

Successful cases of community "Do-nou" Technology projects in Kenya

Githura Self Help Group in Kieni West Sub-County was struggling to transport their product, Bulb Onions, from their farm to the market through the rural access road. Because of the muddy conditions of the rural access road (Photo 1), the tractors carrying Bulb Onions (Photo 2) sometimes got stuck in the mud (Photo 3). Bulb Onions found thrown on the road as waste because they could not reach the market in time due to the bad rural access roads (Photo 4).

However, after Githura Self Help Group received the training and demonstration on road maintenance using "Do-nou" Technology (Photo 5), the group members were motivated and continued to repair road.



Photo 1: Road condition before repair



Photo 2: Tractor carrying Onion to market



Photo 3: Tractor getting stuck



Photo 4: Onions thrown on the road



Photo 5: Road after demo training



Photo 6: Road after repaired by CDF

The "Do-nou" Technology is easily adoptable. **The application of the technology motivates and builds farmers confidence in initiating their own development.**

After a while, Area Member of Parliament heard of farmers' efforts and used Constituency Development Fund to repair the road (Photo 6). Now the group members are enjoying free transportation cost, which used to be 300 Ksh. per bag of Bulb Onion, because vehicles of buyers are able to get to the farm.

The demo training on rural road maintenance using "Do-nou" Technology has triggered the rural development.

Other application of "Do-nou" Technology

- . Construction of dykes
- . Construction of water pans
- . Construction of pathways in mushy or swampy areas
- . Reinforcement of irrigation canal linings

Example of the Dykes



Example of the Water pan



Embankment of water pan built with "Do-nou"

Water pan filled with water

For More Information Contact:

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Better Rural Access Roads, Better Farmers Life!

"Do-nou" Technology

"Mobilization community labor and use of local material for improving impassable rural access roads"

Main target reader: Stakeholders in rural development, Extension staff, Group leaders and Community members



Smallholder Horticulture Empowerment & Promotion Project for Local & Up-scaling (SHEP PLUS)



Japan International Cooperation Agency



Agriculture and Food Authority
Horticultural Crops Directorate



Ministry of Agriculture, Livestock and Fisheries
State Department of Agriculture

What is "Do-nou"?

"Do-nou" is Japanese word that means wrapping soil in a gunny bag. "Do-nou" Technology involves use of gunny bags **filled appropriately** with either sand, farm soil, gravel or murrum, the opening **properly tied** and then, **compacted manually**. "Do-nou" bags are commonly used for: raising embankments to prevent floods and reinforcing buildings' foundations.

"Do-nou" Technology for maintenance of unpaved roads have been **adopted** as alternative technology proven to improve the livelihood of the rural communities and enhance their role in the maintenance of road and other infrastructure as indicated in **Roads 2000 Strategic Plan 2013-2017 in Kenya**.

Characteristics of "Do-nou" Technology

- Use of locally available material
 - 1) "Do-nou" bag/Gunny bag (45 cm x 60 cm)
 - 2) Material put inside the bag: sand, murrum, gravel or farm soil (in-situ soil)
- Manual Labour based and Easily adoptable by the community

Procedure of road maintenance using "Do-nou" Technology

- 1) Through a baraza, the community is **SENSITIZED** about the technology
- 2) The community **IDENTIFIES** the rural access roads with impassable section(s)
- 3) **REMOVE** any stagnant water and mud from the impassable section(s)
- 4) Then **EXCAVATE** the impassable sections to a depth of 10cm, 20cm or 30cm for one (1), two (2) or three (3) layers of "Do-nou" bags, respectively. The number of "Do-nou" layers to be applied depends on the number of vehicles plying the road and the firmness of the ground
- 5) **FILL** the "Do-nou" bags with **the recommended quantity** of either murrum, gravel sand or farm soil
- 6) With one-hand holding the open end of the "Do-nou" bag, use plastic/synthetic twines to **TIE** the bag **above the hand**
- 7) Then **LAY** the bags in a row(s) within the excavated sections and **compact them** manually
- 8) When applying either two or three layers, **FILL** the spaces between the compacted layers before putting additional layers of "Do-nou" bags
- 9) After compacting the final layers of the do-nou bags, **APPLY** a 5 cm thickness layer of murrum. This prevents direct contact between the bags and the traffic; and protects the bags from the ultra violet rays thus keeping the road in good condition for a longer period

Pictorial procedure of "Do-nou" Technology



- 1) Through a baraza, the community is sensitized about the technology



- 2) Identify the impassable sections of a rural access road



- 3), 4) Excavate the impassable sections according to the intended No. of layers of "Do-nou" to be used in repairing the road.



A "Do-nou" bag (45 cm x 60 cm) or Second hand bags for 25 kg or 50 kg



- 5) Fill the "Do-nou" bags with **the recommended amount** of either soil, sand, gravel or murrum.



- 6) Tie the open end of the "Do-nou" bag using the twine.



- 7) Lay the bags in rows within the excavated section of the road and **compact**.



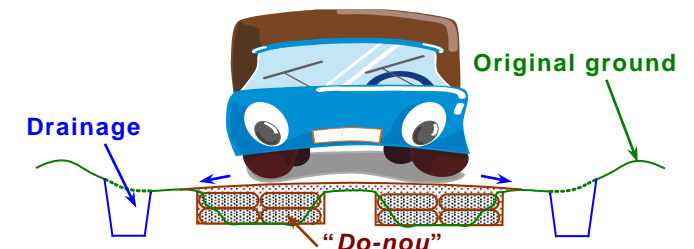
- 8) When applying more than one layer of "Do-nou" bags, fill the spaces between the compacted bags with murrum and repeat the process to the last layer



- 9) Apply a 5 cm thickness layer of murrum to the final layers of compacted "Do-nou" bags and compact



A completed road section maintained using "Do-nou" technology



Cross section maintained by "Do-nou"