

CABI

Improving climate change by soil health management through use of compost

Pakistan, Sindh

.....
BCI's 5th IP Meeting
January 2021



Improving climate change by soil health management through use of compost

- It has become challenging to manage soil health and make its sustained use because of reliability to chemical fertilizer
- Lot of nutrient are lost from soil when crops are grown but soils of cotton are usually applied with only N and P fertilizer thus reduced soil health.
- Each coming year, there is increase in production of chemical fertilizer which means addition of more Carbon Dioxide and other green house gases into environment.



Improving climate change by soil health management through use of compost

- As reported by International Fertilizer Industry Association (IFA) fertilizer manufacture result in CO₂ emission accounts for approximately 1% of global greenhouse gas emissions.
- Due to excessive production and use of Nitrogenous fertilizer (18% growth as compared to last year in this period) more nitrous Oxide N₂O is released in the environment that accounts about 1.5% of total global green house gas emission.
- Changes in soil management, use of compost can reduce emissions of carbon-containing gases from soil through slower decomposition of plant material (carriers of Carbon taken up through Photosynthesis).



Improving climate change by soil health management through use of compost

Process

- A unit of compost is developed from 1000 kg (1 metric ton) raw that is used in 1-acre of cotton crop.

- Raw material used is;
 1. Farmyard manure.
 2. crop waste (leaves and sticks).
 3. small amount green nitrogen source (berseem)
 4. small amount of Nitrogen (for fermentation).

- 70 such units were developed and used by CABI's Better Cotton farmers.



Improving climate change by soil health management through use of compost

Collaborators

- **Agriculture Research Centre Government of Sindh, Pakistan:** Facilitated and trained CABI staff.
- Farmer organizations (**ARDO and INDUS**) and local **Sugar mill** replicated at their own staff and farmers.
- **GIF** and **Farmers** shared cost of compost development at the ratio of 30:70



Improving climate change by soil health management through use of compost

Users and Beneficiaries;

- Farmers and share croppers are direct beneficiaries
- Share croppers and workers are allied beneficiaries.

- Animals, birds, beneficial insects and soil microbes are beneficiaries (Environment).



Improving climate change by soil health management through use of compost

Applicability

- To restore soil OM content, a pilot activity was run through training of Lead Farmers and BC farmers.
- Composts were developed at farm level in limited number (05) during 2017 and 2018.
- When its benefits became clear to farmers the activity was replicated.



Improving climate change by soil health management through use of compost

Engaging farmers/Participatory

- Events of training were conducted in a collective farmers and field facilitators group.
- Currently 2 demonstrative training events are conducted annually in the project based on participatory approach.
- Compost is then monitored, pulverized at a regular interval.
- Its use in the field is also done after counting its benefits in training session (LG/MF session).



Improving climate change by soil health management through use of compost

Success factors & constraints

It has benefitted environment and community by:

- Proving compost as alternative of fertilizer.
- Reduction in per acre quantity of fertilizer use.
- Betterment of environment and biodiversity.

This all remained challenged because:

- Lack of knowledge and interest of farmers.
- Supply of some ingredients.
- Mishandling of compost heap (pulverization at inappropriate time).
- Animals destroyed the heap (in some instances).



Improving climate change by soil health management through use of compost

Impacts & Results; what went well:

- It has reduced use chemical fertilizer and improved organic matter of soil.
- Along with this, it added to environment and water quality.
- Reduced use of nitrogen that helped in keeping sucking insect pests away from cotton field.
- Chemical pesticide is also reduces.



Improving climate change by soil health management through use of compost

Success factors & constraints

- Won confidence of farmers.
- Demonstrated reduction in fertilizer requirement/acre.
- Today farmers adopt themselves, they-spare time and develop composts every year.
- Supply of ingredients such as EM (effective microorganisms) and press mud of sugar mill.
- Lack of interest of farmers as it is time consuming activity.



Improving climate change by soil health management through use of compost

Up-scaling & replicability

- Supply of ingredients.
- Capacity building of farmers.
- Demonstrating to farmers about cost benefit ratio.
- Demonstrating benefit to environment

- By involving other partners (local organizations).
- Research in finding new ways to develop and use compost in easy way at low cost.



Improving climate change by soil health management through use of compost

Up-scaling & replicability; Contribution in BCI Program

- Collaborated government institute and developed standard method of compost making.
- Field team played in knowledge transfer and implementation at other farms.

Support required from BCI

- Research and training material sharing with other IPs.
- Developing other projects for soil health management through compost.
- Replication of the Good Practice.



Improving climate change by soil health management through use of compost

Lessons Learned

- Compost is effective alternative to chemical fertilizer.
- Its easy to prepare and use.
- Compost takes chemical fertilizer to zero (slowly and gradually).
- Sucking insect pests are less attracted.
- It improves environment and soil biodiversity.

Conclusion

- Chemical fertilizer is temporary solution to nutrient requirement of crop but is a main source of pollution and global climate change. Its production emit CO₂ and its use releases N₂O (Nitrous Oxide) in the environment which are main aid to global warming. Chemical fertilizer can be replaced with compost fertilizer that recycles crop waste and improves soil fertility and soil structure.

Pictures Gallery



کل و ش ڈیر مھربانی

لی لی لی ٹورا

Thank
You

شکریہ