



FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

INTEGRATED SOIL FERTILITY MANAGEMENT



TOMATO

PART ONE
PLANNING &
NURSERY MANAGEMENT



USAID
FROM THE AMERICAN PEOPLE



ACKNOWLEDGEMENT

I would like to express my gratitude to the many people who provided support in developing the **training manual for tomato** of the Feed the Future's Nepal Seed and Fertilizer (NSAF) Project which was made possible with the support of the United States Agency for International Development (USAID). I am extremely thankful to the International Fertilizer Development Center team: Dr. Yam Gaihre (Soil Scientist), Ramananda Gupta (Agronomist and Extension Specialist) and Shiva Adhikari (Training and Extension Associate) for their overall leadership and enthusiastic support in content development, planning and execution of NSAF's agricultural extension activities.

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Dr. David Guerena

Soil Scientist- Systems Agronomist
Nepal Seed and Fertilizer Project

DISCLAIMER: This document is made possible by the support of the American People through the United States Agency for International Development (USAID.) The contents of this document are the sole responsibility of the International Maize and Wheat Improvement Center (CIMMYT) and do not necessarily reflect the views of USAID or the United States Government.

BEST MANAGEMENT PRACTICES

|

A RIGHT COMBINATION OF

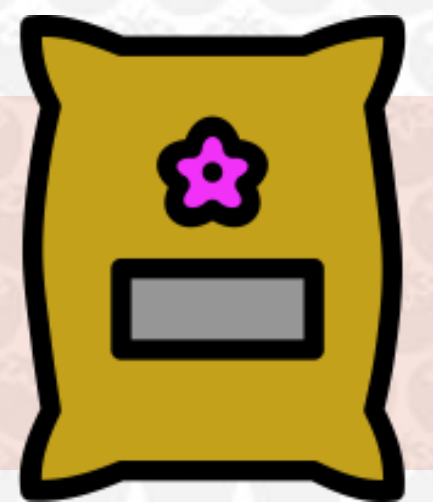
CROP VARIETY



ORGANIC MATTER



FERTILIZER MANAGEMENT



BEST USE OF SOIL



IRRIGATION

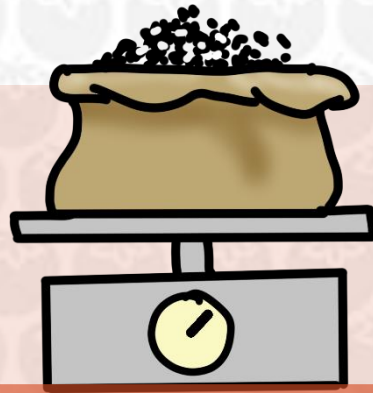


AND OTHER ASPECTS OF CROP
MANAGEMENT TO OBTAIN BEST
RESULT FROM TOMATO PRODUCTION

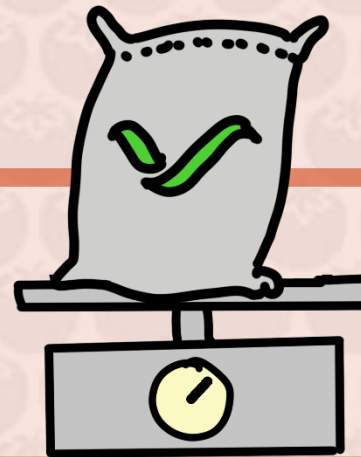


INPUTS

SEED



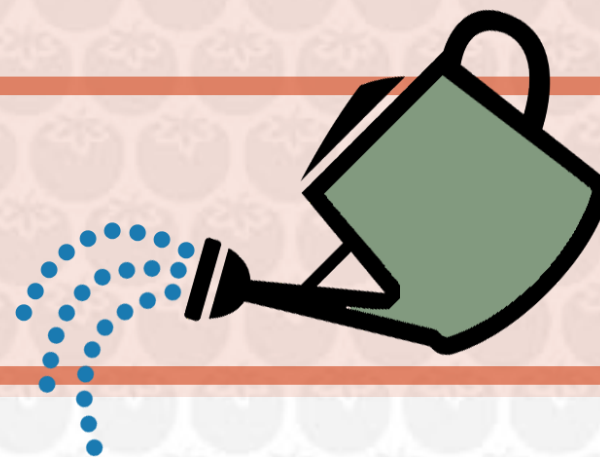
FERTILIZERS



LABOR

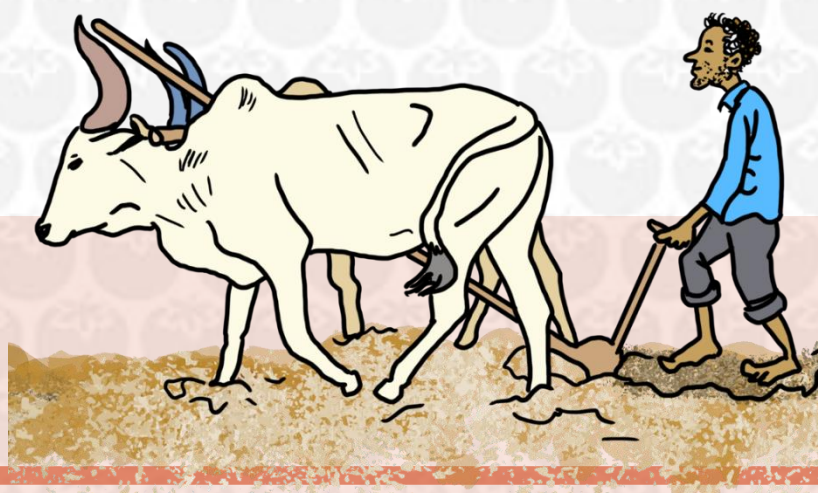


IRRIGATION

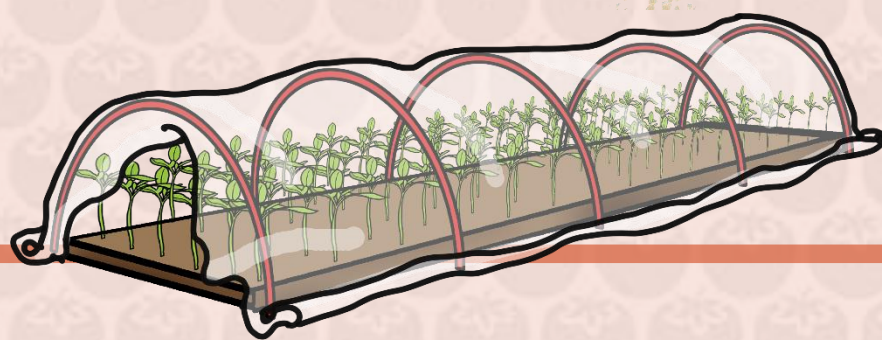


ACTIVITIES

LAND PREPARATION



NURSERY



TRANSPLANTING



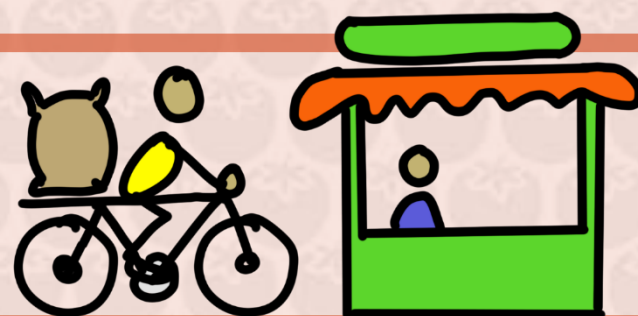
TOPDRESSING



HARVESTING



POSTHARVEST



INVESTMENT & BENEFITS

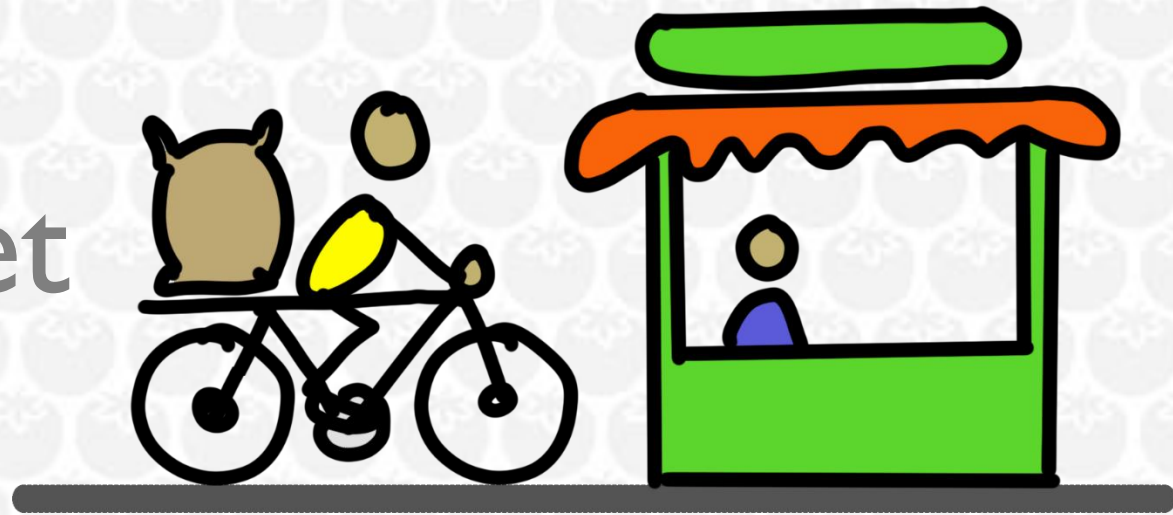


PURPOSE

Home consumption



Local or distant market



TOMATO PLANT SIZE

Dwarf, medium and tall



SEASON

Winter, spring and summer

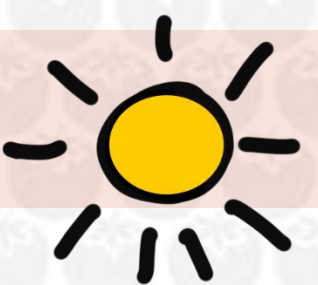






DOMAIN

Mid hills

Lower hills

or Terai



Variety	Type of plant	Yield in kg/ropani	
Srijana	Indeterminate	4000-5000	
Sworaksha	Indeterminate	4000-4500	
NS 2535	Determinate	2000-2500	
VL 443	Indeterminate	4000-5000	

All varieties are suitable for Terai and hilly regions.

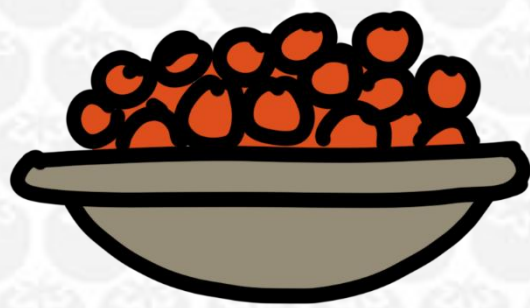
IMPORTANCE OF IMPROVED VARIETY 5

LOCAL VARIETY

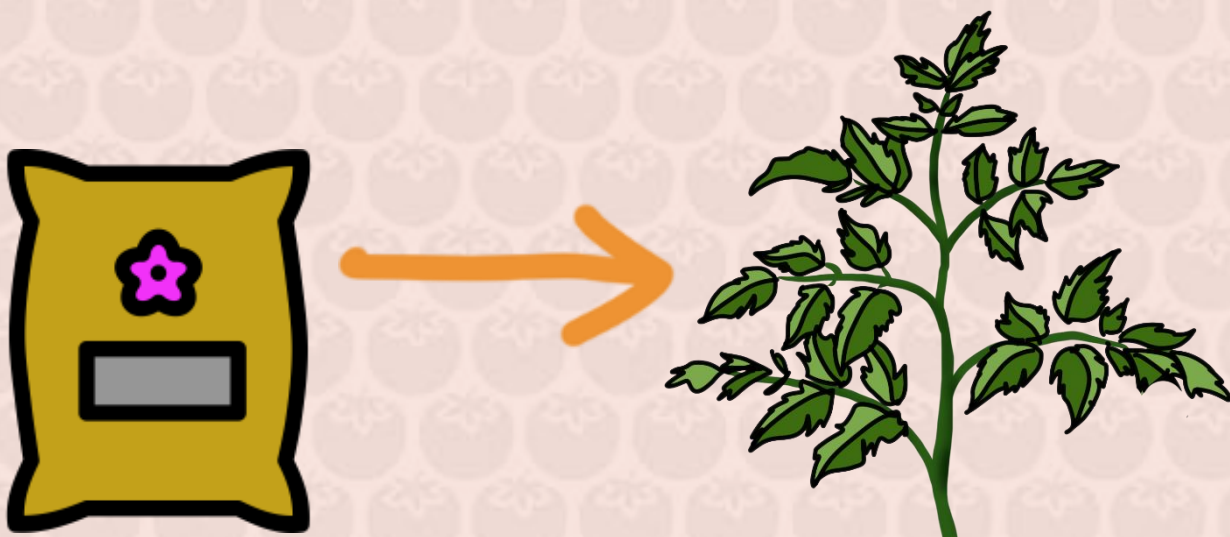
SMALL FRUITS



POOR YIELD



INDETERMINATE



TASTY



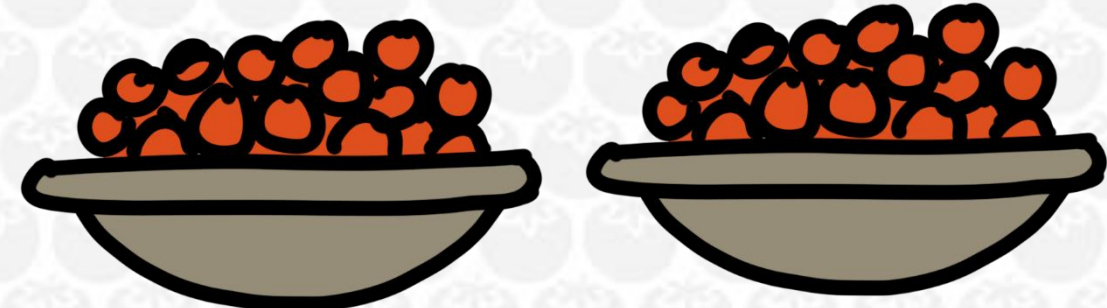
SUITABLE FOR HOME CONSUMPTION

HYBRID / IMPROVED

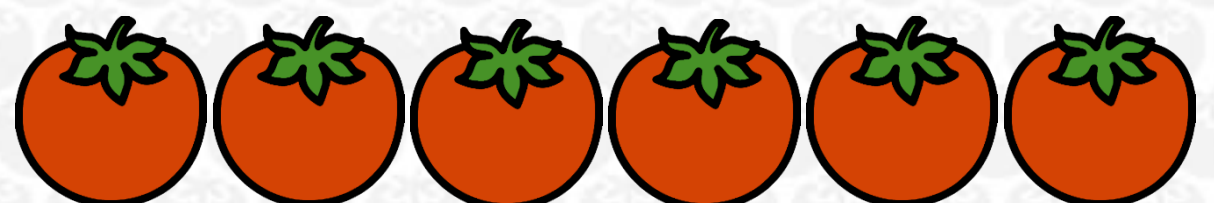
LARGE FRUITS



HIGH YIELD



RESPONSIVE TO FERTILIZER



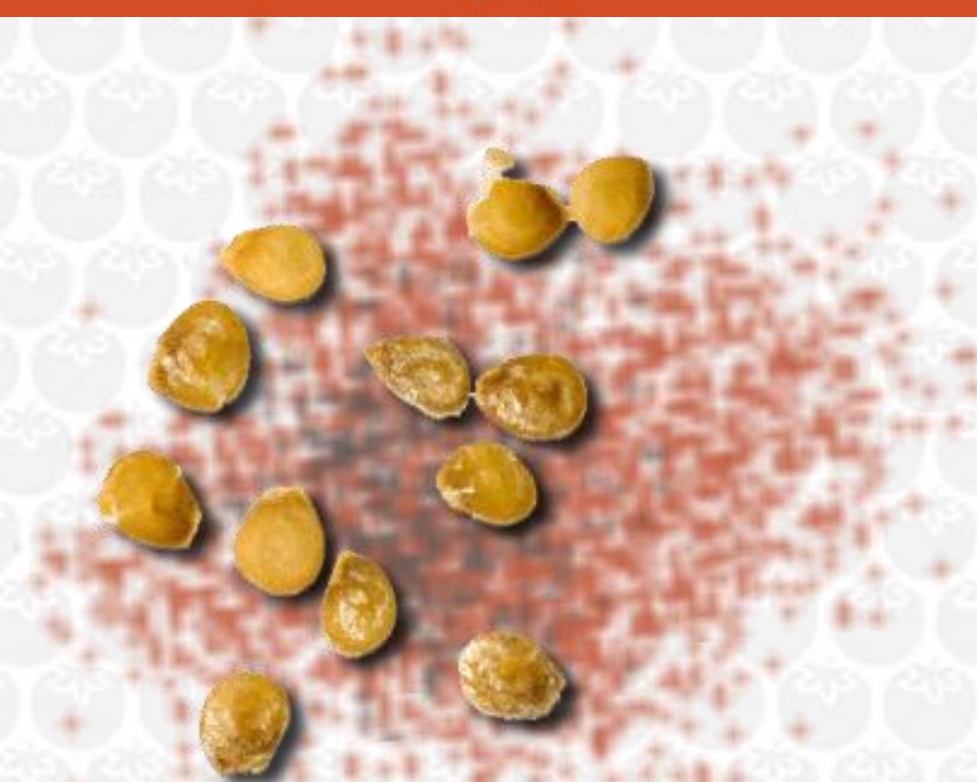
UNIFORM FRUITS, GOOD KEEPING QUALITY

BRED FOR SPECIFIC PURPOSE & CROP MANAGEMENT





CLEAN



PURE

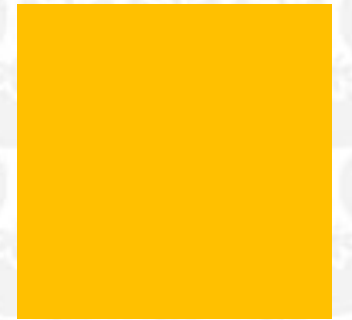
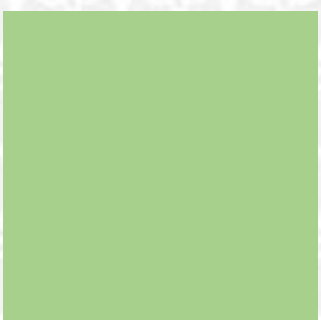


HEALTHY



CROP CALENDAR

Domain/ Months	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	March	April
Mid Hills (monsoon crop)	Green										Green	Green
	Blue	Blue										Blue
			Yellow	Yellow	Yellow							
Mid Hill & Terai (autumn crop)			Green	Green	Green							
				Blue	Blue	Blue						
							Yellow	Yellow	Yellow			
Mid Hill & Terai (winter crop)						Green	Green	Green				
							Blue	Blue	Blue			
										Yellow	Yellow	Yellow
Mid Hill & Terai (spring crop)									Green	Green	Green	
										Blue	Blue	Blue
	Yellow	Yellow	Yellow									

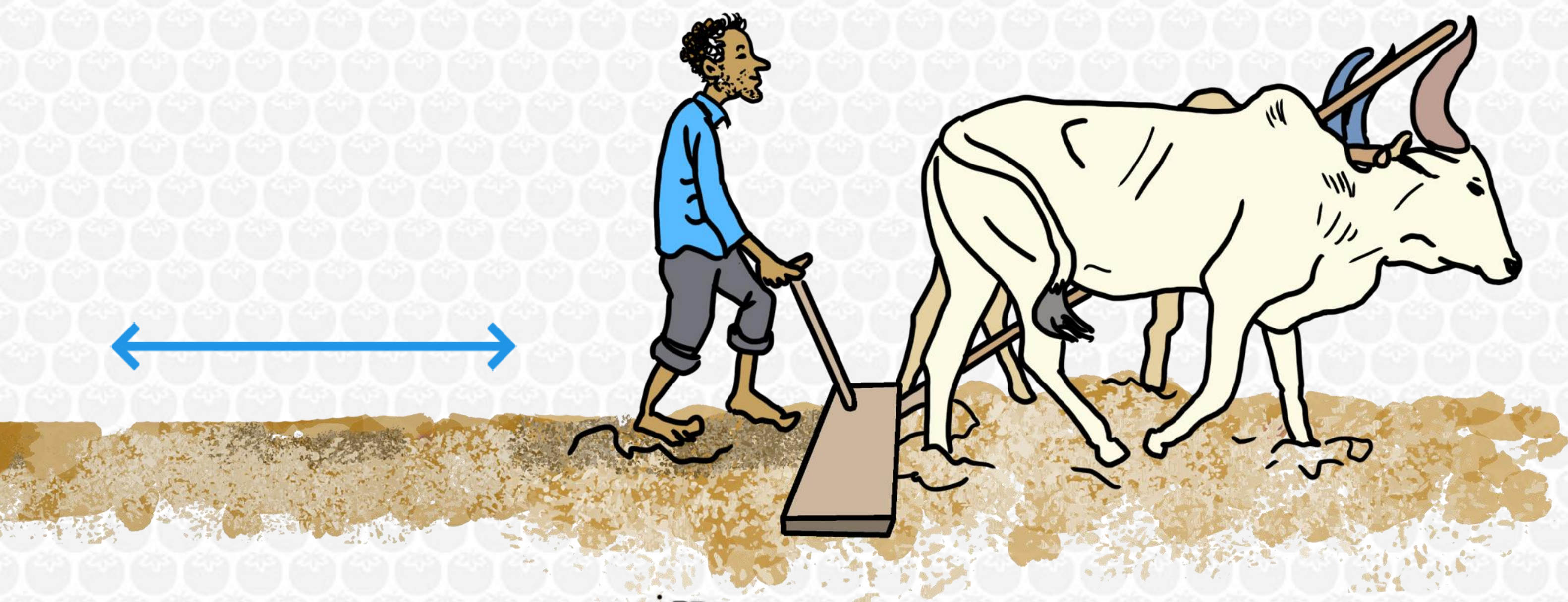


Apply 1500 kg organic manure per ropani at least 15 days before transplanting.



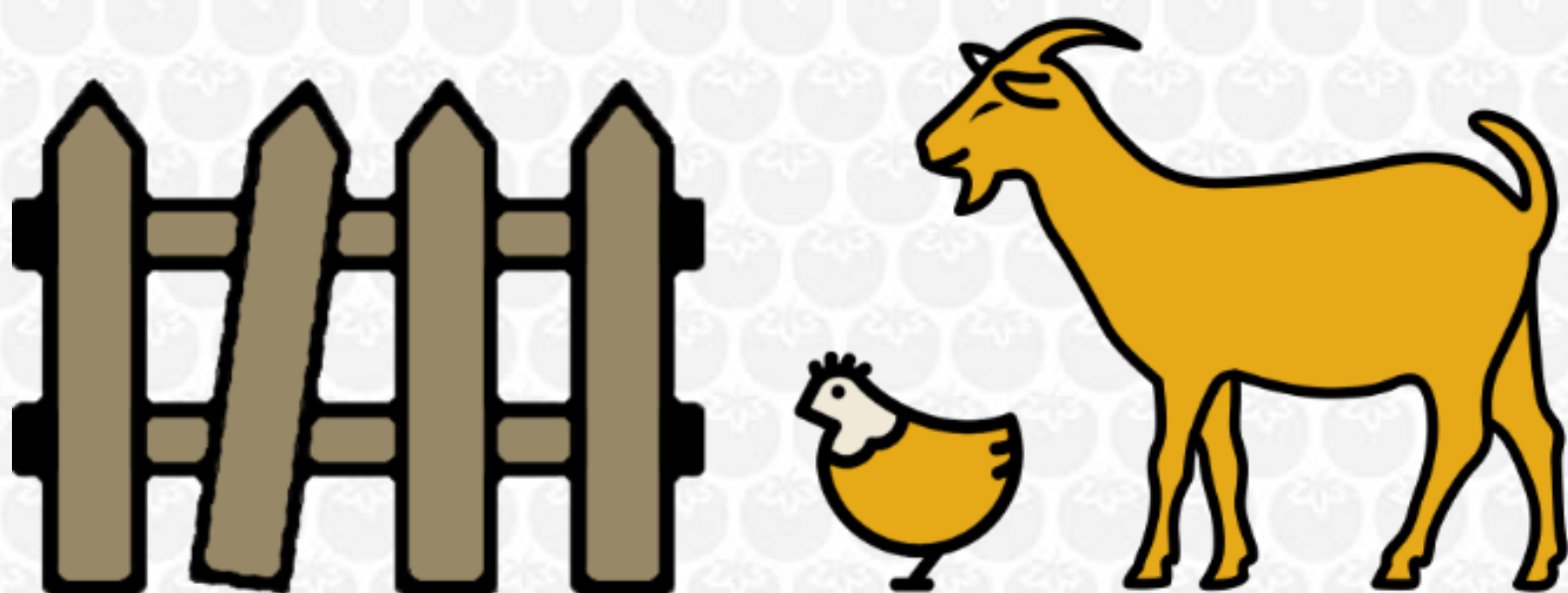
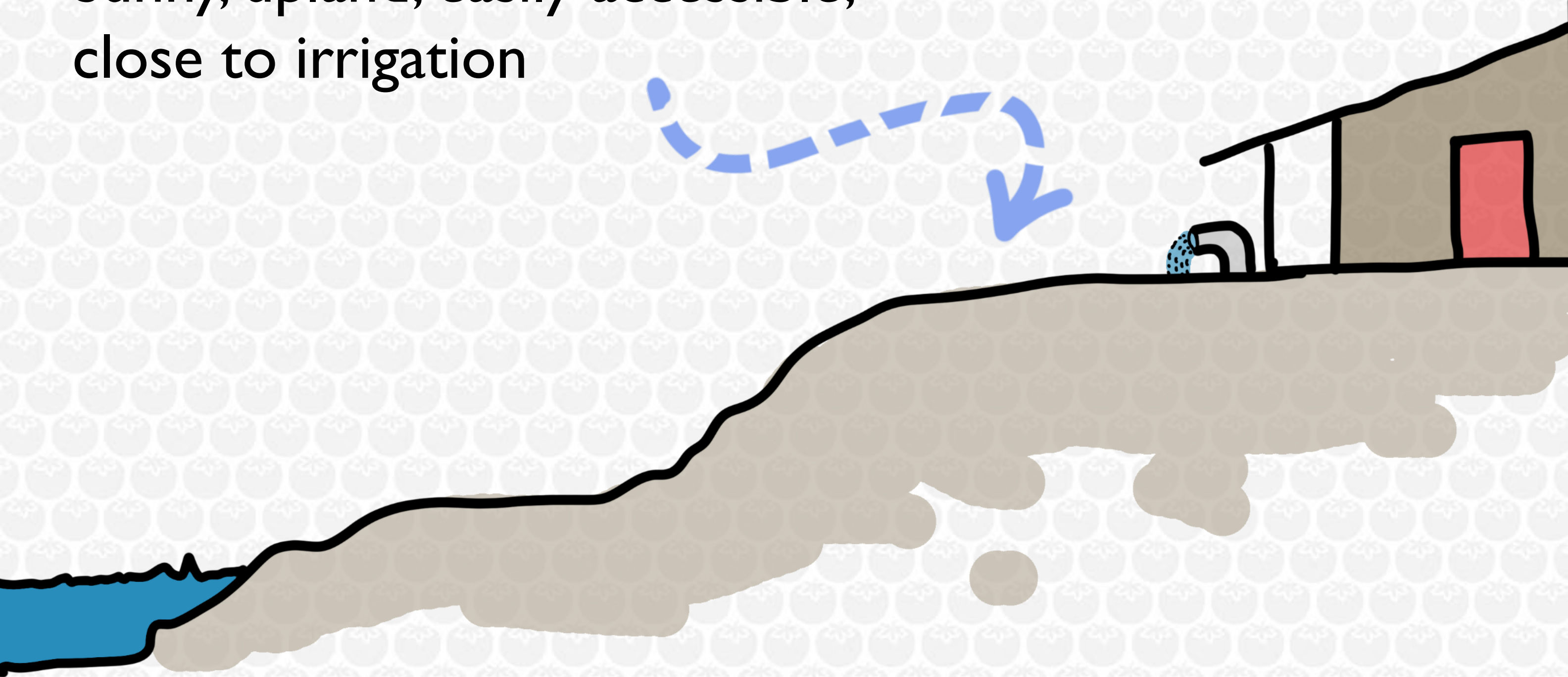
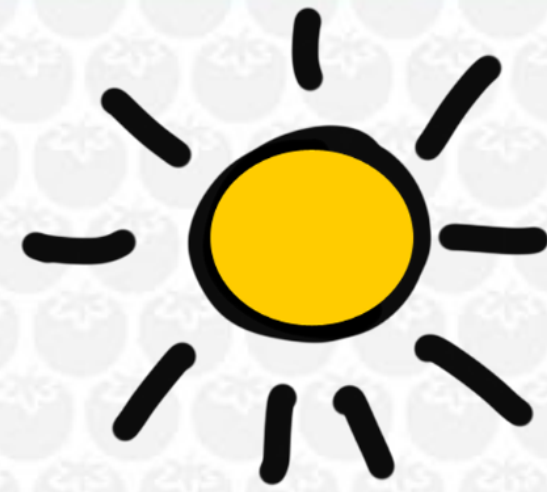
Plough without delay to mix OM in the soil.
Plough 3 times to make soil pulverized.

Level the field for further operations.



NURSERY SITE SELECTION

Sunny, upland, easily accessible, close to irrigation



PROTECTED FENCING

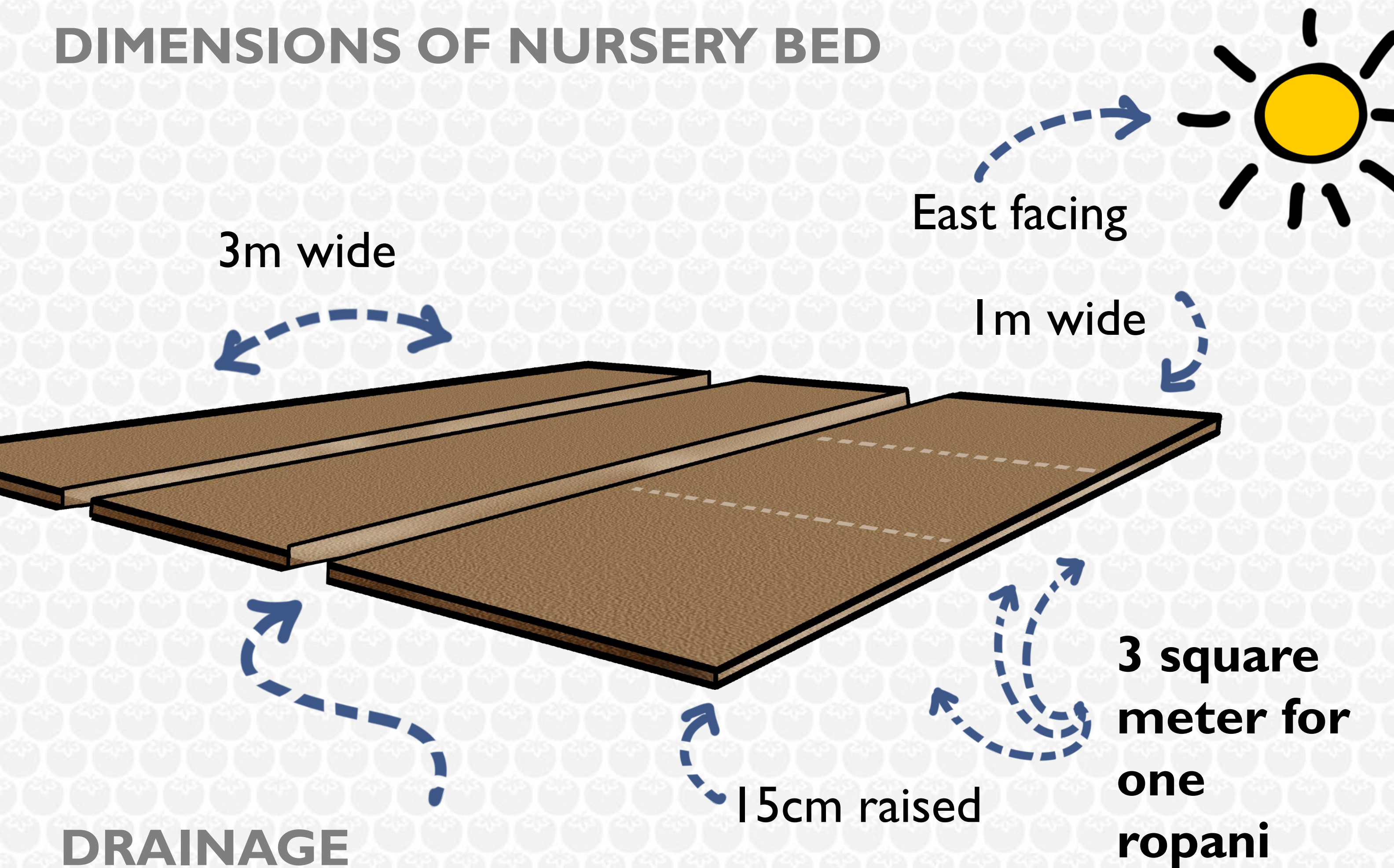
Protected from chickens and animals

TEXTURE OF NURSERY SOIL

Clean, pulverize soil with good amount of OM



DIMENSIONS OF NURSERY BED



DRAINAGE

30 to 40cm space
between two seedbeds

OM AND FERTILIZER

15kg vermi-compost

30gm DAP

30gm MOP

mix in 5cm surface soil before seed sowing



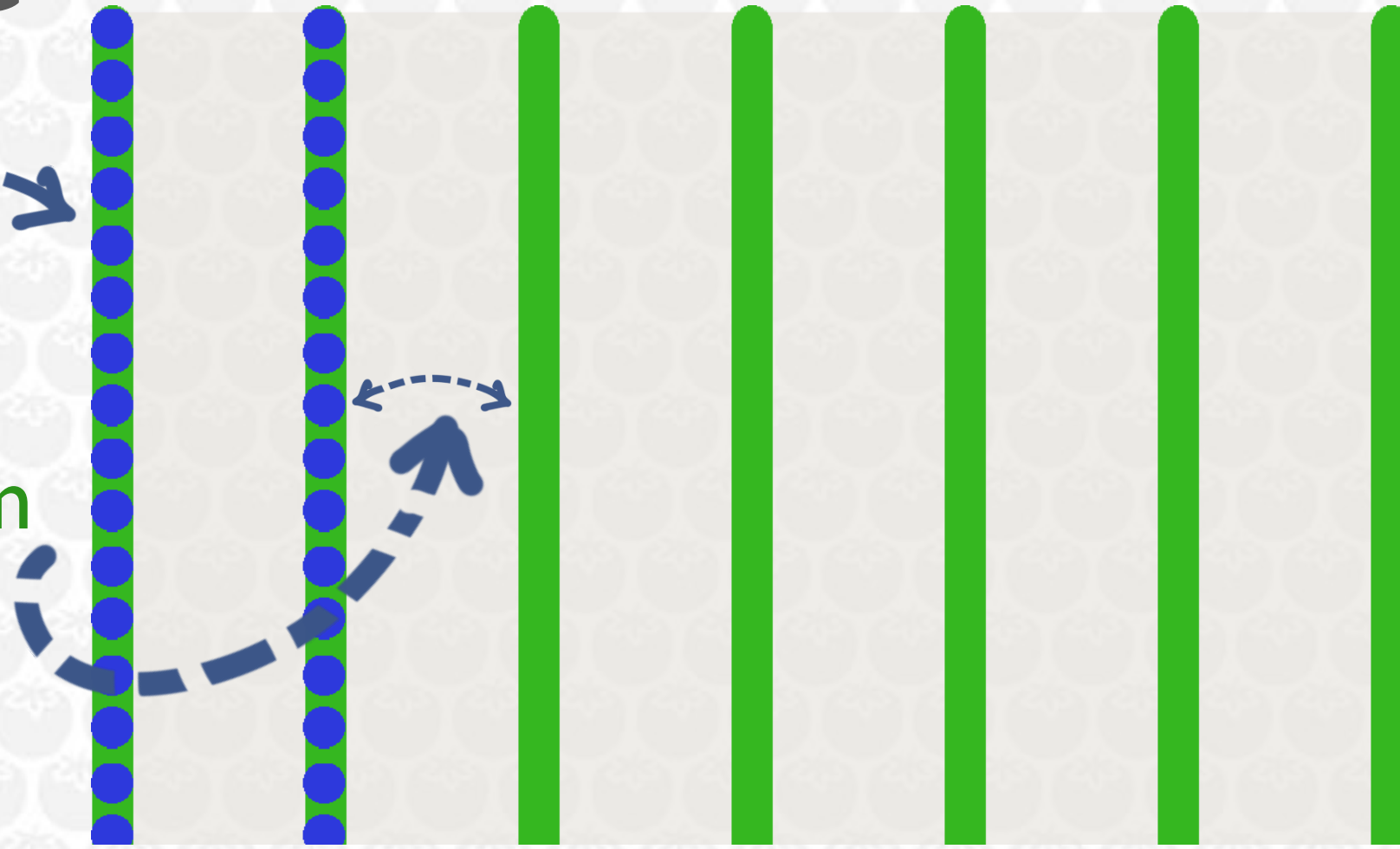
SEED SOWING AND AFTER CARE

||

SEED SOWING SPACING

Between seeds, 1cm

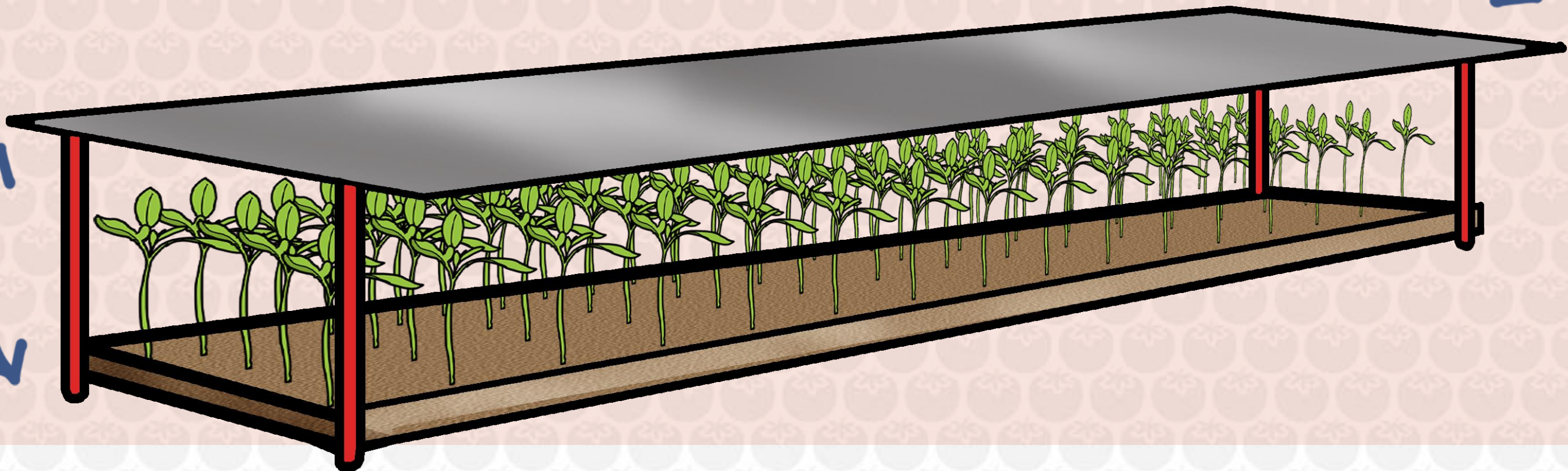
Between rows, 5cm



NURSERY SHED

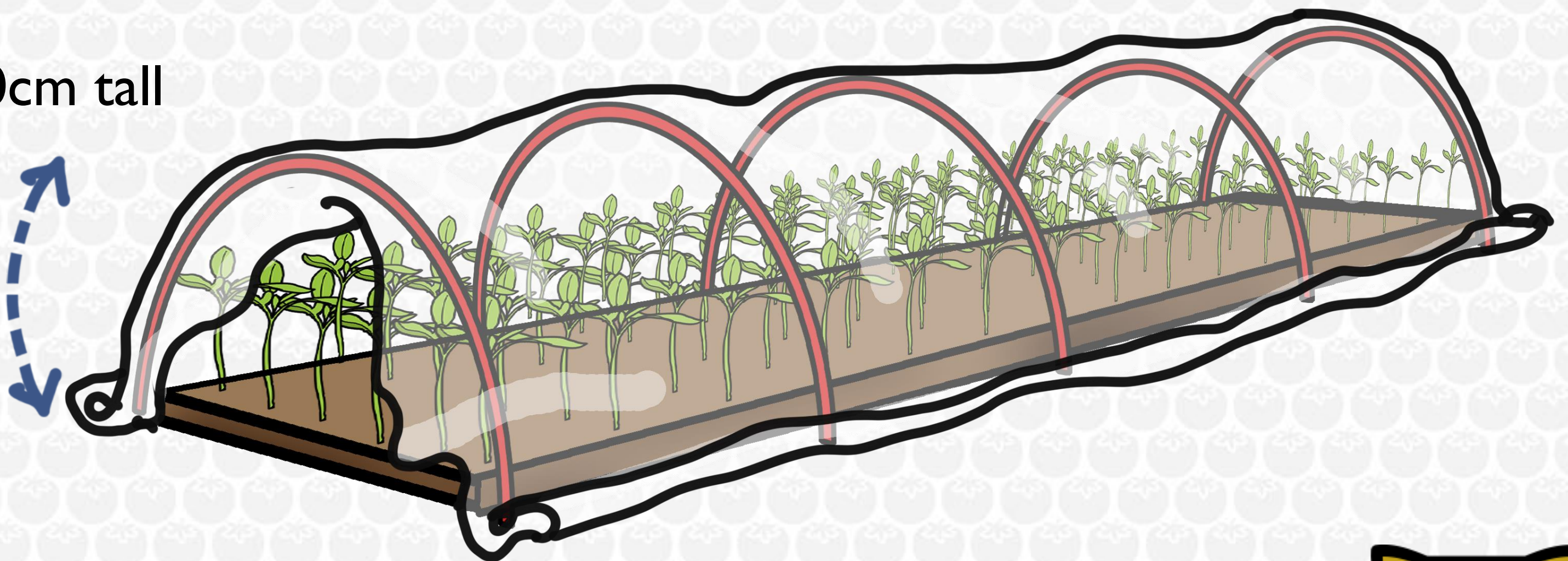
120cm width

90cm height



NURSERY TUNNEL

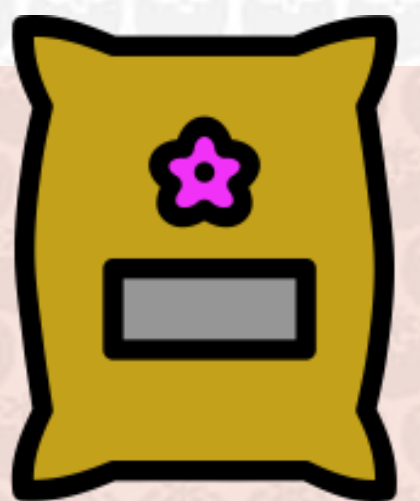
50cm tall



UREA TOPDRESSING

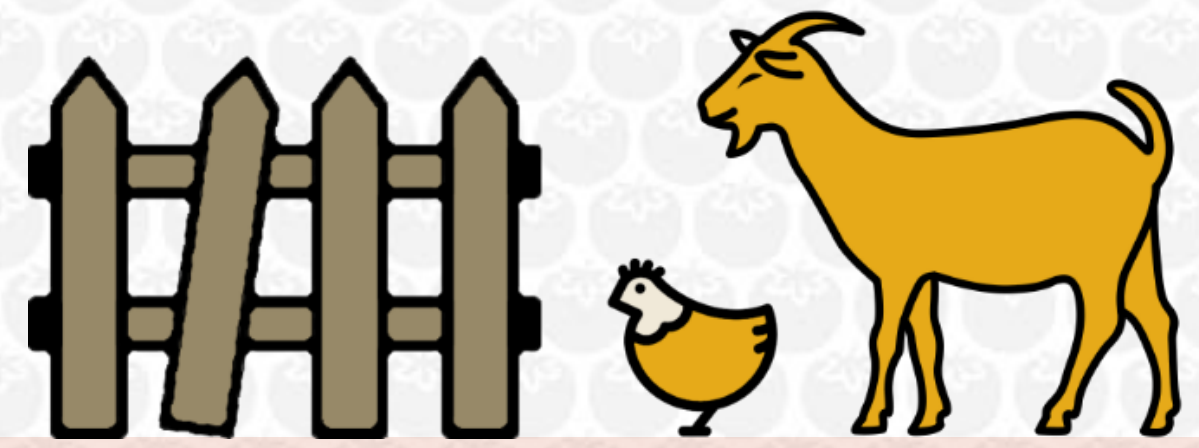
30gm urea topdressing after 15 days of seed sowing

7-10gm seed is required to transplant in one ropani field



SUPERVISION AND SEEDLING PROTECTION | 2

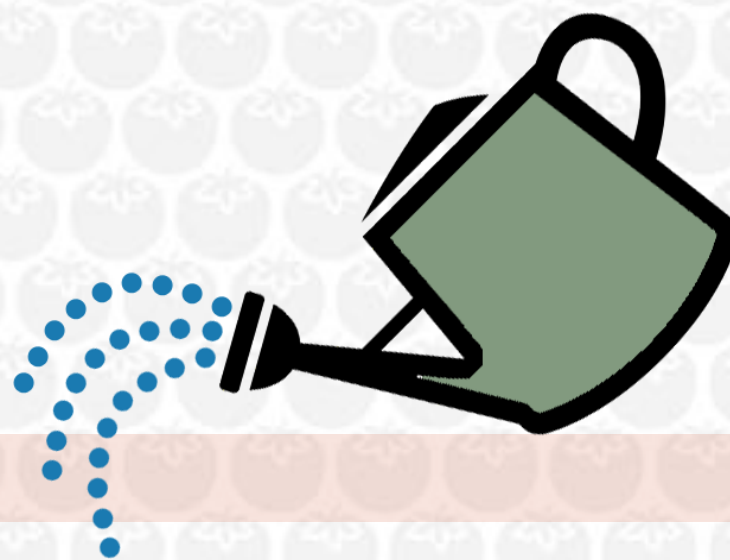
PROTECT from chicken and animals



SUPERVISE seed germination



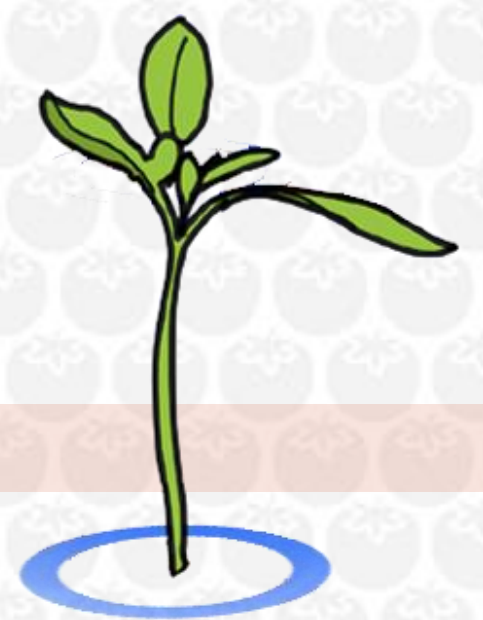
WATER regularly



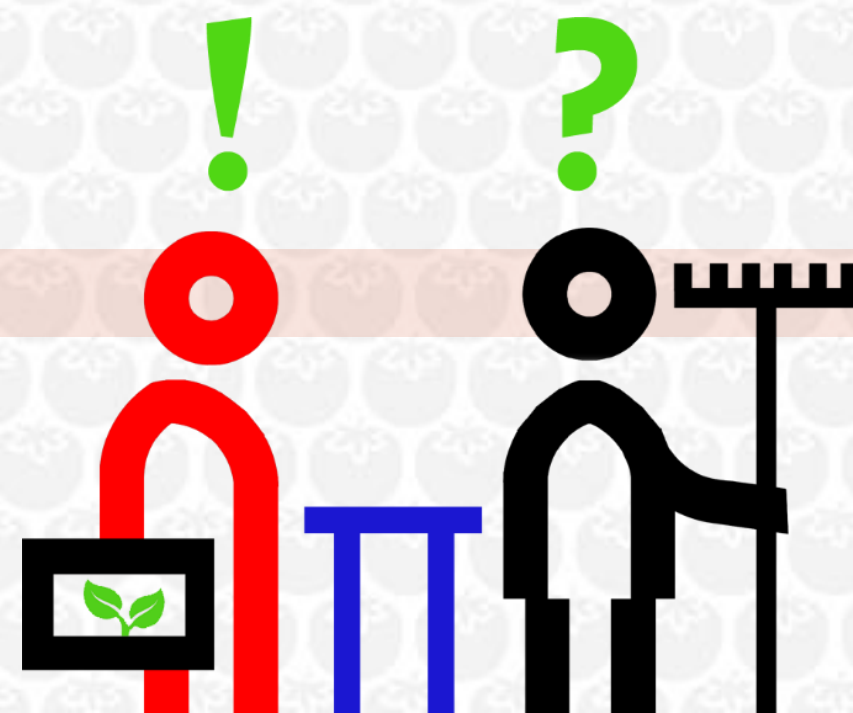
WEED & HOE



TOP-DRESS 30gm urea after 15 days of sowing



CONTACT agri. tech/agro-vet
in case of pest/disease problem





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TOMATO PART TWO CROP MANAGEMENT



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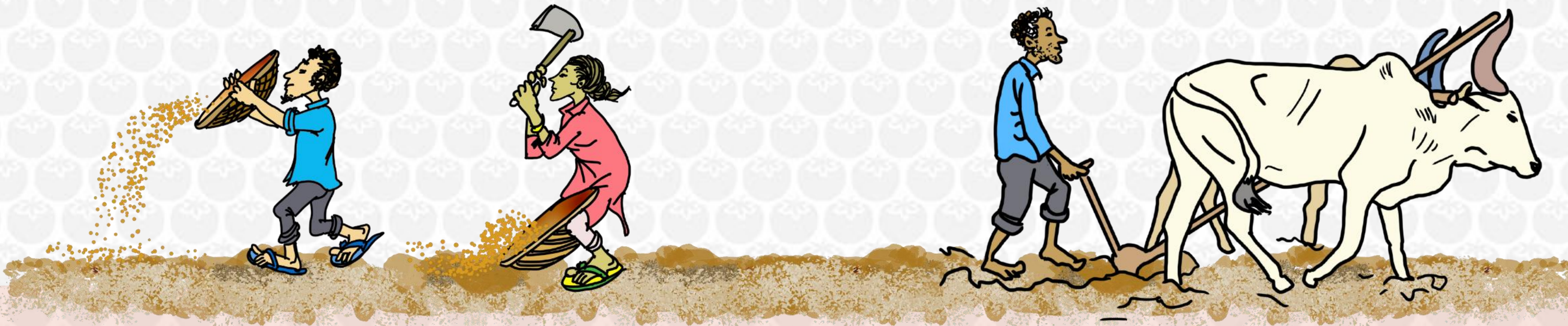


IFDC
Developing Agriculture from the Ground Up

CIMMYT
International Maize and Wheat Improvement Center

LAND PREPARATION

ORGANIC MANURE APPLICATION WITH PLOUGHING



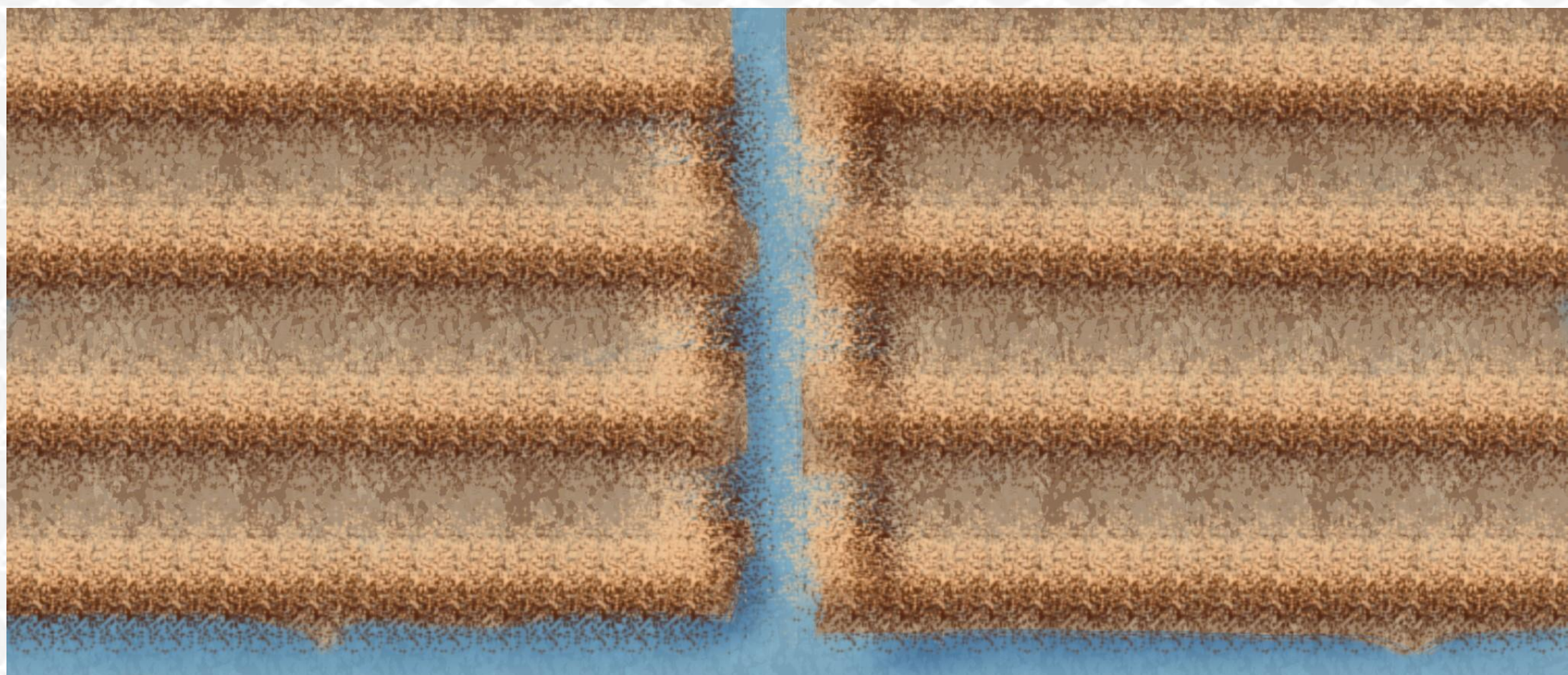
REMOVING WEEDS AND PLANT DEBRIS



LEVELING OF PLOUGHED FIELD

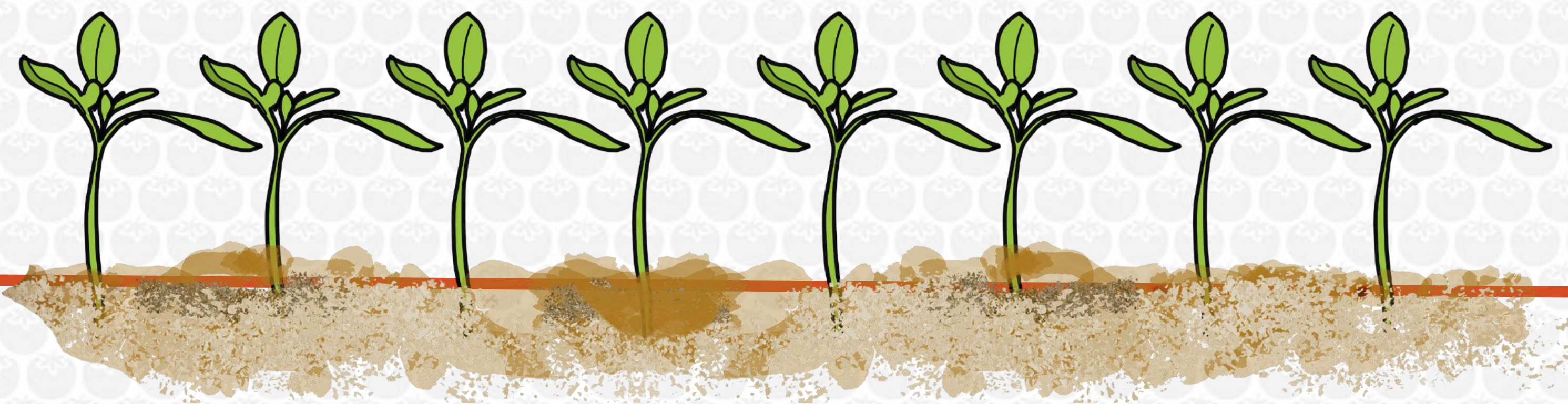


PREPARE
PLANTING
ROWS/BED
CONNECTED
WITH
IRRIGATION
CHANNEL



25 to 30 days old seedling is ready for transplanting

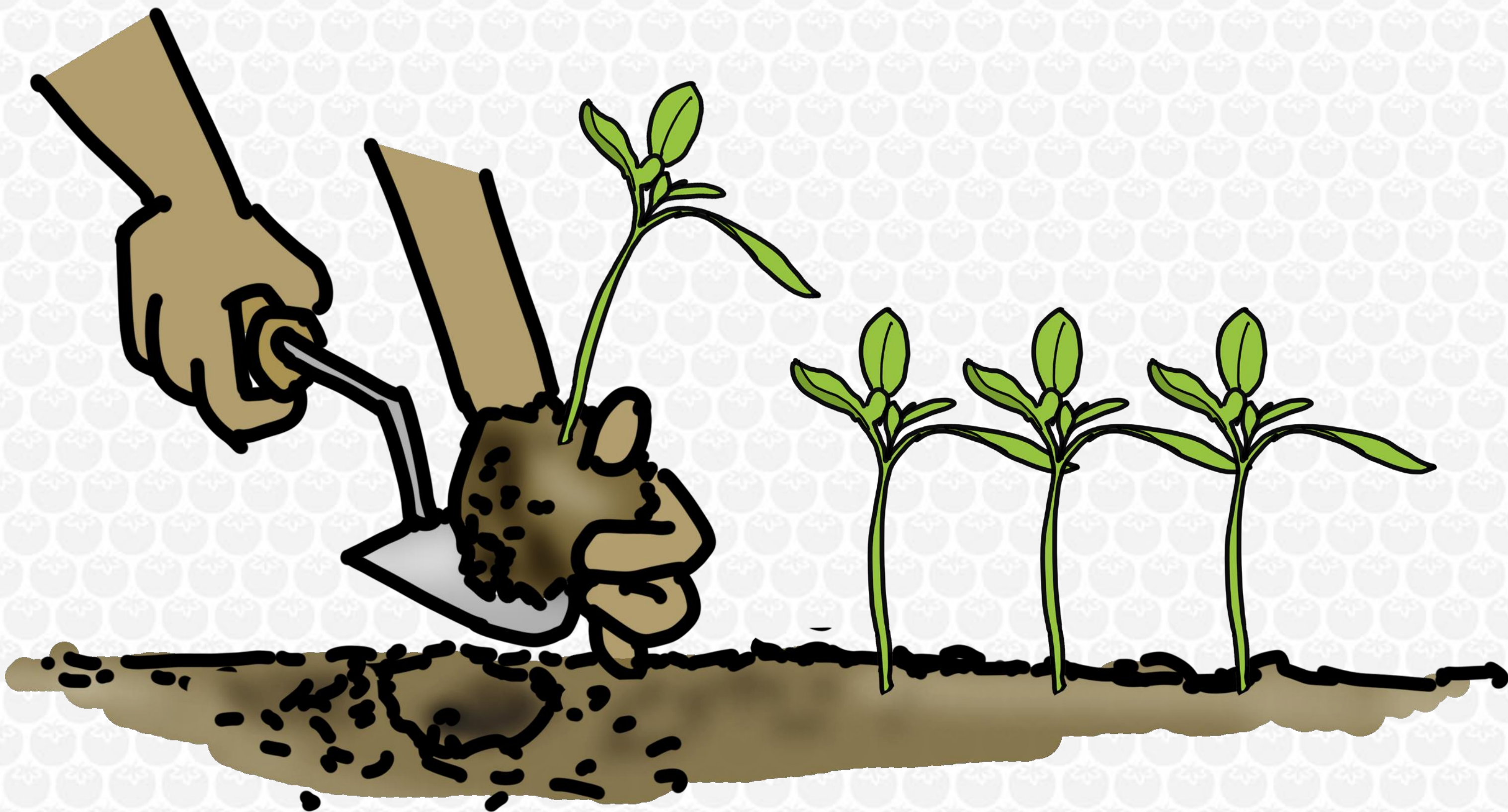
Expose seedlings to the sun and restrict watering for 2-3 days



Irrigate nursery 2-4 hours before uprooting seedling



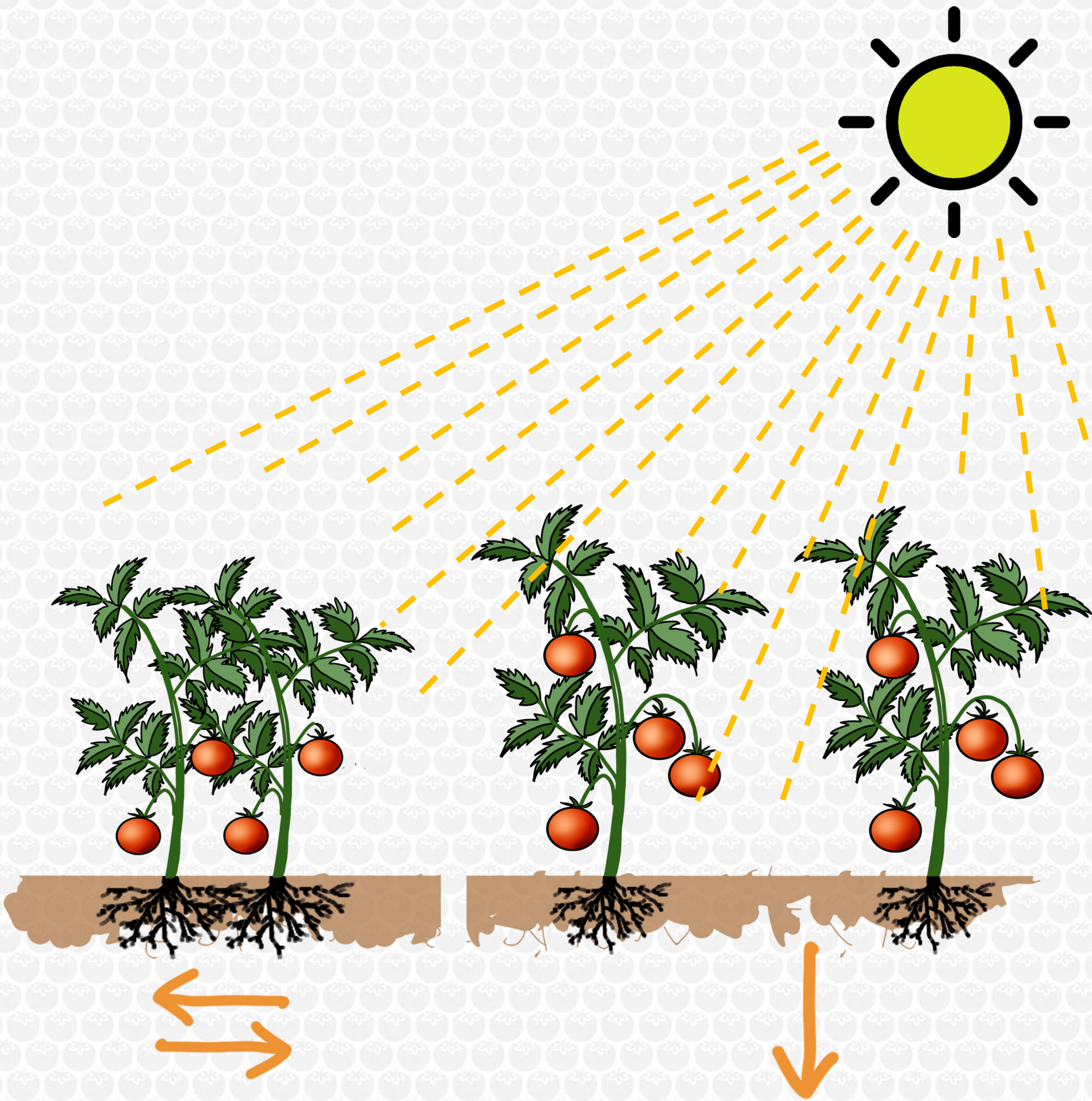
Uproot the seedlings in late afternoon



Keep seedlings in the tray with enough soil to hold them standing



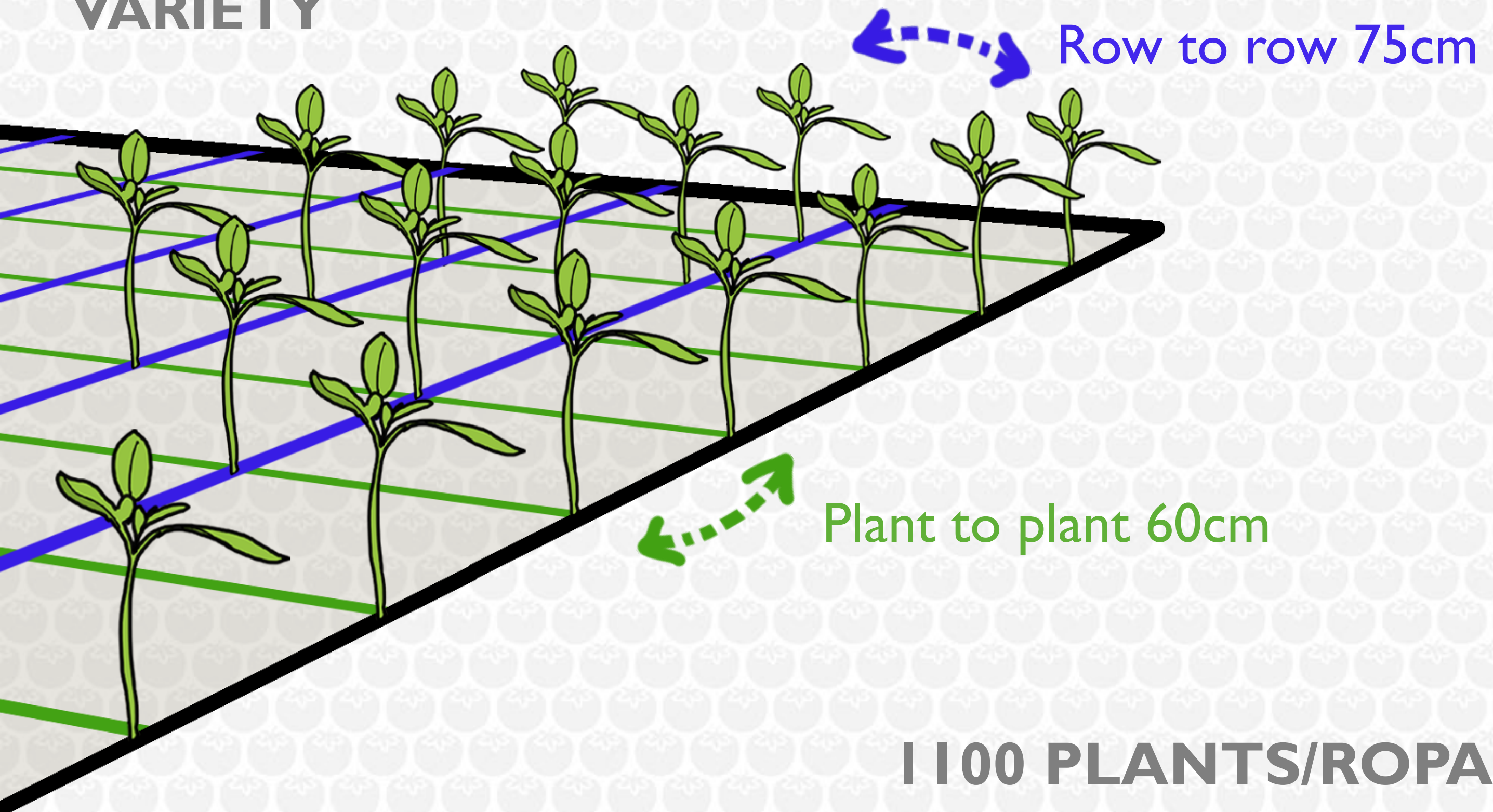
Send the seedling immediately for transplanting



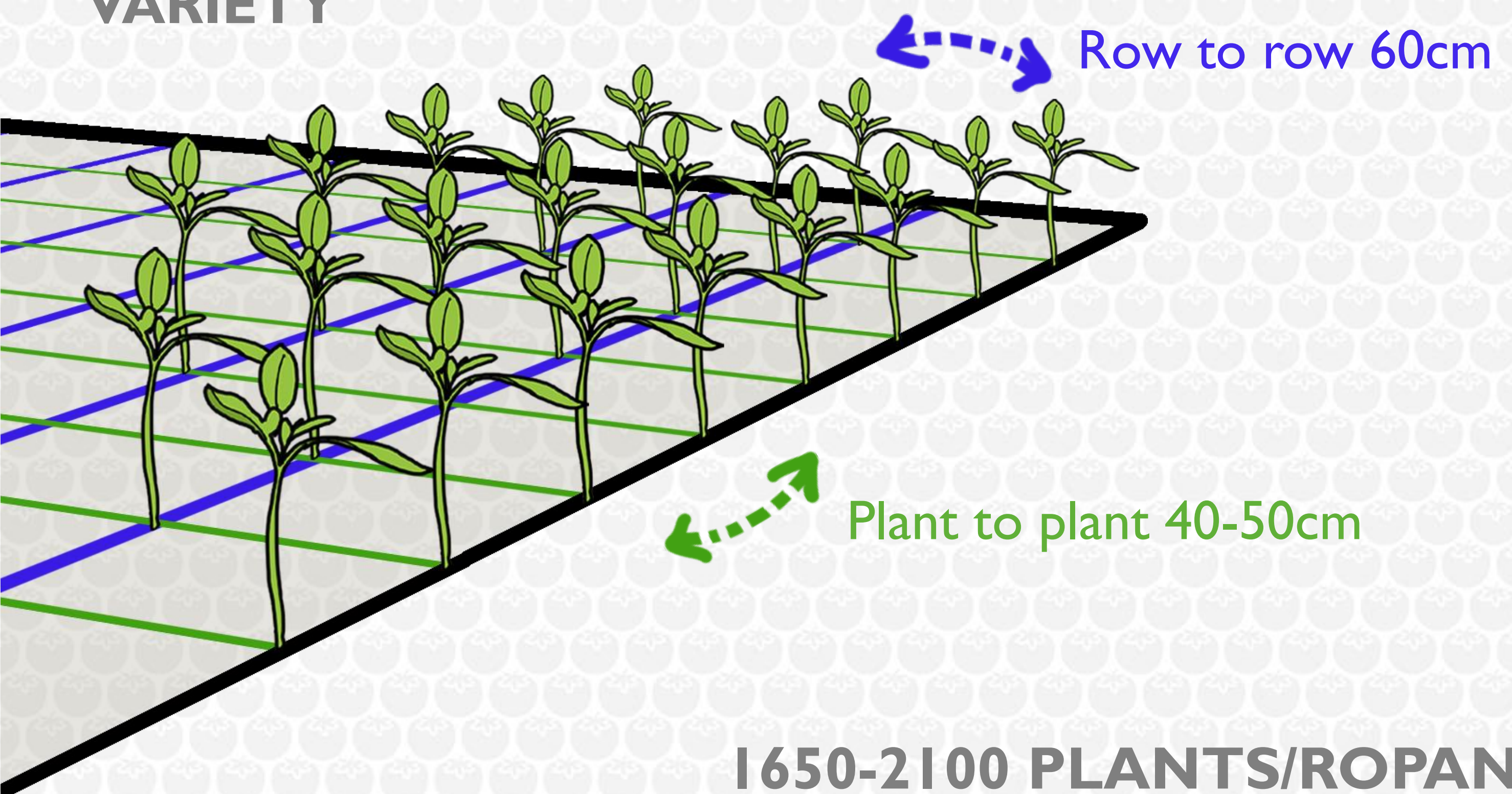
Close spacing
increases competition
for nutrients and lights

Wider spacing
reduces nutrient and
light use efficiencies

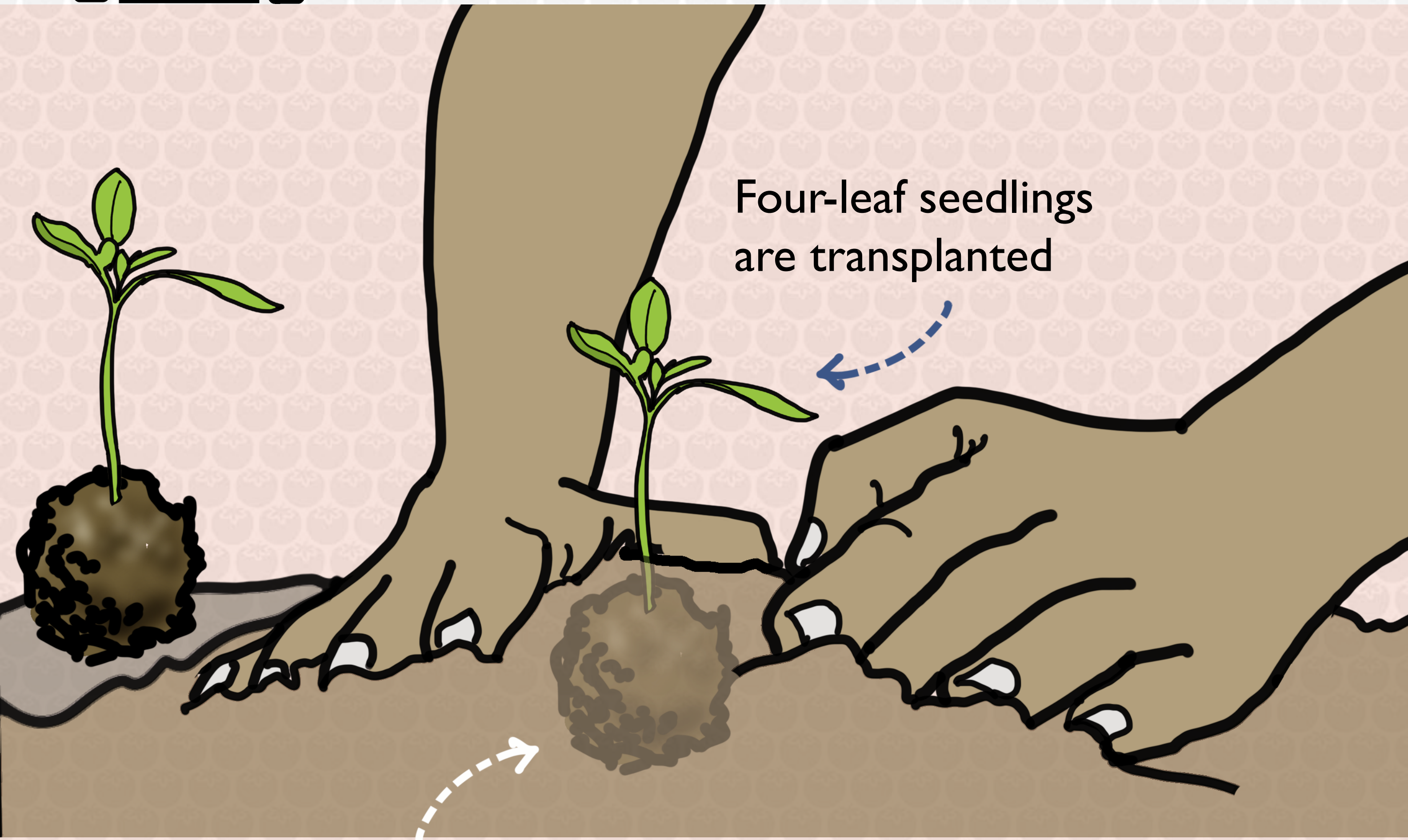
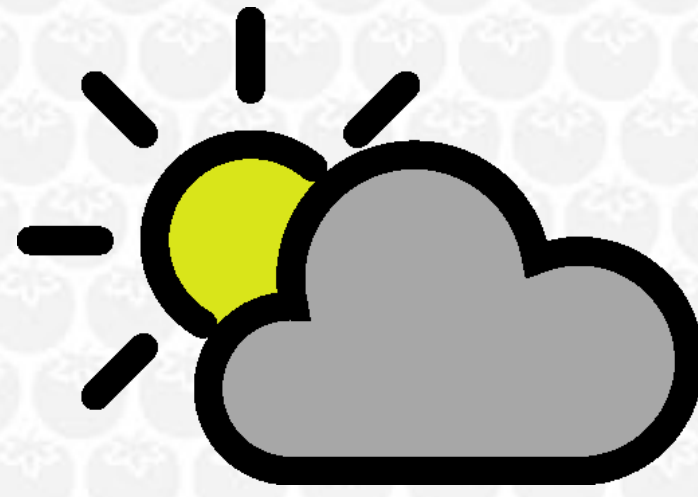
INDETERMINATE VARIETY



DETERMINATE VARIETY



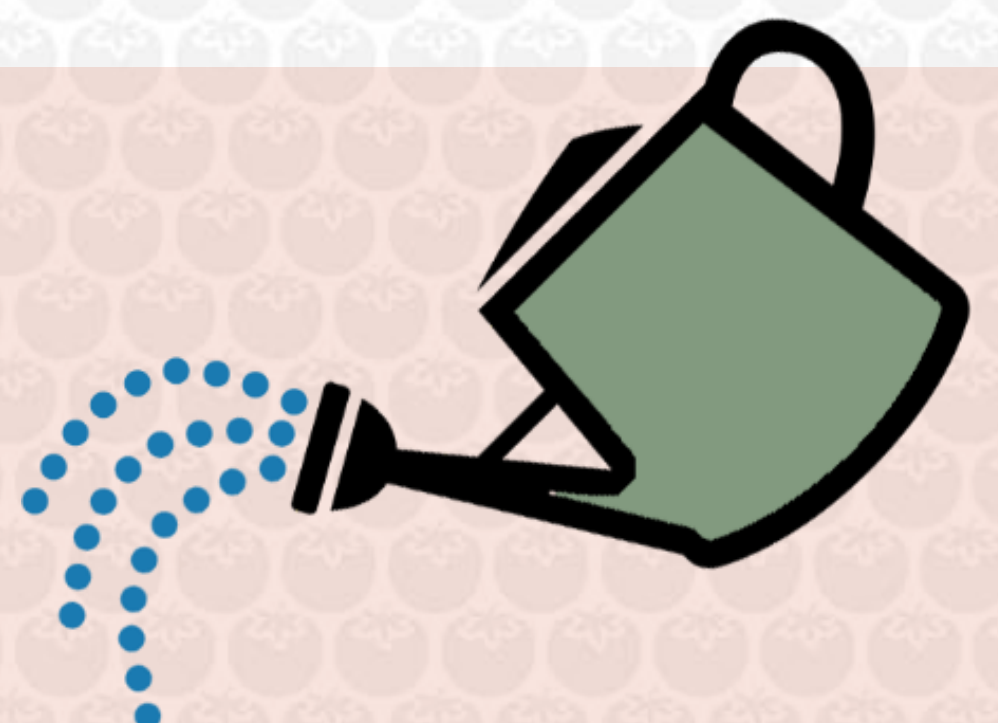
Transplant late in the afternoon or on a cloudy day

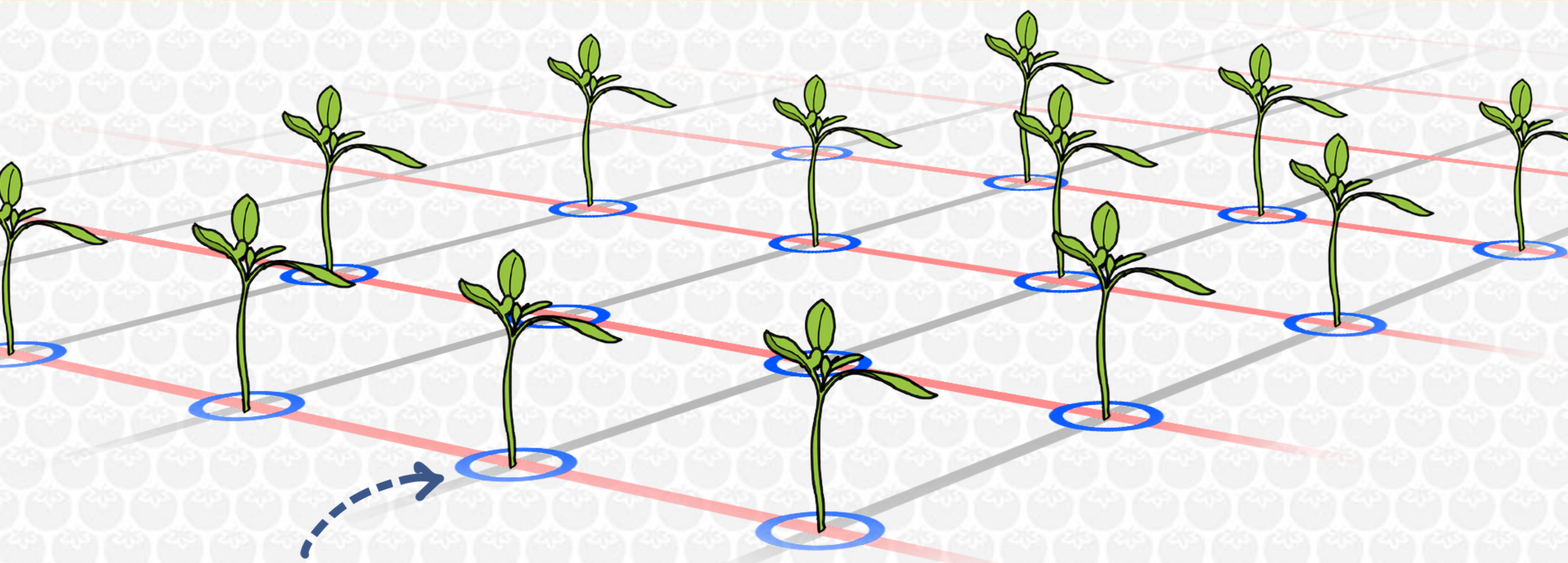


Four-leaf seedlings are transplanted

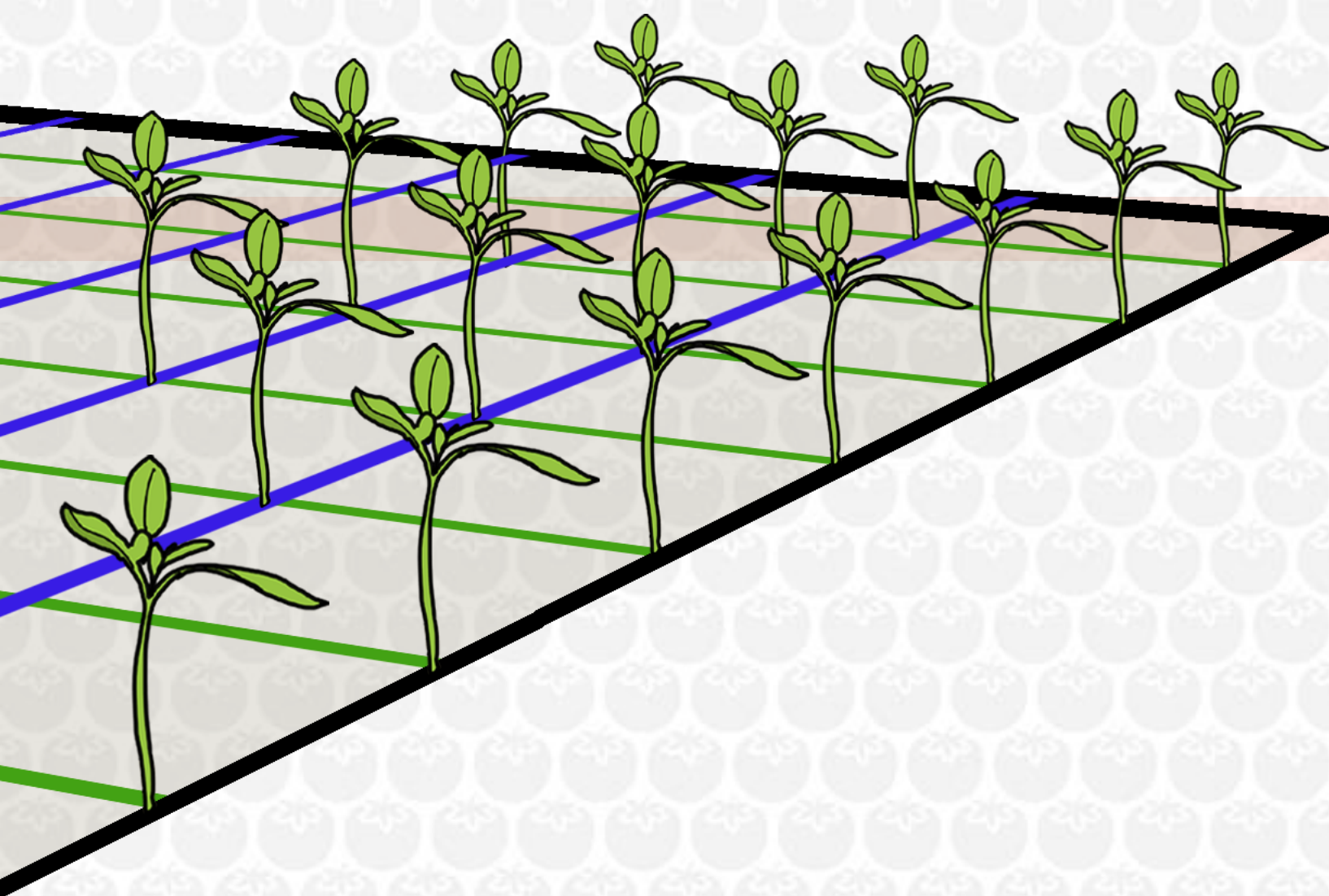
Cover the lower part of seedling which was inside soil in the nursery

Water newly transplanted seedlings soon after transplanting

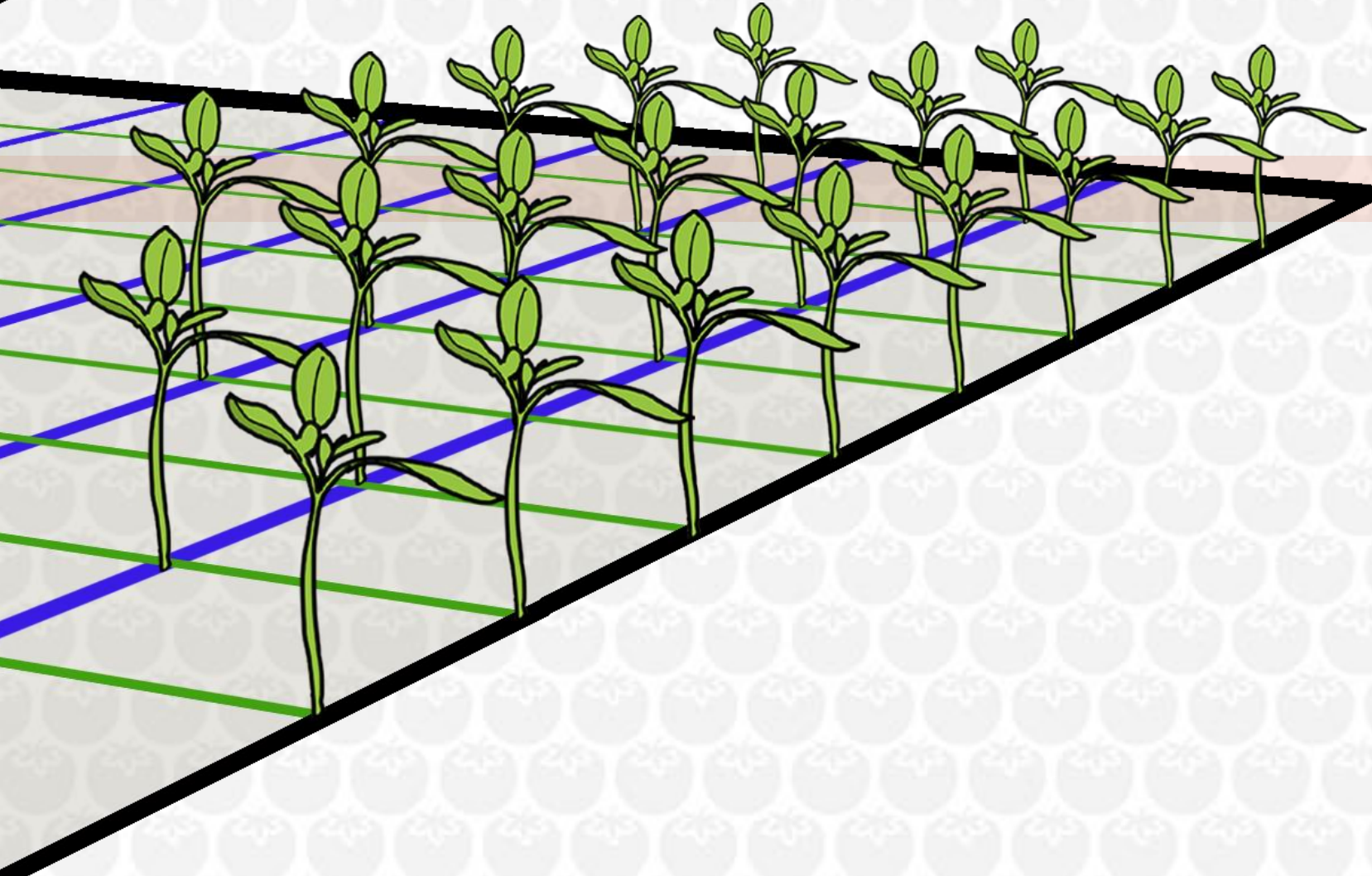




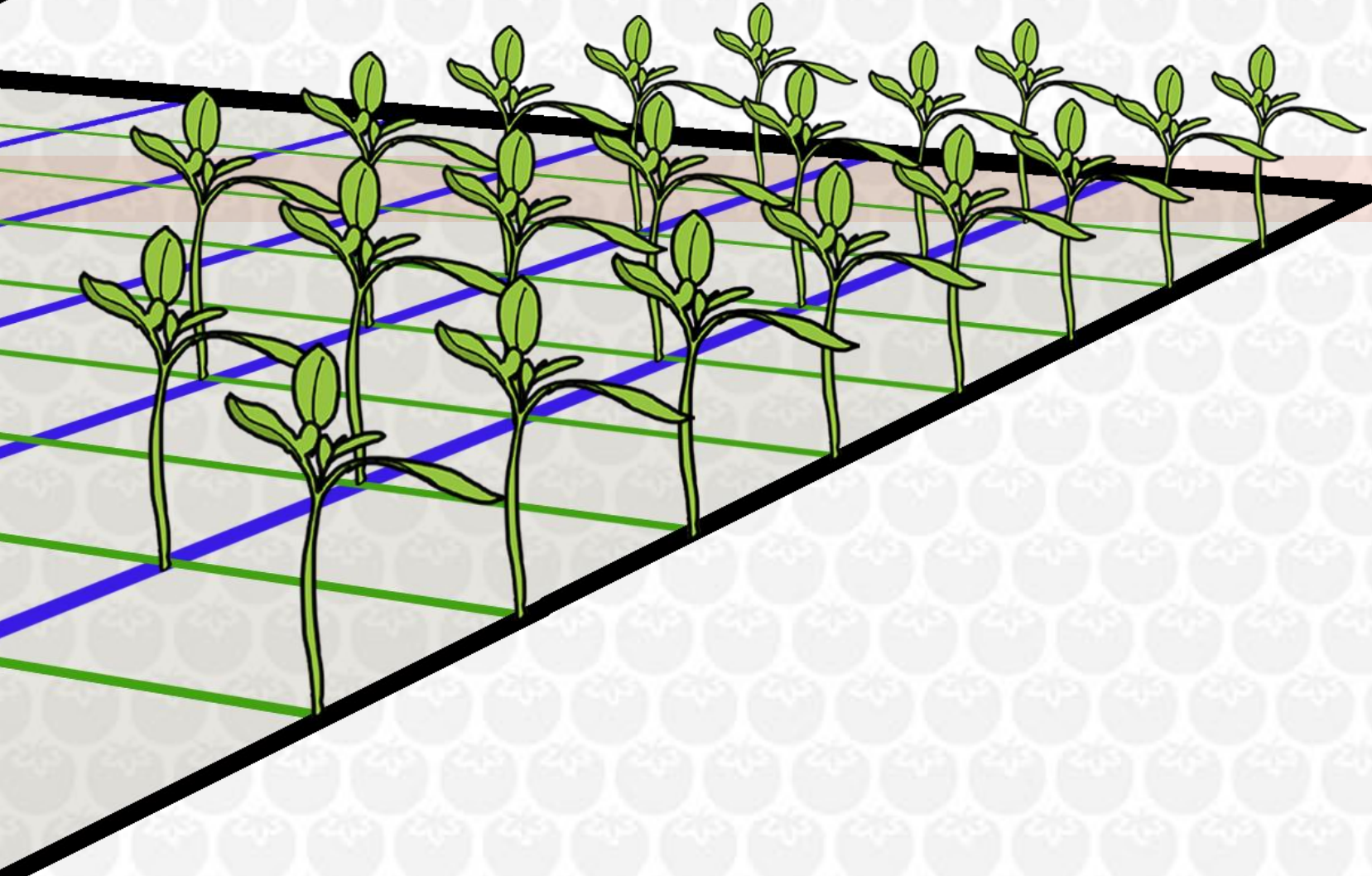
Apply DAP + MOP together
IN A RING OF 6CM
radius around each plant



75 X 60CM SPACING
14.5gm DAP and 7.5gm
MOP per plant



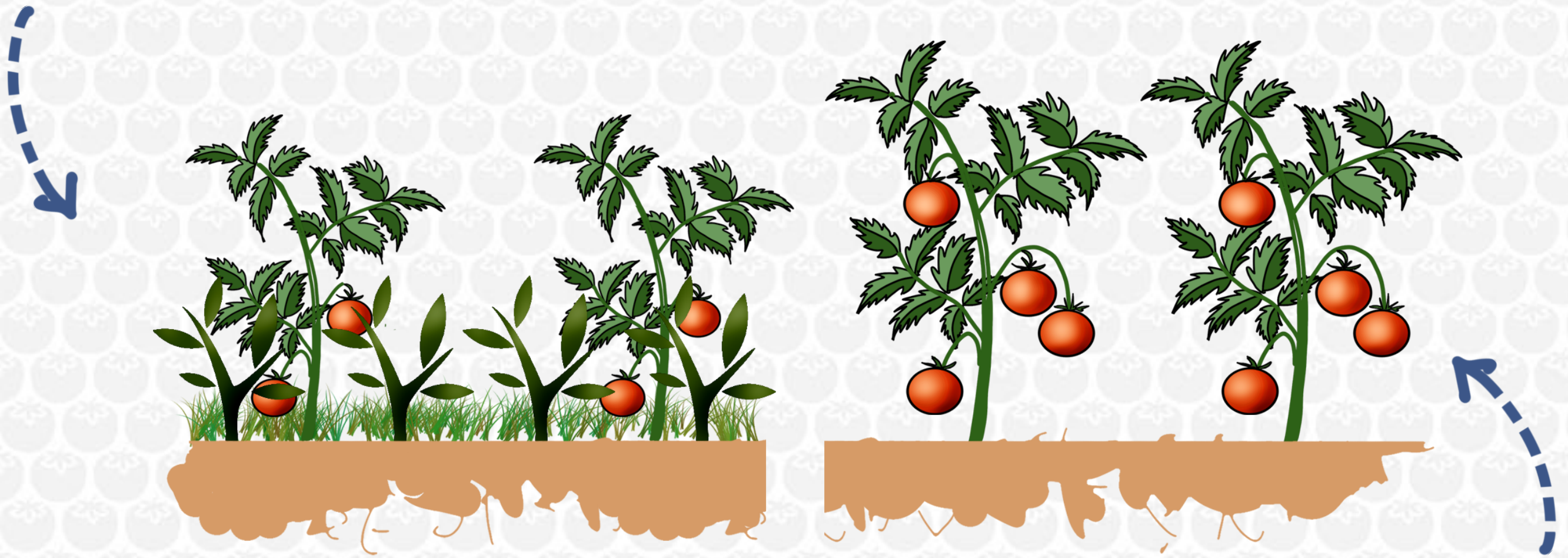
60 X 50CM SPACING
10gm DAP and 5gm
MOP per plant



60 X 40CM SPACING
7.7gm DAP and 4gm
MOP per plant

16kg DAP and 8.3kg MOP per ropani

BAD CROP STAND WITH WEED

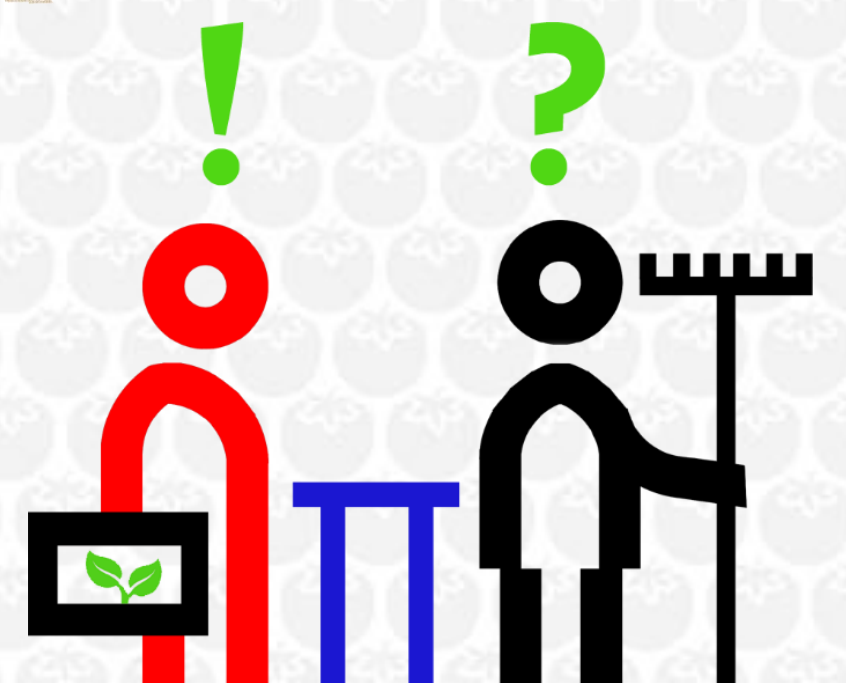


GOOD CROP STAND WITHOUT WEED

WEEDING AND EARTHING UP IS DONE MANUALLY AT EARLY STAGES OF CROP



Contact agri. tech/agro-vet in case of pest/disease problem



1. BEFORE TOPDRESSING



2. FLOWERING STAGE



3. FRUITING STAGE



4. AFTER EACH HARVEST



BUT ONLY ENOUGH MOISTURE, NO FLOODING. IRRIGATION AT EVERY 7-10 DAYS INTERVAL IS NECESSARY. DURING RAINY SEASON A GOOD DRAINAGE SYSTEM IS NECESSARY.

AT 20 DAYS AFTER TRANSPLANTING



WEEDING

AT FRUIT BEARING STAGE



WEEDING

TOPDRESSING



6.8gm
for 75 x 60cm
spacing,
4.5gm
for 60 x 50cm
spacing, and
3.6gm
for 60 x 40cm
spacing
for each plant,
both times.

15KG UREA REQUIRED PER ROPANI IN TWO PARTS

PRUNING AND STAKING

INDETERMINATE VARIETY

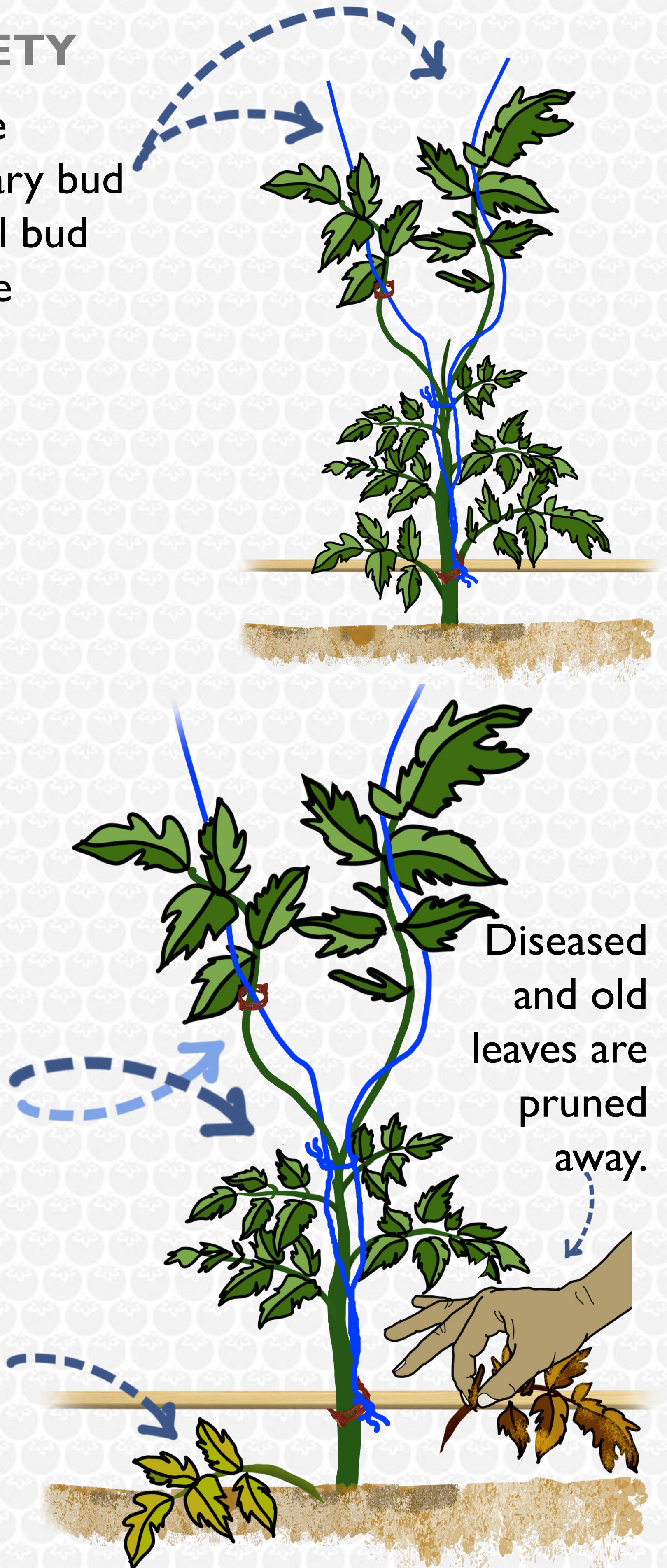
All buds below 30-40cm are removed, allowing one axillary bud to grow in addition to apical bud and these are trained on the strings upwards in V shape.

As the plant grows, buds are pinched away.

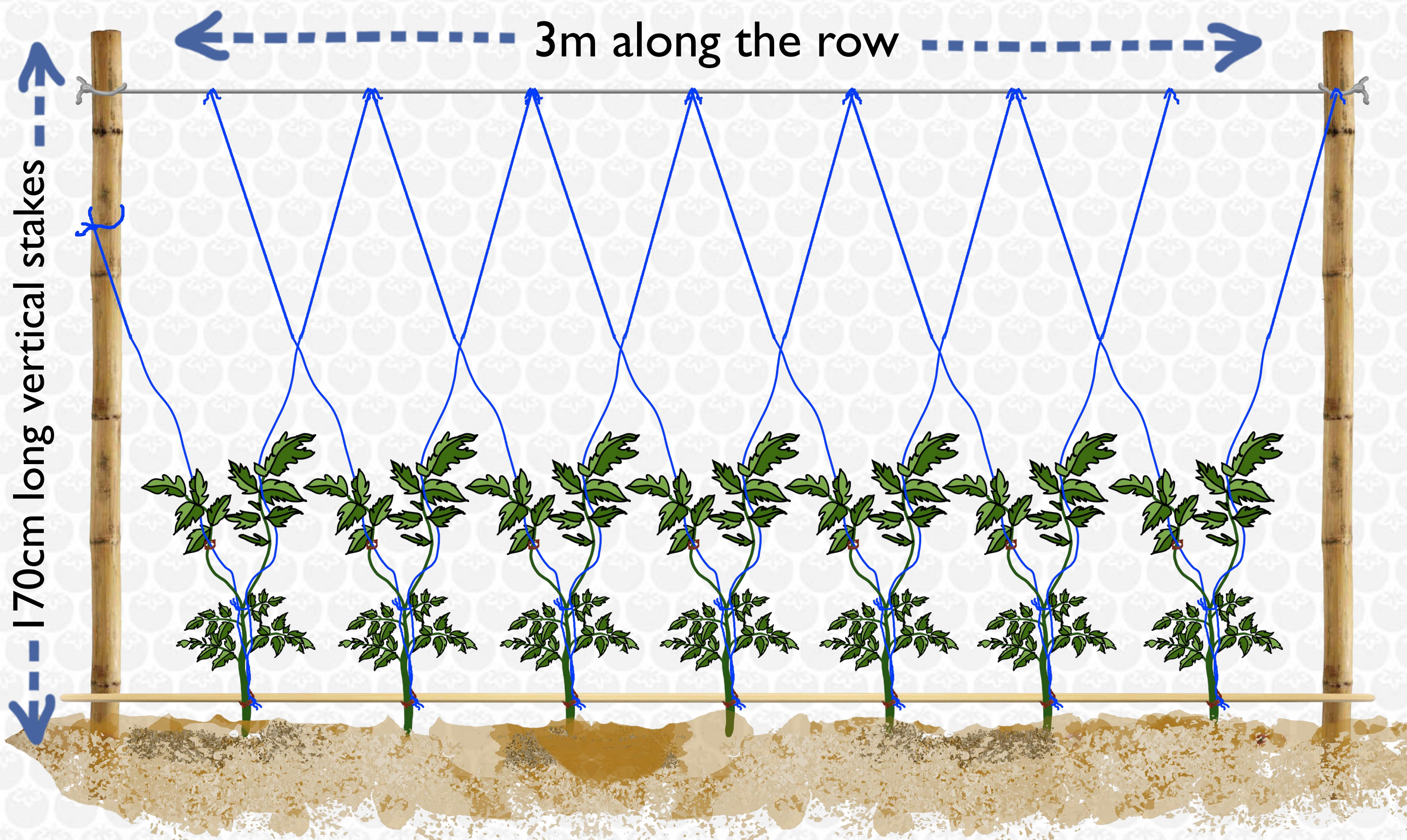


Plant is clipped first at 30cm from ground and then branches are rolled along the string, using clips if required.

Old and yellowing leaves fall off by themselves.



The strings are tied to a metal wire that is held up by 2 vertical poles.



DETERMINATE VARIETY

Remove lower most two axillary buds only





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TOMATO PART THREE HARVEST & POST HARVEST



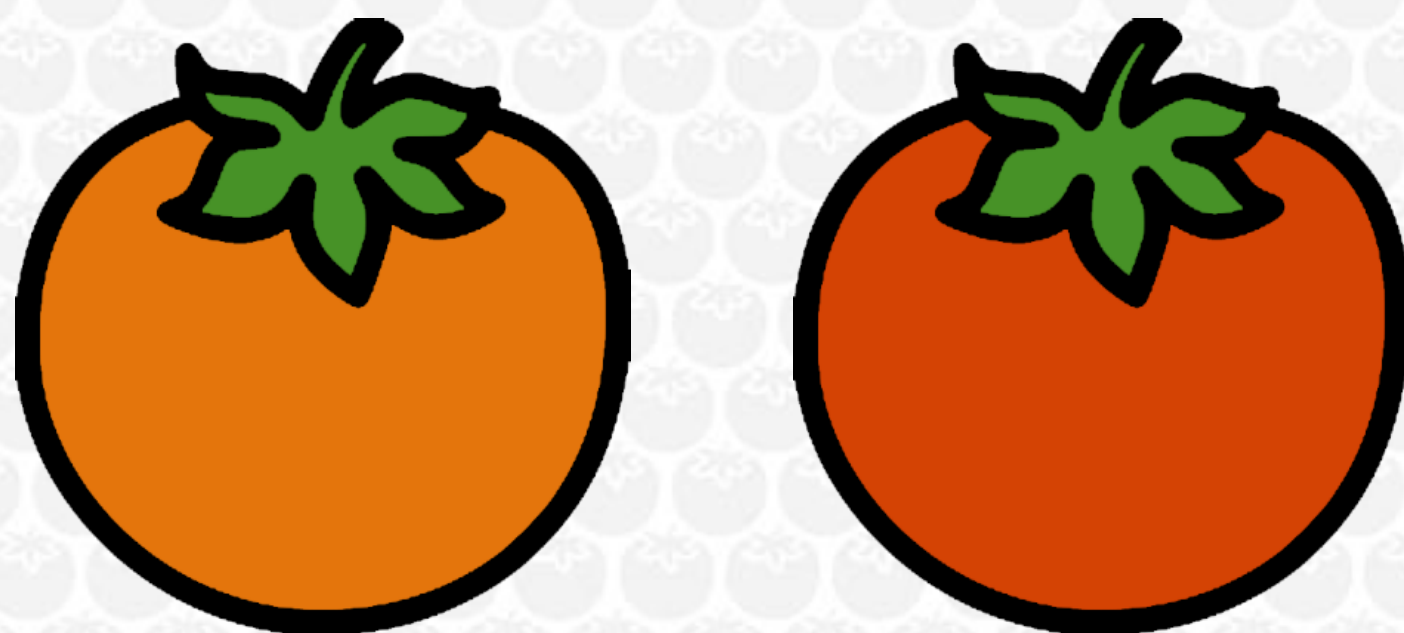
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HARVESTING STAGE BY MARKET DISTANCE |

For home consumption

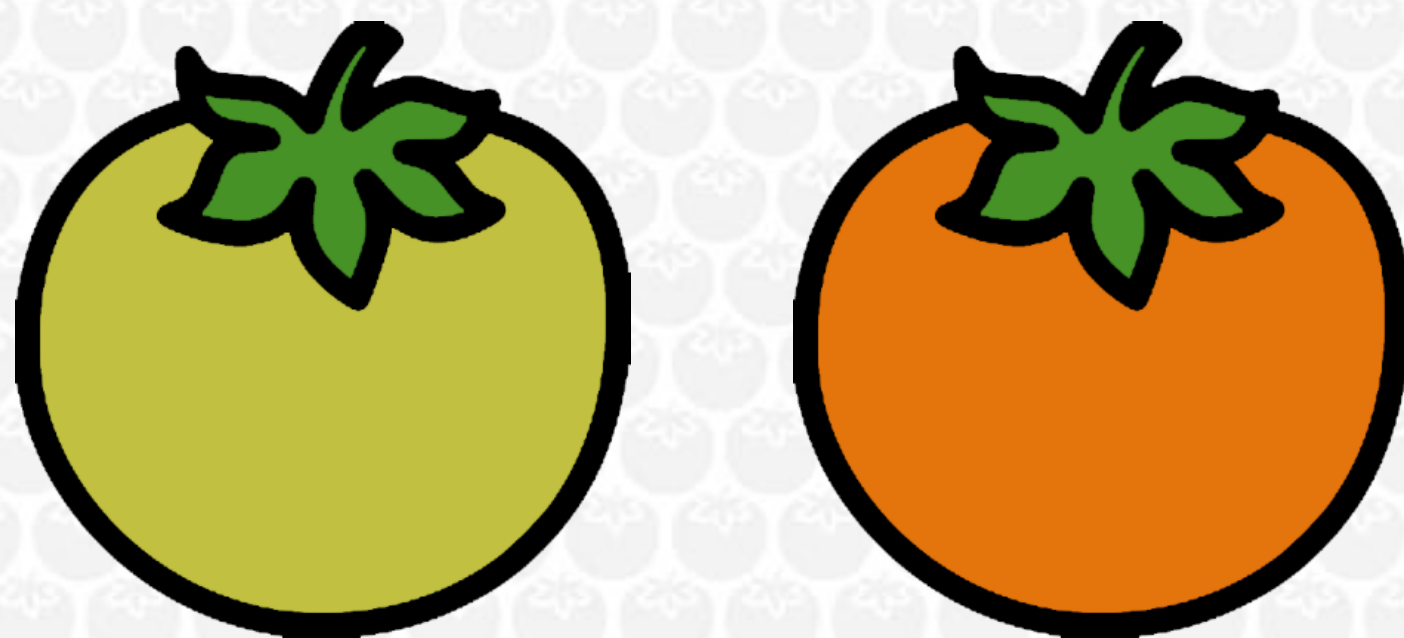
pink, hard ripe to full ripe



For local market

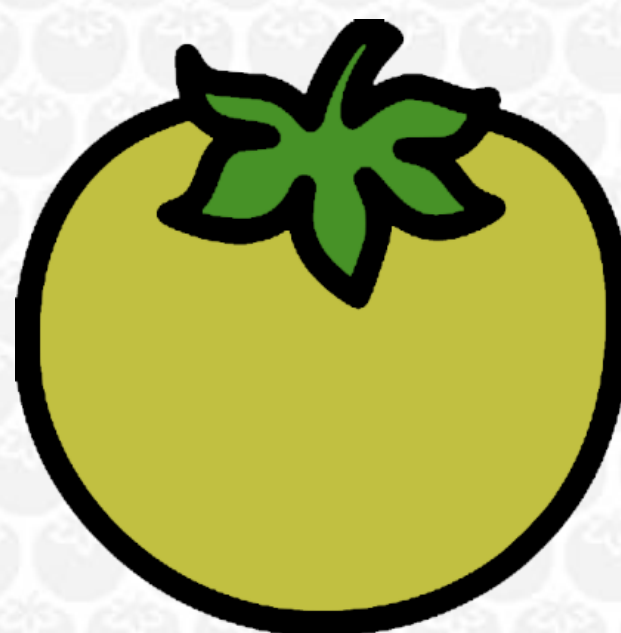
developing yellow

to pink fruits



For distant market

tomato of green-yellow fruits



For storage and export

mature green



SORTING - Sort fruits that are:

ROTTEN,



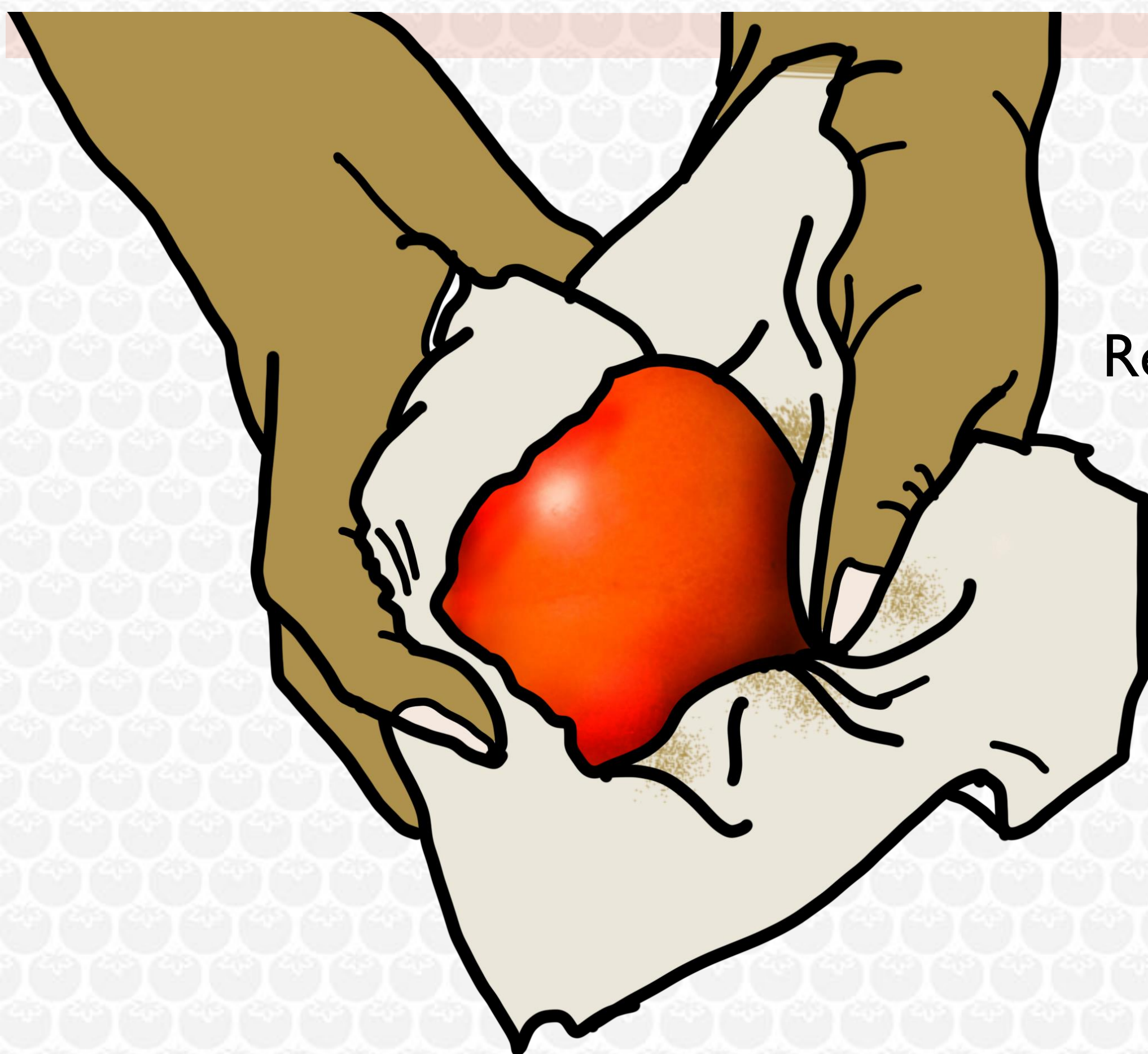
DAMAGED,



DEFORMED,



DISEASED OR PEST AFFECTED



CLEANING

Remove earth, manure,
leaves, weeds



VARIETY-WISE

round,



oval,



oblong



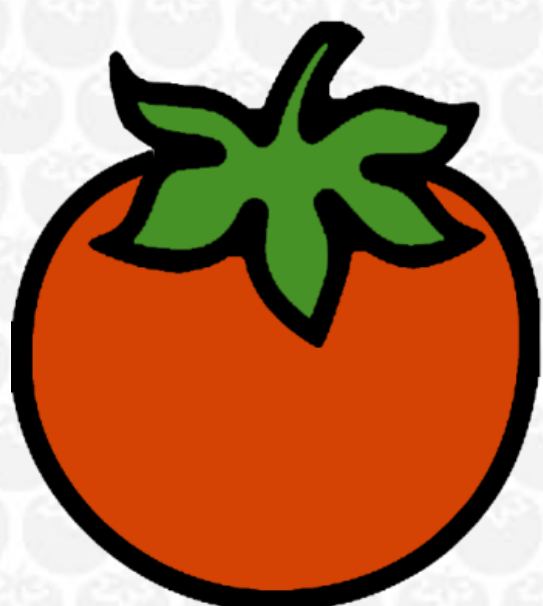
MATURITY LEVEL-WISE

mature green, green-yellow, yellow red and fully ripe



SIZE-WISE

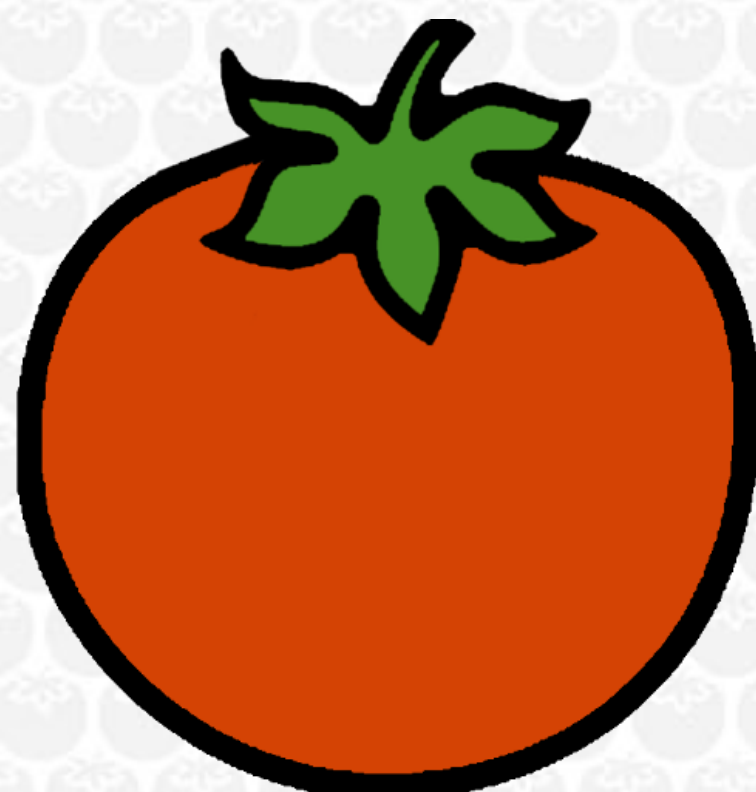
small,



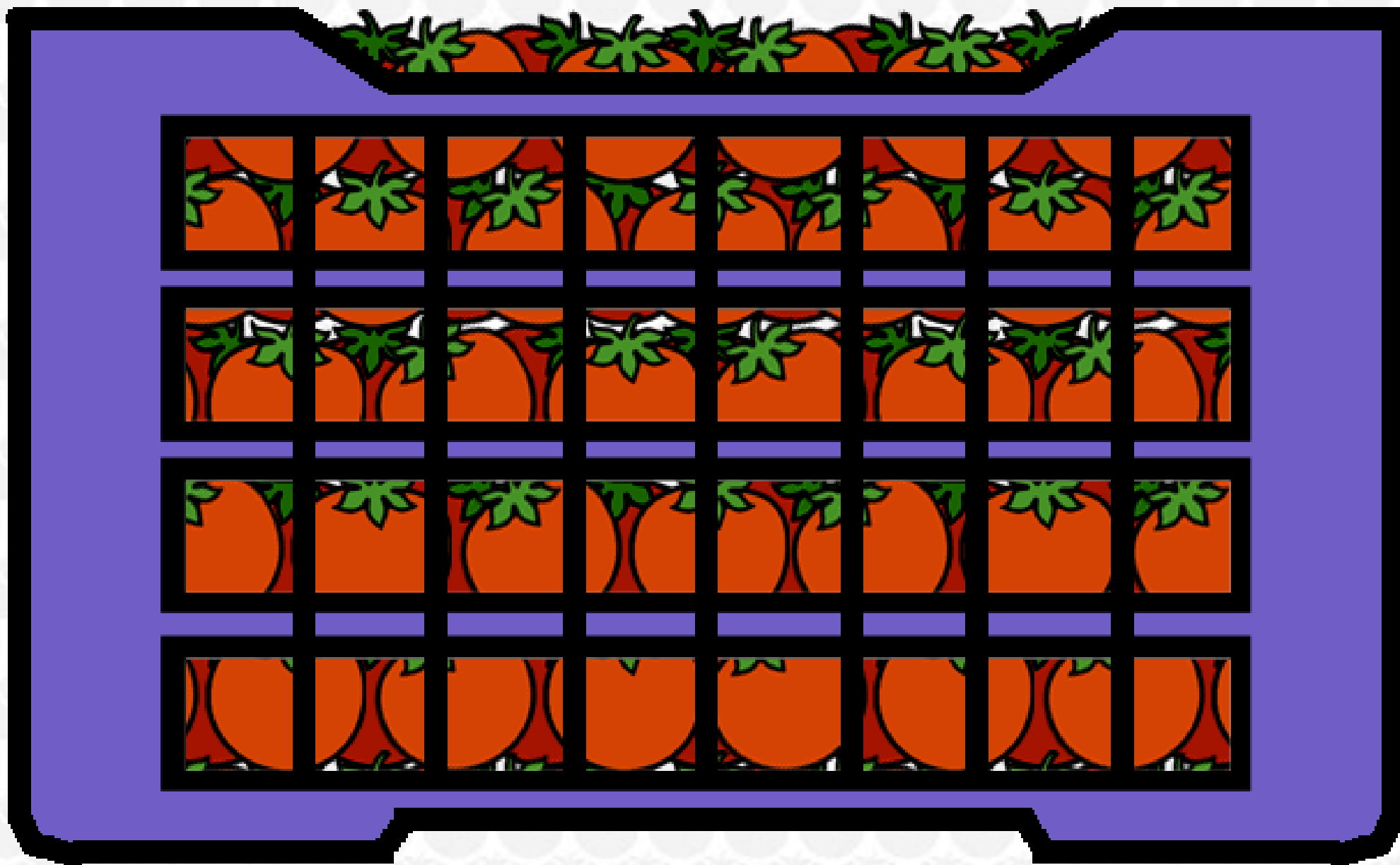
medium



and large



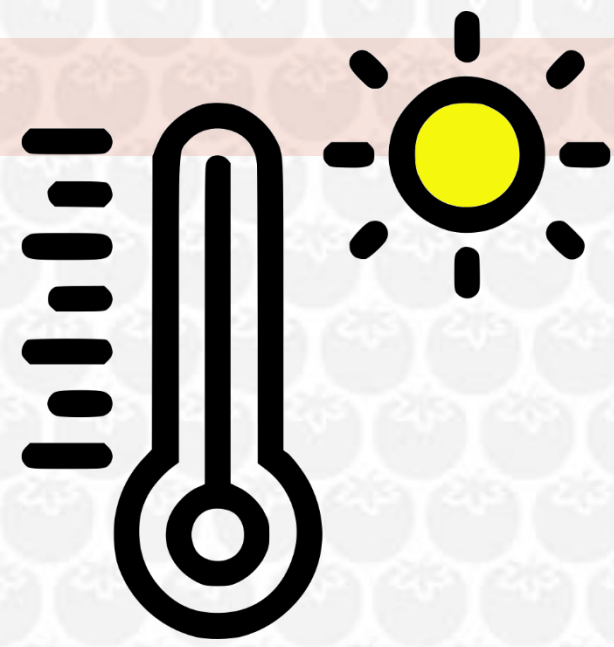
PLASTIC CRATES



BAMBOO BASKETS



FOR RIPE TOMATO

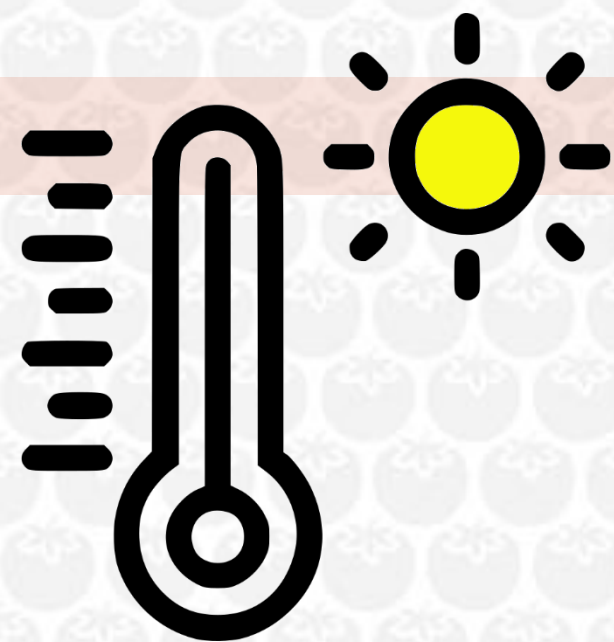


4 - 5°C



85 - 90% RH

FOR MATURE GREEN

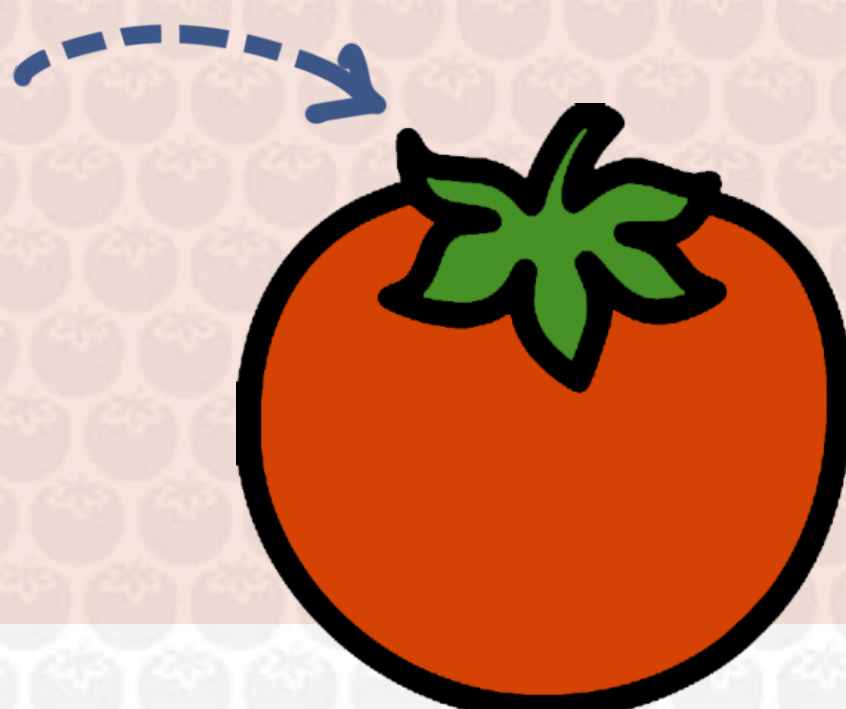


12 - 14°C

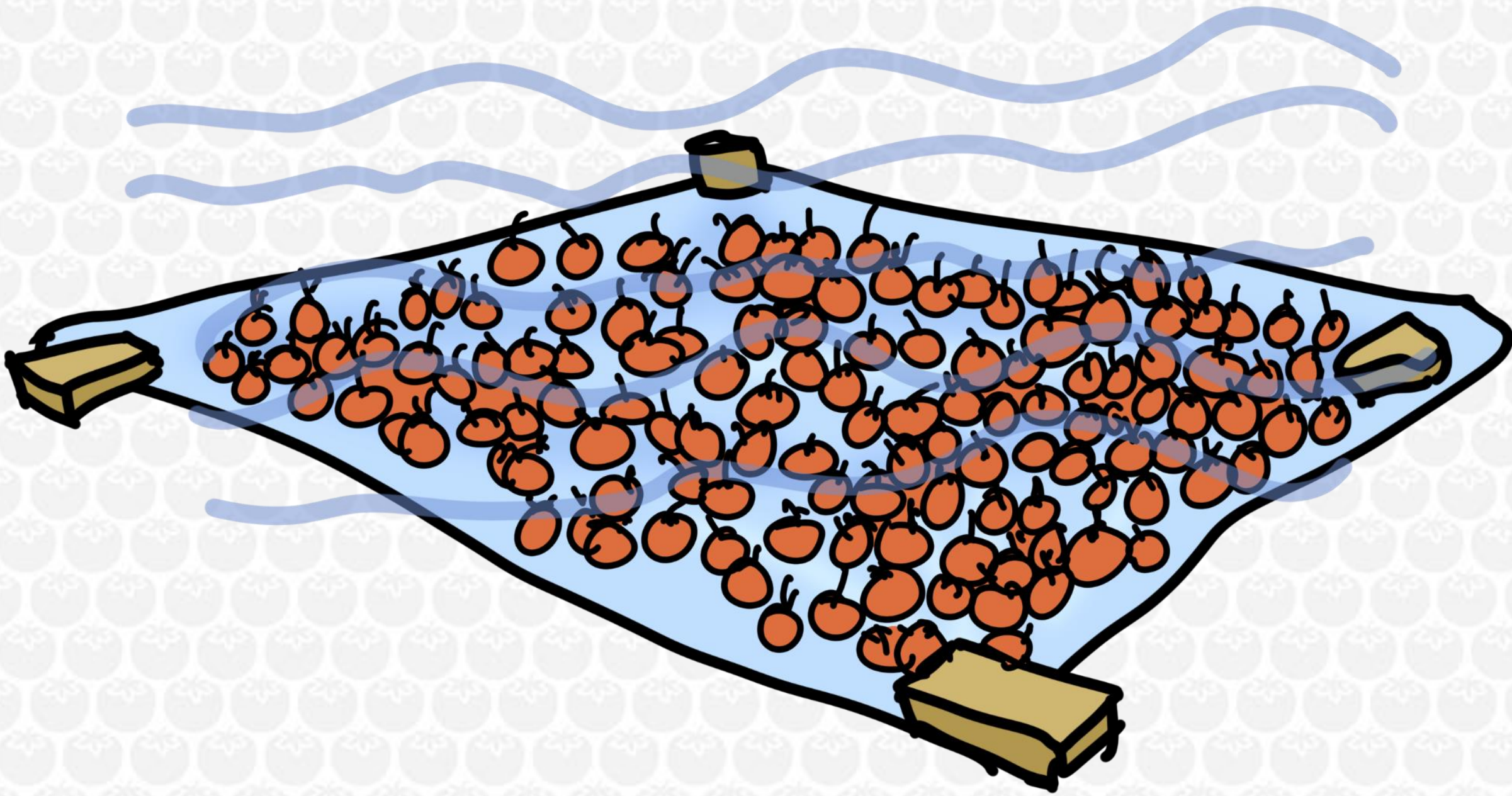


90 - 95% RH

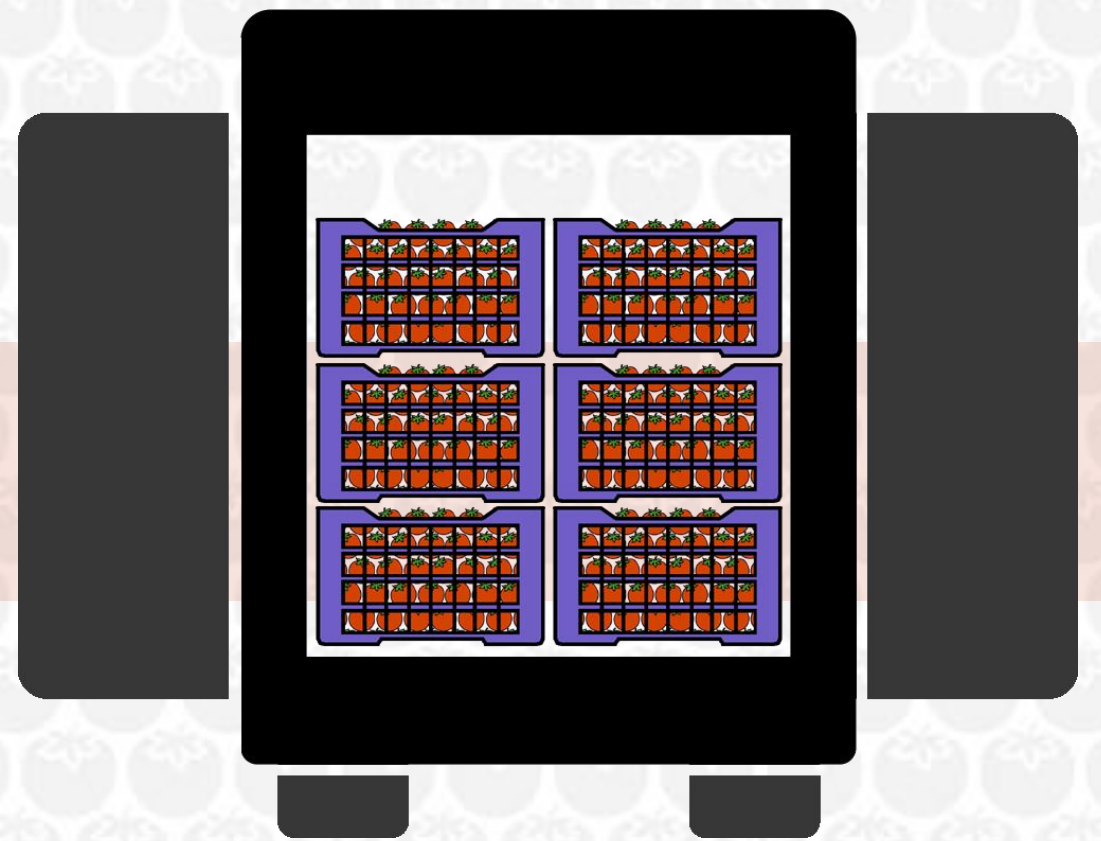
Keeping pedicels
adds 4 to 5 days shelf-life



Pre cooling at 12 to 14°C at farm for few hours



Minimize possible damage on the route to market



Minimum delay in reaching from farm to market



Transport in night or cool weather

