



## Crop Guide

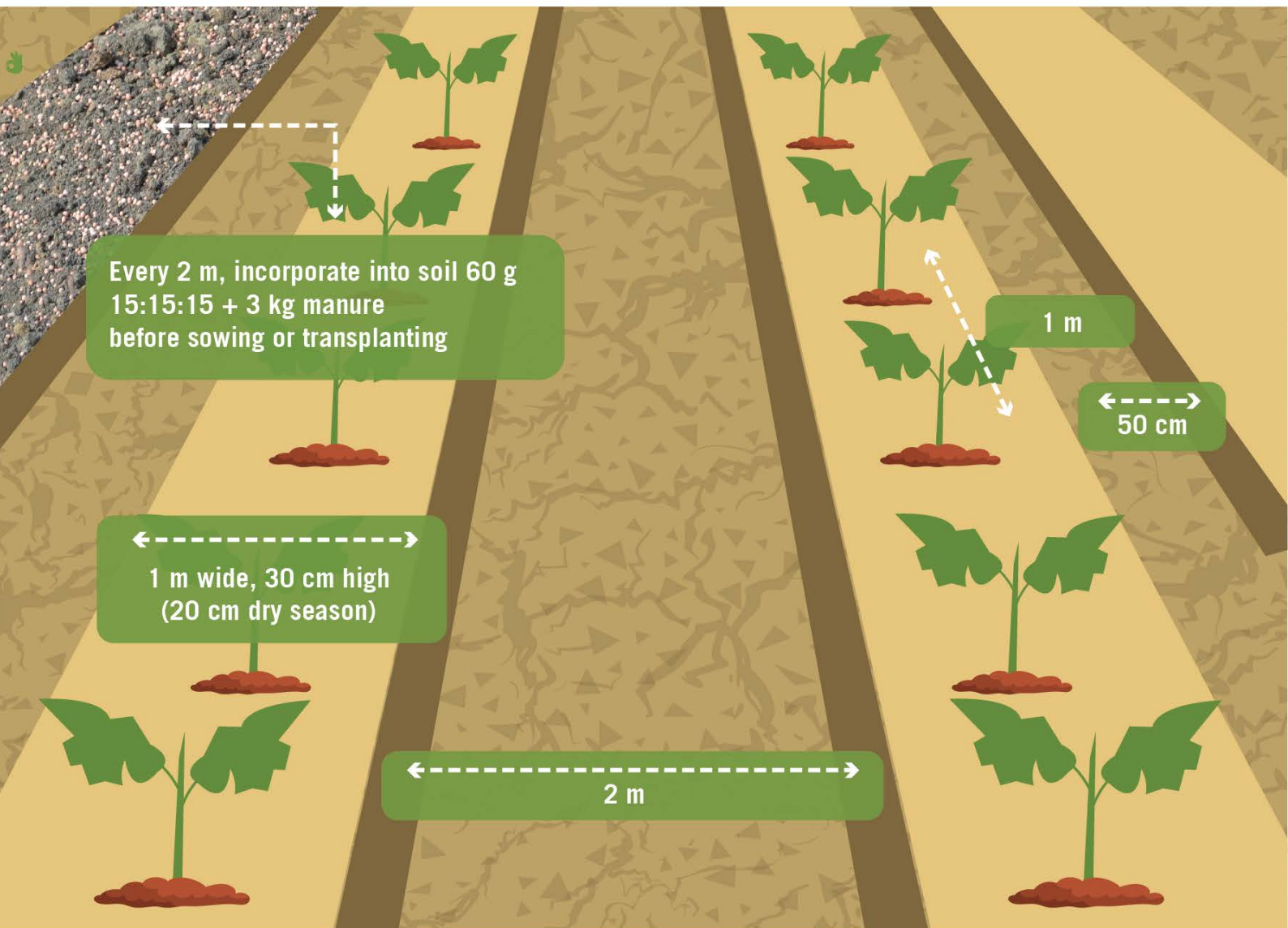
# BOTTLE GOURD

### • Land Preparation

- » Narrow paths help with irrigation and drainage
- » Organic or plastic mulch may be installed to conserve soil moisture and minimize weed growth
- » Install trellis before transplanting
- » 4,400 plants/ha (adjust according to the variety and season)



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# • Seedling Production

- ◆ Substrate preparation: Heat for 10 minutes or place in full sun for half a day, then fill tray



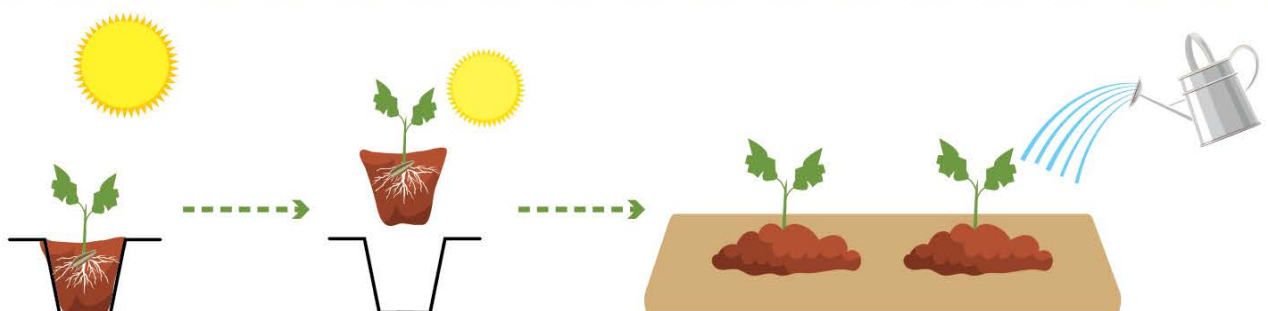
- ◆ Sow seeds and protect seedlings



- ◆ Maintain constant moisture



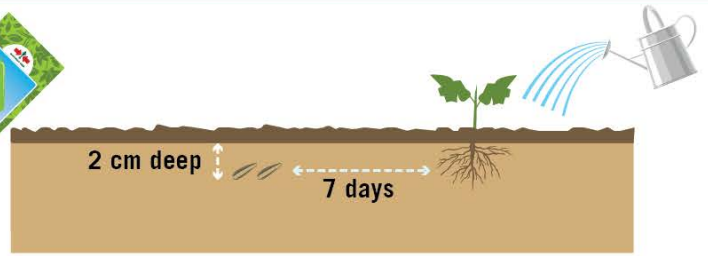
- ◆ Reduce water and expose to more sun 2-3 days before transplanting late in the afternoon



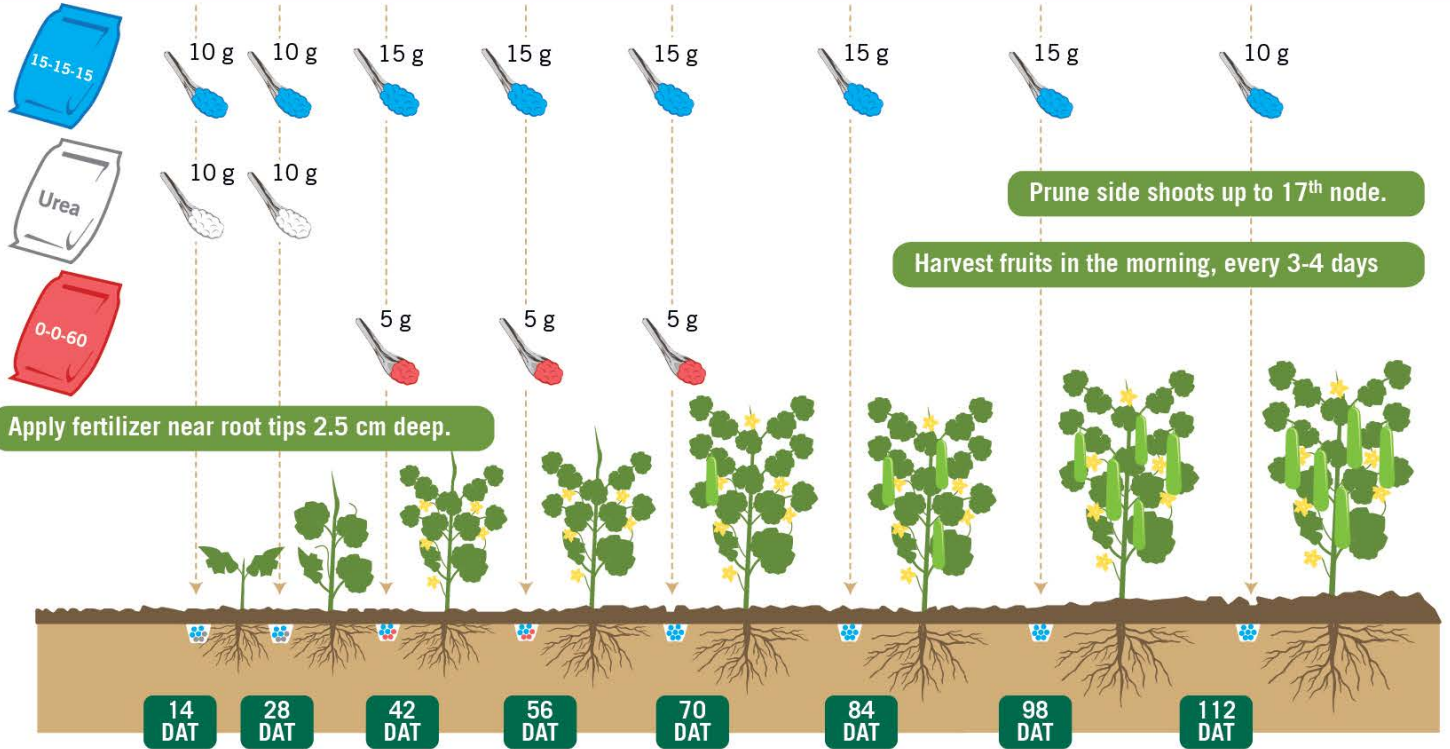
## • Direct Sowing



» Plant 2 seeds per space and then thin to one plant when 10 cm tall.



## • Fertilizer Application



Recommended amount based on crop optimum nutrient requirement and plant population of 4,400 per hectare. Adjust application according to season, soil conditions and plant growth status.

## • Integrated Pest Management



- » Use sticky traps to monitor and mass trap insect pests
- » Use sweet trap, basil extract trap or pheromone trap for fruit fly



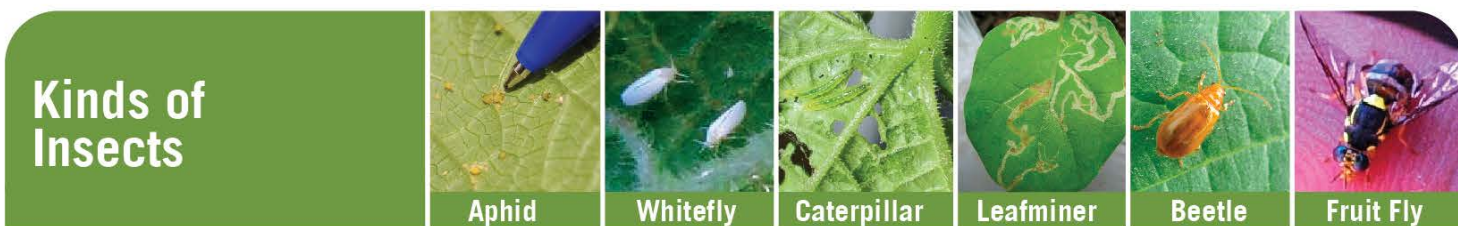
To prevent infection from spreading, sick plants, old crops and weeds must be removed and destroyed.



Crop rotation prevents build up of insect pests and diseases and restores soil fertility.

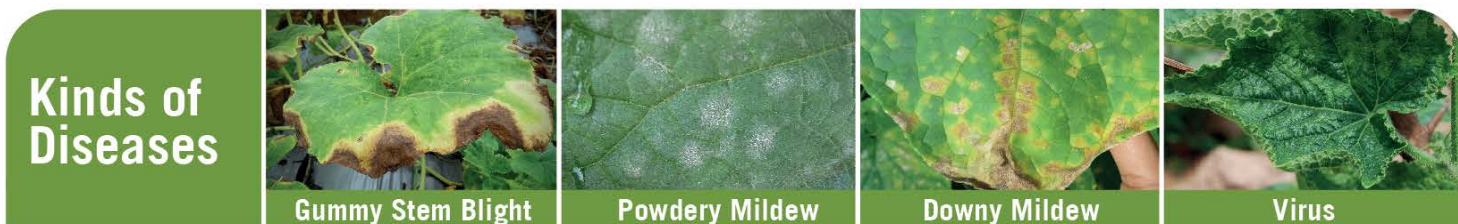
# • Integrated Pest Management and Safe Use of Pesticides

- » Alternate MoA groups to prevent resistance
- » Always read pesticide label and intended use (registered crop and pest)



Active Ingredient	MoA	Action	Aphid	Whitefly	Caterpillar	Leafminer	Beetle	Fruit Fly
Lambda-cyhalothrin	3A	SC	✓	✓	✓	✓	✓	
Dinotefuran	4A	S	✓	✓		✓		✓
Spinosad	5	S			✓	✓		✓
Spinetoram	5	SC			✓	✓		✓
Abamectin	6	SC (slight S)			✓	✓	✓	
Thiocyclam oxalate	14	SC	✓	✓				
Chlorantraniliprole	28	S			✓	✓		
Flubendiamide	28	S			✓	✓		✓
<i>Bacillus thuringiensis</i>	11A	C			✓	✓		
<i>Azadirachtin (neem extract)</i>	UN	unknown	✓	✓	✓	✓	✓	✓

Mode of Action (MoA) based from IRAC; SC (Stomach + Contact); S (Systemic)



Active Ingredient	MoA	Action	Remarks	Gummy Stem Blight	Powdery Mildew	Downy Mildew	Virus
Copper-based Fungicides	M 01	P		✓	✓	✓	Manage insect vectors like aphids and whiteflies
Chlorothalonil	M 05	P		✓	✓	✓	
Mancozeb	M 03	P		✓	✓	✓	
Azoxystrobin	11	P + C	Maximum 4 times per crop cycle	✓	✓	✓	
Propamocarb	28	P + C				✓	
Cymoxanil	27	C	Tank mixed with preventive (Chlorothalonil or Mancozeb)			✓	
Metalaxyl	4	P + C	High risk of resistance (only use 2 times per season)			✓	
<i>Bacillus subtilis</i>	BM02	P			✓	✓	

Mode of Action (MoA) based from FRAC; P = preventive (only effective when disease symptoms have not appeared yet), C = curative

- Wear protective gear ✓
- Good weather ✓
- Good nozzle ✓
- Wash after spraying ✓

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Agrochemical recommendations have been developed in cooperation with Wageningen University & Research