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MWEA AQUAFISH FARM



Pond Construction
Estimating Cost



How much will it cost me to construction a pond?

Example 1

One pond of 100 m² requires about 15 people working 8 hours to construct in 8 days. This will cost 15 * 8* Kshs 127 = 15,240.00. Alternatively if 8 people are constructing 100m² pond they will be required to work for 15-16 days at an average of 8 hours per day.

The cost will be 8 men * 16 days * Kshs 127 = 16,256.00. Inlet canal, Outlet canal, Cement, Sand, Pipes in all will cost about Kshs 5,000.00.

Total cost of such a pond should be Kshs 21,256.00. Consider other incidentals especially due to the prevailing weather. This may have an additional cost of about Kshs 3,750.00. In total, the cost of constructing one pond should be Kshs 25,000.00

Movement of soils

A 100 m² pond whose average depth is 70 cm will have 10 by 10 by 0.7m = 70 m³ Soil to be moved or excavated. This should take 8 people about 8 days if the dig 1m³ of soil and moving it to the dyke for compacting. Volume of soil required to compact and construct dikes is 120 m³ and should take 8 people 7.5 days compacting at the rate of 2 m³.



Compacting core trench reduces water loss through dykes

Example 2

If 8 people are constructing 300m² pond they will be required to work for 26.25 days at an average rate of 8 hours per day.

The cost will be 8 men * 26.25 days * Kshs 127 = 26,670.00 Inlet canal, Outlet canal, Cement, Sand, Pipes all will cost an additional amount of Kshs 5,000.00. Total cost of the pond should be Kshs 31,670.00.

Now consider other incidentals especially the prevailing weather that brings in an additional cost of about Kshs 3,750.00. Therefore the total cost of constructing one pond 300m² should be Kshs 35,420.00

Movement of soils

A 300m² pond whose dimensions are 15 by 20 by 0.7m will have 210 m³ of soils that will be removed. This amount of excavation if done by 8 people will require about 26.25 days at an average of 1m³ of soil moving into the dyke for compacting per person.



Compacting core trench reduces water loss through dykes

In order to cut cost on pond construction:

- Know where you take soil from and where you take it to. The fewer the times you handle the soil the more efficient you are and the less the expense.
- Two- man stretcher works better in black cotton soil than wheelbarrows. But one wheelbarrow takes the same soil amount for one person than two people with a stretcher.
- Black cotton soil has one of the biggest contraction and expansion differences hence more often cracks. So do not get this soil too wet. Only wet it to have minimal water it needs for good compaction.

For little ponds we recommend a one inch pipe but the rule of thumb is that a pond should be filled in less than a week. A 300 m² pond needs a 2" pipe, while a pond more than 4,000m² will require a 4" pipe. To estimate the amount of water that runs into a pond, use the simple bucket procedure. Measure a known capacity of water in a bucket and time the duration it takes for water to fill the bucket e.g. 10 litres bucket filling in 45 seconds.

Canal can be, Open or built using bricks, stones, PVC pipes, Bamboo or Tiles among other local materials. When local materials are used, construction becomes much cheaper and maintenance cost over time is lower.



Pond construction with well constructed dyke slopes



Using liners in poor soils