Keyhole Garden resisting flooding. (Shahid Kamal)

# Keyhole Garden (Bangladesh)

PUSTI BAGAN ("Garden for nutrition")

## DESCRIPCIÓN

**The Keyhole Garden model of homestead vegetable cultivation enhances the resilience of families living in areas with climate-related hazards, such as flooding and drought. Keyhole gardens have been shown to increase vegetable production in all seasons, thereby improving household food autonomy and dietary diversity.**

First initiated in Ugandan communities by Send a Cow UK, the keyhole garden technique is widespread in Africa. In 2011, Terre des hommes (Tdh) and Greendots piloted Keyhole Gardens for the first time in Asia, effectively adapting the design and methodology in Africa to the conditions of flood prone areas of Bangladesh, and eventually India. The garden is a good way to enhance dietary diversity, especially for poor/landless families.

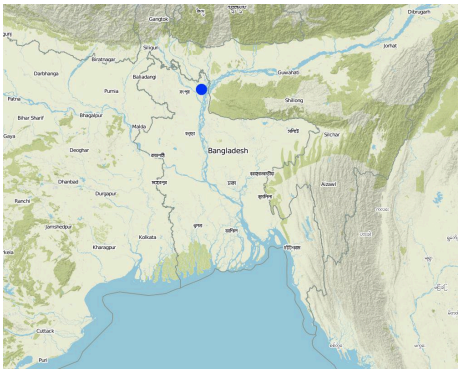
Keyhole gardens consist of a raised circular garden made of clay, shaped like a horseshoe or keyhole, with a maximum diameter of approximately three meters. For flood prone areas in Bangladesh and India, the plinth height depends on the location and is typically the same as the house plinth to resist flooding. A compost basket is built at the center of the garden. Organic matter (kitchen cuttings) and residual water are added on a regular basis through the compost pit. In some countries, bricks or stones are used to make the plinth.

The keyhole garden is a typical Low External Input Sustainable Agriculture (LEISA) approach that includes integrated composting, water retention, use of local materials, natural pest and disease control techniques, natural soil fertility measures, and proximity to the kitchen for both harvesting and care of the garden. In regions with mild conditions of flooding, tidal surge and drought, the garden increases the duration of gardening period during the year thus reducing the risk of disaster. In the aftermath of cyclone Mahasen, keyhole gardens demonstrated DRR utility: although many were partially damaged, none had to be rebuilt entirely. Where plants did not survive the storm, users were able to sow seeds immediately. On the other hand, the traditional ground-level plots used for pit and heap gardening were completely flooded / waterlogged and unusable.

Benefits of the technology include: compact size, proximity to the household for convenient maintenance and harvesting, composting of kitchen cuttings in the basket; and an ergonomic structure (raised, accessible). The small size is also ideal to facilitate training on vegetable growing, soil fertility and pest & disease management to first-time gardeners and students in schools. Keyhole gardens are highly productive—in Lesotho a typical garden can satisfy vegetable needs for a family of eight persons (FAO, 2008). Combined, these factors are scalable as an appropriate technology for landless and marginal farmers. In Bangladesh, the gardens enabled families to produce vegetables even during the monsoon period. As the keyhole garden normally does not need to be rebuilt every year it is a more efficient technique in the long-term than traditional methods such as pit and heap.

Users say that their garden produce tends to be larger and tastier than conventional gardens or market produce; and many indicated that they were able to meet their own vegetable consumption needs and to sell surplus or gift vegetables. For some women it was difficult to access sufficient amounts of soil, which meant that they needed to walk long distances to build the plinth. (Fortunately many received support from other villagers.) Secondly, during the monsoon, while most of the land is flooded, the keyhole garden remains dry. Consequently, it may provide shelter to certain animals (e.g. rats) and attract higher number of pests. Regardless of these two limitations users agree that the benefits greatly outweigh any observed limitations.

## LUGAR




**Lugar:** Kurigram municipality (Kurigram), Patharghata Union (Barguna), Kurigram District / Rajshahi and Barguna District / Barisal, Bangladesh

**No. de sitios de Tecnología analizados:** 100-1000 sitios

**Georreferencia de sitios seleccionados**

- 89.6487, 25.81035

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

**¿En un área de protección permanente?:**

**Fecha de la implementación:** 2012

**Tipo de introducción**

- [x] mediante la innovación de usuarios de tierras
- [ ] como parte de un sistema tradicional (> 50 años)
- [x] durante experimentos/ investigación
- [x] mediante proyectos/ intervenciones externas

Diversity is at the heart of the intervention: increased crop diversity for a healthier garden (resisting pests) and increased dietary diversity for a healthier person. (Sultana Al-Amin)

Keyhole garden resilient to flooding. (Sultana Al-Amin)

## CLASIFICACIÓN DE LA TECNOLOGÍA

### Propósito principal

- [x] mejorar la producción
- [ ] 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
- [x] reducir el riesgo de desastres naturales
- [x] adaptarse al cambio climático/ extremos climáticos y sus impactos
- [x] mitigar cambio climático y sus impactos
- [ ] crear impacto económico benéfico
- [ ] crear impacto social benéfico

### Uso de tierra

**Tierras cultivadas**

- Cosecha anual: cereales - quinoa o amaranto, leguminosas y legumbres - frijoles, vegetales - verdura de hojas verdes (ensaladas, repollo, espinaca, otros), vegetales - melón, zapallo, calabaza o calabacín, vegetales - otros, vegetales - vegetales de raíz (zanahorias, cebollas, remolachas, otros) , tomatoes, cauliflower, brocoli, watercress, eggplant, cucumber
- Cultivos perennes (no leñosos): plantas medicinales, aromáticas, plaguicidas perennes, chili
- Homestead Gardening

Número de temporadas de cultivo por año: 3
¿Se practica el intercultivo? Sí
¿Se practica la rotación de cultivos? Sí

### Provisión de agua

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

### Propósito relacionado a la degradación de las tierras

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

### La degradación considerada

**erosión de suelos por agua** - Wt: pérdida de capa arable/ erosión de la superficie

### Grupo MST

- manejo integrado de la fertilidad del suelo
- manejo integrado de pestes y enfermedades (incl. agricultura orgánica)
- jardines domésticos

### Medidas MST

**medidas agronómicas** - A1: vegetación/ cubierta del suelo , A2: materia orgánica/ fertilidad del suelo

**medidas estructurales** - S11: Otros

## DIBUJO TÉCNICO

### Especificaciones técnicas

Gardens should be built in close vicinity to the beneficiary's house, because gardens that are easily accessible and clearly visible are visited more regularly and maintained better.

The design is highly adaptable to local conditions and availability of free construction materials. The radius of the garden is 150CM and the delineated radius of the circular compost basket (in the center of the garden) is 45cm. The diagrams show (1) the location is near to house as an entry point for maintaining the garden; (2) the plinth is built to the same level of the house and a step is included where the plinth is high; (3) mulching to conserve the moisture; (4) interplanting a diversity of vegetables for both good vegetable health and good family nutrition; (5) using interplanted natural repellent plants as pest control for vegetables; (6) covering the basket during times of high sun intensity or heavy rain; (7) using liquid manures and plant teas as top dressing fertilisers.

Establishing what is the best height for your plinth very much depends on the local climatological conditions. In Bangladesh, the plinth is built from subsurface clayey soil, typically 2-3 feet in height - dependent on the location and level of seasonal flooding. The house plinth is a good gauge for how high to build the garden plinth. If the plinth is built too high, the roots of the plant will not be able to access sufficient water; and if built too low the next flood during the monsoon season may destroy the garden. Depending on dryness or soil/groundwater salinity, daily maintenance usually includes irrigating the soil. The outer rim of the plinth is protected with mud (and plastic or cloth) or stones. On top of the plinth is a mixture of soil and compost/manure (ratio 2:1) sloped up to the basket at a 30 - 40 degree angle. The central compost basket is filled with layers of fresh and dried vegetable matter, manure and ash to ensure that the soil fertility of the garden.

Women devised a number of different solutions to protecting the wall of the plinth and garden: Plastic bags, a combination of rice sacks (around the plinth edge) and plastic entrance way because of wear and tear (rice sacks erode faster), palm matting and old cloth. Some women put extra manure in the plinth walls to protect against flooding.

Sam Rich (www.fourthway.co.uk) has produced other technical drawings in addition to "How to Make Liquid Manure" such as: "How to make a Natural Pesticide" and "How to Make Plant Tea". There is also a version of the "How to Make a Keyhole Garden" in English from the experience in Africa.
None

Author: Sam Rich: www.fourthway.co.uk

Author: Sam Rich: www.fourthway.co.uk

None

Author: BBC Media Action Bangladesh

## ESTABLECIMIENTO/ MANTENIMIENTO: ACTIVIDADES, INSUMOS Y COSTOS

### Cálculo de insumos y costos

- Los costos se calculan: por unidad de Tecnología (unidad: **Keyhole Garden**)
- Moneda usada para calcular costos: **USD**
- Tasa de cambio (a USD): 1 USD = n.d.
- Costo promedio por día del sueldo de la mano de obra contratada: U.S.$2.50

### Factores más determinantes que afectan los costos

Over the last few years, people in disaster-affecteed areas of Bangladesh have become familiar to receiving during humanitarian distributions; and expect "hand-outs" if they were to participate in a development project. The Keyhole garden project, however, follows the LEISA approach and does not rely on giving free inputs to the participants. (In a few cases where the local population was lacking seeds and experience in seed production, women's groups were given seeds and training.) A lack of reliance on external inputs or subsidies contributes to the sustainability of the project. The inputs (clay, manure, sticks, rocks, etc.) are locally available and usually do not require additional expenses. This may not be the case in all contexts.

### Actividades de establecimiento

1. Clear land; mark out basket and external boundary using rope and stick pivoted from the centre) (Momento/ frequencia: Anytime)
2. Build plinth (highest monsoon flood level+30cm); (Momento/ frequencia: Anytime)
3. Construct basket at the centre from local materials. Fill basket with composting materials; (Momento/ frequencia: Anytime)
4. Bring soil and heap it around the central basket. Any available animal dung can also be added into the soil mix for greater initial productivity. (Momento/ frequencia: Anytime)
5. Plant vegetable seeds around the garden - a mix for good family nutrition and to stop the spread of pests and diseases; (Momento/ frequencia: According to the seasonal varieties)
6. Mulch between plants to protect the soil. (Momento/ frequencia: Anytime)
7. Protect the walls with rice sacks or other waterproof protection if neccessary. (Momento/ frequencia: Anytime)

### Insumos y costos para establecimiento (per Keyhole Garden)

| Especifique insumo | Unidad | Cantidad | Costos por unidad (USD) | Costos totales por insumo (USD) | % de los costos cubiertos por los usuarios de las tierras |
|---|---|---|---|---|---|
| **Mano de obra** | | | | | |
| Building the garden | person-days | 3,0 | 2,5 | 7,5 | 100,0 |
| **Material de construcción** | | | | | |
| clay | | | | | 20,0 |
| **Costos totales para establecer la Tecnología** | | | | **7.5** | |
| *Costos totales para establecer la Tecnología en USD* | | | | *7.5* | |

### Actividades de mantenimiento

1. Weeding, harvesting, watering (Momento/ frequencia: Daily)
2. Structural maintenance on the garden (Momento/ frequencia: Annual)

### Insumos y costos de mantenimiento (per Keyhole Garden)

| Especifique insumo | Unidad | Cantidad | Costos por unidad (USD) | Costos totales por insumo (USD) | % de los costos cubiertos por los usuarios de las tierras |
|---|---|---|---|---|---|
| **Mano de obra** | | | | | |
| Maintenance | person-days | 11,0 | 2,5 | 27,5 | 100,0 |
| Structural maintenance on the garden | person-days | 1,0 | 2,5 | 2,5 | 100,0 |
| **Material de construcción** | | | | | |
| Earth Clay -depends on height: ex .4m plinth) | cubic meter | 11,0 | | | |
| Manure (quantity depends on design) | cubic meter | 2,0 | | | |
| Basket (sticks/bamboo with thin sticks to weave the basket | Sticks | 15,0 | | | |

| | | | | | |
|---|---|---|---|---|---|
| Protective material, rice bags/stones/plastic | Square meter | 18,0 | | | |
| **Indique los costos totales para mantenecer la Tecnología** | | | | **30.0** | |
| *Costos totales para mantener la Tecnología en USD* | | | | *30.0* | |

## ENTORNO NATURAL

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

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

### Especificaciones sobre el clima
Promedio anual de lluvia en mm:2666.0
Applied in areas with monsoon and drought like conditions in the project areas in Bangladesh.
Nombre de la estación meteorológica:
http://data.worldbank.org/indicator/AG.LND.PRCP.MM
The technology is adapted to semi-arid areas/countries in Africa like Uganda and Tanzania.

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

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

### Altura
- [x] 0-100 m s.n.m.
- [x] 101-500 m s.n.m.
- [ ] 501-1,000 m s.n.m
- [ ] 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)
- [ ] moderadamente profunda (51-80 cm)
- [ ] profunda (81-120 cm)
- [ ] muy profunda (>120 cm)

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

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

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

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

### Disponibilidad de aguas superficiales
- [x] excesiva
- [ ] 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:*

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

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

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

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

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

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

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

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

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

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

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

### Género
- [x] mujeres
- [x] hombres

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

### Área usada por hogar
- [x] < 0.5 ha
- [x] 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

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

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

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

### Derechos de uso de agua
- [x] acceso abierto (no organizado)

1,000-10,000 ha
> 10,000 ha

comunitarios (organizado)
arrendamiento
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 |

## IMPACTO

### Impactos socioeconómicos

Producción de cultivo

disminuyó — incrementó

Cantidad antes de MST: <5% of pilot families growing vegetables in all 3 seasons
Cantidad luego de MST: 50% of the pilot families able to grow vegetables in 3 seasons
Before the project started, the majority of the participants were not able to produce vegetables year round. Especially during the monsoon months, people were dependent on produce available at the local market. The baseline survey indicated that in both regions more than 50% of the households would cultivate vegetables for a maximum of 3 months per year and in Kurigram 30% of the participants were not able to grow vegetables at all.
This situation has changed significantly after the introduction of the keyhole gardens. At least 50% of the households were able to produce vegetables during each season. Where in the past almost no one was able to cultivate during the monsoon period, now on average 63% of the households in Kurigram and 73% of the households in Patharghata were growing vegetables in the wet season. The summer figures are actually lower than the monsoon figures. Seeds did not germinate well, because participants were not fully prepared to deal with the dry and saline conditions during this season. Learning from this experience, and with adequate support from Tdh, participants should be able to achieve higher cultivation rates in the future.

diversidad de producto

disminuyó — incrementó

Cantidad antes de MST: Average of 2-4 types of vegetables grown.
Cantidad luego de MST: Average of six types of vegetables grown
During the field visits and individual interviews in June 2013, the majority of the participants indicated that in the keyhole garden they usually grow 6 or more different types of vegetables at any given time. This is a marked difference from previous years, when the majority of people in Patharghata would only grow 2 types of vegetables. In Kurigram the baseline was somewhat higher (31% cultivated 4 types of vegetables per year on average), but still significantly lower than in 2013. By increasing the different types of vegetables grown, the families have access to a more diversified diet.

área de producción (nuevas tierras bajo cultivo/ en uso)

disminuyó — incrementó

Cantidad antes de MST: 0
Cantidad luego de MST: 333
In addition to the 175 pilot keyhole gardens, an additional 158 gardens were started on homesteads either via peer to peer pass-along system or spontaneous copy/replication of the technology.

### Impactos socioculturales

situación de salud

empeoró — mejoró

The Keyhole Garden supports a diversified diet by enabling year-round vegetable production; thus boosting the resilience of homesteads exposed to extreme weather patterns (drought or monsoon/flood seasons).

situación de grupos en desventaja social y económica (género, etáreo, estatus, etnicidad, etc.)

empeoró ✓ mejoró

Gardens will quickly increase household vegetable production, easing economic burden and providing for the household consumption or surplus to sell or gift. The latter can increase social bonding and benefit peer to peer linkages.

Teaching

Reduced ✓ Increased

Keyhole garden building and maintenance teaches lessons of good soil, water and vegetable management that can be transferred to field crops or plain large scale vegetable growing.

### Impactos ecológicos

pérdida de suelo

incrementó ✓ disminuyó

Precious topsoil is not lost during flooding events.

impactos de inundaciones

incrementó ✓ disminuyó

Gardens that are not submerged by floods continue to produce in the monsoon season.

Surpluses can be used for selling or gifting; increased vegetables especially at times when they are not usually available enables families to save money on expensive purchases out of the normal vegetable season

None ✓ None

### Impactos fuera del sitio

Teaching

Reduced ✓ Increased

Keyhole garden building and maintenance teaches lessons of good soil, water and vegetable management that can be transferred to field crops or plain large scale vegetable growing.

## ANÁLISIS COSTO-BENEFICIO

### Beneficios comparados con los costos de establecimiento

Ingresos a corto plazo: muy negativo ✓ muy positivo

### Beneficios comparados con costos de mantenimiento

Ingresos a corto plazo: muy negativo ✓ muy positivo

No long term study available. In most cases no (or very low) investment cost in materials and a low investment cost in labor was necessary. Thus the establishment and maintenance costs are relatively low compared to the benefit of increased homestead vegetable production and access to produce for increasing dietary diversity. The benefit increases when the technology supports resilience to flooding as was the case from flooding (Kurigram), and partially from a cyclone (Patharghata).

## CAMBIO CLIMÁTICO

### Extremos (desastres) relacionados al clima

tormenta tropical: nada bien ✓ muy bien

tormenta local: nada bien ✓ muy bien

inundación general (río): nada bien ✓ muy bien

marea tormentosa/ inundación costera: nada bien ✓ muy bien

### Otras consecuencias relacionadas al clima

periodo reducido de crecimiento: 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

333 from the pilot study. Subsequent projects by Tdh from 2013-2015 have seen over 3'500 keyhole gardens created in Bangladesh and India.

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

- ✓ Sí
- No

The technology was adapted from semi-arid zones in Africa (where soil amelioration and water conservation were priorities and materials

**¿A qué condiciones cambiantes?**

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

such as stones and brick are available) to areas of South Asia prone to flood and tidal surge.

## CONCLUSIONES Y LECCIONES APRENDIDAS

**Fortalezas: perspectiva del usuario de tierras**

- Seasonal local agriculturalists reported that gardens yielded high productivity with good vegetable quality and diversity; withstood heavy monsoon rains lasting for several days; and withstood a salt water tidal intrusion that destroyed adjacent traditional gardens. During the FGDs women clearly expressed a lot of enthusiasm for the project and all the participants indicated that they would continue with their garden, even if Tdh would no longer provide any support. One volunteer reported successfully harvesting five common vegetables usually impossible to grow in monsoon conditions:
  - In plain land we can cultivate once in a year but in keyhole garden we can harvest vegetables in three seasons and they don't go underwater in the rainy season
  - Save money for the family: don't need to buy fertilizers or vegetables and some people earn money by selling the garden product
  - We can collect vegetables for the children's requirements directly from the garden when they need them
  - In a small space you can have lots of different vegetables and the taste is much better because the garden depends on compost – no chemicals
  - The cost to make is it very low, but you need labour; by our own labour we can build it
  - Because of composting the garden can always get nutrients

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

- The keyhole garden project has been very successful and has largely achieved its core objective to improve year-round access to nutritious food from the homestead area. These benefits are summarized again as:
  - Appropriate size for landless homesteads, also ideal to facilitate training on LEISA techniques to first-time gardeners and students in schools.
  - Proximity to the household for convenient maintenance and harvesting, composting of kitchen cuttings in the basket;
  - Ergonomic structure (raised, accessible).
  - Highly adaptable to local conditions that supports resilience to flood and drought conditions.
  - Highly productive—families produced vegetables even during the monsoon period.
  - As the keyhole garden normally does not need to be rebuilt every year it is a more efficient technique in the long-term than traditional methods such as pit and heap.

  Therefore, the reviewer did not suggest any major changes to the technique or project; rather to focus on specific issues that could help making the project more efficient and that could help broaden its impact.

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

- No major weaknesses in the technology or design were expressed. However for some women it was difficult to access sufficient amounts of soil, which meant that they needed to walk long distances to bring soil to build the plinth.
  In coastal areas where saline intrusion in groundwater and soils is on the rise, growing and irrigating crops is difficult in the dry season. Some women received support from other family members or neighbours; identify a support network for families having challenges to access soil to build the plinths.
  Continue to look for for alternative irrigation sources and/or groundwater recharge innovations as well as soil conservation techniques to protect against salinity. Likewise, saline resistant vegetable varieties may be available.

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

- More careful planning of the location for the keyhole garden is needed. In Patharghata 11 women decided to relocate their garden within the first year. This suggests that the women appreciate the benefits of the garden, but having to break down and move the garden is a rather laborious activity.
  Not surprisingly, women who have less time to work in the homestead area, e.g. due to work or other out-of-home responsibilities, are not able to maintain their keyhole garden so well. Spend more time to assist the participants with identifying the most suitable locations to construct the garden for a keyhole garden in the homestead area at the start of the project.
  While maintaining a focus on women, involve the husband or other family members/ neighbours and ensure that they are also trained and ensure that the garden is clearly visible and can be accessed.

## REFERENCIAS

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### Descripción completa en la base de datos de WOCAT

https://qcat.wocat.net/es/wocat/technologies/view/technologies_779/
Video: https://player.vimeo.com/video/44042261

### Datos MST vinculados

Approaches: Peer to Peer Pass-on Approach with Women https://qcat.wocat.net/es/wocat/approaches/view/approaches_784/

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Proyecto

- Book project: where people and their land are safer - A Compendium of Good Practices in Disaster Risk Reduction (DRR) (where people and their land are safer)

### Referencias claves

- "Keyhole Gardens: Improved Access to Homestead Vegetables and Dietary Diversification- External Evaluation and Capitalization of the Keyhole Garden Project in Bangladesh", Van Hout, R., 2013: Freely available: Terre des hommes Lausanne Asia Desk: info@tdh.ch
- “Keyhole Gardens – great potential for improving homestead crop diversity and mother & child nutrition”, Taylor S, 2013, Discussion paper for the Agrobiodiversity Conference, Dhaka, 28 January 2013: Freely available: Terre des hommes Lausanne Asia Desk: info@tdh.ch
- "Keyhole Gardens in Lesotho", FAO Nutrition and Consumer Protection Divis"ion (AGN), 2008 (with Send a Cow UK): http://www.fao.org/ag/agn/nutrition/docs/FSNL%20Fact%20sheet_Keyhole%20gardens.pdf

### Vínculos a la información relevante disponible en línea

- Greendots - Terre des hommes technical partner for Keyhole Gardens in South Asia: www.greendots.ch
- Send a Cow UK: How to make an African style raised bed (YouTube, ex. Uganda): https://www.youtube.com/watch?v=ykCXfjzfaco
- Send a Cow UK - Keyhole Garden resources (Learning from Africa: How to make a Keyhole Garden): http://www.sendacow.org.uk/lessonsfromafrica/resources/keyhole-gardens
- Fourthway's posters online: Smallholder organic agriculture (Uganda, including Keyhole gardens): http://www.fourthway.co.uk/posters/
- Fourthway's posters online: Smallholder organic agriculture (Bangladesh, including Keyhole gardens): http://www.fourthway.co.uk/bangladesh/index.html
- Terre des hommes: First Keyhole Garden in Asia (to resist storm surge/floods in Bangladesh): https://vimeo.com/44043929