Part A of Critical Review 1 Plant 105 – Food, Society, Environment

Cameron King

Fresno State

17 September, 2019

Organic agriculture for sustainable growth

**How I conducted literature research**

The first step in conducting the literature research was to formulate and refine the topic and a set of research questions. The topic, which is based on organic versus inorganic agriculture, resulted in several research questions. For example, I wanted to understand the advantages and disadvantages of both organic and inorganic agriculture. I also considered the scope of the review. In this case, I was focusing on identifying one newspaper article on the topic and at least three peer-reviewed primary articles. The next step was to identify the databases on which to conduct the literature search. I started by utilizing Google to get a general idea about the topic. Some of the keywords used on Google include organic versus inorganic agriculture, the definition of organic/inorganic agriculture, advantages/disadvantages of inorganic/organic agriculture, and the debate over organic versus inorganic agriculture. Using these keywords, I also consulted the Journal of Agricultural Science, Google Scholar, International Journal of Agricultural Science Research (IJASR), and Journal of Agricultural Science and Technology. To get the newspaper article, I used CNN.

**Author’s position**

In “Reckless farming is destroying the planet. This could save it,” an article by CNN, Rose Marcario and David Bronner refer to chemical agriculture as “reckless farming.” In their news article, which was published on 17th April 2019, the authors criticize conventional agriculture for causing climate change and increasing health risks. According to the authors, “protecting ourselves and the planet” will require us to go back to “traditional and responsible farming practices.” Authors are calling farmers to “go back to the basics” of regenerative organic farming using practices such as crop rotation, minimum tillage, composting, crop diversification, and planting cover crops. These practices, as the authors suggest, will serve as a substitute for excessive use of fertilizers, pesticides, and other chemicals. Ranchers are encouraged to rear grass-fed animals and stop using antibiotics, hormones, and pesticides.

According to a research carried out by Rodale Institute and which the authors borrow from, all carbon emissions could be recaptured into the soil in a year if farmers practiced organic farming. There is so much potential in organic farming, and the authors are confident that the produce from organic farming could outperform those from conventional farming. If this happens, therefore, it will be possible to feed the world’s growing population without destroying the planet and compromising on health. The authors are determined to pressure the government to stop subsidizing agricultural chemicals as a way of deterring their excessive use. This, in their view, will reduce the number of chemicals being used thereby forcing farmers to shift to regenerative organic farming.

The authors raise several talking points. First, they are concerned about soil health. According to them, healthy soil is the foundation for creating a healthy planet and healthy food. Soil biodiversity, for instance, is one of the things that are threatened by conventional farming. The chemicals used such as pesticides are harmful to soil microbes, and they also interfere with soil natural properties and processes. Organic farming naturally allows the soil to replenish thereby continuing to support life. Secondly, the authors are concerned about animal welfare. Under conventional farming, animals are maintained on the unnatural environment which reduces their ability to interact freely with the natural ecosystem. Organic farming gives animals freedom from all manner of discomforts, fear, hunger, distress, and pain. Most importantly, too, organic farming allows animals to freely express their behavior. Finally, the authors are concerned about the welfare of farmworkers. According to them, conventional farming exposes them to numerous health risks. In most cases, the working conditions in inorganic farming settings are nothing close to being conducive.

**Formulating a title**

From the discussion, it is clear that authors are in support of organic agriculture. They present the reasons for their position. Among these are the need to protect the soil, promoting animal welfare, and social sustainability. There are several phrases and words from the article that were crucial in formulating the title for this review. "Protect ourselves and the planet,” for example, suggests sustainable agricultural practices. This means practicing agriculture in a manner that conserves the planet for future use. The article also talks about the ability of organic farming to feed the growing population. To develop the title, I combined the aspect of sustainability and growing population to come up with the title “organic agriculture for sustainable growth.”

**My position**

According to Fuller et al. (2005), organic farming has a positive impact on biodiversity. The use of agricultural chemicals often kills important soil microorganisms and plants. Additionally, farm chemicals are often washed down into water bodies where they cause damage to marine life. It is from this understanding that I support organic agriculture. Organic farming practices such as minimum tillage results in minimal disruption of soil's natural processes, and this puts little pressure on the natural ecosystem. As much as pests are detrimental to crops, they play important roles in the ecosystem. Killing them may seem like the easy option to control them but with time it will result in reduced biodiversity. Conventional agriculture is determined to completely eradicate certain insects and bacteria from the planet. Although these small animals threaten food production, removing them from the equation leaves a huge blank from the natural ecosystem.

Reeve et al. (2016) examine the impact of agricultural chemicals on food safety and quality. A lot of the chemicals used in agricultural production have residues which are eventually consumed by animals and human beings. These chemicals have been shown to have serious implications for food safety (Carvalho, 2017). Numerous studies have identified agricultural chemical residues as a cause of various diseases such as cancer and food poisoning. Although conventional farming is more productive, I believe it is time we started thinking about food quality as opposed to food quantity. We may have plenty of food alright, but the question should be whether the food we have is safe for human consumption. By going organic, we can prevent a lot of problems related to food safety and food quality.

I am also a supporter of organic agriculture since it is sustainable. Soil, for example, has self-regenerating capabilities. If given time and favorable conditions, the soil can replenish itself over time. Use of chemicals on soil reduces the ability of soil to replenish itself by killing important microorganisms and interfering with natural processes involved in replenishment. With time, therefore, soil loses its natural ability to support life thereby making it difficult to farm without the use of chemicals. Sustainable agricultural activities are those that do not interfere with the soil's capacity to support future life. If we continue to use chemicals now, we compromise the ability of future generations to derive their livelihood from the soil. In a way, we are killing future life forms. If our ancestors used chemicals centuries ago, we would not have the same productive soil we have today.

In supporting organic agriculture, I am also concerned about the health and safety of farmworkers. Most of the chemicals used in agriculture have adverse effects on people who apply them. Pesticides, for instance, can be harmful if they come into contact with the human skin. Excessive use of these chemicals, therefore, puts a population of farm attendants at high risk of developing serious health complication. Chemical plants which manufacture these chemicals also put employees at risk of inhaling poisonous fumes coming from these chemicals as well as chemical spills. Besides, chemical-fed agriculture has negative impacts on the environment. For example, chemical containers are often not properly disposed of, and this causes environmental pollution. Excessive use of chemicals reduces the ability of the planet to recover carbon emissions thereby resulting in excess carbon compounds in the atmosphere. When there are excess carbon compounds, there is a risk of global warming and climate change.

References

Carvalho, F. P. (2017). Pesticides, environment, and food safety. Food and Energy Security, 6(2), 48-60.

Fuller, R. J., Norton, L. R., Feber, R. E., Johnson, P. J., Chamberlain, D. E., Joys, A. C., ... & Wolfe, M. S. (2005). Benefits of organic farming to biodiversity vary among taxa. Biology letters, 1(4), 431-434.

Reeve, J. R., Hoagland, L. A., Villalba, J. J., Carr, P. M., Atucha, A., Cambardella, C., ... & Delate, K. (2016). Organic farming, soil health, and food quality: considering possible links. In Advances in Agronomy (Vol. 137, pp. 319-367). Academic Press.

APPENDIX 1

