A farmer demonstrating the third stage of compost-making (William Onura)

Compost for organic waste management and improved crop yields (Kenia)

Mbolea bora (Kiswahili)

DESCRIPCIÓN

Composting with on-farm organic solid waste management improves the soil sustainably and raises crop yields.

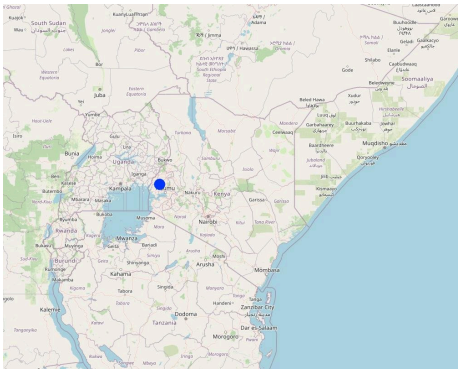
Composting is a natural process of converting organic materials such as plant leaves, and food remains into a nutrient-rich soil-enhancing amendment called compost (if mainly from vegetative matter) or manure (if mainly from animal dung). It involves breaking organic matter down into humus/ compost by aerobic microorganisms - with by-products of water, heat, ammonia (NH_3), and carbon dioxide (CO_2). Humus is a dark and crumbly natural form of fertilizer applied to the soil to improve crop production. Composting is cost-effective since it can be made from locally available materials such as leaves, plant residues, food remains, cow dung, poultry droppings, animal urine, soil, etc. Composting is thus an on-farm solid waste management measure. When made correctly it can improve carbon sequestration in the soil (compost is carbon-rich) and prevent methane emissions (a greenhouse gas) since methane-producing microbes become inactive in aerobic conditions (in the presence of oxygen).

There are many ways of preparing compost. This method involves three key stages; mixing brown organic materials, such as twigs, and green materials, such as fresh leaves that are nitrogen-rich and moist. In the first stage, brown and green materials are layered, beginning with a 30 cm layer of twigs at the bottom, followed by a 30 cm layer of dry matter, such as maize straw chopped to a maximum of 7.5 cm. This is followed by a 30 cm layer of dry grass and dry leaves covered by a 7.5 cm – 15 cm layer of fresh cow dung. The fresh cow dung is covered by a 15 cm layer of fresh tithonia (an exotic plant) that is completely covered by a layer of ash and sprayed uniformly using 10 litres of animal urine and finally completely covered by a layer of soil or manure. All the above inputs except urine are sprayed with 10 – 20 litres of water. The pile is then completely covered with a black polythene sheet to help absorb heat, prevent the entry of rainwater, and prevent volatilization of nitrogen, i.e., the conversion of ammonium into ammonia gas, and left to decompose for 21 to 30 days.
The second stage involves mixing and transferring all the material except the twigs, to another space. The heap is again completely covered with a black polythene sheet to help absorb heat, prevent rainwater entry, and prevent nitrogen volatilization. It is again left to decompose for another 21 to 30 days. The third stage, like the second stage, involves completely mixing and transferring all the material from the second stage to another space and completely covering the heap with a black polythene sheet to help absorb heat and prevent the entry of rainwater. The contents are allowed to decompose for another 21 to 30 days, after which they are ready-to-use compost. The compost is stored under shade and covered with a black polythene sheet again to prevent nitrogen volatilization.

One heap of compost (first stage: 1.5 m by 1.5 m by 1.5 m) produces about 5 tonnes of ready-to-use compost. Composting takes about 90 days; hence, provided that all inputs are available, a farmer can produce compost 4 times each year from the same heaping point, i.e., about 20 tonnes. Normally, a 0.4-hectare farm requires about 20 tonnes of this compost. However, the amount varies from farm to farm depending on the conditions of the soil and the crop(s) to be grown. It is important that soil testing is done to determine the conditions of the soil to ensure that the compost is being used in the most effective manner.

Compost is carried to the farm on wheelbarrows and in buckets and is applied at the farm during planting time where a handful of compost is applied in the planting hole and mixed with soil before planting. It is again applied around the base of the crop and completely covered with soil. Preparation of compost in conservation agriculture situations could pose the problem of competition for plant material since plant material is used in conservation agriculture to cover the soil. To manage this, a farmer implementing both composting and conservation agriculture may have to acquire plant material for composting from other sources such as purchasing stover from other farmer who are not implementing conservation agriculture. In addition, the farmer could also use hedge trimmings as plant material for composting, especially if the farmer has a live fence.

LUGAR



Lugar: Elang'ata Village, Bulanda Sub-location, Imanga Location, Marama Central Ward, Butere Sub-county, Kakamega County in western Kenya, Kenia

No. de sitios de Tecnología analizados: un solo sitio

Georreferencia de sitios seleccionados
- 34.48169, 0.2895

Difusión de la Tecnología: aplicada en puntos específicos/ concentrada en un área pequeña

¿En un área de protección permanente?: No

Fecha de la implementación: 2018

Tipo de introducción
- ☑ mediante la innovación de usuarios de tierras
- ☑ como parte de un sistema tradicional (> 50 años)
- ☐ durante experimentos/ investigación
- ☑ mediante proyectos/ intervenciones externas

The first stage in the process of making compost. (William Onura)

A farmer displaying ready-to-use compost (William Onura)

CLASIFICACIÓN DE LA TECNOLOGÍA

Propósito principal

- [x] mejorar la producción
- [x] reducir, prevenir, restaurar la degradación de la tierra
- [ ] conservar el ecosistema
- [ ] proteger una cuenca hidrográfica/ áreas corriente abajo – en combinación con otras Tecnologías
- [ ] preservar/ mejorar biodiversidad
- [ ] reducir el riesgo de desastres naturales
- [x] adaptarse al cambio climático/ extremos climáticos y sus impactos
- [x] mitigar cambio climático y sus impactos
- [x] crear impacto económico benéfico
- [ ] crear impacto social benéfico

Uso de tierra

Mezcla de tipos de uso de tierras dentro de la misma unidad de tierras: Sí - Agro-silvopastoralismo

Tierras cultivadas

- Cosecha anual: cultivos para forraje - pastos, cereales - maíz, vegetales - otros, leguminosas y legumbres - frijoles, cultivos de raíces/ tubérculos - mandioca. Cropping system: Maíz/sorgo/ mijo en intercultivo con legumbres
- Cultivos perennes (no leñosos): banana/plátano/abacá
- Cosecha de árboles y arbustos: avocado, frutas, otros, mango, mangostán, guayaba, papaya

Número de temporadas de cultivo por año: 2
¿Se practica el intercultivo? Sí
¿Se practica la rotación de cultivos? Sí

Tierra de pastoreo

- Cortar y llevar/ cero pastoreo
- Pastoreo mejorado

Tipo de animal: ganado - lechero, cattle - dairy and beef (e.g. zebu), aves de corral
¿Se practica el manejo integrado de cultivos - ganado? Sí
Productos y servicios: economic security, investment prestige, leche, manure as fertilizer/ energy production, huevos, carne

Especies	Conteo
ganado - lechero	2
cattle - dairy and beef (e.g. zebu)	3
aves de corral	10

Provisión de agua

- [x] de secano
- [ ] mixta de secano – irrigada
- [ ] totalmente irrigada

Propósito relacionado a la degradación de las tierras

- [x] prevenir la degradación de la tierra
- [ ] reducir la degradación de la tierra
- [x] restaurar/ rehabilitar tierra severamente degradada
- [ ] adaptarse a la degradación de la tierra
- [ ] no aplica

La degradación considerada

deterioro químico del suelo - Cn: reducción de la fertilidad y contenido reducido de la materia orgánica del suelo (no ocasionados por la erosión) , Ca: acidificación , Cp: contaminación del suelo

Grupo MST

- manejo de agricultura—ganadería integrada
- manejo integrado de la fertilidad del suelo
- manejo de desperdicios/ manejo de aguas residuales

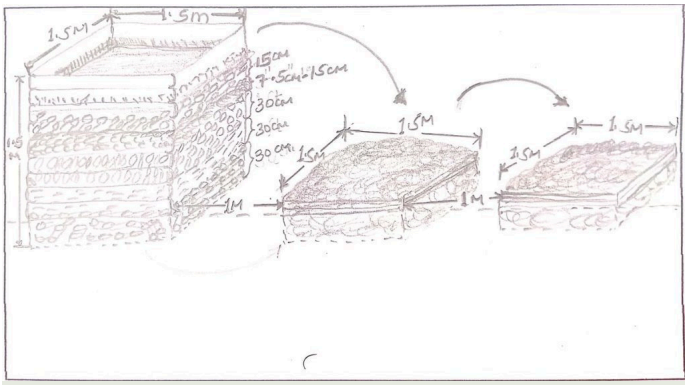
Medidas MST

medidas agronómicas - A2: materia orgánica/ fertilidad del suelo, A6: Manejo de residuos (A 6.3: recogido)

DIBUJO TÉCNICO

Especificaciones técnicas

Stage 1: about 30 cm deep under the ground, 1.5 m long by 1.5 m wide by 1.5 m high, including the 30 cm below the ground. Constructed using timber off-cuts (locally known as magogo) supported on posts at corners using nails. From bottom: 30 cm of twigs to extend some few inches above the ground to allow air circulation, 30 cm of dry matter e.g., maize straw chopped to 7.5 cm maximum, 30 cm dry grass and leaves, 7.5 cm - 15 cm layer of fresh cow dung, 15 cm layer of fresh tithonia, layer of ash, layer of soil or manure, black polythene sheet cover.
Stages 2 and 3: about 1-ft deep under the ground, 1.5 m long by 1.5 m wide, height depends on the volume of the material.
Allow space of no more than 1 m from one stage to the other for easy of mixing and transfer of materials from one stage to the next.



Author: William Onura

ESTABLECIMIENTO/ MANTENIMIENTO: ACTIVIDADES, INSUMOS Y COSTOS

Cálculo de insumos y costos

- Los costos se calculan: por unidad de Tecnología (unidad: **Heap of compost** volume, length: **1.5 m by 1.5 m by 1.5 m**)
- Moneda usada para calcular costos: **KES**
- Tasa de cambio (a USD): 1 USD = 122.95 KES
- Costo promedio por día del sueldo de la mano de obra contratada: 200

Factores más determinantes que afectan los costos

Rate of man-days vary from one place to another. It is not easy to attach monetary value to some of the input e.g., animal urine, cow dung, and water. Exchange rate for January 2023, source: European Commission/ InfoEuro online at https://commission.europa.eu/funding-tenders/procedures-guidelines-tenders/information-contractors-and-beneficiaries/exchange-rate-inforeuro_en

Actividades de establecimiento

1. Digging of pits (Momento/ frequencia: At least 3 months before planting time)
2. Framework construction with off cuts (Momento/ frequencia: At least 3 months before planting time)
3. Filling stage one with inputs (Momento/ frequencia: At least 3 months before planting time)

Insumos y costos para establecimiento (per Heap of compost)

Especifique insumo	Unidad	Cantidad	Costos por unidad (KES)	Costos totales por insumo (KES)	% de los costos cubiertos por los usuarios de las tierras
Mano de obra					
Framework construction	Man-days	2,0	200,0	400,0	100,0
Filling inputs	Man-days	1,0	200,0	200,0	100,0
Equipo					
Jembe (hoe)	No.	1,0	80,0	80,0	
Spade	No.	1,0	90,0	90,0	
Fork hoe	No.	1,0	70,0	70,0	
Wheelbarrow	No.	1,0	800,0	800,0	
Hummer	No.	1,0	100,0	100,0	100,0
Handsaw	No.	1,0	200,0	200,0	100,0
Material para plantas					
Twigs	Wheelbarrow	2,0	100,0	200,0	100,0
Dry matter	Wheelbarrow	6,0	50,0	300,0	100,0
Dry grass and leaves	90 Kg sack	3,0	50,0	150,0	100,0
Fresh tithonia	90 Kg sack	3,0	50,0	150,0	100,0
Fertilizantes y biocidas					
Ash	90 Kg sack	0,4	200,0	80,0	100,0
Animal urine	10 litre container	1,0	125,0	125,0	100,0
Soil or manure	Wheelbarrow	1,0	300,0	300,0	100,0
Fresh cow dung	Wheelbarrow	3,0	200,0	600,0	100,0
Material de construcción					
Timber off-cuts	Pieces	16,0	100,0	1600,0	100,0
Wooden posts	Pieces	4,0	50,0	200,0	100,0
Nails (assorted sizes)	Kgs	3,0	200,0	600,0	100,0
Otros					
Water	20 litres container	4,0	5,0	20,0	100,0
Costos totales para establecer la Tecnología				**6'265.0**	
Costos totales para establecer la Tecnología en USD				*50.96*	

Actividades de mantenimiento

1. Turning at each stage (Momento/ frequencia: 21 - 30 days after start of each stage)
2. Refilling at the first stage (Momento/ frequencia: At turning from the first stage)
3. Distribution to the farm (Momento/ frequencia: When planting and at first weeding (i.e., 3rd week after planting))

Insumos y costos de mantenimiento (per Heap of compost)

Especifique insumo	Unidad	Cantidad	Costos por unidad (KES)	Costos totales por insumo (KES)	% de los costos cubiertos por los usuarios de las tierras
Mano de obra					
Complete mixing and turning from stage one to stage two and from stage two to stage three	Man-days	4,0	200,0	800,0	100,0
Refilling with new materials at the first stage	Man-days	1,0	200,0	200,0	100,0
Transfer to storage	Man-days	2,0	200,0	400,0	100,0
Distribution to the farm	Man-days	2,0	200,0	400,0	100,0
Equipo					
Hoe	No.	1,0	80,0	80,0	
Fork hoe	No.	1,0	90,0	90,0	
Spade	No.	1,0	70,0	70,0	
Wheelbarrow	No.	1,0	400,0	400,0	
Material para plantas					
Dry matter	Wheelbarrow	6,0	50,0	300,0	100,0
Dry grass and leaves	90Kg sack	3,0	50,0	150,0	100,0
Fresh tithonia	90Kg sack	3,0	50,0	150,0	100,0
Fertilizantes y biocidas					
Ash	90 Kg sack	0,4	200,0	80,0	100,0
Animal urine	10 litre container	1,0	125,0	125,0	100,0
Soil or manure	Wheelbarrow	1,0	300,0	300,0	100,0
Fresh cowdung	Wheelbarrow	3,0	200,0	600,0	100,0
Otros					
Water	20 litres container	4,0	5,0	20,0	100,0
Indique los costos totales para mantenecer la Tecnología				**4'165.0**	
Costos totales para mantener la Tecnología en USD				*33.88*	

ENTORNO NATURAL

Promedio anual de lluvia
- [ ] < 250 mm
- [ ] 251-500 mm
- [ ] 501-750 mm
- [ ] 751-1,000 mm
- [x] 1,001-1,500 mm
- [ ] 1,501-2,000 mm
- [ ] 2,001-3,000 mm
- [ ] 3,001-4,000 mm
- [ ] > 4,000 mm

Zona agroclimática
- [x] húmeda
- [ ] Sub-húmeda
- [ ] semi-árida
- [ ] árida

Especificaciones sobre el clima
Monthly rainfall variability is high with some months such as January recording less than 5 mm of total rainfall.
Nombre de la estación meteorológica: Kakamega Meteorological Station
The climate in the area favours most agricultural activities.

Pendiente
- [ ] plana (0-2 %)
- [x] ligera (3-5%)
- [ ] moderada (6-10%)
- [ ] ondulada (11-15%)
- [ ] accidentada (16-30%)
- [ ] empinada (31-60%)
- [ ] muy empinada (>60%)

Formaciones telúricas
- [x] meseta/ planicies
- [x] cordilleras
- [ ] laderas montañosas
- [ ] laderas de cerro
- [ ] pies de monte
- [ ] fondo del valle

Altura
- [ ] 0-100 m s.n.m.
- [ ] 101-500 m s.n.m.
- [ ] 501-1,000 m s.n.m
- [x] 1,001-1,500 m s.n.m
- [ ] 1,501-2,000 m s.n.m
- [ ] 2,001-2,500 m s.n.m
- [ ] 2,501-3,000 m s.n.m
- [ ] 3,001-4,000 m s.n.m
- [ ] > 4,000 m s.n.m

La Tecnología se aplica en
- [ ] situaciones convexas
- [ ] situaciones cóncavas
- [x] no relevante

Profundidad promedio del suelo
- [ ] muy superficial (0-20 cm)
- [ ] superficial (21-50 cm)
- [x] moderadamente profunda (51-80 cm)
- [ ] profunda (81-120 cm)
- [ ] muy profunda (>120 cm)

Textura del suelo (capa arable)
- [ ] áspera/ ligera (arenosa)
- [x] mediana (limosa)
- [ ] fina/ pesada (arcilla)

Textura del suelo (> 20 cm debajo de la superficie)
- [x] áspera/ ligera (arenosa)
- [ ] mediana (limosa)
- [ ] fina/ pesada (arcilla)

Materia orgánica de capa arable
- [ ] elevada (>3%)
- [x] media (1-3%)
- [ ] baja (<1%)

Agua subterránea
- [ ] en superficie
- [ ] < 5 m
- [x] 5-50 m
- [ ] > 50 m

Disponibilidad de aguas superficiales
- [ ] excesiva
- [x] bueno
- [ ] mediana
- [ ] pobre/ ninguna

Calidad de agua (sin tratar)
- [ ] agua potable de buena calidad
- [x] agua potable de mala calidad (requiere tratamiento)
- [ ] solo para uso agrícola (irrigación)
- [ ] inutilizable

La calidad de agua se refiere a: agua subterránea y superficial

¿La salinidad del agua es un problema?
- [ ] Sí
- [x] No

Incidencia de inundaciones
- [ ] Sí
- [x] No

Diversidad de especies
- [ ] elevada
- [x] mediana
- [ ] baja

Diversidad de hábitats
- [ ] elevada
- [x] mediana
- [ ] baja

LAS CARACTERÍSTICAS DE LOS USUARIOS DE LA TIERRA QUE APLICAN LA TECNOLOGÍA

Orientación del mercado
- [ ] subsistencia (autoprovisionamiento)
- [x] mixta (subsistencia/ comercial)
- [ ] comercial/ mercado

Ingresos no agrarios
- [ ] menos del 10% de todos los ingresos
- [ ] 10-50% de todo el ingreso
- [x] > 50% de todo el ingreso

Nivel relativo de riqueza
- [ ] muy pobre
- [ ] pobre
- [x] promedio
- [ ] rico
- [ ] muy rico

Nivel de mecanización
- [x] trabajo manual
- [x] tracción animal
- [ ] mecanizado/motorizado

Sedentario o nómada
- [ ] Sedentario
- [x] Semi-nómada
- [ ] Nómada

Individuos o grupos
- [x] individual/ doméstico
- [ ] grupos/ comunal
- [ ] cooperativa
- [ ] empleado (compañía, gobierno)

Género
- [x] mujeres
- [x] hombres

Edad
- [ ] niños
- [x] jóvenes
- [x] personas de mediana edad
- [x] ancianos

Área usada por hogar
- [x] < 0.5 ha
- [ ] 0.5-1 ha
- [ ] 1-2 ha
- [ ] 2-5 ha
- [ ] 5-15 ha
- [ ] 15-50 ha
- [ ] 50-100 ha
- [ ] 100-500 ha
- [ ] 500-1,000 ha
- [ ] 1,000-10,000 ha
- [ ] > 10,000 ha

Escala
- [ ] pequeña escala
- [x] escala mediana
- [ ] gran escala

Tenencia de tierra
- [ ] estado
- [ ] compañía
- [ ] comunitaria/ aldea
- [ ] grupal
- [x] individual, sin título
- [x] individual, con título

Derechos de uso de tierra
- [ ] acceso abierto (no organizado)
- [ ] comunitarios (organizado)
- [x] arrendamiento
- [x] individual

Derechos de uso de agua
- [x] acceso abierto (no organizado)
- [ ] comunitarios (organizado)
- [ ] arrendamiento
- [x] individual

Acceso a servicios e infraestructura

salud	pobre	bueno
educación	pobre	bueno
asistencia técnica	pobre	bueno
empleo (ej. fuera de la granja)	pobre	bueno
mercados	pobre	bueno
energía	pobre	bueno
caminos y transporte	pobre	bueno
agua potable y saneamiento	pobre	bueno
servicios financieros	pobre	bueno

Comentarios

The above rating varies from one village to the other.

IMPACTO

Impactos socioeconómicos

Producción de cultivo

disminuyó — incrementó

Cantidad antes de MST: Less than 4
Cantidad luego de MST: More than 8
Quantity refers to the number of 90 Kg bags of maize produced per acre. Based on measurement by the farmer.

calidad de cultivo

disminuyó — incrementó

Not easy to quantify. The crops do better compared to how they could do in the past, yet he does not use inorganic fertilizers. Based on estimation by the farmer.

producción de forraje

disminuyó — incrementó

Cantidad antes de MST: 2
Cantidad luego de MST: 3 - 4
Quantity refers to harvesting cycles for nappier grass from the same farm. He applies compost on the pieces of land where he has grown fodder. The fodder does better than how it used to do before when he was not applying compost.

producción animal

disminuyó ✓ incrementó

Cantidad antes de MST: 1 - 3
Cantidad luego de MST: 3 - 10
Quantity refers to the amount of milk in litres from one cow. He gets more milk from his cows as compared to what he used to get before the SLM since applying compost on the pieces of land where he has grown fodder makes the fodder to grow faster. Milk production is often at the peak during early lactation months.

riesgo de fracaso de producción

incrementó ✓ disminuyó

Cantidad antes de MST: Over 50
Cantidad luego de MST: Less than 10
Quantity refers to the percentage probability of the crop failing to do well. Quote from the farmer, '... it was 50 50 getting any produce before I started using compost ...' meaning that there was high chance that the crop could fail due to poor soils. Compost is a rich source of organic matter; hence, ensure sustainable agricultural production.

gastos en insumos agrícolas

incrementó ✓ disminuyó

Cantidad antes de MST: Over 5,000
Cantidad luego de MST: 0
Quantity refers to the amount of money in Kenya shillings spend on inorganic fertilizers in a season. The farmers no longer spend money inorganic fertilizers.

ingreso agrario

disminuyó ✓ incrementó

Cantidad antes de MST: Less than 2,000
Cantidad luego de MST: 20,000
Quantity refers to the amount of money in Kenya shillings received from the sale of farm produce, including compost in a year. The farmer is able to sell surplus crop and animal products as a result of bumper harvest due to the use of compost on his farm.

diversidad de fuentes de ingreso

disminuyó ✓ incrementó

Cantidad antes de MST: 1 - 3
Cantidad luego de MST: More than 3
Quantity refers to household income sources, including sale of surplus farm produce and compost. The farmer is able to sell surplus crop and animal products, and other on-farm products such and compost.

carga de trabajo

incrementó ✓ disminuyó

Cantidad antes de MST: Over 5
Cantidad luego de MST: Less than 1
Quantity refers to the number of hours that the farmer can be free in any working day. A lot of work is involved in the preparation and maintenance of compost in order to achieve the desired results.

Impactos socioculturales

seguridad alimentaria/ autosuficiencia

disminuyó ✓ mejoró

Cantidad antes de MST: About 3 months of purchasing maize
Cantidad luego de MST: No months when there is total lack of food in the house
Quantity refers to the number of months in a year when there is total lack of food in the house, and the farmer has to buy all the food required in the house. The soils at the farm have been enhanced; hence, the farmer grows a variety of crops. Food is available in the household to sustain the family from one harvest to the next.

MST/ conocimiento de la degradación de la tierra

disminuyó ✓ mejoró

Cantidad antes de MST: 10%
Cantidad luego de MST: Over 90%
Quantity refers to the estimated percentage of knowledge in SLM/ land management. Not only is the farmer equipped with skills on how to make compost but also with skills in other SLM technologies such as vermicomposting.

Impactos ecológicos

humedad del suelo

disminuyó ✓ incrementó

Cantidad antes de MST: Less than 10
Cantidad luego de MST: 20 or more
Quantity refers to the farmer's estimated soil moisture content during the dry season when soil moisture challenges are expected to be high.

cubierta del suelo

disminuyó ✓ mejoró

Cantidad antes de MST: 30 - 50
Cantidad luego de MST: 60 - 80
Quantity refers to the farmer's estimated percentage soil cover at the farm.

materia orgánica debajo del suelo C

disminuyó ✓ incrementó

Quantity refers to the farmer's estimated percentage of organic matter at the farm. Based on estimation by the farmer.

cubierta vegetal

disminuyó ✓ incrementó

Cantidad antes de MST: 30 - 50
Cantidad luego de MST: 60 - 80
Quantity refers to the farmer's estimated percentage vegetation cover at the farm.

diversidad vegetal

disminuyó ✓ incrementó

Cantidad antes de MST: About 3
Cantidad luego de MST: More than 5
Quantity refers to the number of plants (crops) that the farmer establishes at the farm.

especies benéficas (depredadores, gusanos de tierra, polinizadores)

disminuyó ✓ incrementó

Not easy to quantify but the number of earthworms in the farm and bees visiting the farm to look for nectar has increased.

diversidad de hábitats

disminuyó ✓ incrementó

Not easy to quantify but the number of earthworms in the farm has increased which is an indication of increased habitats for different animals at the farm.

Impactos fuera del sitio

daño a campos de vecinos

incrementó ✓ disminuyó

Cantidad antes de MST: 80
Cantidad luego de MST: 10
Quantity refers to the probability of the neighbours' farms being burned because of available plant residues. The farmer collects residues from his neighbours' farms for use in composting. The neighbours could have burned the residues leading to death of useful microorganisms (bacteria and fungi).

impacto de gases de invernadero

incrementó ✓ disminuyó

Not easy to quantify. Composting improves carbon sequestration in the soil and by preventing methane emissions through aerobic decomposition, as methane-producing microbes are not active in aerobic conditions.

ANÁLISIS COSTO-BENEFICIO

Beneficios comparados con los costos de establecimiento

Ingresos a corto plazo: muy negativo ✓ muy positivo
Ingresos a largo plazo muy negativo ✓ muy positivo

Beneficios comparados con costos de mantenimiento

Ingresos a corto plazo: muy negativo ✓ muy positivo
Ingresos a largo plazo muy negativo ✓ muy positivo

Use of compost reduces the dependence on inorganic fertilizers.

CAMBIO CLIMÁTICO

Cambio climático gradual

temperatura estacional disminuyó

nada bien ✓ muy bien

Estación: estación húmeda/ de lluvias

Extremos (desastres) relacionados al clima

incendio

nada bien ✓ muy bien

ADOPCIÓN Y ADAPTACIÓN

Porcentaje de usuarios de la tierra que adoptaron la Tecnología

- casos individuales / experimentales
- 1-10%
- ✓ 11-50%
- > 50%

De todos quienes adoptaron la Tecnología, ¿cuántos lo hicieron sin recibir incentivos/ pagos materiales?

- 0-10%
- 11-50%
- 51-90%
- ✓ 91-100%

Número de hogares y/ o área cubierta

The project was implemented in the entire ward. Most farmers are preparing compost as advised in the ProSoil project.

¿La tecnología fue modificada recientemente para adaptarse a las condiciones cambiantes?

- Sí
- ✓ No

¿A qué condiciones cambiantes?

- [ ] cambios climáticos / extremos
- [ ] mercados cambiantes
- [ ] disponibilidad de mano de obra (ej. debido a migración)

CONCLUSIONES Y LECCIONES APRENDIDAS

Fortalezas: perspectiva del usuario de tierras

- With continued use of compost, there is no need for expensive inorganic fertilizers and pesticides that could also contaminate/ degrade the soil.
- Composting is not capital intensive.

Fortalezas: punto de vista del compilador o de otra persona recurso clave

- There is high production in the long run even without use of inorganic fertilizers.
- Composting is not capital intensive.

Debilidades/ desventajas/ riesgos: perspectiva del usuario de tierrascómo sobreponerse

- Inputs such as tithonia are not easy to find. Farmers can plant tithonia as hedges on their farms.
- More labour intensive as compared to the traditional way of composting. Farmers have to be committed.

Debilidades/ desventajas/ riesgos: punto de vista del compilador o de otra persona recurso clavecómo sobreponerse

- More labour intensive. Proper planning/ scheduling of farmm activities.

REFERENCIAS

Compilador
William Akwanyi

Editors
George Onyango
Innocent Faith
Noel Templer
Tabitha Nekesa
Ahmadou Gaye
Siagbé Golli

Revisado por
William Critchley
Rima Mekdaschi Studer
Sally Bunning

Fecha de la implementación: 9 de febrero de 2023

Últimas actualización: 24 de abril de 2024

Personas de referencia
Matthews George Anyanga - usuario de la tierra
George Onyango - Especialista MST
Innocent Faith - Especialista MST

Descripción completa en la base de datos de WOCAT
https://qcat.wocat.net/es/wocat/technologies/view/technologies_6648/

Datos MST vinculados
Approaches: Community Resource Persons (CRP) in agricultural extension https://qcat.wocat.net/es/wocat/approaches/view/approaches_6688/

La documentación fue facilitada por

Institución
- Alliance Bioversity and International Center for Tropical Agriculture (Alliance Bioversity-CIAT) - Kenia
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Proyecto
- Soil protection and rehabilitation for food security (ProSo(i)l)

Referencias claves

- Comparative effectiveness of different composting methods on the stabilization, maturation and sanitization of municipal organic solid wastes and dried faecal sludge mixtures, Mengistu, T., Gebrekidan, H., Kibret, K. et al., 2018, Environ Syst Res 6, 5 (2018): Free download at https://doi.org/10.1186/s40068-017-0079-4

Vínculos a la información relevante disponible en línea

- Composting Recycling Naturally: Simple Steps for Starting at Home: https://scdhec.gov/sites/default/files/Library/OR-1705.pdf