
THE IMPACT OF THE MORINGA BENEFITS ON THE FARMERS DECISION TO CULTIVATE IT

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ABSTRACT

This paper concentrates on studying the impact of Moringa Planet benefits on farmer's decision to cultivate it. A quantitative study drawing data from (25) respondents was employed. The collected data was analysed using SPSS.

Descriptive statistics had been employed in the study. The principal components factor analysis resulted in independent dimension: Moringa benefits. The results of the current research showed that the (25) respondents considered the benefits of the Moringa will make them adopt its cultivating.

Keywords: Moringa, Cultivate, Farmers, Madaba, Benefits

1. INTRODUCTION

Climate change affects the whole world and specially the poorest countries such as Jordan. 80% of Jordan area is considered as arid and semi arid region.

Jordan depends mostly on rain as its main water resource. Recent years have been witnessed shortage in the rainfall average in different parts of the country. According to Al-Qaisi (2010), water scarcity will become an even greater problem over the next two decades as the population doubles and climate change potentially makes precipitation uncertain and variable. Climate change scenarios indicate that Jordan could suffer from reduced water availability and agricultural productivity (World Bank, 2012). According to IPCC, (2007), rising temperature, drought, salinity, floods, desertification and weather extreme are adversely affecting agriculture especially in developing world. Climate change has a great impact that can affect negatively the food security in Jordan (MOA, 2009).

Therefore, adaptation to climate change can be for example by: emphasize dry land farming by water harvesting techniques, combating desertification, conservation of genetic resources, and preparation of legislation on preventing desertification.

Cultivating drought resistant tree that can be harvested several times in one growing season such as Moring plant is one of the interventions to reduce desertification phenomenon and improve grazing. Moringa (*Moringa oleifera*) is grown mainly in semi-arid, tropical, and subtropical areas.

The researchers believes that the research should be conducted because of the following reasons:

1. Decrease the average of the rainfall and increase the drought seasons as a result of climate change threat the soil, grazing and desertification. Therefore, new plant can be used such as *Moringa oleifera*, which can tolerate drought season and withstand with rainfall 50-150mm.
2. Encourage introducing new fast growth plant such as Moringa tree to be one of forest tree list.
3. Using Moringa leaves as protein and micronutrients source including the fact that it is a perennial plant that can be harvested several times in one growing season.
4. Moringa leaves can be used for animal feed as fresh or dried. Dried leaves can be stored for longer periods without lose their nutritive value.
5. Animal feed becomes very scares in the Jordan during the dry season due partly to the unavailability of the feed because of the dry spell. Therefore, new plant such as Moringa plant can be used as animal food.
6. Many animal farmers rely on feed supplementation to sustain animal growth due to the scarcity of natural forage. The high cost of the supplementation making animal production unprofitable and unsustainable. Therefore, Moringa plant can be used as feed supplement.
7. Moringa plant can be used as medicinal plant and as source of proteins and vitamins for human.

1.2 Objectives

The research is going find factors that can persuade and encourage Farmers in Madaba Governance to adopt cultivating and maintain Moringa planet.

As the Moringa plant is important in maintaining the climate and can offer multiple benefits to the farmers, the purpose of this study is to:

- Persuade and encourage farmers to adopt Moringa Plant cultivation and maintain it.
- Give some recommendations based on research results on how we can market this planet.

2. THEORETICAL FRAMEWORK:

Moringa grows best in dry sandy soil and tolerates poor soil. It is one of the 13 species of genus Moringa and family Moringnace, short, slender, deciduous, perennial tree about 10 m tall with drooping branches, brittle stems and branches, corky bark, feathery pale green 30–60 cm long compound leaves, with many small leaflets which are 1.3–2 cm long, 0.6–0.3 cm wide, fragrant white or creamy-white flowers having 2.5 cm in diameter and borne in sprays, pendulous brown triangular pods, splitting lengthwise into 3 parts when dry, containing about 20 dark brown seeds embedded in the pith, pod tapering at both ends. Main root is thick (Foidle et al. 2001).

Moringa is a fast-growing multipurpose tree that originated from Indian subcontinent. It can be used for food, medication and industrial purposes. People use its leaves, flowers and fresh pods as vegetables, while others use it as livestock feed. All parts of the Moringa oleifera tree are edible and have long been consumed by humans. Fuglie (2001) reported the many uses of Moringa oleifera as follows: alley cropping (biomass production), animal forage (leaves and treated seed- cake), biogas (from leaves), domestic cleaning agent (crushed leaves), blue dye (wood), fertilizer (seed-cake), foliar nutrient (juice expressed from the leaves), green manure (from leaves), gum (from tree trunks), honey and sugar cane juice- clarifier (powdered seeds), honey (flower nectar), medicine (all plant parts), ornamental plantings, biopesticide (soil incorporation of leaves to prevent seedling damping off), pulp (wood), rope (bark), tannins for tanning hides (bark and gum), and water purification (Powdered seeds). According to Foidl et al. (2001), the cytokinine-type hormones extracts of Moringa oleifera leaves in 80% ethanol as a foliar spray can be used to accelerate the growth of young plants.

Moringa leaves have significant quantity of vitamins A, B, and C, calcium, iron, and protein (Verma et al.1976). These leaves are rich in protein (28.2%–36.1%) (Negesse et al.2009).

Therefore, Moringa plant can be alternative cheap sources of protein for livestock. In addition, the leaves can be harvested several times in one growing season and feed animal fresh or dried. Dried leaves can be stored for longer periods without deterioration in nutritive value (Mendieta-Araica et al., 2011).

3. RESEARCH HYPOTHESES:

Based on the Theoretical framework, researchers believe that the explanation of the Moringa benefits to the farmers will encourage them to cultivate it. So the research will assume the following hypotheses:

H1: Persuading Farmers with Moringa Commercial benefits will affect positively their decision to cultivate it.

H2: Persuading Farmers with Moringa Health benefits will affect positively their decision to cultivate it.

H3: Persuading Farmers with Moringa benefits on climate will affect positively their decision to cultivate it.

H4: Persuading Farmers with Moringa use to livestock feed will affect positively their decision to cultivate it.

H5: Ability to Harvest Moringa several times in the season will affect positively the decision of the farmers.

4. METHODOLOGY:

4.1 Instrument

The researchers used the personally administrated and online survey questionnaires as a data collection method.

Respondents were asked to answer 9 factors regarding to their decision in planting the Moringa or not.

The researchers used choosing one answer from three options (Yes, No, Maybe).

For the background of the respondents, the researchers used 4 demographic questions

(Gender, Age group, Educational level, and Worker sector).

One form of the questionnaires were made I Arabic because most of the respondents speech Arabic only.

4.2 Sample

Our sample was farmers from Madaba. The sample covered (25) respondents, and data was gathered at different locations (Houses, work filed,), on different days of the week, and at different times of the day to reduce time and location bias.

5. RESULT

The researchers used the SPSS to analyze our collected data. All the respondents were Jordanian Farmers from Madaba.

88 % of the respondents were males and 12 % of respondents were females.

The respondents ages were from (18 to 60), 44% from 18 to 30, 12% from 31 to 45, and 44% from 46 to 60.

The Educational level was Middle School 20%, Secondary 36% and University degree 44%.

The working sector for the respondents was 24% for public, 36% for private and 40% business owners.

Table 1: Descriptive Statistics

	N	Mean	Std. Deviation
Feed	25	2.80	.408
Storage	25	2.2400	.92556
Eat	25	2.1600	.89815
Medical	25	2.5200	.82260
Commercial	25	2.4000	.91287
Supplement	25	2.7200	.67823
Harvest	25	2.7200	.67823
Health	25	2.4000	.91287
Climate	25	2.6000	.81650

As in the table above, the farmers showed more interest in using Moringa as a livestock feed, multiple harvests during the year, Livestock supplements and positive effect on climate.

6. DISCUSSION AND CONCLUSION:

This research was made to see how the benefits of Moringa will make Farmers accept cultivate it especially this is the first time Moringa got cultivated in Madaba.

Livestock feed seems to be the most effective benefit that can encourage the farmers to cultivate it. This was expected as Jordan suffering from shortage in pastures.

The second importance things to the farmers were the multiple harvest and the supplements that the plant offers to the livestock. Which can be understood as the farmers will get the chance to reduce the cost of buying supplements and increase the production because of the harvest advantage.

The climate also is an important to the farmers, which can be used as an indicator of the awareness and responsibility that the farmers have to their world.

Medical, Commercial and Health benefits of the Moringa approximately have the same importance to the farmers.

While the Edibility and the expiration have less importance than the other benefits.

As the conclusion, the researchers found that all hypotheses were true regarding to the positive impact of the Moringa benefits on Framers decision to cultivate Moringa planet.

7. RECOMMENDATIONS:

The researchers believes that the following recommendations should be conducted from the decision makers and the researchers:

The Agriculture decision makers should encourage the farmers to cultivate this planet based on its benefits and the acceptance of the farmers to the importance of this planet to livestock, humans and climate.

Also they have to offer full support to farmers to be able to success in cultivating it by providing them with the necessary resources and instructions.

By the help of the researchers, the decision makers have to do more effort to show the benefits of this planet to humans by eating it, because based on the research results, the edibility is the less importance benefit to the farmers.

The researches have to investigate experimentally on field of the benefits of this planet to persuade all farmers across the country to cultivate it.

8. REFERENCES

IPCC, (2007), "Climate change 2007." <http://www.ipcc.ch/report/ar5/wg1/>.

Wigley, T. M. L., and Raper, S. B. C. (2001). "Interpretation of high projections of global-mean warming," *Science*, Vol. 293, No. 5529, 451-454.

Trenberth, K. E. (2011). "Changes in precipitation with climate change," *Climate Research*, Vol. 47, No. 1, 123-138.

Al-Qaisi, B. M. (2010). "Climate Change effects on Water Resources in Amman Zarqa Basin – Jordan," Individual Project Report Climate Change -Mitigation and Adaptation.

World Bank (2012). *Adaptation to a Changing Climate in the Arab Countries* (2012)

MoA, Ministry of Agriculture (Jordan), Annual Report (2009).

Foidle, N., Makkar, H. P. S., and Becker, K. (2001). "The potential of *Moringa oleifera* for agricultural and industrial uses," *Moringa News*.www.morniganews.org/actes/foidl_en.doc. (accessed April 2013).

Fuglie, L. J. (2001). "The Miracle Tree: *Moringa Oleifera*: natural nutrition for the tropics, (Church World Service, Dakar, 1999). pp: 68. Revised in 2001 and published as *The Miracle Tree: The Multiple Attributes of Moringa*, pp: 172.

Verma, S. C., Banerji R., Misra, G., Nigam, S. K. (1976). "Nutritional value of *Moringa*," *Current Science*, Vol.45, No. 21, 769-70.

Negesse, T., Makkar, H. P. S., Becker, K. (2009). "Nutritive value of some non-conventional feed resources of Ethiopia determined by chemical analyses and an in vitro gas method," *Animal Feed Science and Technology*, Vol. 154, 204–217.

Mendieta-Aracia, B., Spörndly, R., Sánchez, N. R., Spörndly, E. (2011). "Moringa (*Moringa oleifera*) leaf meal as a source of protein in locally produced concentrates for dairy cows fed low protein diets in tropical areas," *Livestock Science*, Vol.137, No. 1-3, 10–17.