OSU Extension

Beef Industry Tour 2013: Fats in the Cattle Diet

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This entire presentation can be viewed on the OSU Beef Cattle Sciences website at: beefcattle.ans.oregonstate.edu/BeefTour2013.htm

Session Two: Feeding Fat for Optimal Health, Production, and Reproduction in Cattle

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Reinaldo started out by explaining what fats are. Fats are: organic compounds with twice the energy content of carbohydrates. Fats can be present in different forms such as triglycerides and cholesterol. Vitamins such as A, D, E, and K are soluble in fat. Triglycerides are the main fat component of vegetable and animal fat and they can be utilized in cattle nutrition. They are composed of fatty acids and glycerol. Fatty acids, in turn, can be saturated, monounsaturated, and polyunsaturated. Omega 9 is a monounsaturated fat and Omega 3 and Omega 6 are polyunsaturated fats. Omega 3 and Omega 6 are both known as essential fatty acids. They are not produced by the body like Omega 9 is. Yet, they are very important in physiological processes. Sources of Omega 3 include linseed and camelina as well as green forages. Sources of Omega 6 include cottonseed, corn, soybean, and safflower.

Fats in the ruminant diet are still being understood. It is well known that fats are a concentrated source of energy. They are also known to adjust body functions and positively influence reproduction and carcass quality. However, in order to successfully integrate fats into the ruminant diet, we have to consider the source so that the animal processes it adequately and we do not disrupt the normal function of the rumen. For example, fats need to be at less than 3% of the total forage dry matter in a cattle diet in order to maximize the efficiency of the diet and less than 4% of the forage matter to prevent ruminal disturbances. Reinaldo gave the following example: For a 1200 lb. cow eating 30 lbs. of low quality hay per day, you would supplement with 5 lbs. of camelina meal (18% fat) to maximize diet efficiency. In napkin math, that is: 30 lbs. * 0.03 = 0.9 lbs, but the camelina meal is only 18% fat, so 0.9 / 0.18 = 5 total lbs. of camelina meal.

Increasing Grazing Cattle Performance: A research study in 2010 (Scholljegerdes and Kronberg) supplemented summer grazing cattle with flaxseed (Omega 3) at 3.2% of their diet dry matter. While the supplemented cattle decreased their forage consumption, their average daily gain at 2 lbs./day was twice the level of the unsupplemented cattle at 1 lb./day.

Fats as a Modulator: modulation involves change that brings a body into balance. Reinaldo discussed fats as a modulator in cattle performance. Essential fatty acids contain prostaglandins which can positively affect the immune system as well as maintain pregnancy. For weaned calves that are being preconditioned, adding fats to the diet can potentially assist them maintain a healthy immune system as they deal with stress. A recent study in 2012 (Cappellozza et al.) fed 1) one set of weaned calves a forage based diet supplemented with corn and soybean meal (Omega 6) and 2) another set of calves a forage based diet supplemented with corn and camelina meal (Omega 6 and Omega 3) for thirty days. The #2 set performed better in terms of feed efficiency with a reduced cost and less stress response which was measured by plasma levels. This type of supplemented diet needs to be fed at least 14 days prior to shipping for the polyunsaturated fats to be incorporated into the animal.

In cow calf systems, maintaining pregnancy is obviously of utmost importance to the cattleman. A study on grazing cows (Lopes et al., 2009 and 2011), demonstrated how fats can be used in the breeding season. 1) One set of grazing cows was unsupplemented and 2) the other set was supplemented with a polyunsaturated fat (100 g. Ca. salt of soybean oil). Both were started on supplementation, 21 days after being artificially inseminated with the goal of maintaining the pregnancy. The supplemented cows had an average of 10% better pregnancy rates than the unsupplemented. When supplementing natural service cows, it is important to offer a fat supplemented diet prior to the breeding season in order for the polyunsaturated fats to be incorporated into the body.

Reinaldo concluded by repeating that fats can be a useful addition in cattle diets but care must be taken to incorporate them wisely, especially in grazing cattle. They should be incorporated slowly so that the rumen adapts, and the animal body can incorporate them effectively.

For more information, please contact your local Extension office or visit:

beefcattle.ans.oregonstate.edu/BeefTour2013.htm

Get More Whole Grains with Oats

Try these creative ways to eat them!

- Add a handful or two of raw oats to your favorite muffin, pancake or smoothie recipe.
- Make Apple Spice Baked Oatmeal. Recipe on back.
- Use oats in FoodHero.org's Skillet Granola or Breakfast No-Bake Granola Bar recipes.

Try adding these toppings to warm oatmeal:

Fresh fruit: sliced bananas or chopped apples
Dry fruit: raisins, cranberries or chopped apricots
Frozen fruit: blueberries or raspberries
Canned fruit: peaches or applesauce
Fresh vegetables: shredded carrots
Canned vegetables: pumpkin
Nuts: chopped peanuts or walnuts
Spices: cinnamon or pumpkin pie spice

Tips for Saving Money

√ Stock up on oats from the bulk section.
√ Store oats in a tightly covered container, such as a clean glass jar or plastic food storage container.

Kids Can...

- add toppings to warm oatmeal.
- put raw oats in their favorite smoothie.
- mix ingredients for Apple Spice Baked Oatmeal.

Time-Saving Oatmeal Recipes

- Cold oatmeal. For one serving, mix ½ cup rolled oats and 1 cup yogurt or milk in a bowl. Refrigerate overnight. In the morning, add fruit and a little yogurt or milk. Stir and enjoy!
- Hot oatmeal. For one serving, mix ½ cup rolled oats and 1 cup water or milk in a microwave safe bowl. Microwave on high for 1-3 minutes. Pause and stir once or twice to prevent hot oatmeal from spilling over the edge of the bowl.

Apple Spice Baked Oatmeal

Ingredients
1 **egg**, beaten
1/2 cup **applesauce**
1 1/2 cups **non-fat** or **1% milk**
1 teaspoon **vanilla**
2 tablespoons **oil**
1 **apple**, chopped (about 1 1/2 cups)
2 cups **rolled oats**
1 teaspoon **baking powder**
1/4 teaspoon **salt**
1 teaspoon **cinnamon**
TOPPING
2 tablespoons **brown sugar**
2 tablespoons **chopped nuts**

Directions
1. Preheat oven to 375 degrees. Lightly oil or spray an 8" x 8" baking pan.
2. Combine the egg, applesauce, milk, vanilla and oil in a bowl. Add the apple.
3. In a separate bowl, mix the rolled oats, baking powder, salt and cinnamon. Add to the liquid ingredients and mix well.
4. Pour mixture into baking dish, and bake for 25 minutes.
5. Remove from oven and sprinkle with brown sugar and nuts.
6. Return to oven and broil for 3 to 4 minutes until top is browned and the sugar bubbles.
7. Serve warm. Refrigerate leftovers within 2 hours.

Note: Substitute other fruit for the apple. Try bananas, pears, blueberries or a mixture.

Nutrition Facts
Serving Size 2.5 inches x 2.5 inches (108g)
Servings Per Container 9
Amount Per Serving
Calories 160 Calories from Fat 50
% Daily Value*
Total Fat 6g 9%
Saturated Fat 0.5g 3%
Trans Fat 0g
Cholesterol 20mg 7%
Sodium 150mg 6%
Total Carbohydrate 22g 7%
Dietary Fiber 3g 12%
Sugars 5g
Protein 6g
Vitamin A 2% • Vitamin C 2%
Calcium 10% • Iron 6%
* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:
Fat 9 • Carbohydrate 4 • Protein 4

Monthly Hero Checklist

☐ Freeze a cooked food to be used later.
☐ Have kids help freeze foods using the Basic