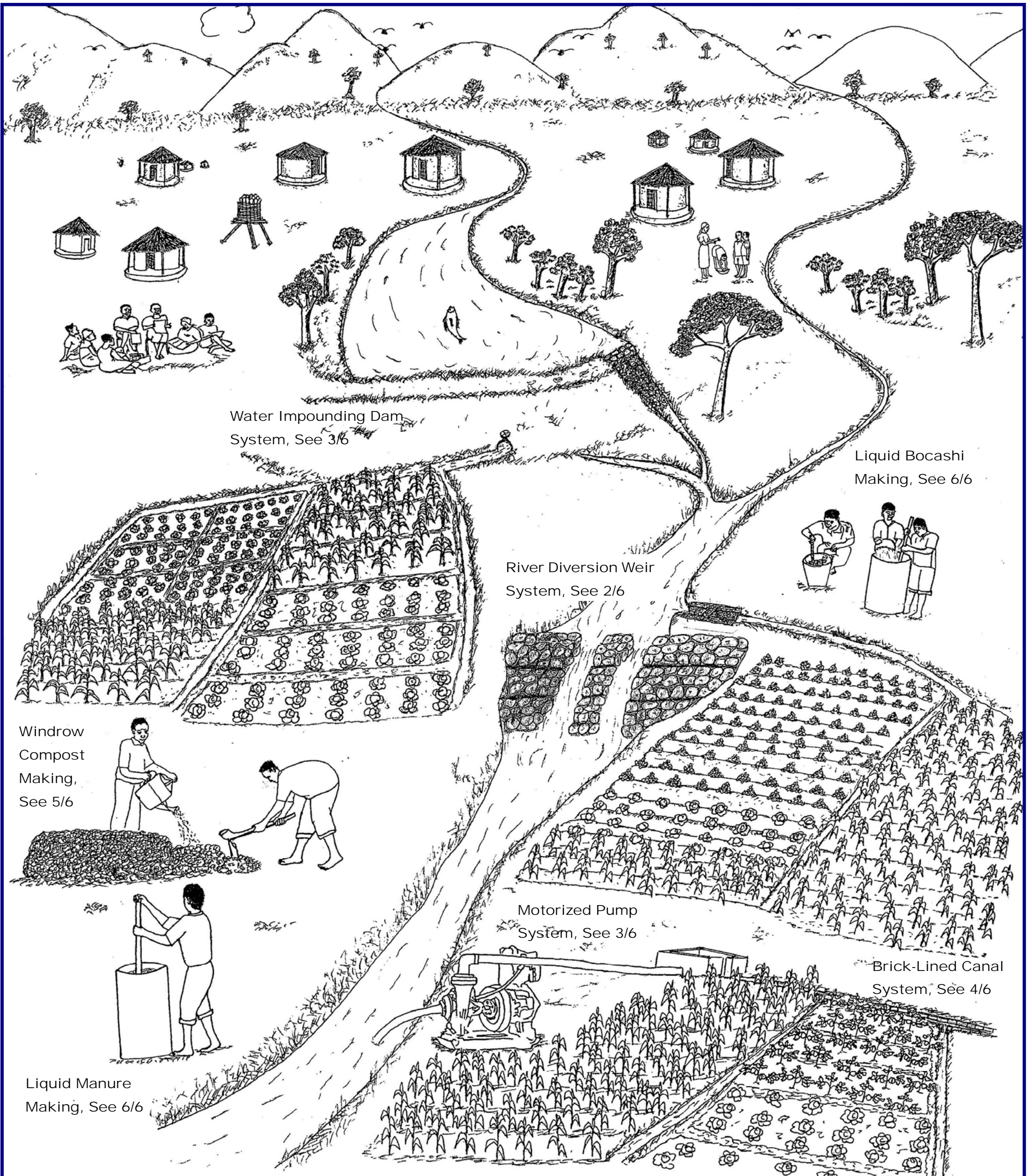


# SELF-HELP IRRIGATION, A BRIDGE TO IMPROVING RURAL LIVELIHOOD

Development of Smallholder Farmers' Capacity, a Key to Self-Reliance and Sustainability of Medium-Scale Irrigation Schemes

No. 1/6



Water Impounding Dam System, See 3/6

Liquid Bocashi Making, See 6/6

River Diversion Weir System, See 2/6

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Motorized Pump System, See 3/6

Brick-Lined Canal System, See 4/6

Liquid Manure Making, See 6/6



JICA INTERNATIONAL COOPERATION AGENCY (JICA)

THE CAPACITY BUILDING AND DEVELOPMENT  
FOR SMALLHOLDER IRRIGATION SCHEMES

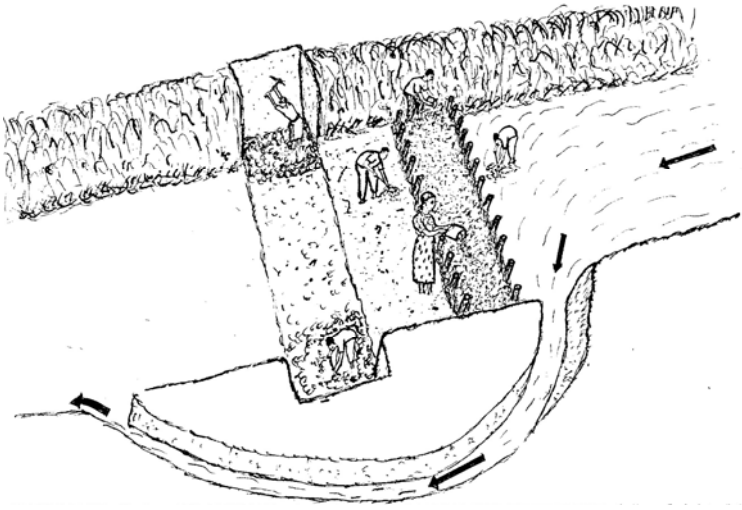
SCI SANYU CONSULTANTS, INC. JAPAN



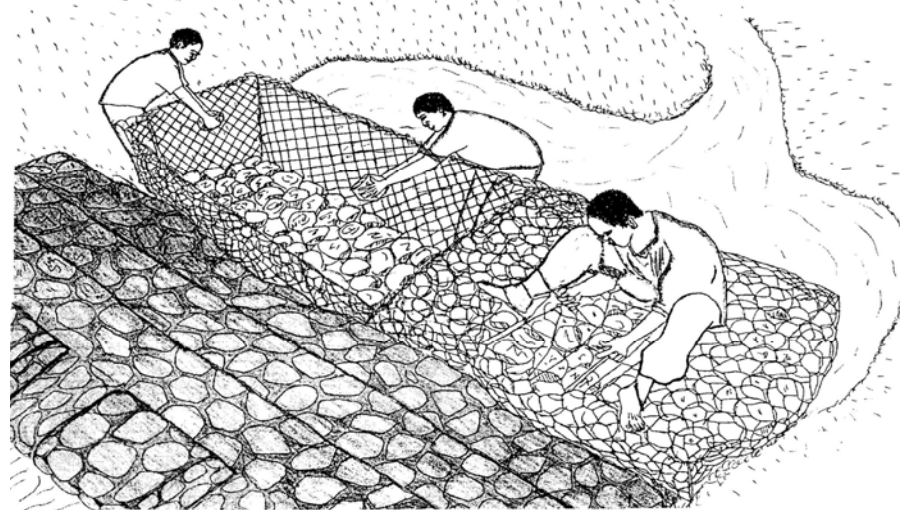
DEPARTMENT OF IRRIGATION SERVICES (DOI), MOIWD  
DEPARTMENT OF AGRICULTURAL EXTENSION SERVICES (DAES), MOAFS

## River Diversion Weir System

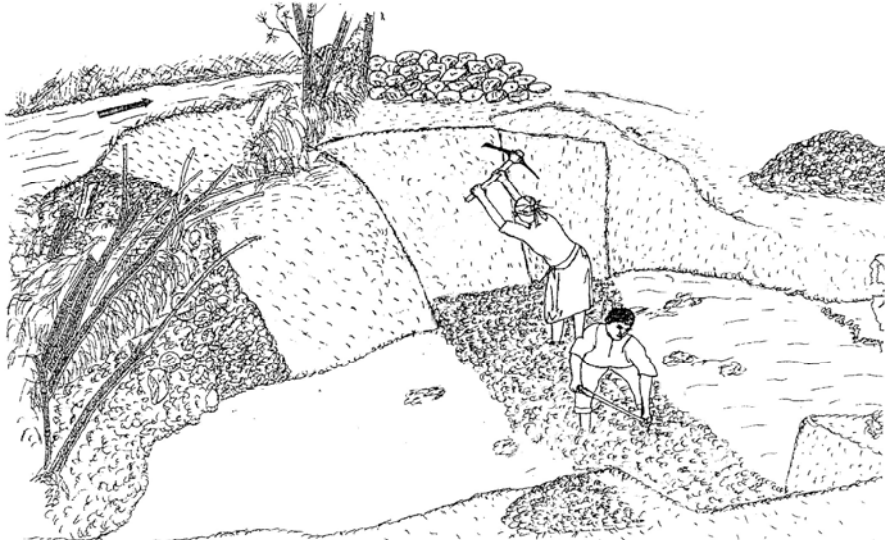
**1) Construction of Cofferdam:** A temporary structure to divert water to downstream away from weir construction site



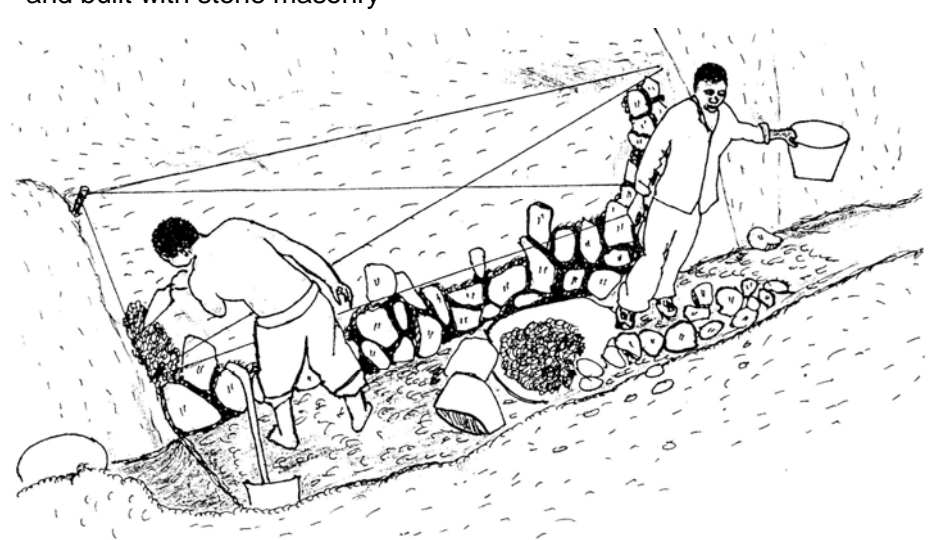
**5) Construction of Gabion:** To protect riverbed and both banks of downstream weir. Fill the baskets with stones



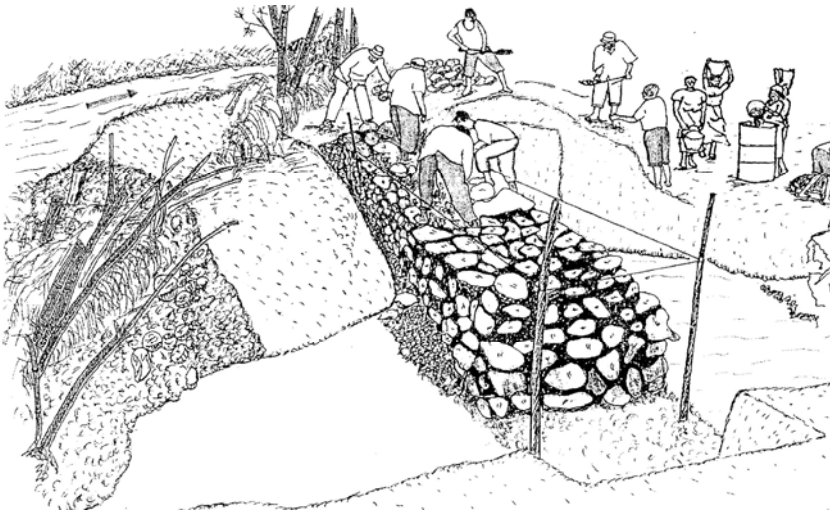
**2) Excavation of Weir:** Foundation should be made to a hard layer



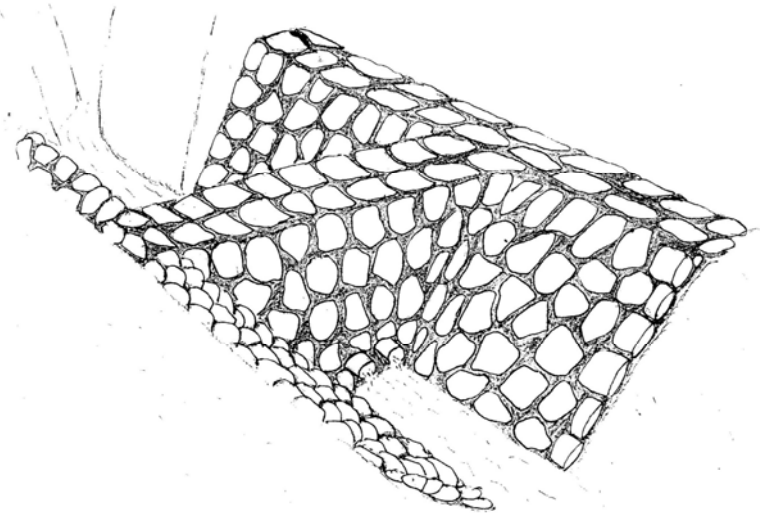
**6) Construction of Intake:** Walls and base of the intake should be compacted and built with stone masonry



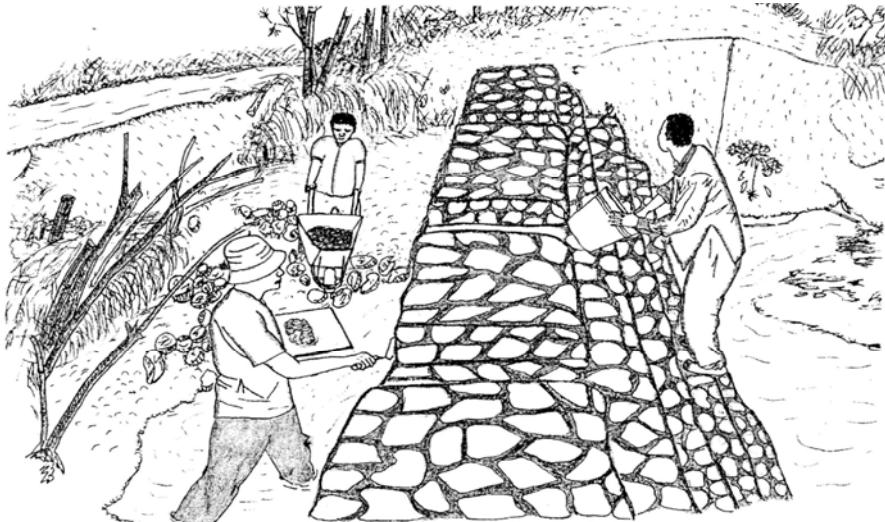
**3) Construction of Weir:** Right and Left side abutments and riverbed foundation should be properly built with stone masonry



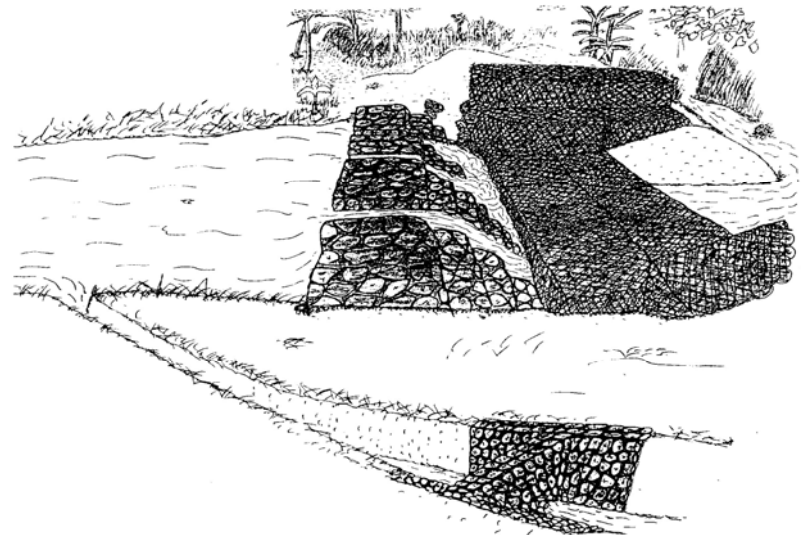
**7) Completed Intake:** Operate intake according to irrigation scheduling and water requirement



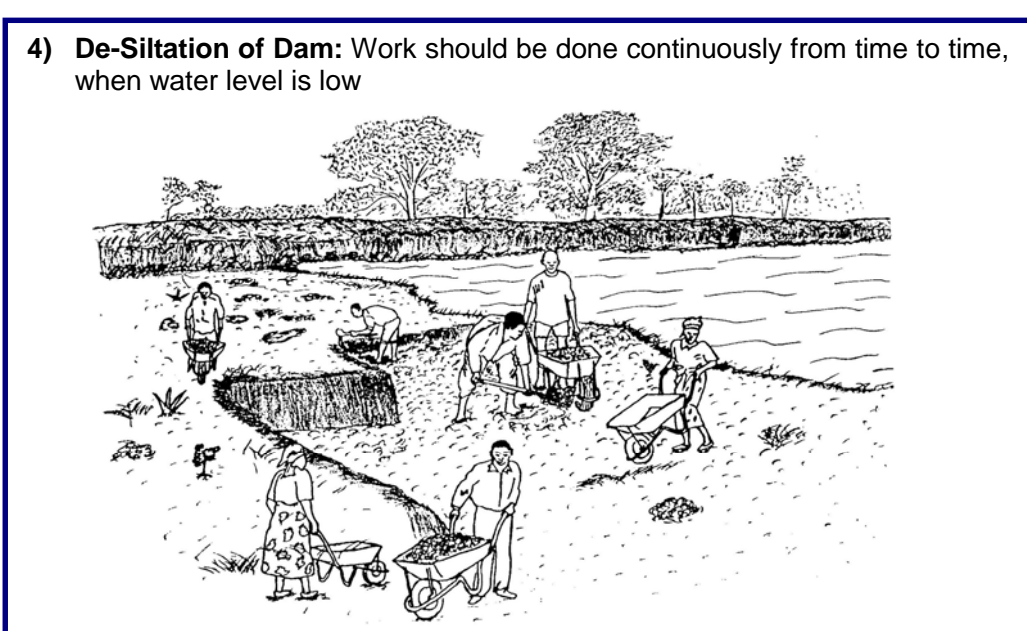
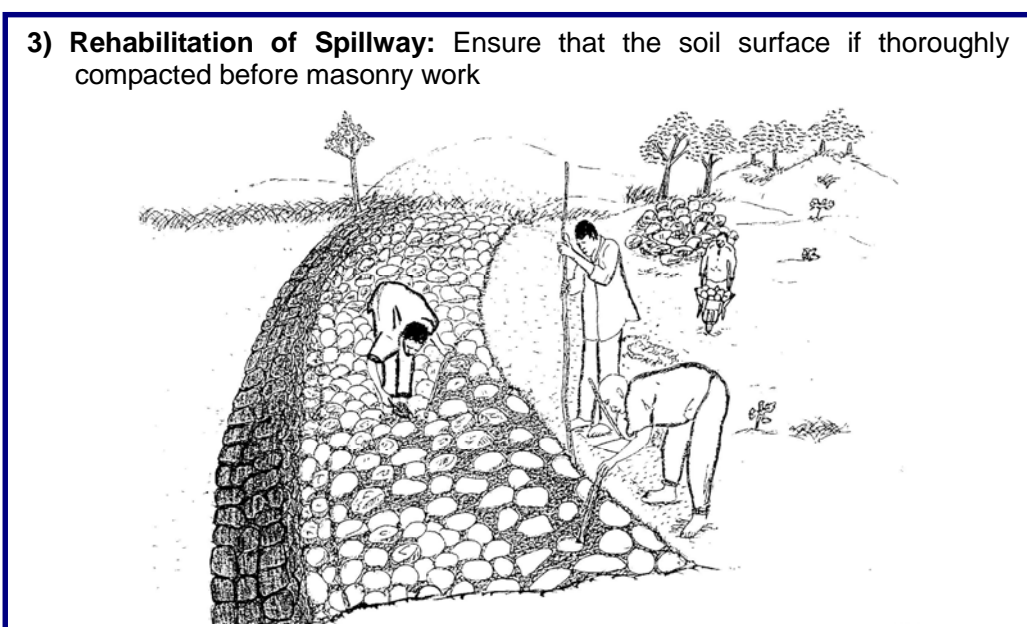
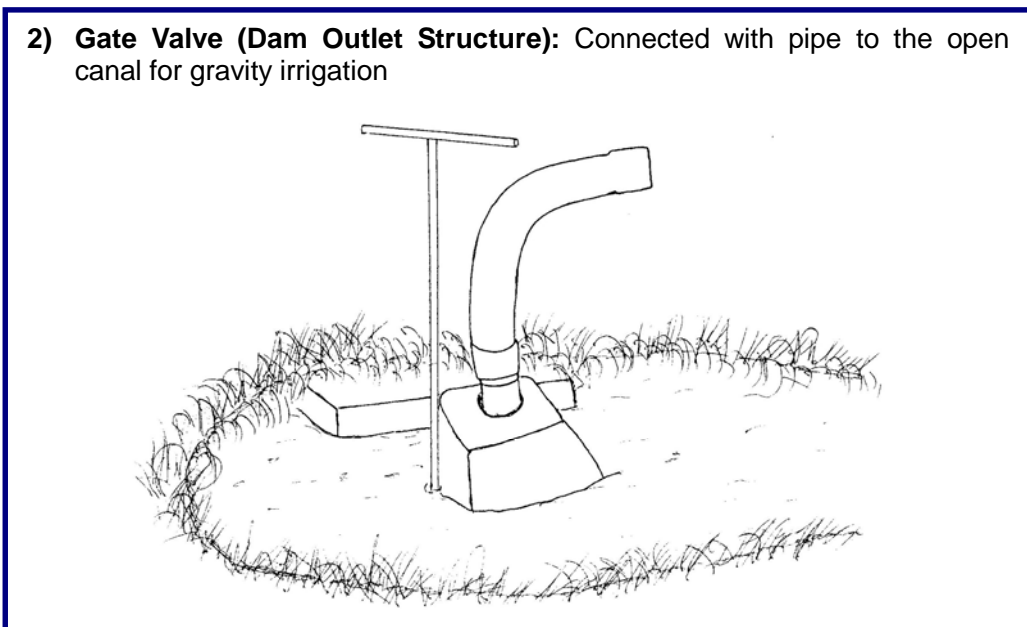
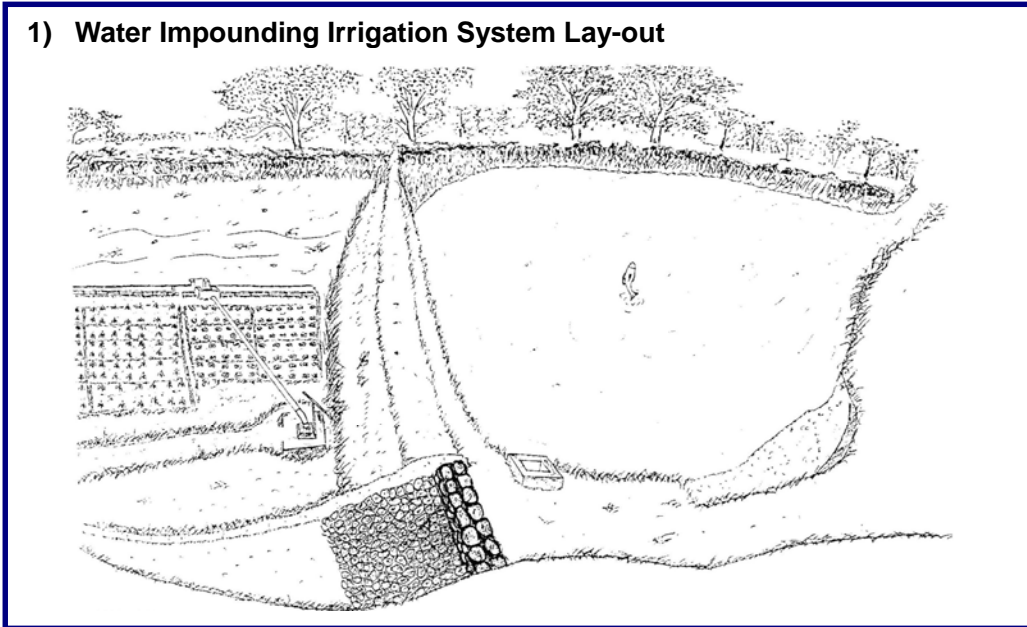
**4) Finishing of Weir:** After finishing construction, the weir should be cured by spraying water



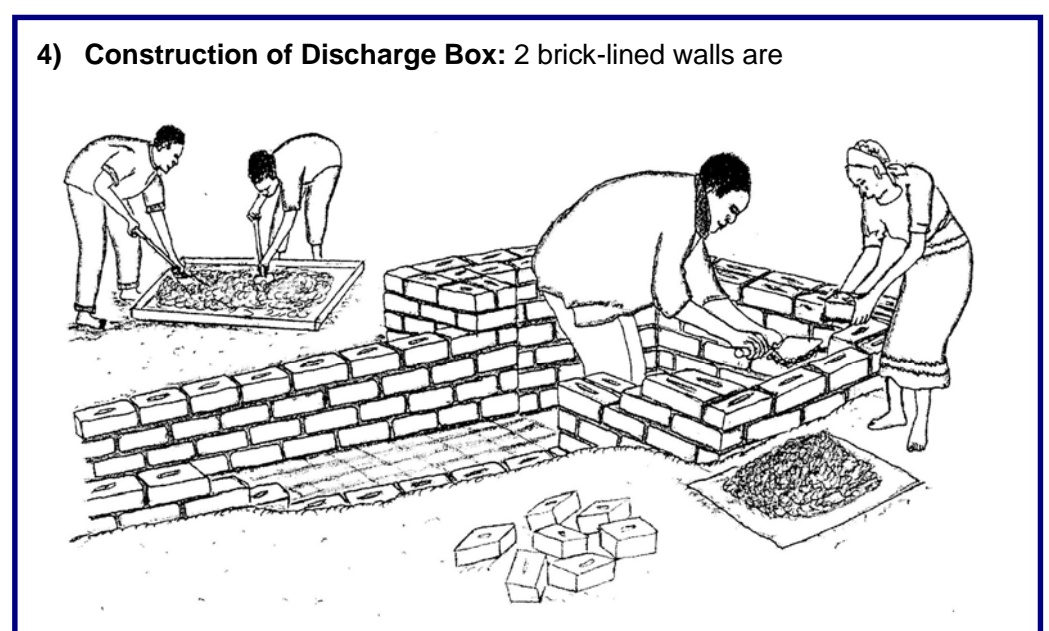
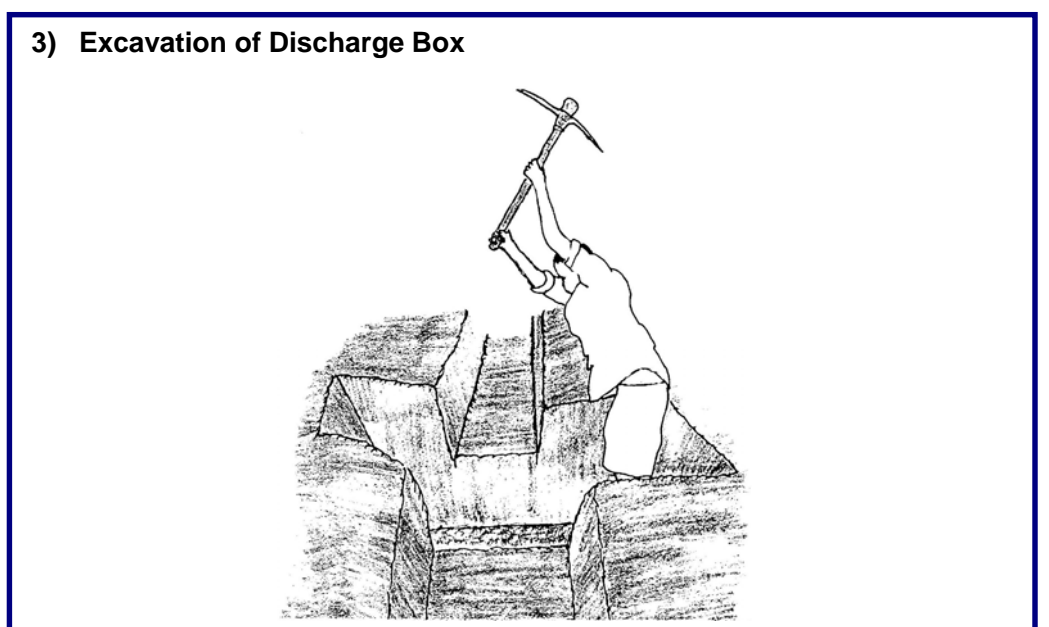
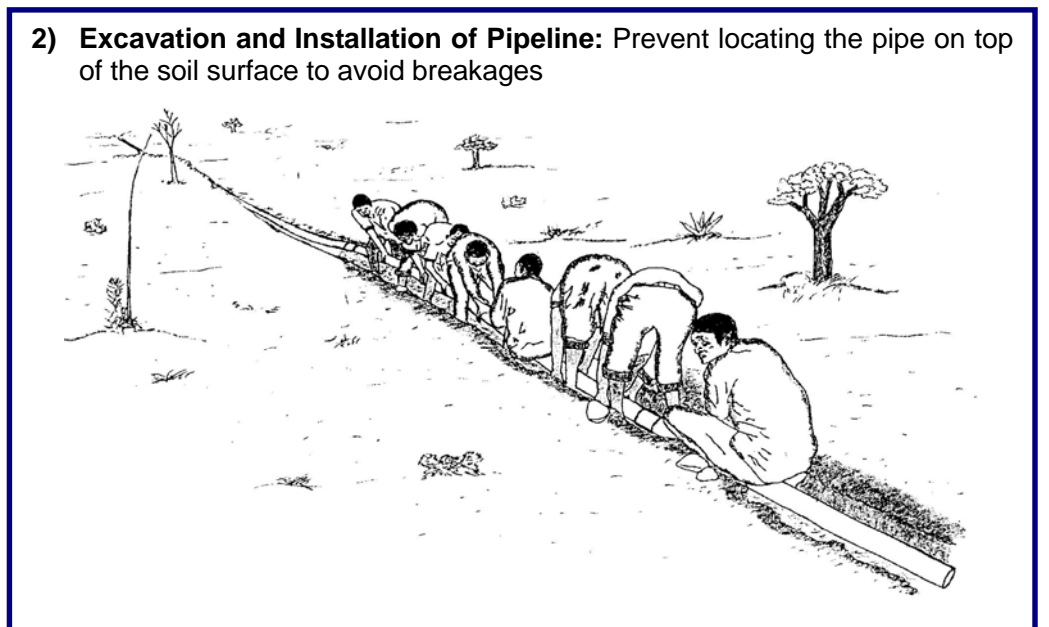
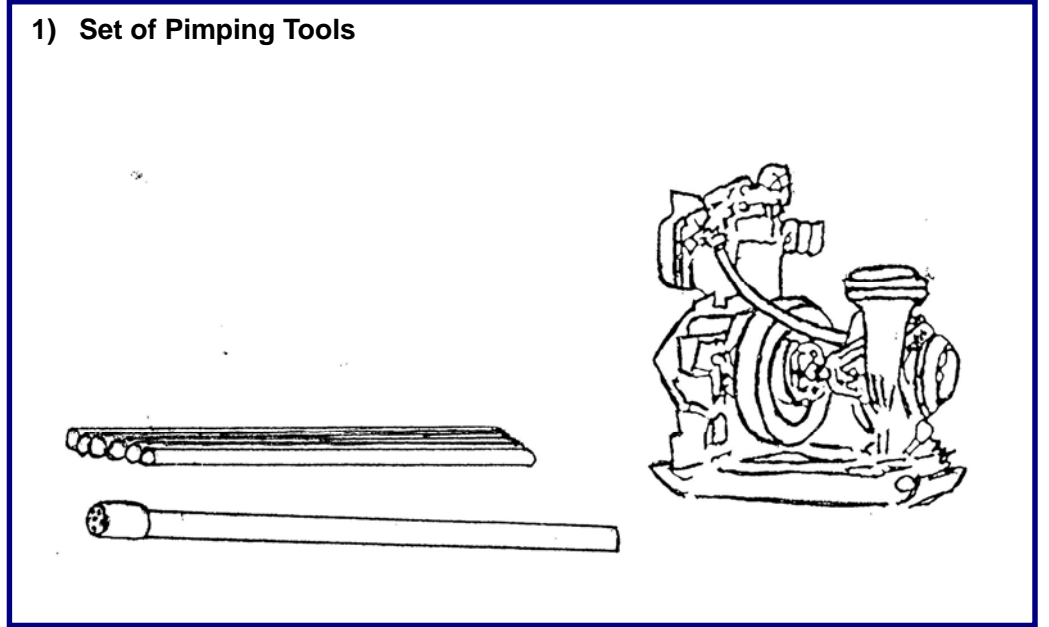
**8) Completed Weir, Protection Gabion and Intake**



## Water Impounding Dam System

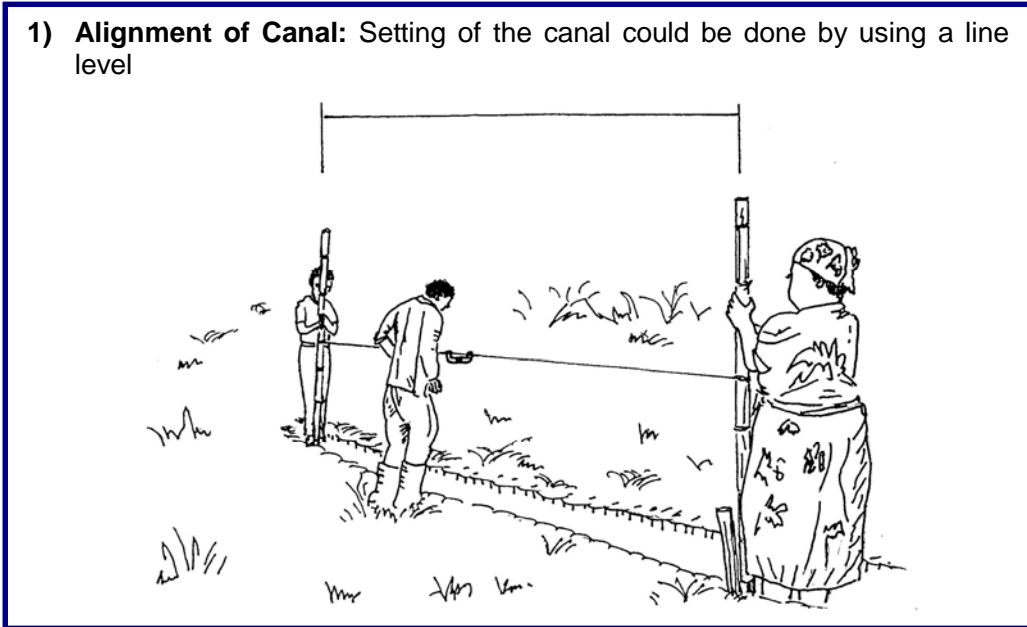


## Motorized Pump System

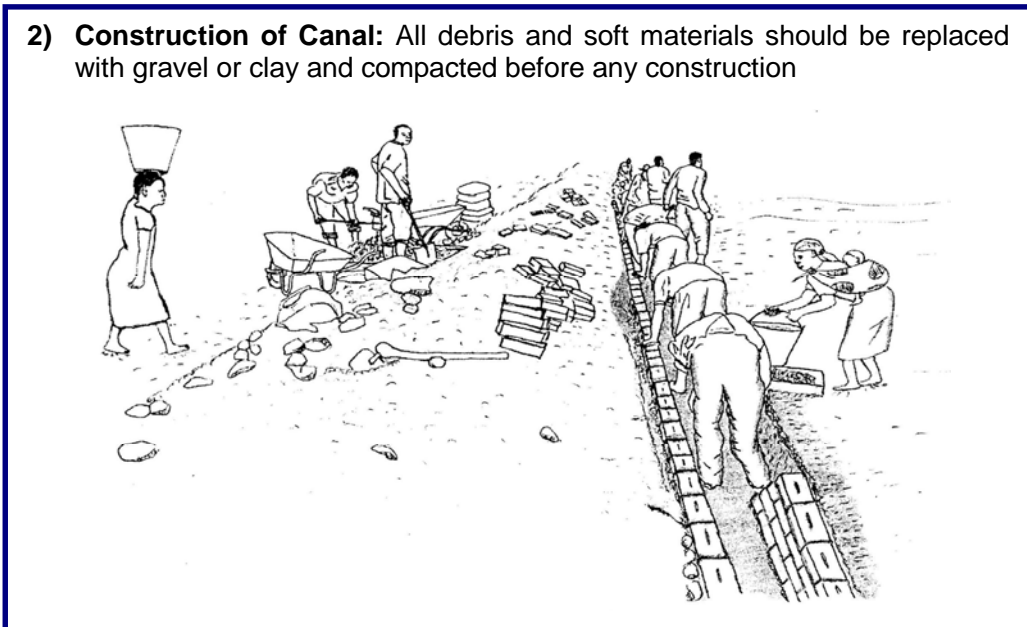


## Brick-Lined Canal System

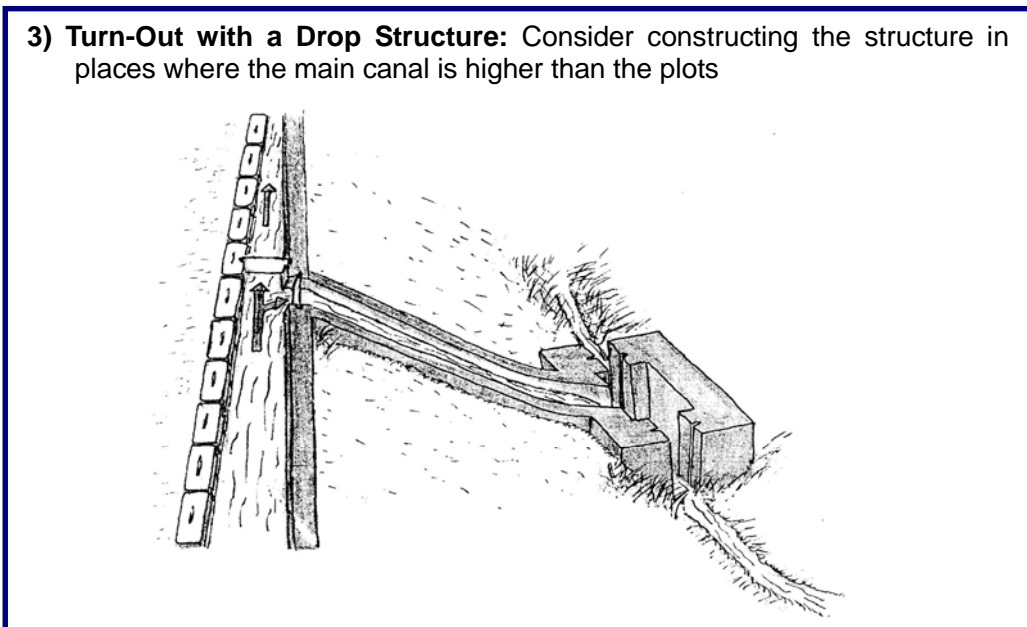
1) **Alignment of Canal:** Setting of the canal could be done by using a line level



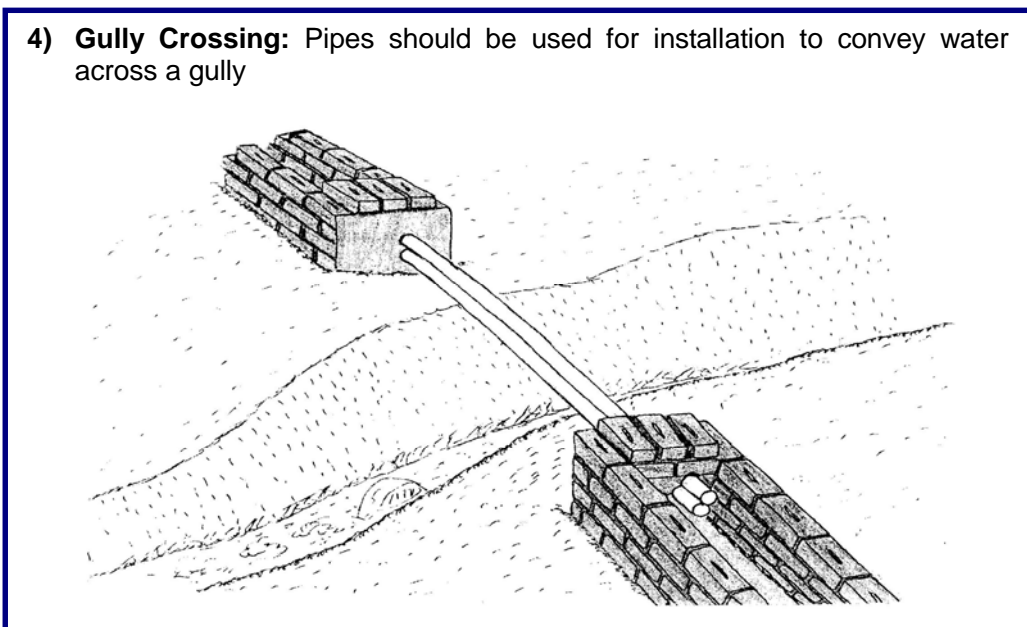
2) **Construction of Canal:** All debris and soft materials should be replaced with gravel or clay and compacted before any construction



3) **Turn-Out with a Drop Structure:** Consider constructing the structure in places where the main canal is higher than the plots

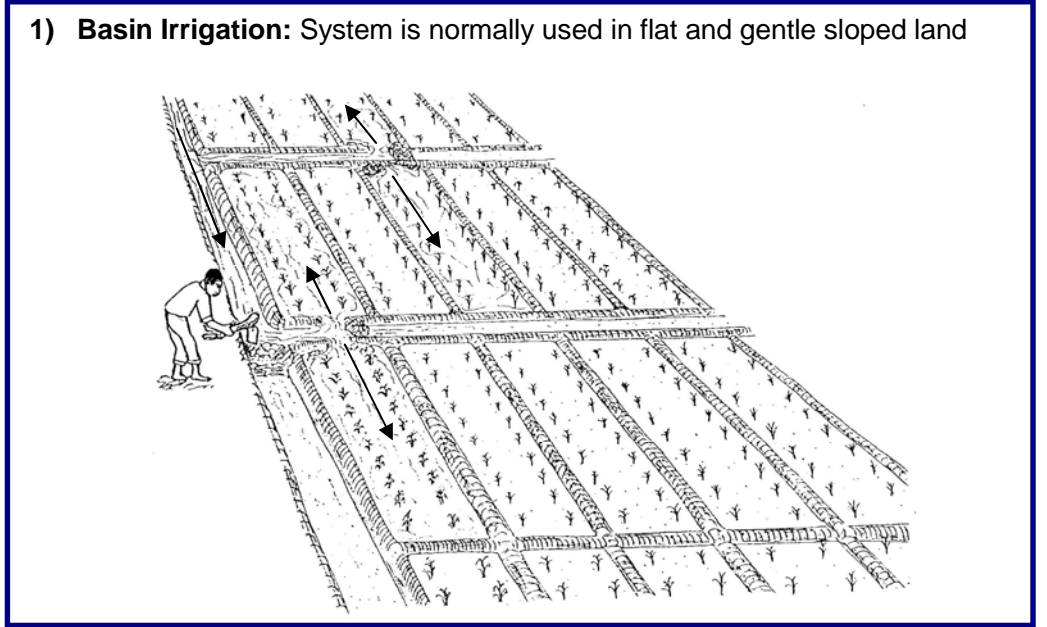


4) **Gully Crossing:** Pipes should be used for installation to convey water across a gully

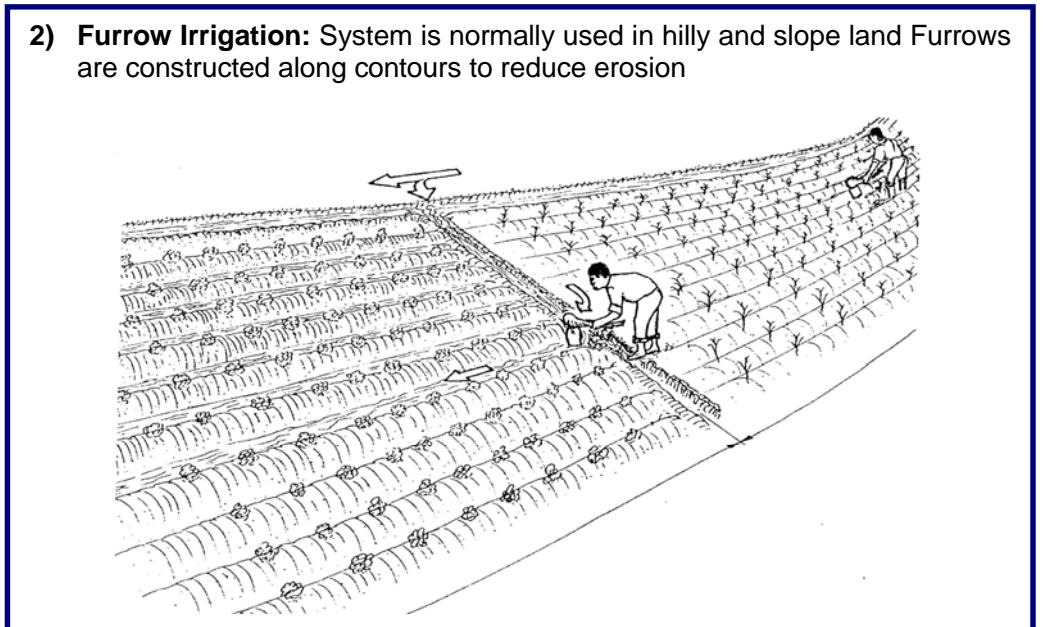


## Irrigation Water Supply Methods

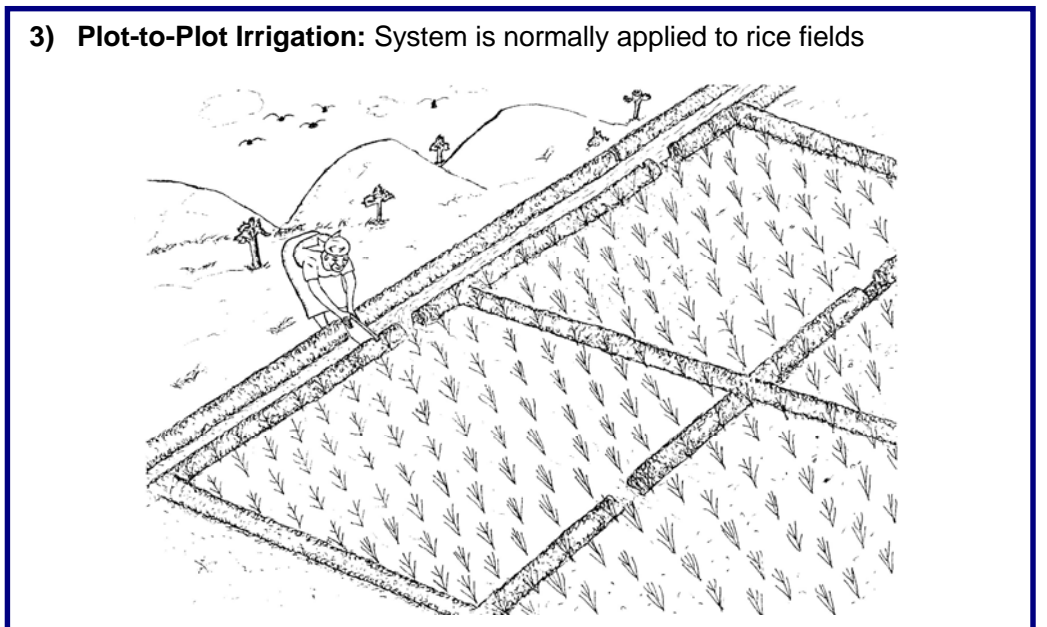
1) **Basin Irrigation:** System is normally used in flat and gentle sloped land



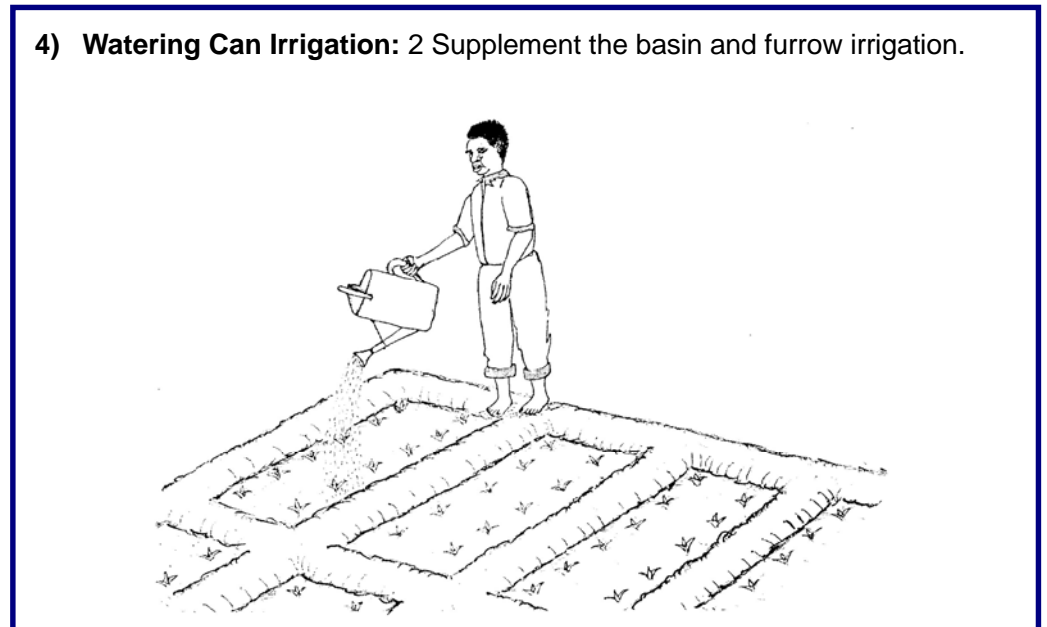
2) **Furrow Irrigation:** System is normally used in hilly and slope land Furrows are constructed along contours to reduce erosion



3) **Plot-to-Plot Irrigation:** System is normally applied to rice fields



4) **Watering Can Irrigation:** 2 Supplement the basin and furrow irrigation.



## Windrow Compost Making

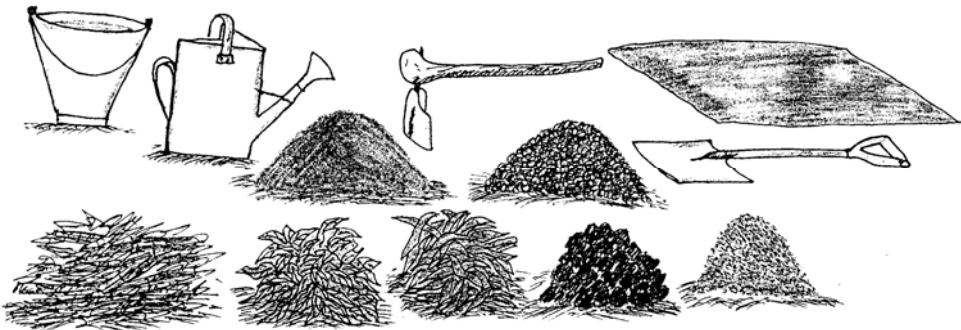
1) Source of Material



4) Covering of Windrow Compost Heap: Cover the heap with plastic paper



2) Heap Making of Windrow Compost: Make a heap of the following; maize stover, green leaves, maize husks, legume-crop residues, wooden ash and virgin soil



5) Mixing of the Heap: To be done after 30 days



6) Re-Covering of the Heap: Immediately after mixing, the heap should be covered again. The heap should be covered for another 30 days to mature.



3) Water: After each layer add water

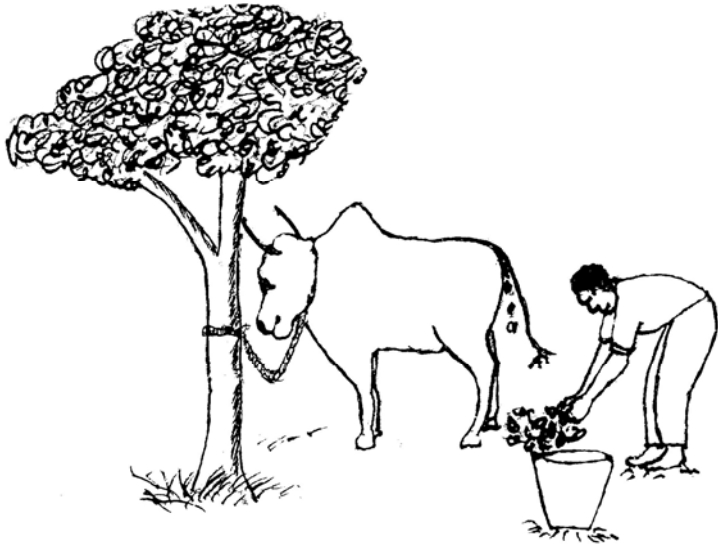


7) Windrow Compost Application: 2 handfuls are per planting station



## Liquid Manure Making

### 1) Source of Materials



### 2) Animal Dung: Fill the drum with animal dung to half-full mark and top the drum with water



### 3) Stirring: To ensure quick fermentation stir every-morning for 21 days

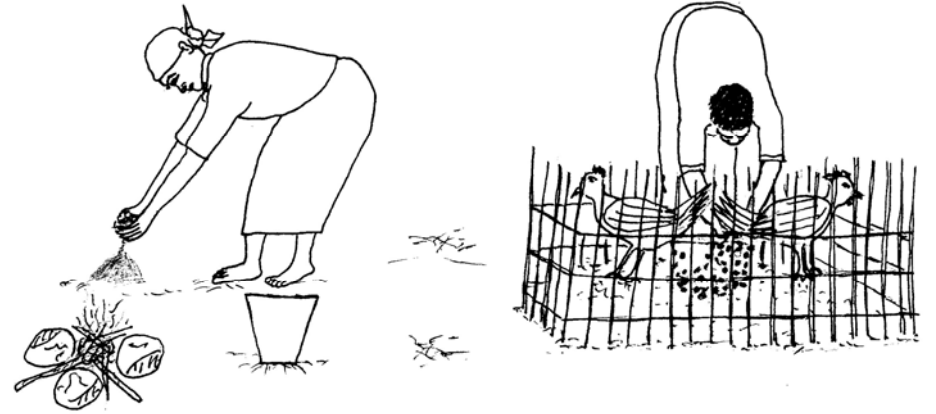


### 4) Sieving: After the Bocashi has fermented (after 10 days), the solution should be sieved when it is applied as Liquid Bocashi Pesticide (Mixture of Liquid Bocashi and Herbal Extract Pesticide)



## Liquid Bocashi Making

### 1) Source of Materials



### 2) Process: Solution of maize husks and yeast, wooden ash and animal manure are mixed and poured in a drum of water and left to ferment



### 3) Application as Top dressing: Dilution should be done before application (after 10 days)



### 4) Application as Liquid Bocashi Pesticide: Strained and diluted Liquid Bocashi is mixed with extract of herbal pesticide. The mixture can be applied by using watering can

