Final Project:

Introducing Local Grass-Fed Beef to Williams College Dining Halls

Introduction

Why bother putting grass-fed beef in dining halls? It’s more than twice as expensive, and a small change to our eating habits isn’t quite so camera friendly as brand new solar panels and wind turbines. It’s true, if we’re concerned with greening our college campus, food seems like a strange place to start. But is it really? Not if we analyze it in terms of our goals. We want to:

- Reduce our energy consumption and carbon footprint
- Reduce the amount of pollution that we produce, directly or indirectly
- Reduce our consumption of other non-renewable resources, like water
- Instill good habits in students that will be carried forward into their lives

It may be surprising, but switching to local grass-fed beef in our dining halls could effectively do all of these things. In addition, it would contribute to the health of the students. Grass-fed beef contains only 80% less saturated fat than grain-fed beef, as well as more vitamins and Omega-3 fatty acids. Although student health is not among the goals associated with greening our campus, it is an issue that is very important to the
functioning of the college. The improvement in the nutrition of dining hall meals should be a further incentive to prioritize the introduction of grass-fed beef to our campus.

Reducing our school’s carbon footprint would be one incentive to implement the switch from grain-fed to grass-fed beef. On average, one grain-fed steer requires 208 gallons of crude oil to be raised to slaughter, whereas one grass-fed steer of the same weight requires only 74 gallons (Lee, J., 2005). This only accounts for energy consumption leading up to slaughter, such as the operation of the machinery to harvest the corn, the production of feed, the production of fertilizers (a very energetically intense process), and the transportation of all of this feed and fertilizer.

For grass-fed steers, this figure accounts for the energy used by the equipment to harvest and transport hay to cattle for the winter. Neither of these averages account for the additional energy burned in the distribution of conventional grain-fed beef from slaughter to dining hall. This additional number (let’s call it the distribution number), varies depending on the various distributors we buy our beef from, but is always greater than the energy that would be used to transport beef from a local slaughterhouse to Williams.

In addition to reducing our carbon footprint, grass-fed beef would also reduce the amount of chemical pollution that Williams indirectly contributes to the environment. Grain fed beef requires a great deal of fertilizer to grow the corn and other crops that go into feeds. Inevitably, these fertilizers run off into our rivers and streams, eventually ending up in large lakes and even bays, contributing to the over-nitrification of these bodies of water.
Excess nitrogen causes blooms of algae species whose populations previously had been nutrient-limited. These blooms consume excess oxygen in the water column, leading to anoxia and thus an unproductive ecosystem. A great deal less fertilizer, sometimes none at all, is used to grow grass. Switching to grass-fed beef would therefore not only lessen our impact on our atmosphere, but also our estuaries.

Although we live in an area where water is not scarce, we contribute to global water consumption in ways that are less direct than our own consumption. The water consumed in raising one pound of grain-feed beef to slaughter is 2,500 gallons, compared to the mere 18-30 gallons required to raise a pound of grass-fed beef (Lee, J., 2005). This is partly due to the fact that grain-fed cattle drink more water, but most of this extra water goes to irrigating the fields that grow the grain that is in the feed.

All of these reductions may not make a significant difference in the context of global or even national environmental impacts, but they have the potential to do much more. As a school, Williams is one of the best places to effect change. Our campus’ environmental footprint is nothing compared to the size of the combined footprints that Williams graduates will have an opportunity to change in their lifetimes.

Whether it is as homeowners, professionals with decision-making capacities for large companies, or even politicians, Williams alumni can go on to significantly shrink the environmental impact of our country. It is therefore worth both the money and effort to educate Williams students about one of the most basic but misunderstood concepts – the impact of their own food consumption.

Although Williams is not as cash-strapped as many of its peer institutions, we should aim to make the grass-fed beef project not only environmentally but also
economically sustainable. It is one thing to implement a green-but-expensive program, but it is quite another to be a role-model institution known for finding ways to reduce the cost of environmentally responsible dining.

Is this even possible? It will definitely be difficult. Even when purchased in bulk, grass-fed beef usually costs more than $5 per pound. Williams dining services currently spends an average of $1.65 per pound on ground beef. At the volume at which we purchase, keeping the cost within proportion is a daunting task. In addition to researching the benefits of switching to grass-fed beef, the goal of my project was to determine a way to make the switch to grass-fed beef financially feasible.

Setting

If Williams began to serve grass-fed beef in it’s dining halls, it wouldn’t be enormously difficult to make it local. Luckily, Williams is surrounded by a number of dairy and beef farms, making it an ideal school to pioneer such a project. Westminster meats, a local slaughterhouse and meat processing facility, is only 68 miles from Williamstown.
Westminster Meats has very high standards of cleanliness and safety. These standards were approved by Williams head chef Mark Thompson on a recent visit. Westminster meats is a small business, so we would be one of their primary clients. Mark Thompson maintains that being a significant client gives us flexibility and negotiation clout, and small facilities are best, as they find it easier to maintain quality and cleanliness. Rather than using ammonia to kill pathogenic E. coli, Westminster meats has a Thermal Intervention Unit, which is equally effective.
Where would we get the beef for Westminster Meats to slaughter and process?

An important component of this project is the fact that the grass-fed beef would be local. Westminster Meats can be hired not only to slaughter and process beef, but also to take care of the purchase and transport of steers from local farms. They would also take care of delivering beef to Williams dining halls. If Williams hired Westminster meats, we could eat better beef while helping out local farms and businesses in the process.

Results

There are a number of different approaches to making the switch to local grass-fed beef financially feasible. A combination of many different cost-cutting techniques seems to be the most economical. Rather than making a sudden transition to buying only grass-fed beef for the dining halls, it may make more sense to try a pilot program in
which only ground beef purchases are grass-fed. This way, if the program turns out to be uneconomical for unforeseen reasons (which always crop up), the college will not have lost a great deal of money. Starting small gives the program an opportunity to be improved wherever need be before it expands. There are also many financial advantages specific to using ground beef as the guinea pig in this situation.

Why ground beef? First, it’s simple. The college uses a significant amount of ground beef each year, and it is purchased in bulk. In 2009 Williams purchased 10,500 lbs of beef, the majority of which was purchased in three large orders (Thompson, M.). When we purchase ground beef, we don’t have to worry about multiple price points on different quality cuts of beef. Simplifying the logistics will make this project much easier for dining services, and much more likely to make it past the first stage.

Another advantage to starting this program with ground beef is that it would allow us to buy dairy beef at a reduced price. There are many grass-fed dairies around Williamstown, and since most of these dairies don’t use sexed sperm to inseminate their breeder cows, there is an annual supply of dairy steers that the dairies either slaughter themselves, or sell on-the-hoof. Since dairy cattle are bred to produce a great deal of milk, and not to produce a good quality carcass, dairy steers sell for a lower price per pound than beef steers.
Fig. 2 – Each letter and red dot in the figure above are dairy farms within 20 miles of Westminster meats.

Buying dairy beef is a good way to cut our costs, but dairy beef can be tougher than conventional beef, simply because it is not bread for eating. Often the carcass is not very marbled, meaning that the fat is not incorporated into the muscle, but instead forms a layer close to the skin. However, if we have Westminster Meats grind our dairy beef, we can get around both of these problems, because ground beef is not so tough, and the process of grinding distributes the fat throughout the meat. If we replace our ground beef with ground grass-fed dairy beef we may be able to lower the overall cost of this program.

Another way to reduce the cost of the pilot program is to buy our steers on-the-hoof. Right now, Williams buys packaged meat from distributors, but if we buy steers while they are still alive (when they’re at slaughter weight), we can prevent the loss of money that comes with a middleman. During the pilot stage of this program, we may even be able to make back a little bit of money by selling off the nice cuts of beef.
Since Williams would initially only be switching to grass-fed ground beef, and it is not economical to grind the higher quality cuts of meat, we could buy more pounds of meat on-the-hoof than we plan to consume. Once the meat is processed, we could sell the excess, good quality cuts at a high price, because in small quantities, grass-fed beef can sell for more than $5 per pound.

Westminster Meats estimates that at the volume that we require beef, they can sell it to us at about $3.50 per pound (Thompson, M.). This is contingent upon Williams providing the capital to buy steers on-the-hoof, but it includes all of the transportation, slaughter, and processing services that they will provide us. This may seem expensive, but considering the cost of grass-fed beef elsewhere, it is actually a pretty good price. If we can implement some of the other strategies, such as buying dairy steers, or selling back quality cuts of beef, we could perhaps cut the cost even more.

Discussion

This pilot program, although reasonably economical, would still require some additional investment of funds by the college. The rise in cost from $1.65 to $3.50 per pound for ground beef, when applied to the annual 10,500 pounds that Williams consumes, would come to almost $20,000 in additional expenses. Is this change worth $20,000 per year? It is a lot of money, but to put it into proportion, $20,000 dollars is less than half of the customary budget of Spring Fling, a large concert and party held annually at Williams.

We must not forget that the improved quality of meat for a year is not the only thing that this $20,000 will buy. The water consumption due to our grain-fed beef eating
habits is enormous. We could cut our water consumption by more than 26 million gallons per year (based on the fact that we consume 10,500 pounds of ground beef annually, Thompson, M.) with the grass-fed ground beef pilot program. That is a great deal of water, considering that ground beef is only a fraction (less than half) of our beef intake at Williams (Thompson, M.).

In addition, the 10,500 pounds of ground beef that Williams consumes each year (Thompson, M.) is equivalent to the edible meat on about 21 steers. By supporting these grass-fed beef and dairy farmers, Williams would be contributing to 21 steers that do not consume 208 gallons of crude oil, but only 74, during their lifetimes. This would result in us reducing our carbon footprint by more than 400 tons of carbon dioxide per year, just by switching our ground beef to grass-fed.

This isn’t enough to justify funding this program solely as a method of emissions cutback (carbon offsets cost $50/ton), but considering the fact that carbon offsets are only one of many advantages that this switch would offer, I think that it is still worth the additional funding. Also, in later years, as purchase volume increases, and the business kinks are worked out, the net price per pound that we pay for our grass-fed beef may fall. We’ll never know until we try. $20,000 is a small investment to make for an opportunity to serve clean, local, healthily raised beef to all Williams students for a whole year. It would cost less than 10$ per student.

Will we ever be able to get grass-fed beef for $1.65 per pound? Even if we buy dairy beef on-the-hoof and sell quality cuts for a mark-up, probably not. It is unnatural for meat to cost less than vegetables. Much more land, water, and resources go into raising meat than growing vegetables. Perhaps meat shouldn’t be available for $1.65 per
pound at all. But if we are to be economically minded, this means we’d have to eat less meat.

Is eating less meat a possibility at Williams? Perhaps. If the amount of meat were suddenly and drastically reduced in the dining halls, I suspect it would meet with a great deal of student discontent. However, if the amount of meat served in Williams meals were gradually reduced, and the college made sure to educate Williams students about the environmental impact of eating meat, maybe the students would be more receptive. I am not suggesting that we stop eating meat entirely. But perhaps if we reduce the amount of meat that we consume, and implement buying programs that support responsible, healthy, sustainable farming, Williams will be able to make a difference.
Acknowledgements and References

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