

# Horticulture Job Aid



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# SOIL SAMPLING AND TESTING

## Soil testing

- Prime tool in soil fertility management.
- Helps in understanding health conditions of soil.
- Soil is a bank account & soil test as the account statement.
- Farmers cannot just keep on growing the crops without replenishing the nutrients taken up by crops back into soils.
- Crop production without return of nutrients to the soils-Problems of fertility start and results in reduced soil health.
- Without an actual measure of soil fertility at regular intervals management of soil fertility and productivity is not possible.
- It is important to apply fertilizer based on targeted yields
- Organic Matter is another important component that provides nutrients and can help in improving soil water holding and nutrient holding capacity.

## Soil sampling

- Soils are highly heterogeneous and are not uniform in many aspects.
- Soils need to be analyzed for physical, chemical and biological properties to decide amount of fertilizers/amendments to be applied to increase crop productivity.
- Since, it has not possible to test or analyze the entire field one must depends on samples taken from the field for testing.
- Soil sampling is a technique by which true representative sample of a given area is collected.
- Collection of representative samples is most important in an effective soil testing programmed as the entire analysis and recommendation depends on the sample collection.
- If meticulous care is not taken in collecting a representative sample, any amount of precautions taken during soil analysis will be of no use.

## Why soil sampling?

- To take a true representative soil sample for analysis,
- To evaluate fertility status of soil,
- To know the amount of available nutrient status in the soil,
- To assess the deficiency of nutrients for supplementing the deficient nutrient elements,
- To make scientific recommendation of amount of fertilizers and amendments (lime/gypsum / rock phosphate) for the soils,
- To arrive at the decision on suitability of soil for cultivation / gardening,
- To know the acidity, alkalinity, salinity problem, of soil,
- To determine the engineering properties of soils useful for construction of buildings, roads etc.,
- To find out the effect of irrigation on soil properties,
- To arrive at quantitative specifications of soils for their genesis and constituents.

## Benefits of soil testing

- Soil testing is the single most important guide to the profitable use of fertilizer and lime. It is in the best interest of farmers to promote the use of soil testing for several reasons.
- Grow higher crop yields
- Produce higher quality crops
- Use Fertilizer more efficiently

# Pest Management Best Practices



- ✓ **Be climate smart**
  - Select and varieties suited for your environment.
  - Planting and harvest times to be done on suitable climate to minimize pest damage.
- ✓ **Field scouting**
  - To be done regularly for early detection of pest and naturally enemy populations.
- ✓ **Practice crop rotation**
  - Avoid build up of pests.
- ✓ **Use Natural enemies**
  - Minimizes heavy reliance on pesticides

## **KNOW YOUR PESTICIDES.**

- ❖ Use registered pesticides.
- ❖ Source pesticides from reputable suppliers.
- ❖ Mix according to pesticide label.
- ❖ Always use protective clothing when handling pesticides.

# Pesticide Handling And Safety



## TYPES OF PESTICIDES




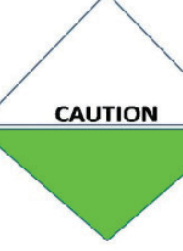
### Insecticides

- Used to kill insects/pests

### Herbicides


- Used to destroy weed.


### Bio Pesticides


Interpretation				
Colour of lower triangle	Bright red	Bright Yellow	Bright blue	Bright Green
Toxicity Class	Extremely Toxic	Highly Toxic	Moderately Toxic	Mildly Toxic
LD50- Oral Dose	<50 mg/kg BW	51-500 mg/kg BW	501-5000 mg/kg BW	>5001 mg/kg BW
Signal Words	Poison ( In red	Poison ( in Black)	Danger	Caution
Warning Words	KEEP OUT OF REACH OF CHILDREN. IF SWALLOWED OF SYMPTOMS SEEN CALL DOCTOR	KEEP OUT OF REACH OF CHILDREN.	KEEP OUT OF REACH OF CHILDREN.	-----


# Pesticide Handling And Safety

## DOS

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Use gloves when measuring and mixing pesticides.
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Make sure you always use suitable PPE
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Make sure no child/animal is close by while using pesticides
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Clean your hands and your body before eating, drinking or smoking


- Read and follow instructions on the label
- Mix the pesticide as recommended
- Use suitable equipment
- Shower immediately after use

## DON'TS

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Do not use damaged or leaking sprays
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Do not spray against the wind
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Avoid blowing the spray nozzles with the mouth
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Do not use pesticide containers to store food or drinks

- Clean and store equipment, clothing and PPE properly
- Record the usage in the log book
- Know the first aid measures and procedures



# Growing Guide For Common Vegetables In Eswatini



CROP	AREA	BEST TIME	SPACING		
			Inter-row	Intra-row	
Beetroot	HV	Feb, Mar, Apr, Aug, Sept	35cm	10X5cm	Use double rows
	MV	Mar, Apr, May, Aug			
	LV	Mar, Apr, Aug			



CROP	AREA	BEST TIME	SPACING		
			Inter-row	Intra-row	
Green beans	HV	Feb, Mar, Sept, Oct	10cm	10X5cm	Use double rows
	MV	Mar, Sep, Oct			
	LV	Mar, Apr, May, Jul, Aug			

# Growing Guide For Common Vegetables In Eswatini

CROP	AREA	BEST TIME	SPACING	
			Inter-row	Intra-row
Broccoli	HV	Feb, Mar, Aug, Sept	90cm	45cm
	MV	Mar, Apr, Aug, Sep		
	LV	-		



CROP	AREA	BEST TIME	SPACING	
			Inter-row	Intra-row
Cabbage	HV	Feb, Mar, Apr, Aug, Sept, Oct	90cm	60cm
	MV	Mar, Apr, May, Aug, Sep, Oct		
	LV	May, June		

# Growing Guide For Common Vegetables In Eswatini



CROP	AREA	BEST TIME	SPACING	
			Inter-row	Intra-row
Cauliflower	HV	Feb, Mar, Aug, Sept	90cm	45cm
	MV	Mar, Apr, Aug, Sep		
	LV	Mar, Apr, May		

CROP	AREA	BEST TIME	SPACING	
			Inter-row	Intra-row
Lettuce	HV	Feb, Mar, Apr, Aug, Sep, Oct	35cm	20cm
	MV	Feb, Mar, Apr, May, Aug, Sep, Oct		
	LV	May, Jun		



# Growing Guide For Common Vegetables In Eswatini

CROP	AREA	BEST TIME	SPACING		
			Inter-row	Intra-row	
Onions	HV	Feb, Mar,	40cm	20X10cm	Use double rows
	MV	Feb, Mar			
	LV	Mar, Apr			



CROP	AREA	BEST TIME	SPACING	
			Inter-row	Intra-row
Pepper	HV	Aug, Sep	60cm	35cm
	MV	Feb, Mar, Aug, Sep		
	LV	Apr, Aug		

# Growing Guide For Common Vegetables In Eswatini



CROP	AREA	BEST TIME	SPACING	
			Inter-row	Intra-row
Tomatoes	HV	Jan, Sep, Oct	120-150cm	40cm
	MV	Feb, Mar, Aug, Sep, Oct		
	LV	Apr, May, Aug, Sep		

CROP	AREA	BEST TIME	SPACING	
			Inter-row	Intra-row
Carrots	HV	Feb, Mar, Aug, Sep, Oct	35cm	15X3cm
	MV	Mar, Apr, Aug, Sep, Oct		
	LV	May, Jun		



# Growing Guide For Common Vegetables In Eswatini



CROP	AREA	BEST TIME	SPACING	
			Inter-row	Intra-row
Potatoes	HV	Feb, Jul, Aug, Sep	90cm	25cm
	MV	Feb, Mar		
	LV	Apr, May, Jun		