

# Integrating Vermiculture; Aquaponics and Biochar Production; A zero neutral approach to food production

The system has the following components.

- 1) Biochar reactor to convert all residues and purpose grown crops (especially bamboo and acacia) to biochar for use as a growing media, filter and for feeding to fish with wood vinegar (1% biochar with ,25% wood vinegar).
- 2) Heat fro biochar reactor maintains optimum temperature for fish and plants.
- 3) Biochar used as a medium for improve nutrient uptake in either pots tanks or troughs. Note with biochar water flows through troughs for only 1-3 hours per day reducing electricity requirements
- 4) Aeration pond to grow water plants, fingerlings and filter water

# Flow Diagram-Schematic

Rainwater tank

Aeration Ponds

Biochar and worm castes used as medium in porous pots

Aerator

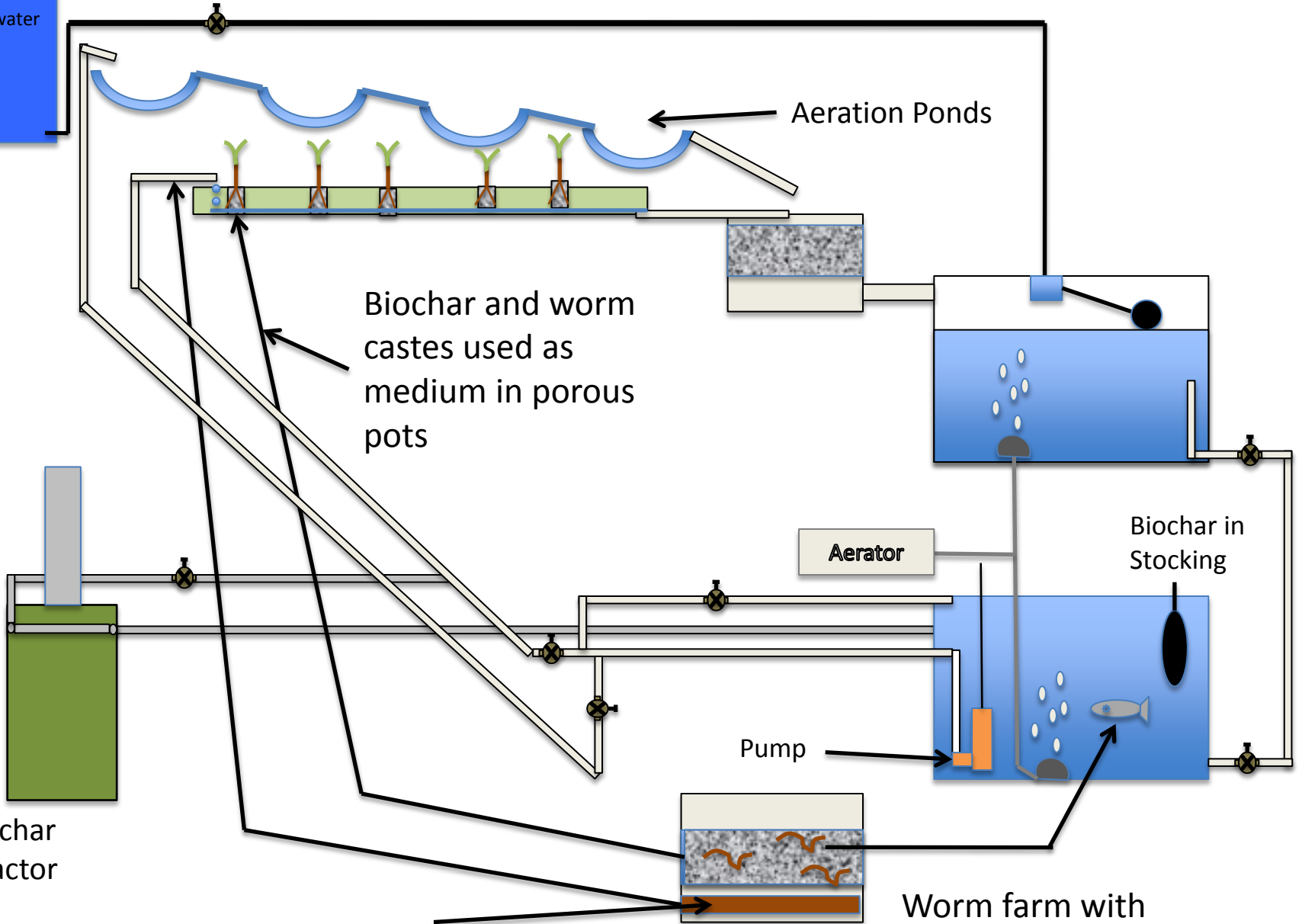
Biochar in Stocking

Pump

Biochar Reactor

Worm Juice to hydroponics troughs

Worm farm with biochar feeding fish





Aeration Ponds



Biochar Filter



Fish Tank Worm Farm



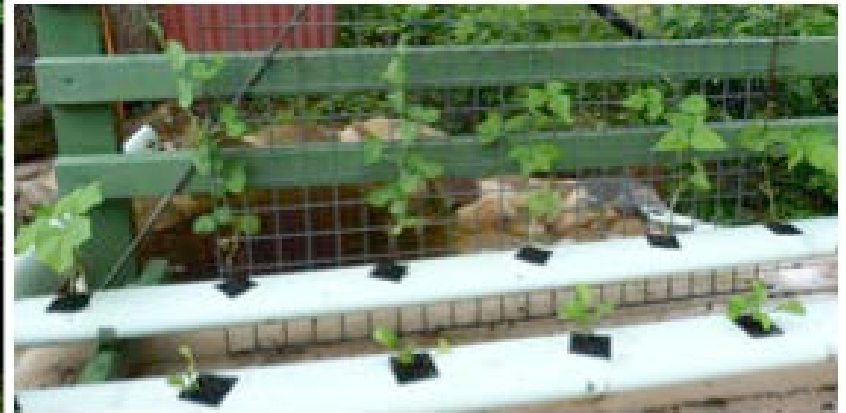
Biochar Sock  
in Fish Tank



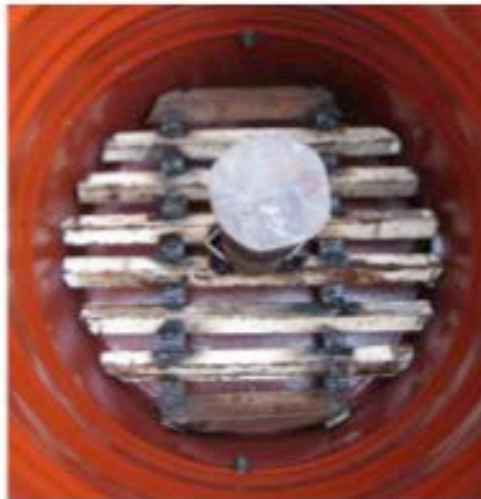
Pak Choi in Pot with  
Biochar Compost



Ell-gro Channels with pots



Biochar Reactor with Internal Heat Exchanger for Providing Warm Water to the Fish Tanks. Reactor can Take Straw and Manure



Smaller Vermiponics with Autosyphon, Biochar Sock in Tank and Biochar and Scoria in the Vegetable Garden above the tanks. One tank has fish the other Yabbies

