

TRADITIONAL IRRIGATION &
ENVIRONMENTAL DEVELOPMENT
ORGANIZATION

WATER HARVESTING

- COLLECTION INFILTRATION
DRAINAGE DITCH

UVUNAJI MAJI

- VUNA MAJI HODARI

COLLECTION INFILTRATION DRAINAGE DITCH

Infiltration Drainage Ditch

CIDD is an open trench with an embankment on the lower side and with number of check structures inside.

The collection infiltration ditch (CIDD) is actually a combination of the cut-off-drain and the retention ditch.

Its functions are:-

- Collecting run-off water
- Allowing part of the water to infiltrate
- Draining the excess water safely to a waterway.

The design of Collection Infiltration Drainage Ditch is more or less the same as the cut-off-drain except that CIDD has check structures (tie trench) inside which allow accumulation of water at a spacing between 5m and 10m apart within a trench.

It is used in areas where during heavy rainfall most of water has to be discharged to a waterway but where during little rainfall infiltration of water is needed.

Advantages

The main advantage of the Collection Infiltration Drainage Ditch as compared to the Cut-off-drain and retention ditch is the combination of functions.

- In case of low rainfall is not discharged but is allowed to infiltrate
- In case of high rainfall, excess water can be safely discharged to a waterway

Dimension

The dimensions of the Collection Infiltration Drainage ditch depend mainly on:-

- The size of the catchment area above
- Rainfall intensity millimeters per hour
- Runoff coefficient (between 0 and 1)
- Slope of the area

Construction

Labour Requirement

Labour requirement depends mainly on the dimensions of the ditch and soil type. Average excavation per man-day is 2 cubic meter of soil.

Tools Required

Line level set

Hoe

Pick axe

Pegs and ropes

Stabilizing materials

VUNA MAJI HODARI

Vuna Maji Hodari

Vuna maji hodari ni mtaro unaochimbwa na kuachwa vizuizi ndani yake katika vipimo maalumu na kuwa na kingo upande wa chini ili kukusanya maji kulingana na muundo.

Mtaro huu umeundwa kwa kuchanganya Punguza maji na Vuna maji.

Kazi ya mtaro huu ni kama lifuatavyo:-

- Hukusanya maporomoko ya maji ya mvua
- Huruhusu kiasi cha maji kunywea kulingana na uwezo/ukubwa wa mtaro
- Unao uwezo wa kupunguza kiasi cha maji yanayozidi kwenda kwenye njia ya asili ya maji kwa usalama

Muundo wa vuna maji hodari hufanana sana na ule wa punguza maji isipokuwa tu Vuna maji hodari linavyo vizuizi ndani ya mtaro. Vizuizi hivi huwekwa katika nafasi kati ya mita 5 na mita 10 ambavyo husaida kuzuia maji yasimame na kunywea kwa urahisi. Katika maeneo yenye mvua nyingi hutumika katika kupunguza maji yanayozidi kwenda kwenye njia ya asili ya maji na wakati wa mvua kidogo maji yote huvunwa ili kuongeza unyevu mashambani

Faida

Faida kubwa ya Vuna Maji Hodari ukilinganisha na Punguza maji na Vuna maji Sawa ni muunganisho wa kazi (kuvuna maji na kupunguza maji anayozidi)

- Kwa kipindi cha mvua chache maji yote huvunwa na kunywa ardhini
- Kwa kipindi cha mvua kubwa maji yanayozidi uwezo wa mtaro, hupunguzwa kwa usalama kwenda kwenye njia ya asili ya maji.

Vipimo vya Vuna Maji Hodari

Vipimo vya Vuna Maji Hodari hutegemea:-

- Ukubwa wa eneo bonde/eneo la kuteka upande wa juu
- Wingi wa mvua kwa saa
- Mteremko wa eneo
- Kasi ya mtiririko wa maji ya mvua kati 0 na 1

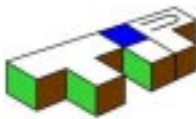
Uchimbaji

Nguvu kazi

Ukubwa wa nguvu kazi hutegemea vipimo au ukubwa wa mtaro wa Vuna Maji na aina ya udongo. Wastani wa uchimbaji kwa siku kwa mtu mmoja ni mita moja ya ujazo hadi mbili ($m^3 1 - m^3 2$) za udongo

Vitendea kazi

- Vifaa vya kupimia kontua
- Jembe
- Sururu/jembe shoka
- Mambo na kamba
- Majani na miti stahili ya kuimarisha kingo



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