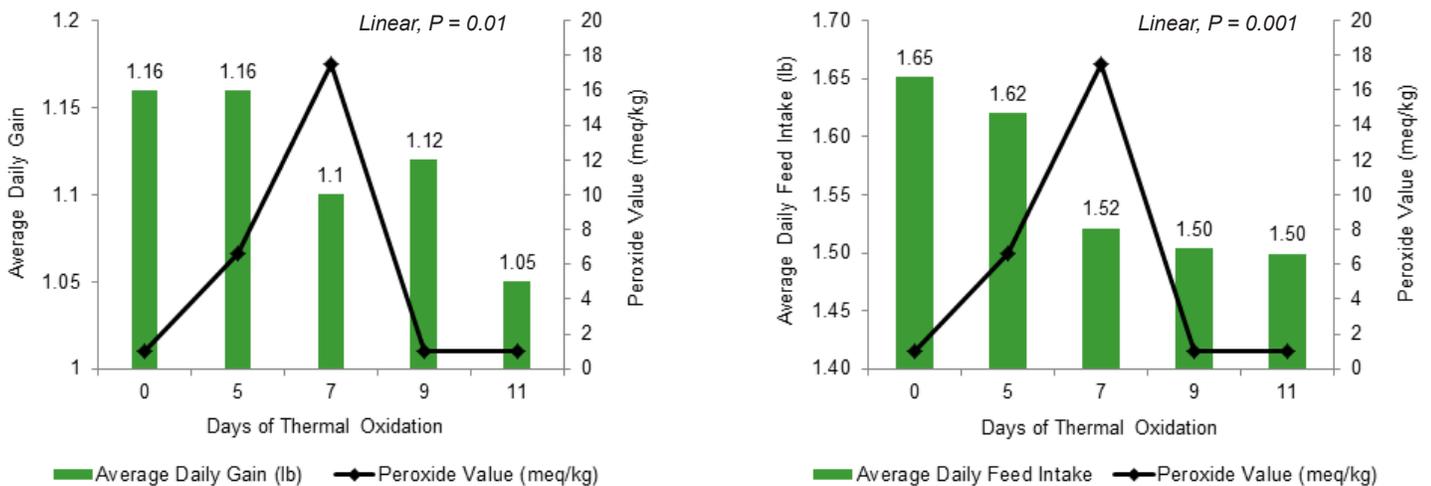


## How Can Oxidation Effect Growth in Pigs

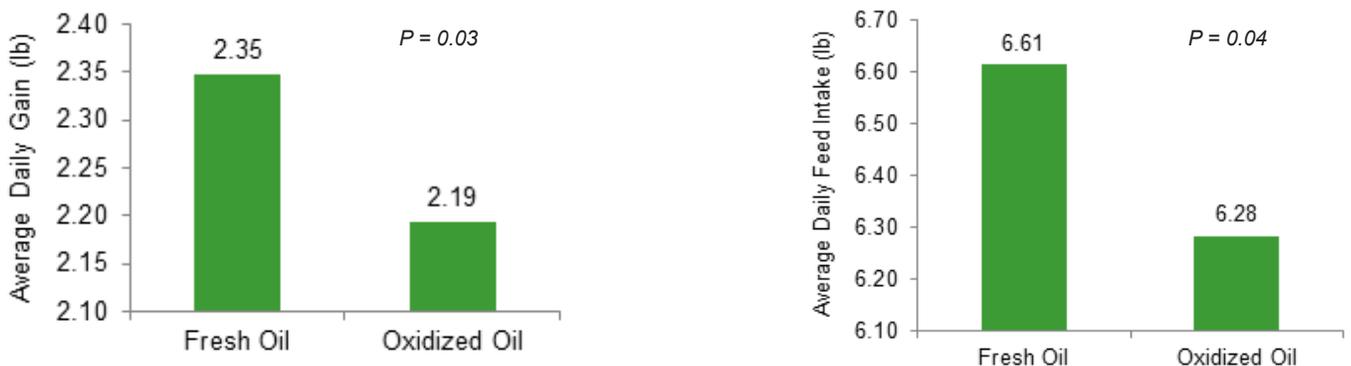
Lipid oxidation can be a main factor in the reduction of feed and fat quality. Lipid oxidation is defined as the irreversible destruction of unsaturated fatty acids in the presence of oxygen. The oxidation process is initiated when fat is exposed to oxygen, metal ions, heat, enzymes, and light. As oxidation progresses, primary and secondary products of oxidation are created. This process can create off-flavors, reduce energy content of feed, and damage vitamins and proteins.

Feeding diets containing oxidized fats and oils has shown to reduce the growth performance of pigs.

**Figure 1 and 2. Effect of feeding diets containing 6% choice white grease oxidized at various levels on the growth performance of weanling pigs initial body weight of 15 pounds (0-35 d).<sup>1</sup>**



**Figure 3 and 4. Effect of feeding diets containing 5% corn oil either fresh (Peroxide Value = 1.0 meq/kg) or oxidized oil (Peroxide Value = 7.5 meq/kg) on the growth performance of finishing barrows initial body weight of 177 pounds (0-56 d).<sup>2</sup>**



\* Main effects of oxidation level in a factorial arrangement that included 2 levels of antioxidants (0 vs 250 ppm).

In both trials, feeding diets containing oxidized fats and oils significantly reduced average daily gain and average daily feed intake of pigs. To prevent reduction in growth performance associated with lipid oxidation, an antioxidant system needs to be introduced in the diet.

# Control Oxidation with a Kemin Antioxidant System

To prevent the negative effects of productivity associated with lipid oxidation, an antioxidant system should be used. An antioxidant system should contain a combination of the following:

- Synergistic blend of antioxidants to absorb free radicals before they destroy fatty acids.
- Metal chelators to bind metal ions, which may form free radicals.
- Oil-based carriers to better assimilate with fat molecules.

## RENDOX®

When treating ingredients, identifying the correct antioxidant for your application can be the difference between success and failure. The RENDOX line of liquid antioxidants is formulated specifically for treating commonly used rendered fats and oils.

### Benefits

- Maintains optimal nutritional value and palatability of the ingredient.
- Low ethoxyquin inclusion and ethoxyquin free products.
- Complete system containing antioxidants and chelators in an oil carrier.

### Packaging and Conditioning

20-25 kg drum, 180-200 kg barrel, and 900-1000 kg IBC. Store in a cool, dark place and keep container closed when not in use.

## ENDOX®

Stabilizing feed and premixes is important for maintaining energy and nutritive value. By adding an antioxidant system such as ENDOX dry, you can lower the oxidative stress provided to the animal through the feed.

### Benefits

- Maintain optimal nutritional value and palatability of feed or premix.
- Complete system containing antioxidants and chelators.
- Unique production process coats each particle with antioxidants.

### Packaging and Conditioning

50 lb. multi-layer bag. Store in a cool, dry place and keep container closed when not in use.

#### References:

<sup>1</sup>DeRouchev, J.M., Hancock, J.D., Hines, R.H., Maloney, C.A., Lee, D.J., Cao, H., Dean, D.W., and Park, J.S. 2004. Effects of rancidity and free fatty acids in choice white grease on growth performance and nutrient digestibility in weanling pigs. *J. Anim. Sci.* 82:2937-2944.

<sup>2</sup>Boler, D.D., Fernandez-Duenas, D.M., Kutzler, L.W., Zhao, J., Harrell, R.J., Campion, D.R., McKeith, F.K., Killefer, J., and Dilger, A.C. 2012. Effects of oxidized corn oil and a synthetic antioxidant blend on performance, oxidative status of tissues, and fresh meat quality in finishing barrows. *J. Anim. Sci.* 90:5159-5169.

