Evaluating a Seaweed Blend for Growing Pigs

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Introduction

The purpose of this project was to compare growth and performance in growing pigs between diets currently used by many Niman Ranch producers and the same diets supplemented with a commercially available macroalgae blend. The examined product was a combination of dried Chlorophyta, Phaeophyta, and Rhodophyta algae, more commonly described as green, brown, and red seaweed. Previous work has suggested supplementing pig diets with seaweed may deliver several bioactive compounds that support pig performance, but it is unclear whether this product adds value to existing diets.

Material and Methods

Two feeding trials were conducted at the ISU Western Research Farm, Castana, Iowa, to test whether a macroalgae blend added value to existing diet formulations. In each trial weaned pigs were delivered to the farm and fed for four weeks. The SPRING group began March 21, 2019, and the FALL group began October 10, 2019. Each group was approximately 400 head of mixed barrows and gilts with a beginning weight of 20 lb. The pigs were placed in six pens equipped with automatic waterers and round self-feeders. Pens were randomly assigned to one of two dietary treatments. Dietary treatments were CONTROL—a complete corn-soybean meal diet commonly used by Niman Ranch Producers or TEST—the control diet supplemented with the dried seaweed product at a rate of 7,500 ppm. The same base mix was used for both diets and included dried whey, various yeast fermentation products, and phytase, but only the TEST diet contained dried seaweed. All feed was prepared at the farm with a portable grinder mixer. Feed usage was tracked by pen, and pigs were weighed every four weeks. Within each trial, growth and performance were compared for two time periods—for the first four weeks and for the entire growing period (wean-to-finish).

Results and Discussion

Supplementing 20–50 lb pigs with 7,500 ppm of a dried seaweed product did not improve growth rate or feed efficiency in either trial (Table 1). There was no difference in average daily gain, average daily feed intake, or gain:feed. There was a seasonal effect, with pigs starting in March growing faster and consuming more feed than pigs starting in October, but there was no diet-by-season interaction.

Supplementing pigs with 7,500 ppm of a dried seaweed product wean-to-finish did not improve growth rate or feed efficiency in either trial (Table 2). There was no difference in average daily gain, average daily feed intake, or gain:feed. There was a seasonal effect, with pigs starting in March growing faster and consuming more feed than pigs starting in October, but there was no diet-by-season interaction.

The lack of increased growth rate suggests supplementing with the dried seaweed product did not add detectable value in these trials. While supplementing pigs with bioactive compounds may support overall gut health and reduce negative consequences of stress in some situations, in these trials the pigs without supplementation performed as well as the pigs that had been supplemented. This suggests

existing diet formulations and handling protocol are sufficient, and while additional supplementation did not decrease performance, there was no detectable benefit of adding the examined product.

Table 1. Growth and performance of young pigs in bedded hoop barns.[1]

	CONTROL[2]	TEST[2]	P-value
Start wt, lb	20.32 ± 0.75	20.25 ± 0.64	0.853
End wt, lb	40.50 ± 3.29	47.90 ± 4.66	0.500
ADG, lb	1.03 ± 0.11	0.97 ± 0.16	0.515
ADFI, lb	2.99 ± 0.40	2.87 ± 0.31	0.560
G:F	0.35 ± 0.08	0.35 ± 0.09	0.924
Mortality, %	4.90 ± 1.45	5.40 ± 2.81	0.707
	SPRING[3]	FALL[3]	P-value
Start wt, lb	20.90 ± 0.15	19.67 ± 0.05	< 0.001
End wt, lb	52.13 ± 1.27	45.32 ± 2.18	< 0.001
ADG, lb	1.12 ± 0.04	0.89 ±0.08	< 0.001
ADFI, lb	2.63 ± 0.17	3.24 ± 0.13	<0.001
G:F	0.43 ± 0.03	0.27 ± 0.14	<0.001
Mortality, %	4.63 ± 2.50	5.67 ± 1.81	0.431

[1]Means ± standard deviation.
[2]CONTROL = 0% supplementation; TEST = 7,500 ppm dried macroalgae blend.
[3]FALL = October 10-Nov 8, 2019 29 d; SPRING = March 21-April 18, 2019 28 d.

Table 2. Growth and performance of wean-to-finish pigs in bedded hoop barns.[1]

	CONTROL[2]	TEST[2]	P-value
Start wt, lb	20.32 ± 0.73	20.25 ± 0.64	0.869
End wt, lb	235.93 ± 26.50	238.60 ± 30.18	0.874
ADG, lb	1.82 ± 0.04	1.85 ± 0.06	0.454
ADFI, lb	5.34 ± 0.59	5.27 ± 0.64	0.845
G:F	0.34 ± 0.33	0.35 ± 0.03	0.656
	SPRING[3]	FALL[3]	P-value
Start wt, lb	20.90 ± 0.15	19.67 ± 0.05	< 0.001
End wt, lb	211.57 ± 3.56	262.97 ± 4.40	< 0.001
ADG, lb	1.80 ± 0.03	1.87 ± 0.04	0.005
ADFI, lb	4.76 ± 0.11	5.86 ± 0.17	<0.001
G:F	0.38 ± 0.01	0.32 ± 0.01	<0.001

[1]Means ± standard deviation.
[2]CONTROL = 0% supplementation; TEST = 7,500 ppm dried macroalgae blend.
[3]FALL = October 10, 2019-Feb 17, 2020 130 d; SPRING = March 21-July 5, 2019 106 d.