

Survey on Traditional Knowledge that are Compliant to Organic Standard

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Abstract

The adoption of organic agriculture has been limited in Africa by inadequate organic alternatives in addressing some agricultural problems. This survey therefore sought to identify some of the ecological traditional methods that could conform to organic standards. Farmers with vast experience in both crop and livestock production, from various parts of Nigeria were gathered using a focused group discussion (FGD), in the year 2017. Various traditional knowledge were captured from the FGD and the ones that were organic standard compliant documented. The information covered crop protection, livestock health management, preservation methods, bio-security, fruit set induction, etc. However, the efforts of scientists shall be required to validate and or calibrate some of the methods, which could serve as efficient alternatives (to conventional methods) in organic system.

Keywords:

Organic agriculture,
organic alternatives,
organic inputs,
traditional knowledge

Introduction

The advocacy and awareness on benefits of organic agriculture is vast spreading among farmers today in Africa. This has been aided by some projects, one of which is the Ecological Organic Agriculture Initiative (EOAI) project. However, a major challenge facing the adoption of organic system among farmers is inadequate organic alternatives in addressing some key agricultural problems such as crop pest and diseases control, storage and preservation, livestock pest and diseases control, etc. (AdeOluwa and Adeogun, 2011). Organic agriculture combines traditional knowledge, innovation and modern science to benefit the shared environment and promote fair relationships and a good quality of life for all involved (International Federation of Organic Movement, 2004). Hence, it could be possible to explore some indigenous (traditional) knowledge in addressing the problems limiting the practice of organic agriculture.

It has been observed that traditionally experienced farmers have some very useful and efficient indigenous knowledge in addressing their agricultural challenges (Sofia *et al.*, 2006). Such knowledge could be compliant to organic standards, and might only require validation and or calibration. This survey work therefore documented some indigenous knowledge that could be compliant to organic system.

Methodology

Farmers with vast experience in both crop and livestock production, from various parts of Nigeria were gathered in the Federal Capital Territory, Abuja for a focused group discussion in the year 2017. The farmers provided information on traditional knowledge they are used to in solving various agricultural problems and these were captured and collated, while the ones that conform to organic standard were reported in this paper.



Farmers during the deliberations

Results and discussion

Some botanicals and natural products and their uses as reported by farmers

1. Siam weeds; *Chromolaenaodorata*: The leaves extract or grounded leaves are mixed with water and applied on crops to prevent pests. The leaves also has allelopathy properties against other plants / weeds. This is evident on why the growth of other weeds are suppressed around siam weeds. The leaves are fed to animals as antibiotics, it was reported to have been very useful in raising poultry from day olds.
2. Lemon grass; *Cymbopogonspp*: The leaf scent scares snakes from farm. The grass has been proven as a strong pesticide and preservative due to its anti-fungal properties.
3. Castor plants; *Ricinuscommunis*: The leaves if squeezed with water are used in plant protection. The plant may also provide bio-security for the farms if planted round the farm land. This is because animals like cattle resented the scent from the plants.

4. Chili pepper; *Capsicumannuum*: When grinded and applied on crops, it prevent insects' infestation in stored products, due to the presence of capsin.
5. Pawpaw; *Caricapapaya*: The leaves when fermented in water could be used as liquid fertilizers for crop production. The seeds have antibiotic properties and are used to build the immune system of livestock against diseases. They could be dried, grinded and added to animal feeds. Filtrates of pawpaw leaves and unripe fruits soaked in water could be giving to poultry to address coccidiosis.
6. Garlic; *Alliumsativum*: Garlic has a strong anti-fungal, anti- bacterial and anti-viral characteristics. It is used as pesticides in crop production and an antibiotic in animal health management. The active ingredients called allacin is released when the cloves are crushed.
7. Cassava; *Manihotesculenta*: The water waste from fermented cassava produces methane which prevent pest build-up on the farm. Also, the fermented waste water has been noticed to have weedicide properties. This could be as a result of the hydrocyanide present in the cassava.
8. Bitter leave; *Vernoniaamygdalina*: The leaves extracts are squeezed mixed water to treat crops infestation. The dried leaves could also be mixed with animal feeds to serve as antibiotics.
9. Turmeric (*Curcumalonga*) and ginger (*Zingiberofficinale*): These two spices are used in addressing health challenges in livestock production. Small, dry, grounded quantity could be added to animal feeds. They could also be blended and the extract is added into drinking water for livestock. Ginger, when crushed and spread around repels several pests from crops.
10. Bitter kola; *Cassiasinguenta*: It is chopped to pieces and drop around the farm, repels snakes, insects and other reptiles.
11. Tobacco; *Nicotianatabacum*: The leaves are used as repellent of carrot fly and flea beetles.
12. Onion; *Aliumcepa*: This is a very strong repellent of rabbits, cabbage loopers, and small white flies.
13. Clove basil; *Ocimumgratissimum*: Basil has shown to have very potent anti-fungal and anti-bacterial characteristics. It also has insect repelling properties.
14. Jute mallow; *Corchorusolitorius*; Extract of fresh leaves of jute mallow is given to animals with dystocia (difficult birth). It is administered orally to animals to aid delivery.
15. Cassava peels: sprinkle dried cassava peels on hot coals, inside a pineapple field. The smoke induce fruit setting for pineapple. This could serves as alternatives to the use of synthetic chemicals to induce fruit setting in pineapple orchard.
16. Honey: Honey could be given to animals especially poultry as an anti-stress. This would replace the synthetic anti-stress required for poultry especially when they are moved from one location to the other. The honey is added to the drinking water for the animals.
17. Shea butter: This is very useful in treating mange and similar skin diseases in animals.

Specific challenges and the identified traditional solutions

S/N	Challenge	Materials used	Method/principles
1	Cattle invasion of farmers' crop field	1. Jatropha (<i>Jatropha</i> spp) 2. Hot pepper (<i>Capsicum</i> spp) 3. Soybean (<i>Glycine</i> max)	Plant jatropha or local hot pepper as fence crops. The sap from jatropha is poisonous and also itches their skin, while pepper is a natural repellent. Cattle do not graze on soybean, because it can lead to their death.
2	Monkey invasion of farmers field	Hot pepper	Monkeys by default, usually wash their faces on sitting water. Provide bowl/pots of water with pepper solution on your farm. The sting of the pepper on their eyes would drive them away, and henceforth avoid visiting the area.
3	Ants and Termites infestation	Bone	Drop bones around the farm, the ants and termites will focus on the bone.
4	Birds invasion (especially rice fields)	1. Scare crows 2. Local gun	Erect scare crow in the open field or shot local gun in to the air once they infest, it scares them away.
5	Seed treatment	1. Wood ash 2. Soaking	Before planting seeds to the field, mix wood ash paste with seeds. It repels insects, nematodes and acts as fertilizer for the new seedlings. Soaking of some recalcitrant seeds in water breaks dormancy.
7	Rat and rodent infestation	Sodium Bicarbonate (Baking Powder)	Rats and most rodents are not known to fart. Mix baking powder in their trap food, once they eat, it generates gasses in their stomach, which leads to bloating and death.

The findings of this survey revealed that traditional knowledge captured covered crop protection, livestock health management, preservation methods, bio-security, fruit setting induction, etc. However, the efforts of scientists shall be required to validate and or calibrate some of the methods.

Scientists in the field of crop protection, animal health, soil fertility management are therefore required to take up the challenges to convert this set of raw information into goldmine for the farmers. This could be achieved through validation and or calibration of this documented indigenous / traditional knowledge. This would obviously address vast majority of the problems of the organic farmers and encourage other farmers to embrace the system.

Conclusion

The aim of this survey was achieved as various traditional knowledge that were in line with organic standards were documented. The information captured covered crop protection, livestock health

management, preservation methods, bio-security, fruit set induction, etc. However, the efforts of scientist shall be required to validate and or calibrate some of the methods, before they could become useful in an organic system.

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