

4-1-2011

Future Meat Production Abstract

David Skorusa
College of DuPage

Follow this and additional works at: <http://dc.cod.edu/essai>

Recommended Citation

Skorusa, David (2011) "Future Meat Production Abstract," *ESSAI*: Vol. 9, Article 37.
Available at: <http://dc.cod.edu/essai/vol9/iss1/37>

This Selection is brought to you for free and open access by the College Publications at DigitalCommons@C.O.D.. It has been accepted for inclusion in *ESSAI* by an authorized administrator of DigitalCommons@C.O.D.. For more information, please contact koteles@cod.edu.

Future Meat Production Abstract

by David Skorusa

(Biology 1110)

This paper will discuss a current major form of meat production which is concentrated animal feed operations, or better known as Concentrated animal farm operation (CAFO), I will examine potential effects on the environment, and argue that this method of meat production should be reevaluated. This paper will go into detail about the specific environmental impact that CAFOs have on the water sources near them whether they are above or below ground. The water sources become contaminated with many pollutants due to manure runoff and spills from lagoons that store liquid manure and other piles of manure that are stored in other locations on the CAFO. These pollutants range from a variety of chemicals, feed preservatives, growth hormones, and nutrients that are given to the animals on CAFOs. Since most of these pollutants are not fully absorbed most of them are being excreted as waste. This problem can have significant impacts on the ecosystem of the local water sources decreasing biodiversity and have effects on non-aquatic life, which uses the water as sources of drinking water including humans. These pollutants can cause serious health concerns not only because they add excess chemicals and nutrients to those who drink the contaminated water, but also because the manure runoff can also carry with it pathogens that can cause serious diseases. Possible solutions will also be discussed such as the potential of change to a vegetarian diet, increasing regulations, or switching to organic farming as the major source of meat production in order to better protect the environment and the health of those who depend on those contaminated water sources. A solution can be implemented through mainly educating the public as to why it is so vital to preserve our environment not only for us, the current generation, but also for future generations that deserve to be given an Earth in as good of a condition as we have been given. The current form of meat production is a major issue that needs to be addressed, looked into, and reevaluated.

In today's world a major form of meat productions comes from large scale industrial factories known as concentrated animal feeding operations (CAFO) or more commonly called factory farms which produce the large quantities of meat for most of the world's demand. The top three countries for consumption of beef and veal are (all data is in thousands of metric tons) the United States with 12,268, European Union with 8,317, and Brazil with 7,374. The top three countries for pork consumption are China with 48,732, European Union with 20,683, and United States with 8,995. As for broiler consumption the top three countries are United States with 71,065, China with 12,210, and European Union with 8,589(US Census Bureau). However, these factory farms produce meat in a way that is not only inhumane to the animals but also in a way that is very destructive and damaging to the environment. Looking back at how meat production was previously done before heavy machinery and technology was introduced will provide insights how the world's meat supply may produced so that the inhumane treatment of animals and damage to the environment can be avoided.

According to the Environmental Protection Agency (EPA) a CAFO is an agricultural operation where animals are kept and raised in confined situations (What Is a CAFO?). In these CAFOs the animals are raised in areas that are not much larger than their bodies in order to be able to maximize the amount of animals that the stable can hold and produce meat from (Mason). The animals are also not allowed to roam and graze naturally in fields instead their feed is brought to them in crammed feedlots which have no grass or other natural vegetation growing in them. Along with not being able to feed naturally on grass they are also regularly given antibiotics in order to

protect them from diseases that can quickly spread in the crowded and unsanitary living conditions. The animals are also given growth hormones to speed up growth so they can be processed earlier. The number of animals a CAFO can contain is very large. A medium size CAFO can have between 300-399 cattle, 750-2,499 hogs, and 37,500-124,999 chickens (Factory Farming). CAFOs are designed to be able to hold and raise the greatest number of animals possible in order to be able to produce the most meat possible. Because they process and raise very large numbers of animals in such small and confined areas CAFOs generate large quantities of pollution in the environment that surrounds them. These pollutants affect the air, water, and soil in their local areas which can spread to neighboring environments as well. In this paper I will be focusing on the water pollution caused by CAFOs.

The methods of raising animals for meat involved in CAFOs while being very efficient leads to large quantities of waste that needs to be dealt with. This waste is the manure and urine that is created by these large numbers of animals being held together and contained in small areas. CAFOs can produce 3,000 tons of manure in a week which needs to be dealt with (Mason). This manure and urine is not processed like human waste would be. Instead it is left unprocessed and falls down through slated holes in the floor to a sub level. Once in this sublevel it gets washed into waste lagoons, which is where it is stored. The manure can also be scraped from the feedlot floors and stored in piles on the factory farms for later use, such as fertilizer, or transported to another location (Environmental Protection Agency). These lagoons however do not always completely contain the manure from the animals. The manure sometimes spills out due to the vast amount of manure being produced and can leak out of the lagoons if they are not made properly or maintained properly. When the manure does get out of the lagoons it can make its way into local rivers, streams, and even underground water sources. This in turn is what causes the local water sources to become polluted. Water sources become contaminated with the antibiotics and growth hormones that are used on factory farms because these are contained within the manure (Environment). Along with the antibiotics and growth hormones the manure is also very rich in nutrients due to the diet that the animals are fed. The animals can only absorb about 20% of the nutrients meaning that the rest is excreted in the manure and when it gets into water sources increases the levels of nutrients, such as nitrogen, phosphorous, heavy metals, and feed preservatives, in the water (Mason).

These pollutants and contaminants in the water can seriously affect aquatic life and even human health. The added nutrients from the manure runoff from lagoons and manure piles can promote plant growth in the water, specifically algae growth. The manure acts as a fertilizer to the aquatic plant because it contains the nutrients that promote plant growth, such as nitrogen, causing algae to grow much more rapidly in the new nutrient rich water (Environmental Protection Agency, p. 39). The algae reduces the oxygen levels in the water because the algae consumes oxygen in order to produce energy for itself. Additionally, oxygen is used when the large piles of algae die and bacteria start to decay. The dead piles use up oxygen in the process and quickly deplete oxygen levels in the water sources. This causes anoxic conditions, low oxygen levels, in the water killing fish and other aquatic organisms (Mack). Such cases of manure spills killing aquatic life can be seen from incidents such as the New York's Black River spill in 2005 and the 1995 spill into North Carolina's New River Basin (Colleran, p. 1). In both of these incidents countless numbers of fish and aquatic life were killed. These cases, however, both involved instances where the lagoons broke or some other unusual event happened allowing very large quantities of manure to escape into the rivers, but they are simply much more accelerated, massive instances of what happens when the manure manages to get into rivers and other local water sources. As the pollutants continue to make their way into water sources it changes the natural ecosystem of the water killing the natural aquatic life, including both flora and fauna, which can and most likely will lead to extinction of species that can no longer survive in the changed aquatic ecosystem (Environmental Protection Agency, p. 39). The pollution of the water does not simply affect the aquatic life but also any other animal that drinks

from those water sources including humans. Along with the chemicals and nutrients the manure runoff pollutes the water with harmful pathogens. Due to animal living conditions at the CAFO these pathogens can easily thrive and spread from animal to animal, and some pathogens can also thrive in manure which is held and stored in vast quantities. As the manure leaks out and makes it into water sources it takes along with it pathogens that can cause diseases such as cryptosporidiosis, giardiasis, campylobacteriosis, and salmonellosis just to name a few. All of these diseases cause infection of the small intestine causing fever, vomiting, diarrhea, abdominal pains, and many other symptoms that can be potentially life threatening (Pub Med Health). These pathogens are not limited to above ground water sources but can also make it into underground sources. Once these pathogens make their way into the water animals and humans who get their drinking water from these sources can unknowingly ingest this polluted water causing outbreaks of these diseases killing humans and animals alike (Environmental Protection Agency, p. 43). Accordingly, the pollution of the water does not simply affect aquatic life but also the lives of humans.

Trying to find a solution for CAFOs is a very challenging task due to the fact that CAFOs are so efficient and currently the only viable means to produce the amount of meat that the world currently demands. However there are some solutions that can be looked at such taking up a vegetarian diet. This move toward a new diet would completely reduce the issue regarding water pollution caused by CAFOs. People would follow strictly vegetarian diets, the use of CAFOs would no longer be needed. Large quantities of manure stored in the lagoons or in piles that could possibly spill or runoff into water sources would not be necessary. A vegetarian diet would also be healthier because it does not contain as much saturated fats and cholesterol such as a diet based on meat (Freeman, p. 9). Unfortunately, this solution would be very difficult to implement due to the fact that trying to turn everyone into strict vegetarians is impossible. Too many people in the world would not turn completely away from having meat in their diet due to the fact that the culture that most people are raised in is based off of meat. One type of culture most Americans are raised on is a diet that comes from fast food chains, such as McDonalds or Burger King, that have become so popular not only in the U.S. but also other developed countries. The manure of these chains consists mostly in meat products, making people very accustomed to eating meat on a regular bases. A another issue would be that more stress would be put on the non meat producing sector of agriculture causing a need for much more land to be dedicated to farming plants a move which would have issues and consequences of its own. Turning to a vegetarian lifestyle is simply too extreme of a solution for the whole of the population in the United States.

Another possible solution would be to create stricter laws and regulations regarding CAFO operations. This could include limiting the amount of chemicals that the animals can be given so that their manure does not contain such high levels of nutrients and chemicals. Also stricter regulations on what is done with the manure such as going through some form of treatment similar to that of human waste so that it does not contain so many pathogens and unwanted chemicals and high levels of nutrients. Along with treatment of the manure could also come regular inspections of the lagoons and how CAFOs store their manure so that pollutants have less of a chance of making their way into above ground or underground water sources. However, this solution would most likely still not work due to the fact that it would not necessarily stop the leaking out of manure from lagoons completely. Stricter regulations would raise meat prices. The last possible solution would be switching to a form of meat production that is already currently in use and is even growing in popularity. This form of meat production is known as free range farming, known also as organic farming. In this form of farming the animals are allowed to roam and graze naturally as they would in the wild. They also have a completely naturally diet, such as grass fed, throughout their lives grazing in fields in the summer and feeding off dried grass from the same fields that was stored away for winter use (Robbins). Along with the natural grass fed diet these animals who graze freely are also not given any growth hormones, antibiotics, or other preservatives that would be found in their feed unless the

animal is sick and it is necessary to not have the animal suffer. Organically raised animals are also processed later in their lives such as cattle which is processed at 18 to 24 months instead of the traditional 12 to 14 months of conventional CAFOs (Organic it's worth it). Not any kind of high levels of chemicals, growth hormones, or added nutrients are found in the animals manure. Along with less chemicals found in the manure, stockpiles of manure in either lagoons or onsite areas are unnecessary. There is no high concentration of animals in small areas as in CAFOs. Instead, the numbers of animals are much lower due to the requirement of having to allow the animals to roam and graze naturally which allows for the manure to be naturally recycled into the ground most of the time greatly reducing possible manure runoff. The manure can also be composted and used as fertilizer for other areas rarely ever leaving huge stockpiles of it (Organic Foods). This solution is not without its problems. One issue is that organic farms cannot produce the current level of meat that the world demands, according to the consumption levels that were stated previously. This is due to the fact that most organic farms are small scale and labor intensive because the lack of use of antibiotics, growth hormones, and other chemicals means that farmers have to tend to the animals longer so that it reaches the desired weight. More land is required that the farmers have to manage along with the animals (Robbins). Along with the lower meat production levels organic meat is also more expensive. It is more expensive because it is more labor intensive once again going back to the fact that it requires more land to raise the animals and simply more work overall. Organic farming can even be seen as decreasing biodiversity with the large amounts of land that need to be used for organic farming. It would require more land to be turned into grassing fields once it the current amount of grazing fields where used to their limits meaning that other ecosystems could possibly be cut down in order to be converted. Positively, organic meat is seen as being of higher quality because it is free of all the chemicals and fulfills high USDA requirements and regulations in order to be certified as organic. The advantages humans get from organic farming and the decreased pollution and environmental impact still heavily outweigh the large amounts of pollution that is caused by CAFOs that is why this solution should be implemented to replace CAFOs.

In order to implement this solution it would have to be a gradual process because if implemented too quickly and forced onto people, organic farming, as the major form of meat production, would most likely fail. The first step would be getting the population, being those who regularly eat meat and even those who don't, to see exactly how important using organic farming as the major form of meat production is and understand all of the benefits it has over traditional CAFOs not only to the environment but also to the people who consume meat. It would have to be made very clear that meat would not be as readily available and cheap as before so that people are not outraged when the change would be put in place and then start to oppose the change. Also discussing how this change is needed not only for the current generation but also for future generations to come would be a necessary educational step to motivate people. The population would have to be educated on exactly why and how organic farming is a better and safer way to produce meat. Educating the population could be done through advertisement campaigns. Most important would be to make the information about both CAFOs and organic farming easily available to large groups of people so they can see for themselves the benefits and disadvantages of both. Once organic farming gains enough popularity regulations to try and change meat production to required to follow organic farming methods. People could start to petition so that new laws will be passed giving stricter regulations and breaking down and eliminating the practices of CAFO s and any other form of meat production that has serious environmental impacts and can have negative effects on human health. Once the laws and regulations are put in place simply slowly converting any CAFO into organic farms and building new organic farms could take place and this solution could be fully implemented.

The most challenging part of implementing this solution comes from convincing the population that eats meat so regularly to change to a form of meat production that would limit the availability of meat and also make it more expensive. In order to accomplish this a philosophical

question must be brought into this discussion because by introducing an ethical view the current population of meat consumers will see that these changes will not simply affect the availability and price of meat but will also affect their children's generation and generations to come. The importance of the decisions that past generations made for them, the current generation, and how it affected them can become clearer helping to make implement the solution of organic farms easier because they will be able to see that the decisions that are made now have large effects for the generations to come. With that said the question now is whether the welfare of future generations and the sustainability of the water that all life depends on is important enough to preserve and protect? To answer this question a quote from Edith Brown Weiss comes to mind which is, "Every generation needs to pass the Earth and our natural and cultural resources on in at least as good condition as we received them" (Weiss, p. 2). Weiss suggests three basic principles in order to achieve intergenerational equality. The first is the principle of options. By options it is meant to allow future generations to have a variety of natural resources to use to satisfy the needs and values that they will come to develop (Weiss, p.2). This must be done because it is simply impossible to know what the tastes, preferences, and needs of future generations will be (Partridge, p. 380). By using organic farming as the primary method of meat production the biodiversity of the water is protected keeping options available for future generations and giving them the same variety of nature that we have to benefit from. The next principle would be that of quality to insure that there is a balance of the environmental quality from generation to generation (Weiss, p.2). Is it not only fair to allow future generations to enjoy the same environmental quality, that we, the current generation of meat consumers, now get to enjoy? Who are we to deny them this basic right that we were able to enjoy from the generation that preceded us? Simply by promoting and supporting the methods of organic farming and having them implemented in meat production will help to preserve the quality of the water that all life forms depend on to survive. Organic farming as our method of meat production will reduce the pollution of the water sources that we use in our everyday lives and protect that principle of quality allowing not only current users to have good quality water but also future generations to come. The third and last of the three principles is that of access which means that there is no discrimination who is allowed access to Earth and all of its resources from generation to generation (Weiss, p.2). The Earth and the water that is on it was not put here for simply one group or race to use but for all groups and races to use. If we simply start to believe that we work hard for these resources so we can do with it what we want then we will quickly run out of them because they are un-renewable. Polluting the water and destroying the land to such a degree that they cannot be used again will diminish the supply and leave none for the generations to come. In today's world it would be seen as unethical and cruel to deny someone access who is thirsty and in dire need of water simply because one believes they do not deserve the water or that the water is for their use alone. Such an example can be seen from the threat of war over the Nile River. The upstream nations of Egypt and Sudan are keeping more and more of the water for themselves simply because they are upstream and have access to the water first causing the downstream nations such as Ethiopia and Kenya, to name two, to be denied of water and their people to go thirsty and crops to wither (Rotberg). These people are suffering simply because people believe that since they have first access to the water they can use as much of it as they please.

Yet surly denial of access is a very similar exploitation of resources as performed by the current generation of meat consumers. CAFOs polluting the water denies even current populations fair use of the water. For example through pollution that is produced by the current form of meat production, CAFO, anoxic zones are being produced in the gulf of Mexico through discharges of water from the Mississippi River that carry all these pollutants (Environmental Protection Agency, p. 34). Our high demand of meat and use of CAFOs is denying those people who rely on the gulf and its natural ecosystem to support their livelihood. This is also what future generations will face, denial of clean water due to pollution causing anoxic zones. This concept of passing on an Earth and its natural resources as good of a condition that we received is not an easy one to grasp. Many people

will argue that they do not have any responsibility to future generations because they will not see any reward or punishment from future generation because they, the current generation, will not be around when future generations are present (Partridge, p.379). This same thing could be said for us in terms of the generation that came before us. Simply because the past generation is no longer present and alive does not mean that we should not be thankful for what they have left for us. They had left the Earth with the three basic principles of options, quality, and access mostly intact. We are able to thrive and live our lives. We could even say that we expected previous generations to allow us to live a good life. As a principle of fairness, humans should also strive to do the same for future generations.

Meat production in the world today and the reliance of CAFOs follows practices that are unsustainable and very environmentally damaging to the Earth's water supplies. They destroy the biodiversity of the water that the pollutants get into and harm the health of the animals and humans that depend on the water to simply survive. Through changing meat to the methods and practices of organic farming the biodiversity of water and the lives and health of animals and humans alike can be protected and saved. These benefits that can be seen through the implementation of organic farms as the primary method of meat production will be seen not only in current generations but also in future generations to come which deserve to be given a planet that is in as good of quality, with the same amount or natural resources as options, and also with equal access to all that we, the current generation, were given.

Work Cited

- Colleran, Brian. "Think Before You Eat: The Widespread Effects of Factory-Farmed Meat." *E: The Environmental Magazine* 19.4 (2008): 30-31. *Academic Search Premier*. EBSCO. Web. 1 May 2011.
- Edith Brown Weiss. Climate Change, Intergenerational Equity, and International Law. "Environment." *Sustainabletable*. Web. 29 Apr. 2011.
- Environmental Protection Agency, "Risk Assessment Evaluation for Concentrated Animal Feeding Operations." National Risk Management Research Library, Cincinnati, Ohio, May, 2004.
- "Factory Farming." *Sustainabletable*. Web. 29 Apr. 2011.
- Freeman, Carrie Packwood. "Framing Animal Rights in the "Go Veg" Campaigns of U.S. Animal Rights Organizations." *Society & Animals* 18.2 (2010): 163-182. *Academic Search Premier*. EBSCO. Web. 1 May 2011.
- Mack, Jeremy. "Eutrophication." *Lake Scientists*. Web. 1 May 2011.
- Mason, Jim. "Fowling the waters." *E: The Environmental Magazine* 6.5 (1995): 33. *Academic Search Premier*. EBSCO. Web. 2 May 2011.
- "Meat Consumption by Type and Country." *Census Bureau Home Page*. U.S. Census Bureau. Web. 08 July 2011. <<http://www.census.gov>>.
- "Organic Foods." *USDA-FDA.com Nutritional Labeling, USDA Label Expeditor, Facility Consultant, UPC Barcodes*. Web. 28 Mar. 2011.
- Partridge, Earnest. "Future Generations." *A Companion To Environmental Philosophy*. Massachusetts: Blackwell, 2003. 377-89. Print.
- Pub Med Health*. National Center for Biotechnology Information. Web. 08 July 2011.

- Robbins, Jim. "Free-Range, Organic Beef the Way Forward for Ranchers and Consumers." *Organic Consumers Associations*. New York Times, 8 Oct. 2003. Web. 28 Mar. 2011.
- Rotberg, Robert I. "The Threat of a Water War." *Boston.com - Boston, MA News, Breaking News, Sports, Video*. The Boston Globe, 2 July 2010. Web. 08 July 2011.
<<http://www.boston.com>>.
- "The Tale of Two Cattle. (Cover story)." *Time* 174.8 (2009): 34-35. *Academic Search Premier*. EBSCO. Web. 2 May 2011.
- "What Is a CAFO?" *US Environmental Protection Agency*. Web. 29 Apr. 2011.