Review of CSA

Learning Groups - Limpopo

2018

PRINCIPLES

- Minimize external inputs
- Maximise internal diversity
- Focus on soil health and natural soil building techniques
- Take care of the environment
- Use available water as efficiently as possible.
- Work together, learn together and plan together

MENWANA E MEHLANO/ FIVE FINGERS

Ditsela tše hlano tšeo di ka dirago gore temo e be maleba / kaone

2. GO FOKOTŠA KGOGOLEGO YA MOBU
CONTROLLING SOIL MOVEMENT

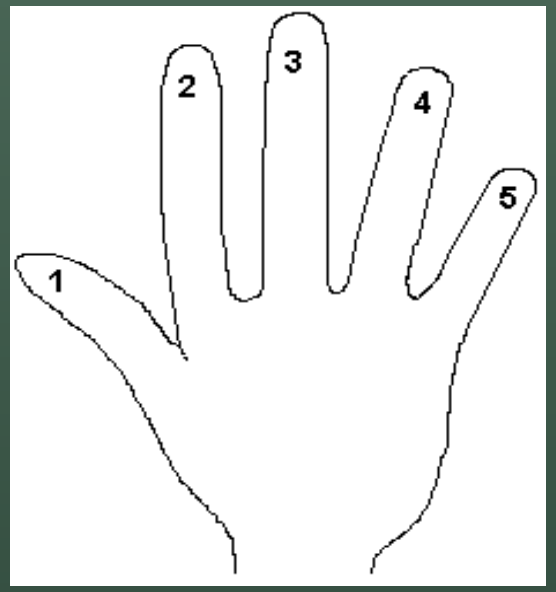
Cut off drains – ditches across a contour at top of garden/slop
Contours- measured with line level
Stone lines/bunds- made on contour
Strip cropping-
Sand bags for erosion control-

•1. GO KAONAFATŠA TAOLO YA MEETSE
GOOD WATER MANAGEMENT

Diversion ditches- to carry water to beds
Mulching -
Improved furrows and ridges
contour, mulching, mixed cropping
Greywater management and use;-ash, tower gardens, keyhole gardens, greywater bucket filter
Dripkits
Tunnels
RWH storage tanks
Small dams

3. GO KAONAFATŠA HLOKOMELO YA DIBJALWA
CROP MANAGEMENT

Mixed cropping- incl intercropping
Pest control brews -Chilli -soap, onion-paraffin etc
Planting of herbs -(mixed in veg beds eg coriander, parsley,
Seed successions- planting a range of seed, across seasons for continuity, ***Seed saving***
Conservation Agriculture; minimal soil disturbance, soil cover ,crop diversity
Planting to maximise shade – in afternoons



4. GO NONTŠA MOBU
KEEP THE SOIL FERTILTY/HEALTHY

fertility management- manure incl improved manure), compost, green manures, legumes, liquid manure
Bed design -trench beds, shallow trenches, eco-circles, banana circles/basins

5. HLOKOMELO YA DIMELA TŠA TLHAGO
TAKE CARE OF INDIGENOUS PLANTS

Small nurseries-propagation of fruit and indigenous crops and trees
Planting- windbreaks, hedges, multi functional plants, inter cropping

Principles	Practices	Assessments (traffic light)	% implementation in the group
Water Management	Cut off drains and swales		Not yet implemented by most participants
	Diversion ditches		~20% (10/52)
	Greywater (filtration, use)		~8%
	Small dams		~14%
	Organic matter (incorporation in soil)- leaves, bones, woodchips etc buried to increase water holding and fertility		~60%
	Drip irrigation		~6%
	Saving water; Rainwater harvesting in drums, management of leaks of communal stand pipes, no longer letting irrigation water run 24/7 - Lepelle		All participants involved in some way in saving water
Control soil movement and erosion	Stone bunds		~24%
	Banana basins and circles		~22%
	Strip cropping (aloes, sisal) and planting grass to reduce run-off		~8%
	Contours- water flow for collection		Not yet implemented
	Ridges and furrows-planting of crops on ridges; sweet potato, sunflowers…		~30%
	Sacks with sand for rehabilitation of gulleys		~2%
Crop management	Planting in basins, mulching and direct watering of basins only		~60%
	Close spacing in field crops and vegetables		~20% - Not everyone agreed with this practice
	Planting to provide afternoon shade and planting windbreaks		~22% - Not everyone agreed with this practice
	Crop rotation and intercropping		~52%
	Natural pest control		~18%
	Conservation Agriculture		~36% - more ideas still to be tried
Soil fertility	Trench beds		~60%
	Mulch		~60%
	Liquid manure		~20%
	Compost		~46%
	Application of manure (cattle, chickens)		~70%
	Legumes; planting for food and soil fertility		~68%
Looking after indigenous plants	Stop burning veld		No one doing and not needed for all areas
	Don’t chop whole trees- just cut branches		Most participants
	Plant indigenous trees in the yards to protect and save them		Most participants

List of practices

Soil and Water Conservation

- Cut off drains – ditches across a contour at top of garden/catchment
- Contours- measured with line level
- Diversion ditches- made to carry water to the garden
- Stone lines/bunds- made on contour
- Banana pits (local good practice)
- Improved furrows and ridges- made on contour with mulching and plantings (Local good practice +)

List of practices

Gardening practices

- Dedicated paths and beds
- Soil fertility management
- Mixed cropping; companion planting
- Mulching
- Trench beds
- Shallow trenches
- Eco-circles
- Incorporation of manure- large quantities
- Making improved manure- composting manure with grass and OM and inclusion of urine fraction from kraaling
- Making compost
- Liquid manures
- Pest control brews _Chilli -soap derivatives, onion-paraffin derivates,
- Planting of herbs (mixed in veg beds)
- (Seed and seedlings) Seed successions; seed beds with a range of seed planted in succession for continual supply of seedlings

List of practices

Field cropping

- Conservation agriculture; close spacing and inclusion of lime and bone meal with manure
- Diversified crops; maize, millet sorghum, sugar beans , cowpeas
- Intercropping
- Planting fodder

List of practices

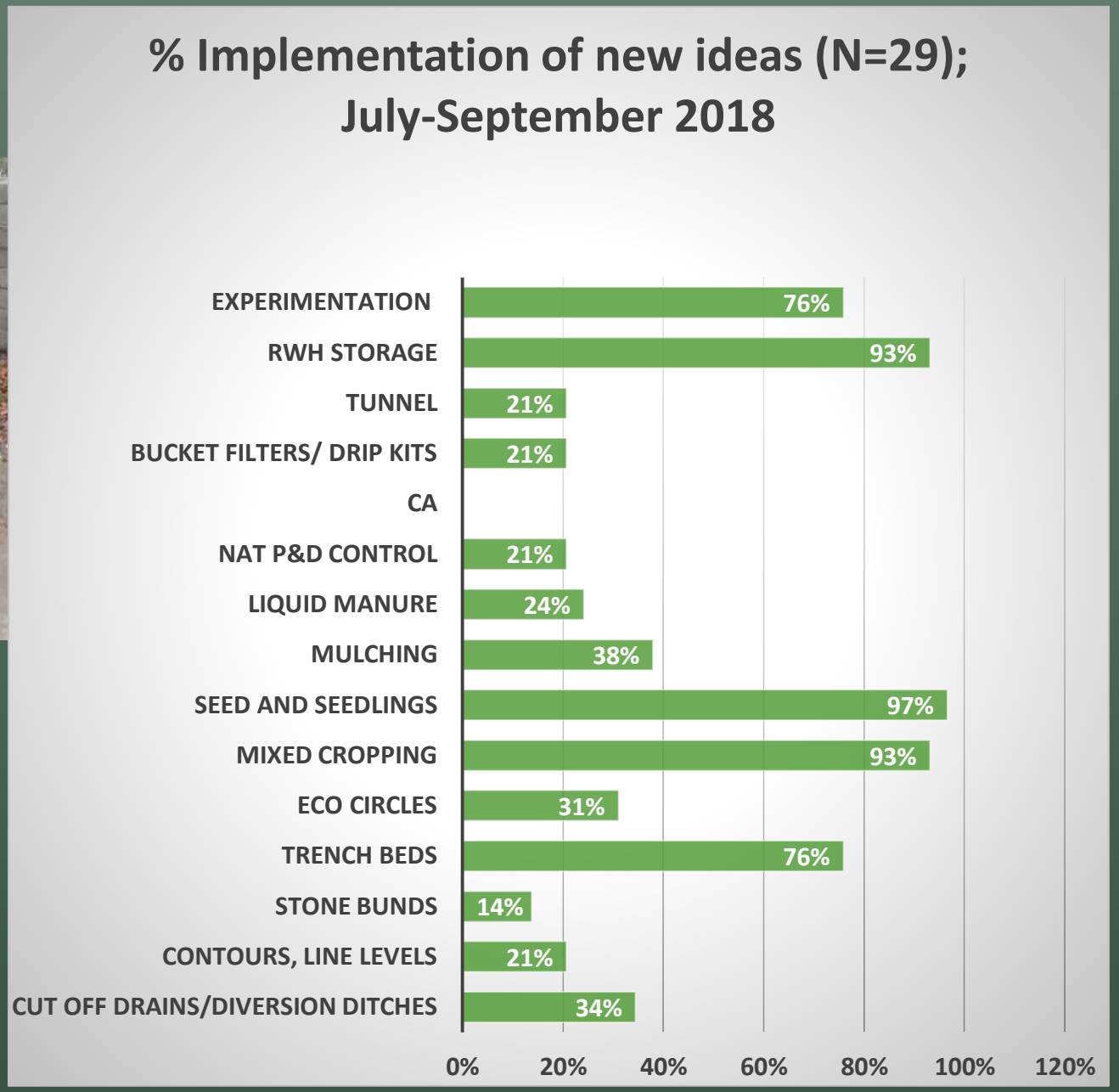
Associated practices

- Greywater management and use; ash (local practice),
- Tower gardens
- Greywater bucket filter and drip kits
- Small nurseries; propagation of fruit and indigenous crops and trees
- Tunnels
- RWH storage tanks

Garden monitoring

Eco –circles, mulching, mixed cropping

Farmer Experimentation	No of participants (N=29)
trench beds	21
tower gardens	4
banana basins	3
Eco-circles	5



Measurements

	Sedawa		Mametja	Botshabelo
	Christina Tobejane	Koko Maphori	Lerato Lewele	Mariam Malephe
Date	rainfall (mm)	rainfall (mm)	rainfall (mm)	rainfall (mm)
21/12/2017	5	10	8	7
24/12/2017	1	4	3	4
30/12/2017	22	32	30	28
25/01/2018	1.5	3.5	3.8	5
28/01/2018	1.6	2.1	2	3
30/01/2018	1	1.5	1.8	1.4
24/02/2018	2	2.6	2.8	2.4
16/03/2018	28	51	30.2	10.2
21/03/2018	9	20.8	10.2	20.5
24/03/2018	20	32	28	9
01/04/2018	9	8	15	30
02/04/208	1.4	2	2	1.8
Total	**101.5**	**169.5**	**136.8**	**122.3**
Ave for each rainfall event	8.5	14.1	11.4	10.2

Tunnel experiments



- Trench bed inside tunnel
- Trench bed outside tunnel
- Furrows and ridges outside tunnel (control)

How productive is each practice?

- Water productivity – how much crop is produced for the amount of water used?
  - Trench in tunnel 10x more than furrows and ridges and 5 x more than trench outside tunnel
  - Must have mulch and do deep watering. If not then result is similar to furrows and ridges…
- Cost- benefit (R35/210l)
  - Profit of R31/m of trench bed (in tunnel)
  - ~R620/tunnel fully planted ($15m^2$), for a season
  - If water is free then~ R900

	Farmers' method (Water applied)		
Name of famer	water use (m^3)	Total weight (kg)	WP (kg/m^3)
Christina Thobejane (Tunnel; trench beds, with mulch)	1,10	48,9	56,7
Christina Thobejane (Furrows and ridges with mulch)	3,91	24,5	5
Christina trench outside	2,93	14,7	11,3
Nora Mahlako (Tunnel; trench beds without mulch)	9,47	19,6	5

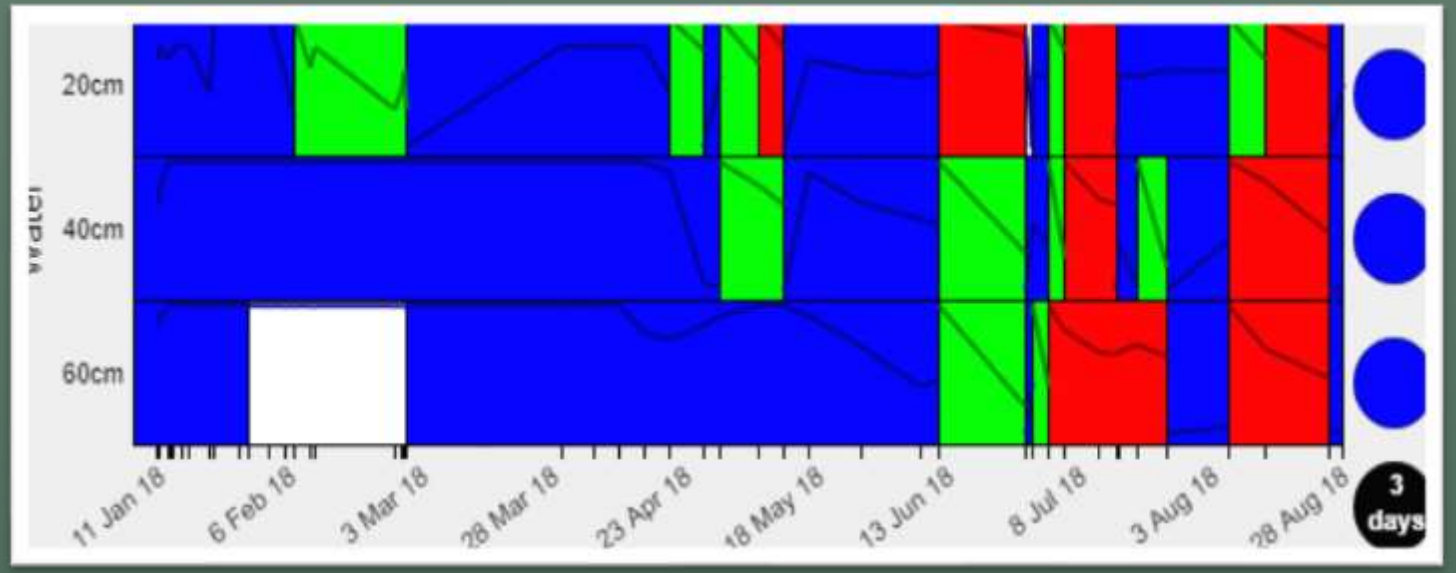
	Water	Cost (R/m^2)	Yield	Sales (Rands/ m^2)	Profit (R/m^2)
Trench inside tunnel	1100	R18,70	6 bundles/m^2	R60	R41,30
Trench outside tunnel	2926	R48,80	4,2 bundles/m^2	R42	-R6,80
Furrows and ridges	3913	R130,40	2,4 bundles/m^2	R24	-R106,40

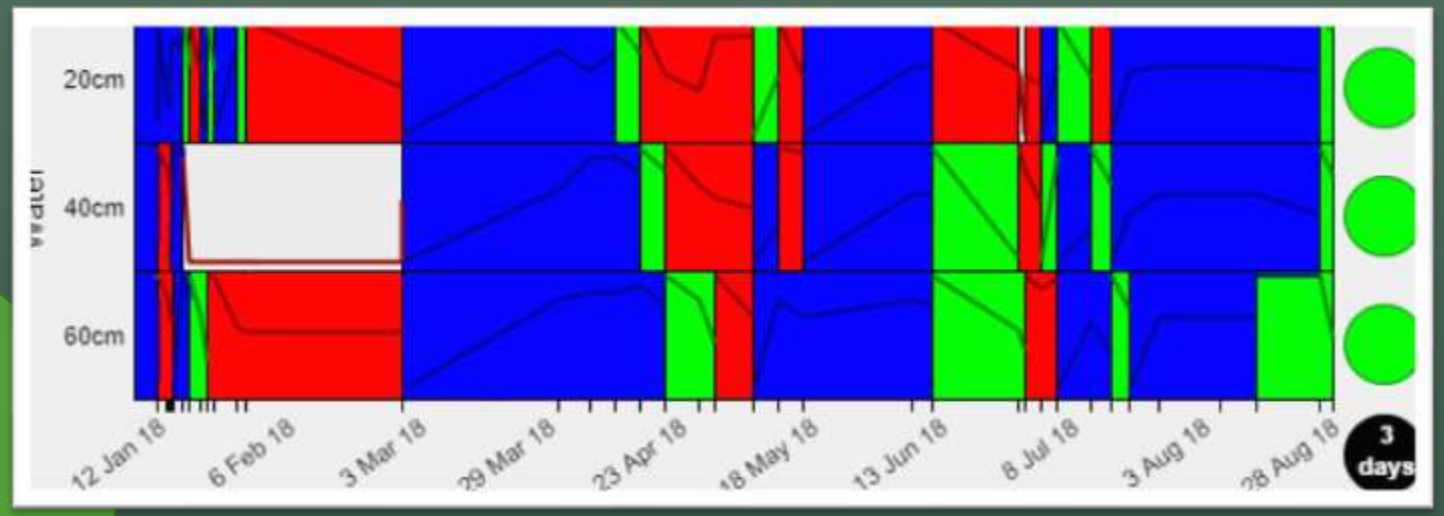
Production in tunnels

Chameleons

- Measure the amount of water in the soil (20,40 and 60 cm deep)
- Tells you when and how much to irrigate

Applying water until the chameleon changes colour (goes blue) seems to be a good idea as this saves her some water and means that she only has to irrigate once a week (every 7 days). She has thus now changed her irrigation practice of watering a little every morning and afternoon, to a deep watering every 5-7 days.





- Top: Chameleon in trench bed inside tunnel
- Bottom: furrows and ridges outside tunnel

Herb sales

An average of R600/month for the 7-10 participants; selling herbs and vegetables

Date	Herbs	No bundles	Price	Amount	Total
2018/08/17	Basil	2	R15,00	R30,00	
	Coriander	32	R14,00	R448,00	
	Flat leaf parsley	21	R9,50	R199,50	R677,50
2018/08/24	Coriander	20	R14,00	R280,00	
	Flat leaf parsley	20	R9,50	R190,00	
	Spinach	30	R10,00	R300,00	
	Onions	33	R10,00	R330,00	R1 100,00
2018/08/31	Coriander	30	R14,00	R420,00	
	Flat leaf parsley	15	R9,50	R142,50	
	Basil	4	R15,00	R60,00	
	Spinach	24	R10,00	R240,00	R862,50
2018/09/07	Coriander	10	R20,00	R200,00	
	Parsley flat leaf	10	R20,00	R200,00	
	Parsley curly leaf	2	R20,00	R40,00	
	Funnel	6	R20,00	R120,00	
	Cabbage	7	R20,00	R140,00	
	Basil	4	R20,00	R80,00	
	Beetroot	2	R15,00	R30,00	
	Tomatoes	13	R10,00	R130,00	
	Spinach	40	R18,00	R720,00	R1 660,00
2018/09/14	Coriander	10	R20,00	R200,00	
	Parsley flat-leaf	10	R20,00	R200,00	
	Parsley curly-leaf	20	R20,00	R400,00	
	Cabbage	4	R20,00	R80,00	
	Basil	4	R20,00	R80,00	
	Beetroot	20	R15,00	R300,00	
	spinach	27	R18,00	R486,00	
	Onions	25	R10,00	R250,00	
	Fennel	4	R20,00	R80,00	R2 076,00
Total sales					R6 376,00

Marketing process

- Monday; all participants give a list of available produce
- Thursday- HH relays orders for the week – after checking with their buyers
- Friday- harvesting, washing, packing, delivery, payment
- Payment towards transport
- Good demand: spinach, beetroot, flat leaf parsley, basil, sweet potatoes, grenn beans, onions
- Average demand: coriander, curly leaf parsley, fennel,
- Other: cabbage, brinjals, green pepper,

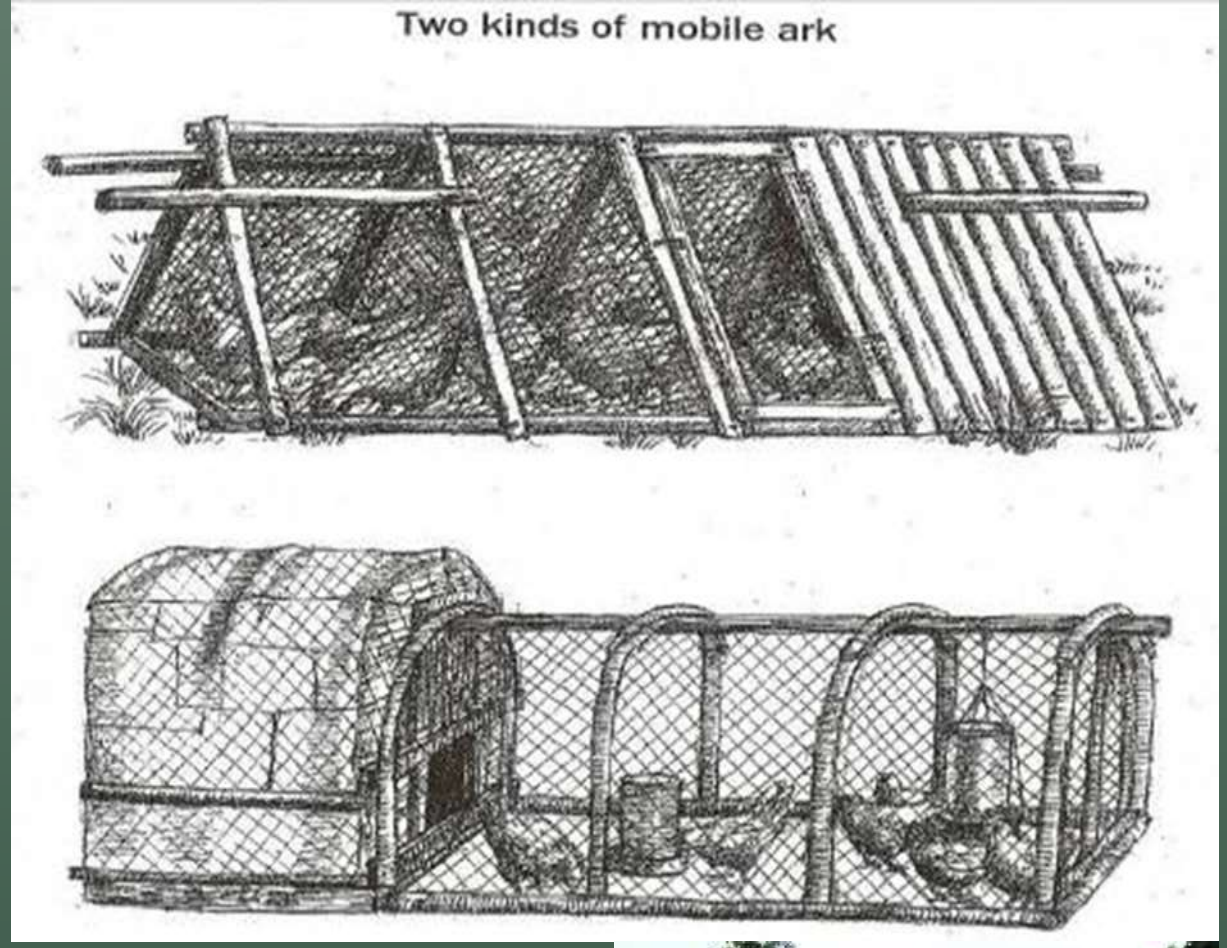
Week	Farmer's name	Vegetables and/ herbs delivered	Quantities	Price/unit	Amount paid	Total amount of sales
28/09/2018	Christina Thobejane	Spinach	5	R 18,00	R90,00	R550,00
		Brinjal	4	R 15,00	R60,00	
		Basil	10	R 20,00	R200,00	
		Parsley curly leaf	10	R 20,00	R200,00	
	Lena Malepe	Parsley flat leaf	15	R 20,00	R300,00	R440,00
		Green Beans	7	R 20,00	R140,00	
	Mmatshego Shaai	Basil	10	R 20,00	R200,00	R490,00
		Spinach	5	R 18,00	R 90,00	
		Parsley curly leaf	10	R 20,00	R 200,00	
	Mpelesi Sekgobela	Coriander	11	R 20,00	R220,00	R220,00
	Magdelina Malepe	Parsley curly leaf	5	R 20,00	R100,00	R100,00
	Josphina Malepe	Coriander	9	R 20,00	R180,00	R180,00
	Bigman Maimela	Green peppers	8	R 11,00	R88,00	R268,00
		Tomatoes	12	R 15,00	R180,00	
	Obridge Tshetlha	Sweet-potatoes	12	R 25,00	R300,00	R300,00

Chicken tractors

Chickens scratch over the soil like a tractor. It is a good idea to position the 'chicken tractor' where you want to develop your next vegetable bed. While scratching and scavenging, the chickens do an intensive soil preparation job for you, by:

- loosening and aerating the soil;
- fertilising the area through their droppings, and by scratching that into the soil as well; and
- clearing the soil of bugs and pests that may damage your new plantings.

You can move the shelter every two to three weeks, or as soon as your chickens have accomplished the job you wanted them to do in that portion of your yard.



Feeding Indigenous chickens

Herbs:
•Comfrey
•Fennel
•Thyme
•Lavender
•Nasturtium
•Rosemary
•Sage
•Wormwood
•Oregano
•Chickweed
•Dandelions
•Nettles

Vegetables & Grains:
•Amaranth
•Plantain
•Clover
•Alfalfa
•Sunflowers
•Peas, Beans, & Legumes
•Lentils
•Squash
•Rhubarb
•Buckwheat
•Garlic, Onions, Leeks (Alliums)
•Asparagus

Besides water, chickens need four things (the four G's): **Grain, Greens, Grit and Grubs**

- **Grain:**
  This is seed, like sorghum, millet, oats, maize, sorghum, soya or sunflower seeds.. Maize is probably the best and cheapest grain to feed your chickens.
- **Greens:**
  Greens keep chickens healthy. They will get greens themselves if you let them scavenge during the day, or you can feed them cabbage, comfrey, herbs and most kinds of fruit. They also like eating vegetable scraps. A good idea is to feed the chickens weeds from your vegetable garden.
- **Grit:**
  This is small stones that chickens need to help them digest their food. They can collect their own grit if they have somewhere to scratch around,'.
- **Grubs:**
  Bugs and insects provide the chickens with most of the protein that they need so that they can grow. They need protein to make muscles in their bodies and to make eggs. Growing soya beans and feeding this to the chickens is another way to give them protein. If they are kept in a 'chicken tractor', they can help you clear a new planting bed of bugs, prior to planting.

In winter you should feed them mash (bought food), because there are fewer insects and less grass for them to eat outside.