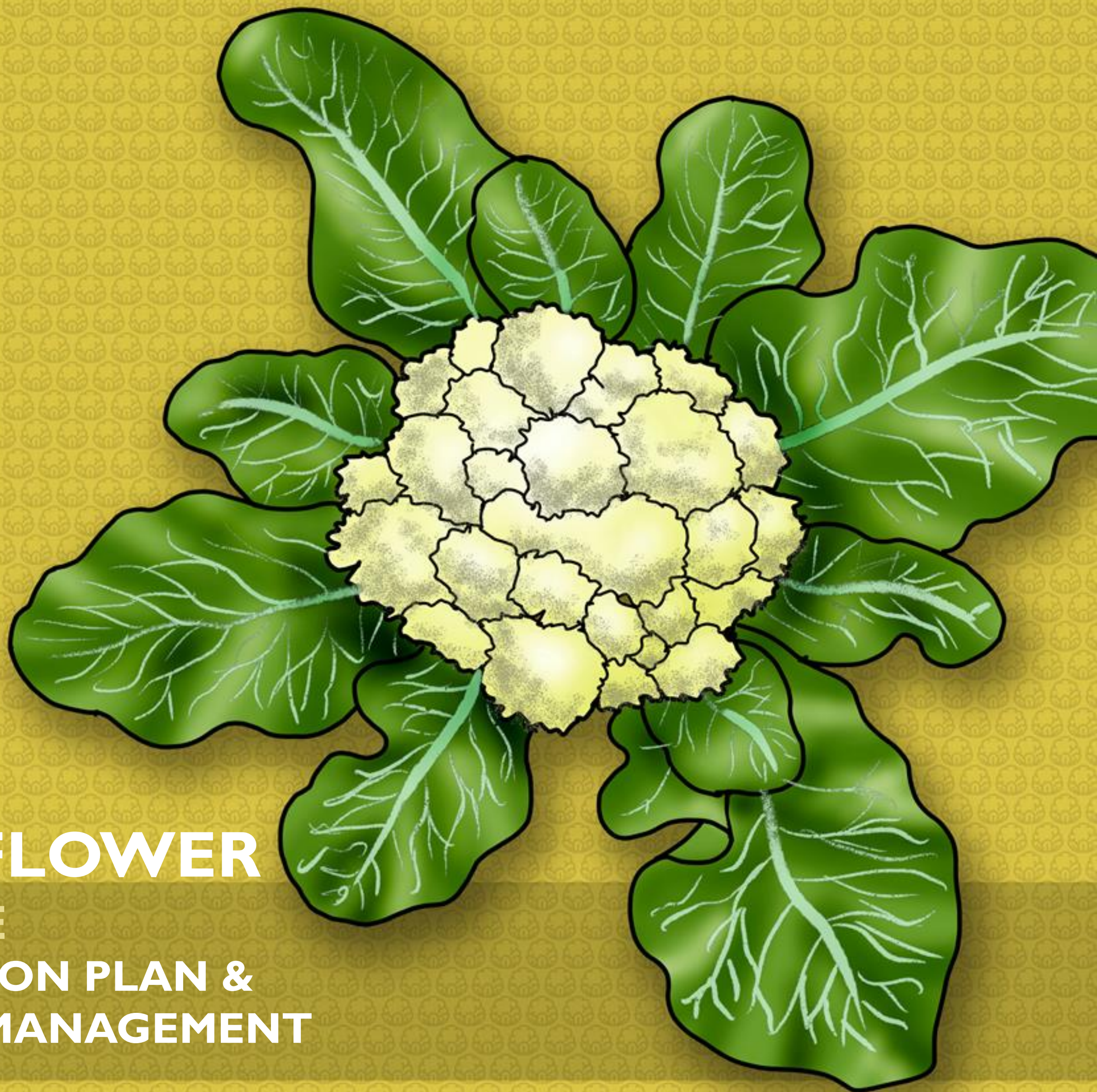




FEED THE FUTURE

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

INTEGRATED SOIL FERTILITY MANAGEMENT



CAULIFLOWER PART ONE PRODUCTION PLAN & NURSERY MANAGEMENT



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IFDC
Developing Agriculture from the Ground Up

CIMMYT
International Maize and Wheat Improvement Center

ACKNOWLEDGEMENT

I would like to express my gratitude to the many people who provided support in developing the **training manual for cauliflower** 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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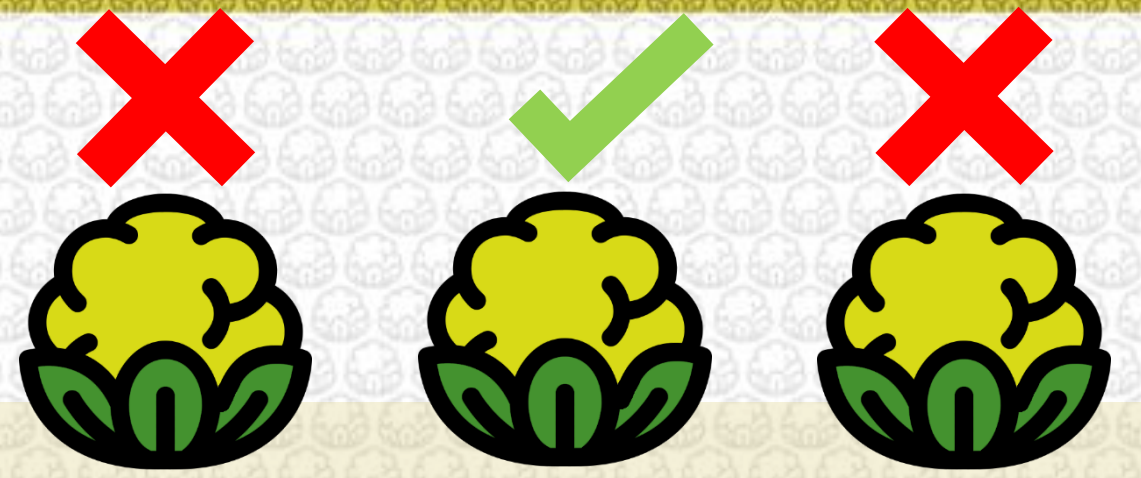
Dr. David Guerena

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 |

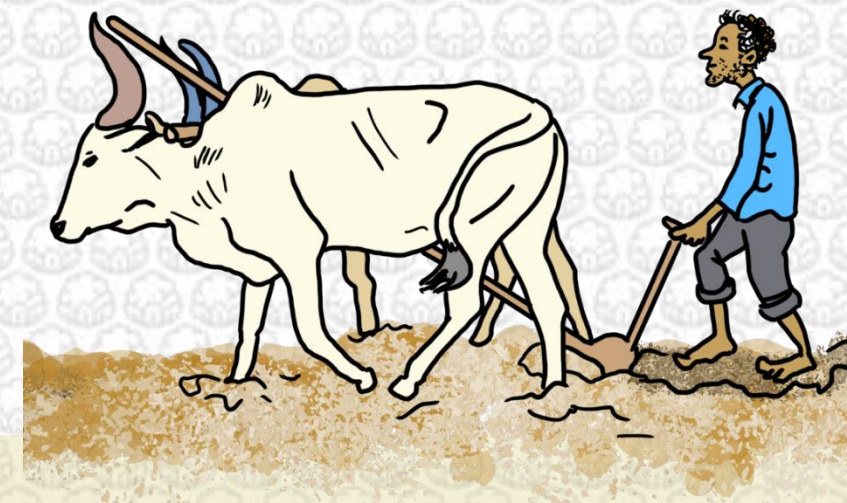
VARIETY SELECTION



QUALITY SEED



LAND PREPARATION



PRODUCING HEALTHY SEEDLING

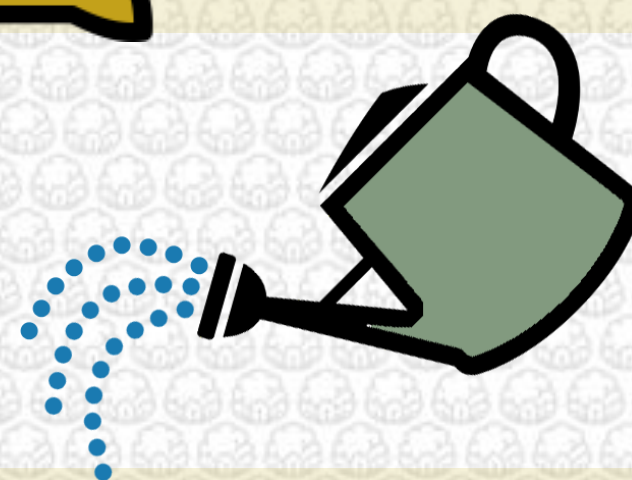


SEEDLING TRANSPLANTING

FERTILIZER MANAGEMENT



IRRIGATION AND DRAINAGE



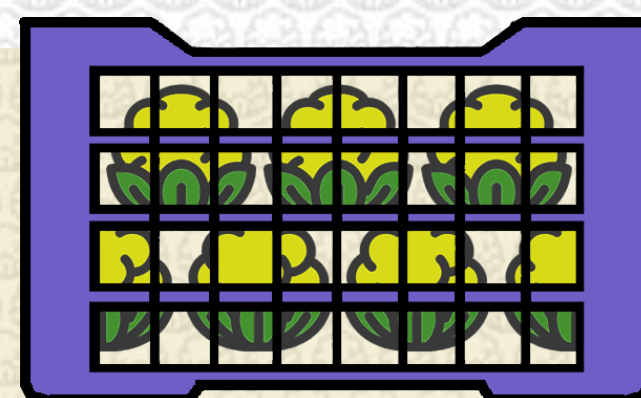
WEEDS, DISEASE AND PEST MANAGEMENT



HARVESTING



STORAGE

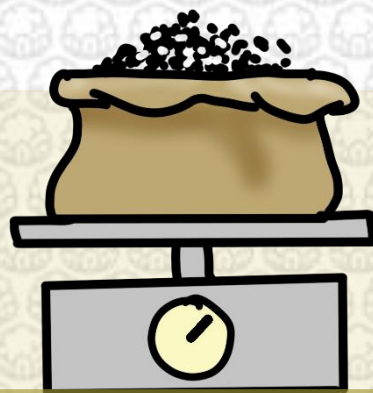


PLANNING

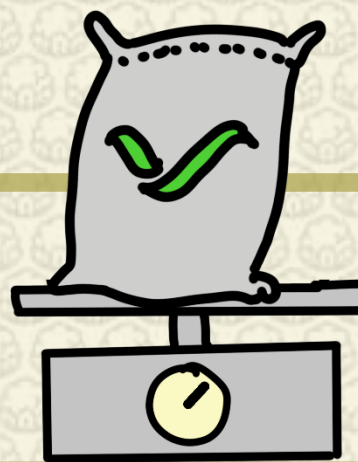
2

INPUTS

SEED



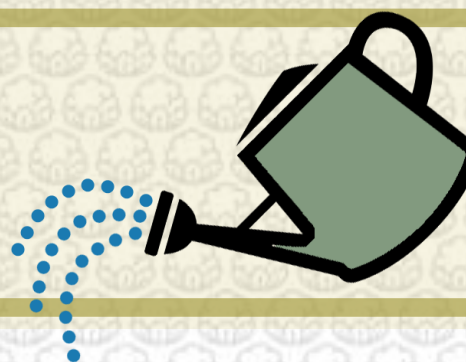
FERTILIZERS



LABOR

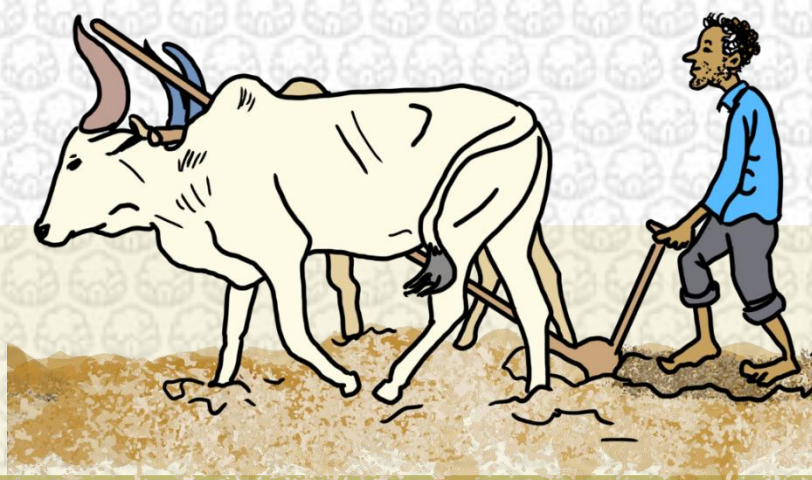


IRRIGATION

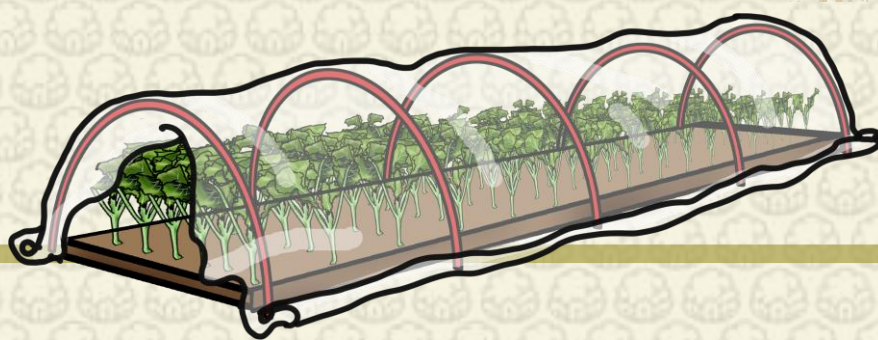


ACTIVITIES

LAND PREPARATION



NURSERY



TRANSPLANTING



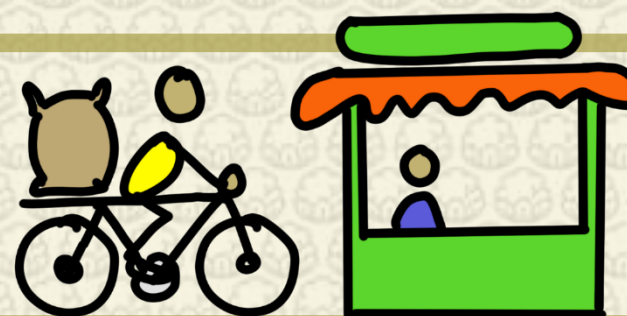
TOPDRESSING



HARVESTING






POSTHARVEST



INVESTMENT AND BENEFITS



SELECTION OF SUITABLE VARIETY 3

Variety	Days to harvest (after transplanting)	Yield (kg/ropani)	Remarks	
Kathmandu Local	110-120	1250	Improved variety, mid- season	
NS 90	90-95	2000- 3000	Hybrid, mid- season	
Silver Cup 60	50-60	1200- 1250	Hybrid, early variety	

RECOMMENDED AREAS FOR ALL VARIETIES: TERAJ, HILL AND HIGH HILL

GOOD QUALITY SEED

4



CLEAN



PURE



HEALTHY

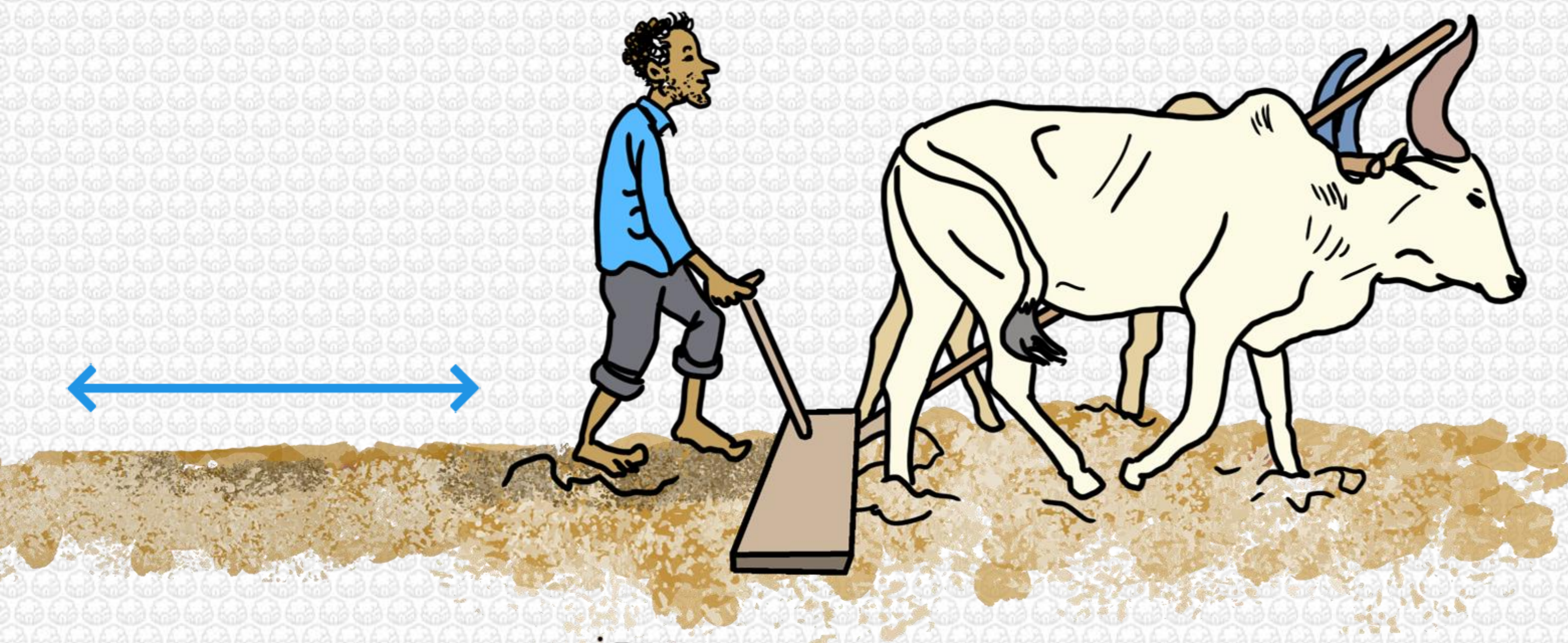


Apply organic manure 1500 kg per ropani at least 15 days before transplanting seedlings in the main field



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

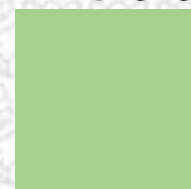
Level the field for further operations



OM is also applied at least 15 days before seed sowing in the nursery plots

CROP CALENDAR

REGION	MONTH	Aug		Sept		Oct		Nov		Dec		Jan		Feb							
		1	2	1	2	1	2	1	2	1	2	1	2	1	2						
TERAI, INNER TERAI Up to 600m	EARLY		Green	Blue					Yellow												
	MID			Green	Blue							Yellow									
	LATE					Green	Blue							Yellow	Yellow						
	MONTH	July		Aug		Sept		Oct		Nov		Dec		Jan		Feb		March		April	
		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
MID HILLS 600-2000m	EARLY	Green	Blue					Yellow													
	MID				Green	Blue						Yellow									
	LATE									Green	Blue									Yellow	Yellow
	MONTH	May		June		July		Aug		Sept		Oct		Nov		Dec					
		1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2				
HIGH HILLS Above 2000m	EARLY	Green	Blue					Yellow													
	MID			Green	Blue							Yellow									
	LATE							Green	Blue											Yellow	Yellow

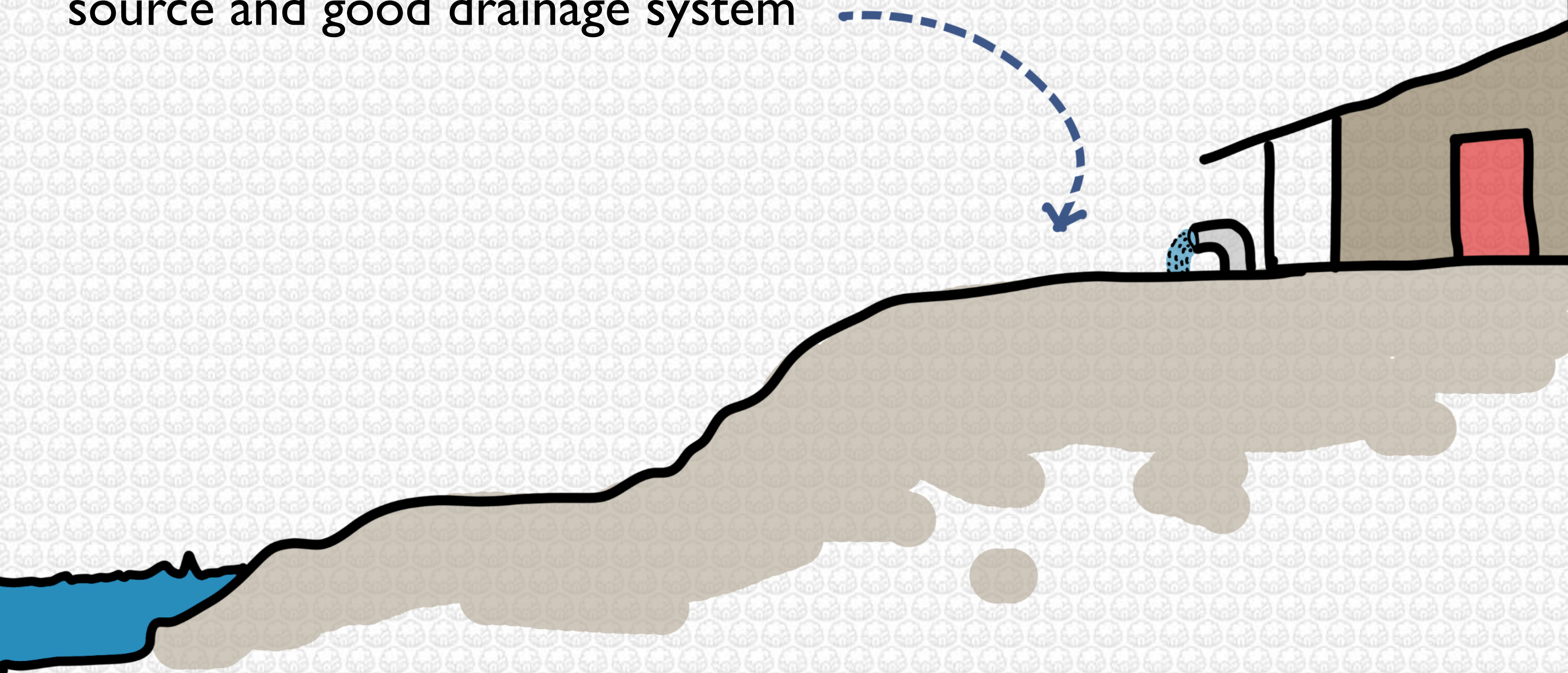
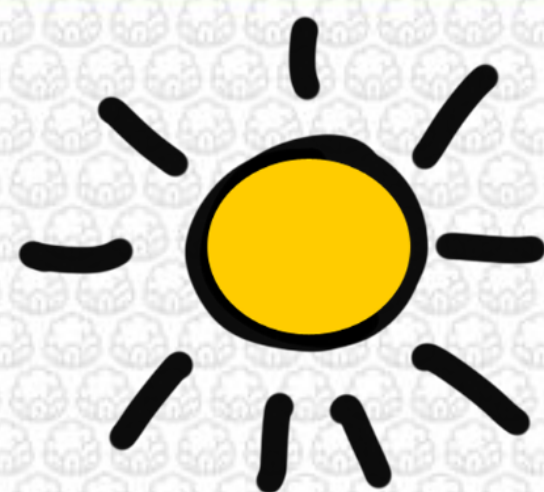


NURSERY BED PREPARATION

7

SITE SELECTION

Sunny, elevated and easy to accessible, closer to irrigation source and good drainage system



SOIL

Loamy soil with organic matter and pulverized



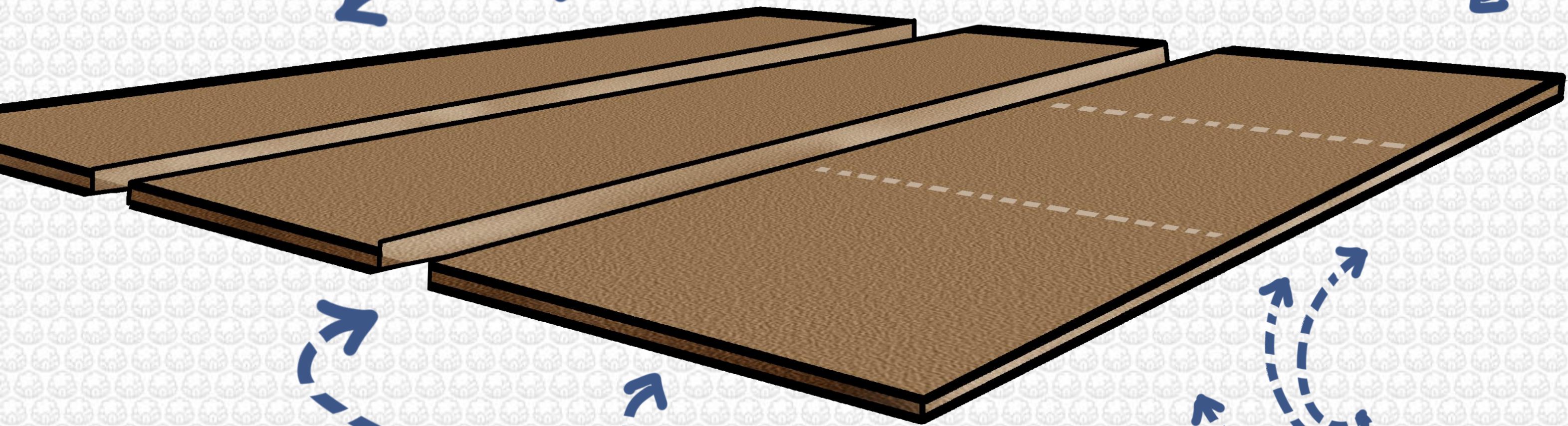
NURSERY BED PREPARATION

8

SIZE

3m long

1m wide



15cm raised

3 square meter
for one ropani

DRAINAGE

30 to 40cm space
between two seedbeds

OM AND FERTILIZER

Apply 15kg organic manure
at least 15 days prior to seed sowing.

Apply 30gm DAP and 30gm MOP.



SEED SOWING SPACING

Between seeds, 1cm

Between rows, 5cm

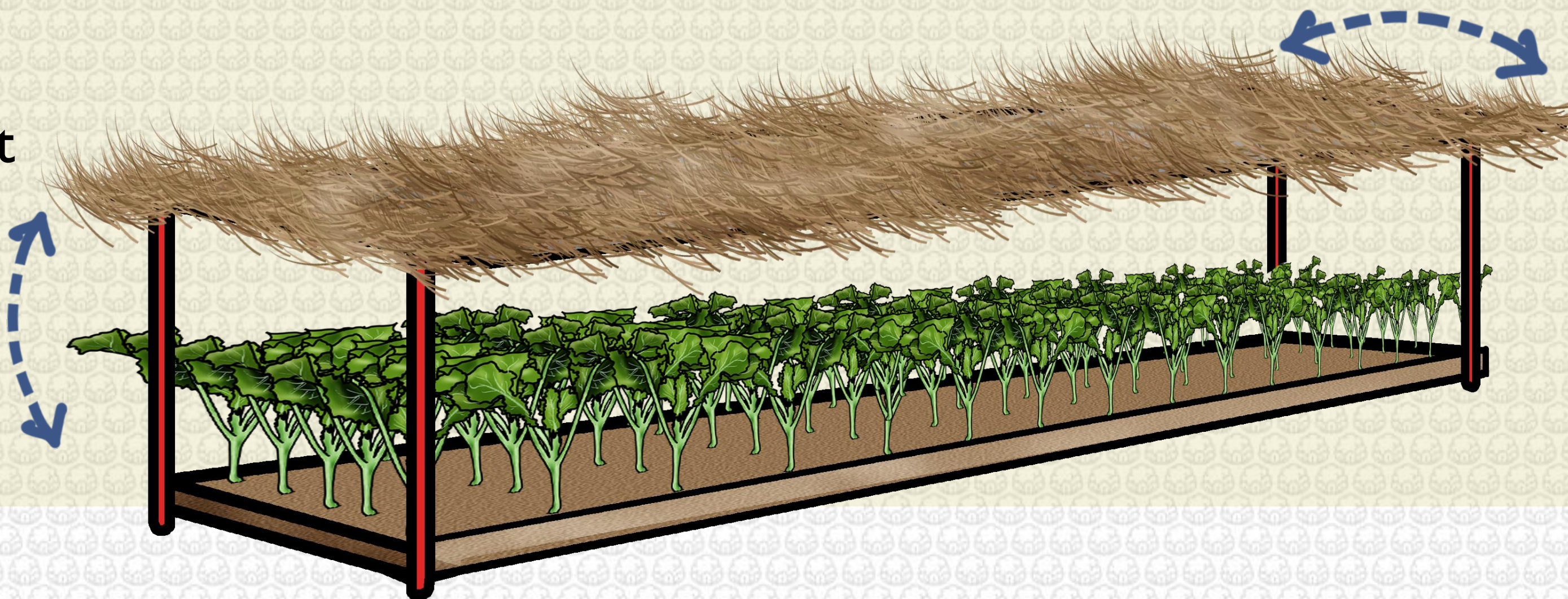
1cm deep

10-15gm seed is required for one ropani

NURSERY SHED TO PROTECT FROM HEAT

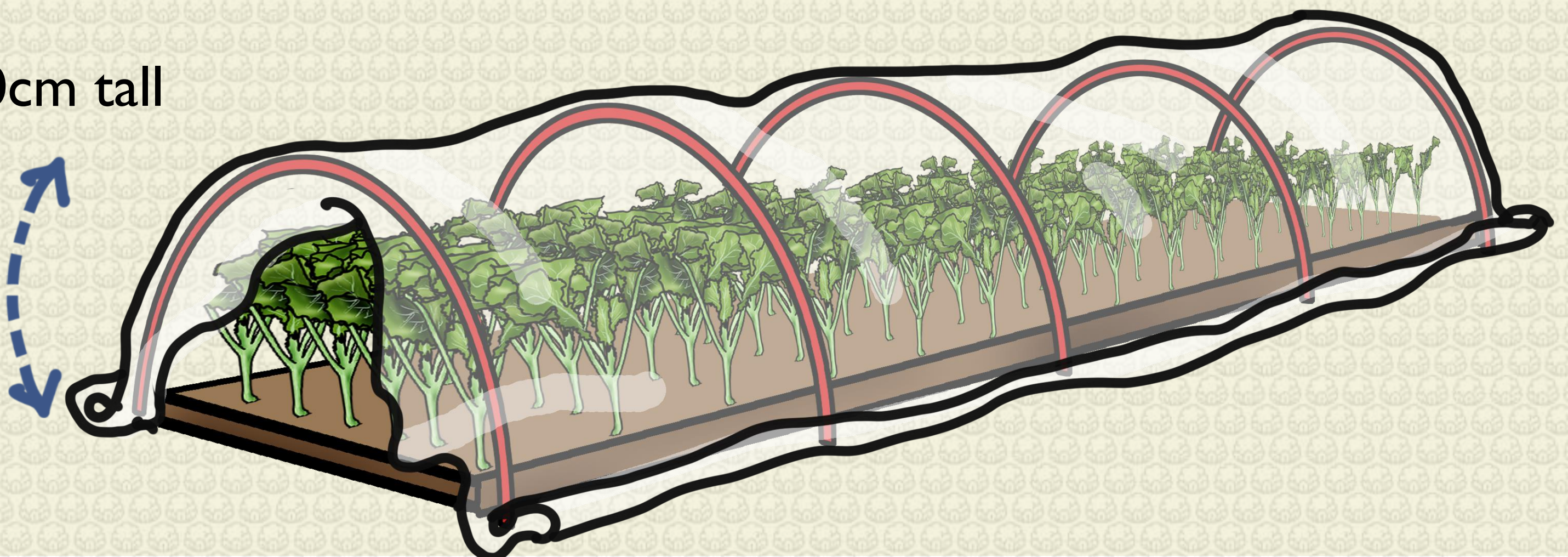
90cm height

120cm width



NURSERY TUNNEL TO PROTECT FROM COLD

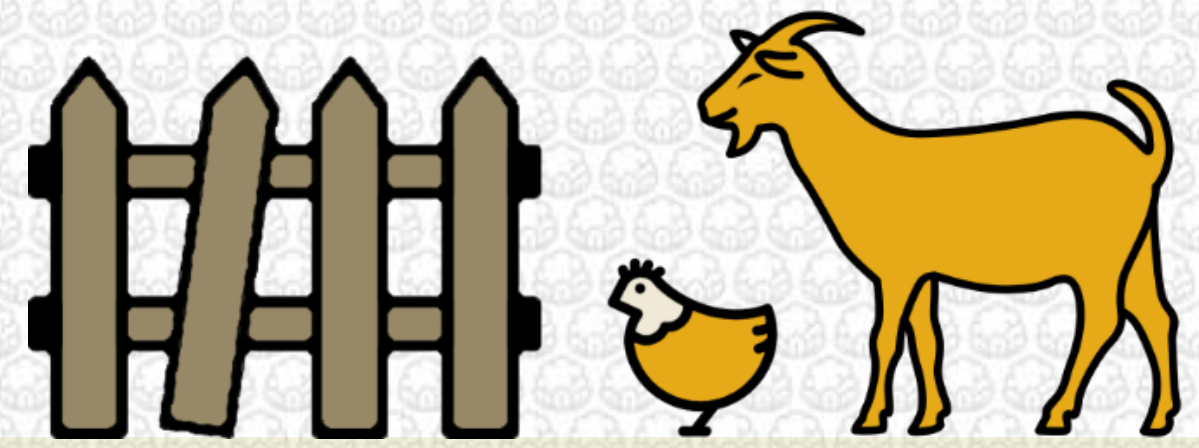
50cm tall



SUPERVISION AND PROTECTION 10

MAKE SURE TO:

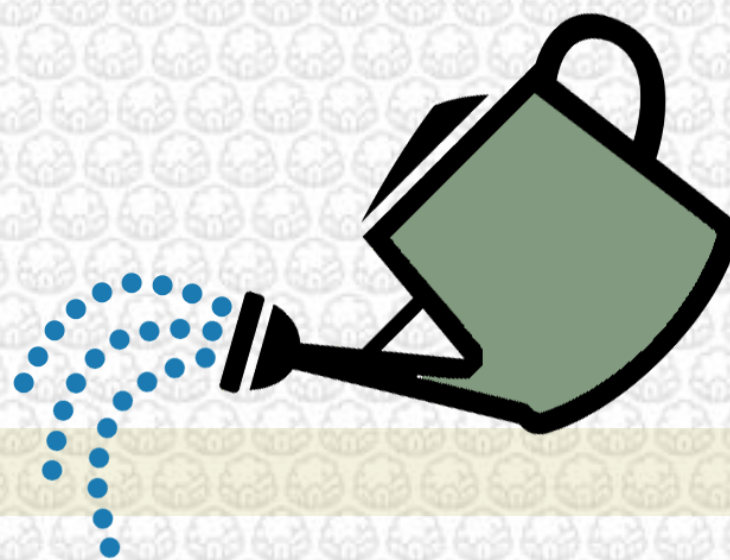
PROTECT from chicken and animals



SUPERVISE seed germination



WATER regularly



WEED & HOE

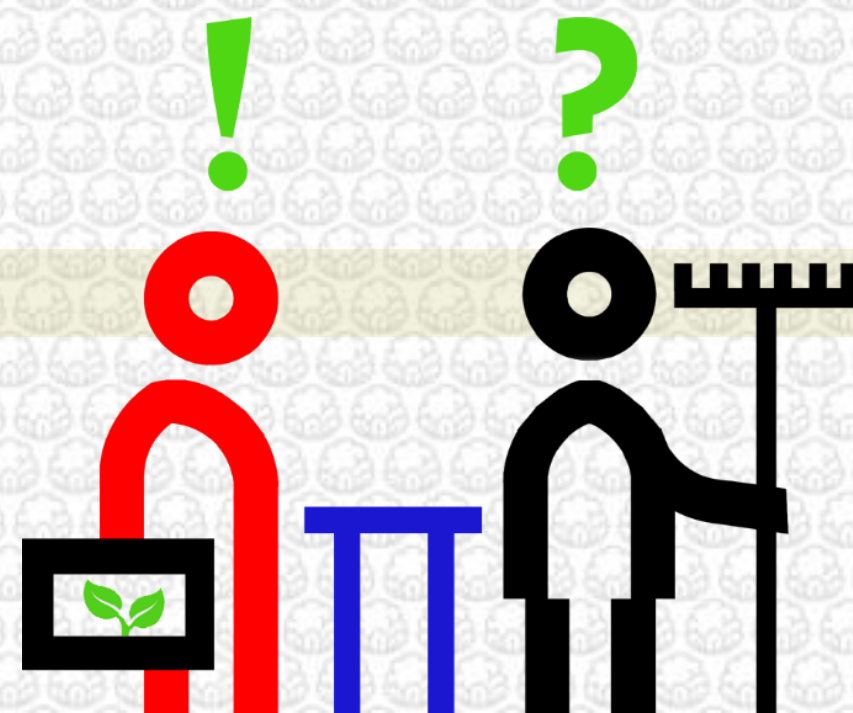


TOP-DRESS 30gm urea after 15 days of sowing



CONTACT agri. tech/agro-vet

in case of pest/disease problem





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CAULIFLOWER PART TWO CROP MANAGEMENT



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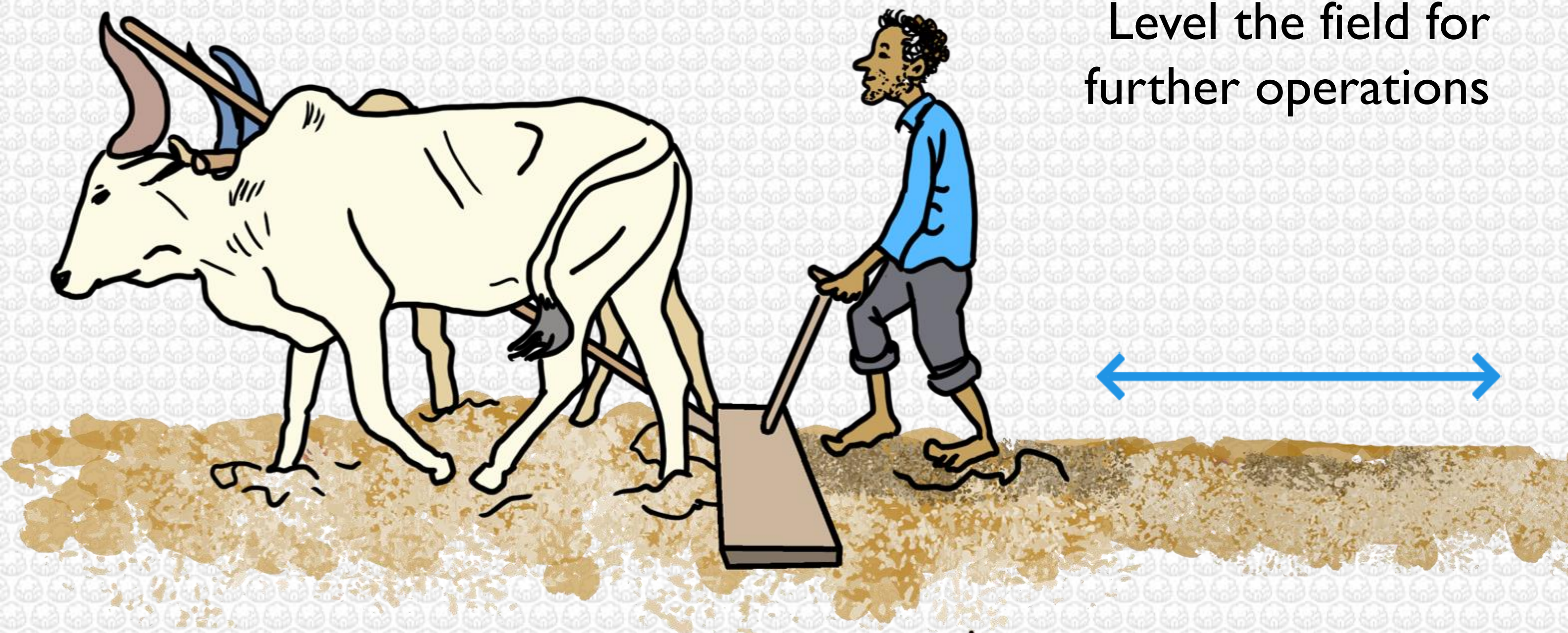


IFDC
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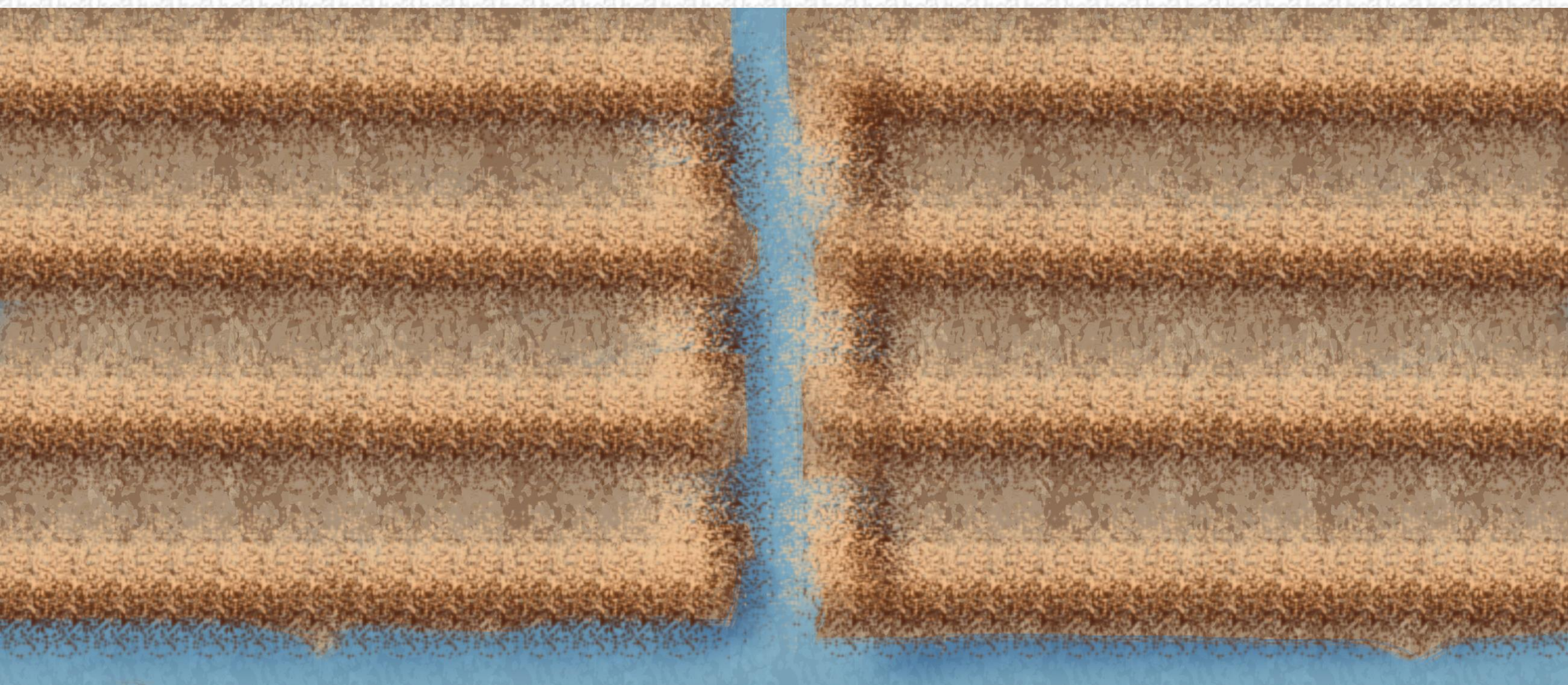
CIMMYT_{MR}
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LAND PREPARATION

Level the field for further operations

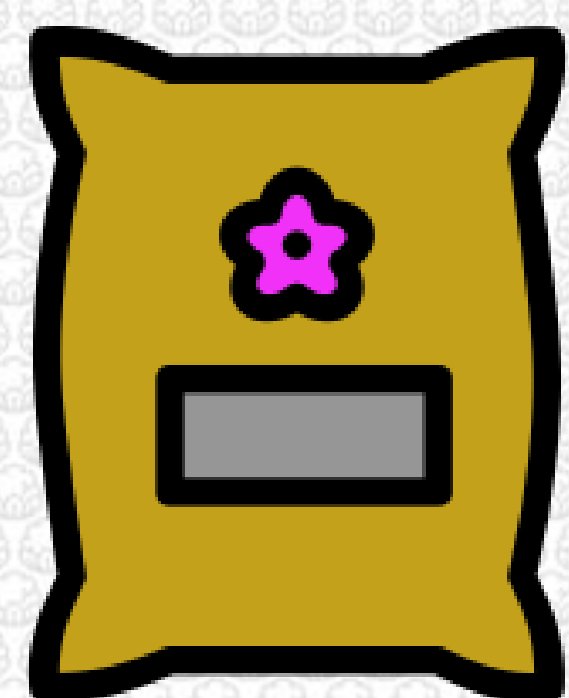


Prepare planting rows/bed connected with irrigation channel



DAP 13kg and MOP 8.3kg is applied at the time of seedling transplanting

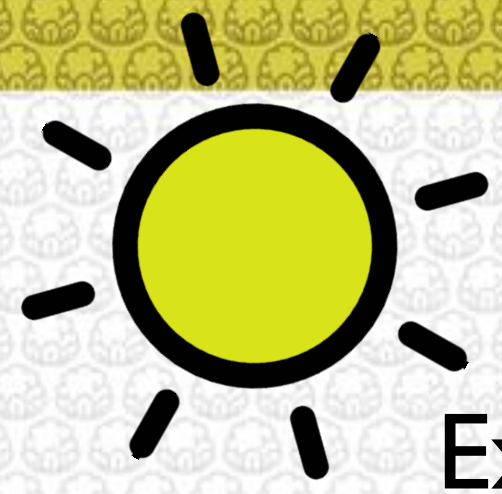
16.6kg urea is applied in two split doses as topdressing



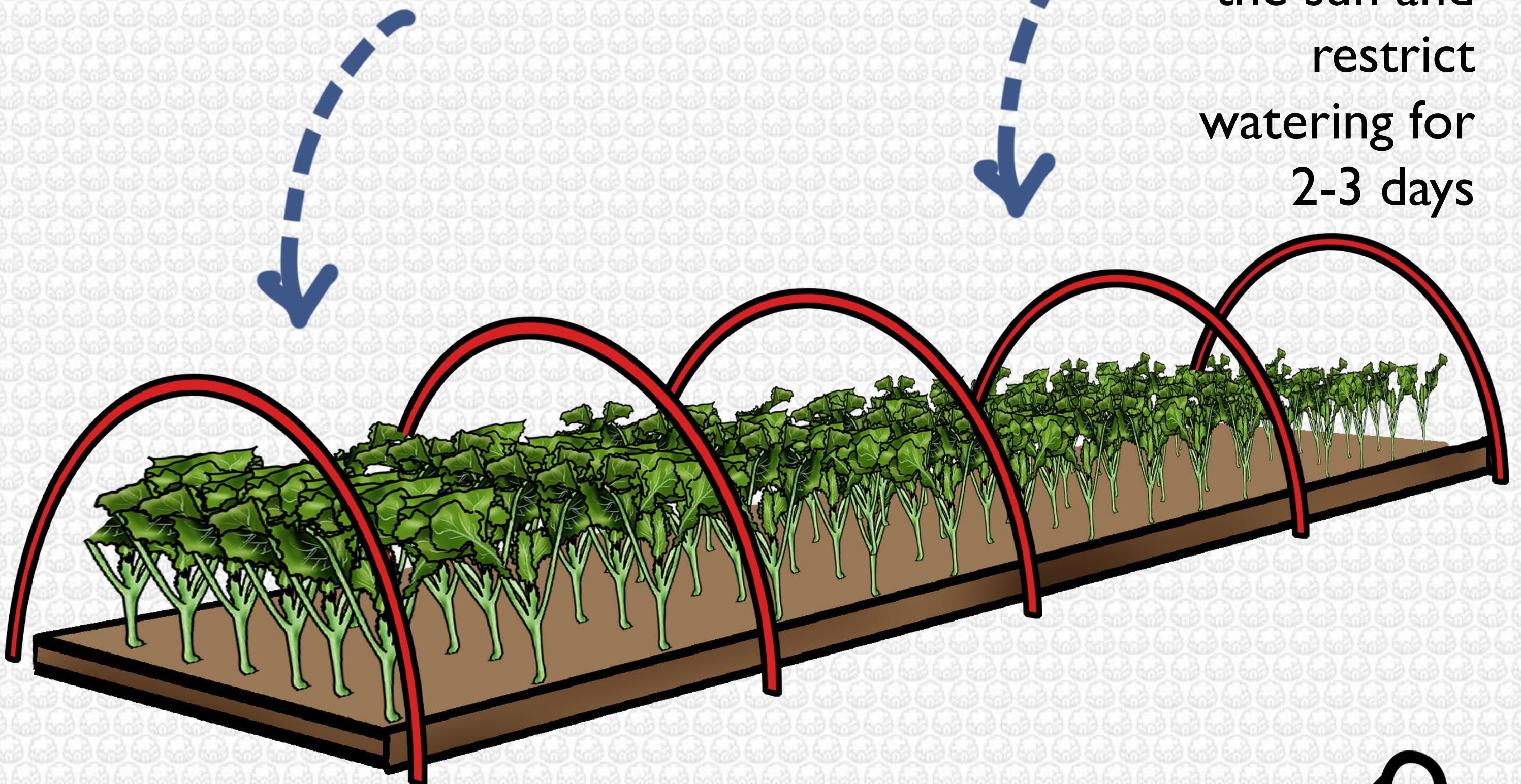
HARDENING AND UPROOTING

2

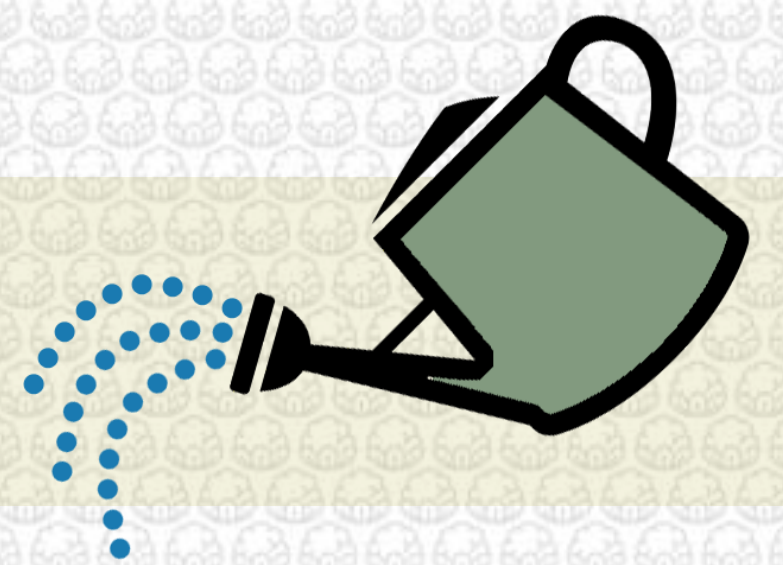
20 to 25 days old seedling is ready for transplanting



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



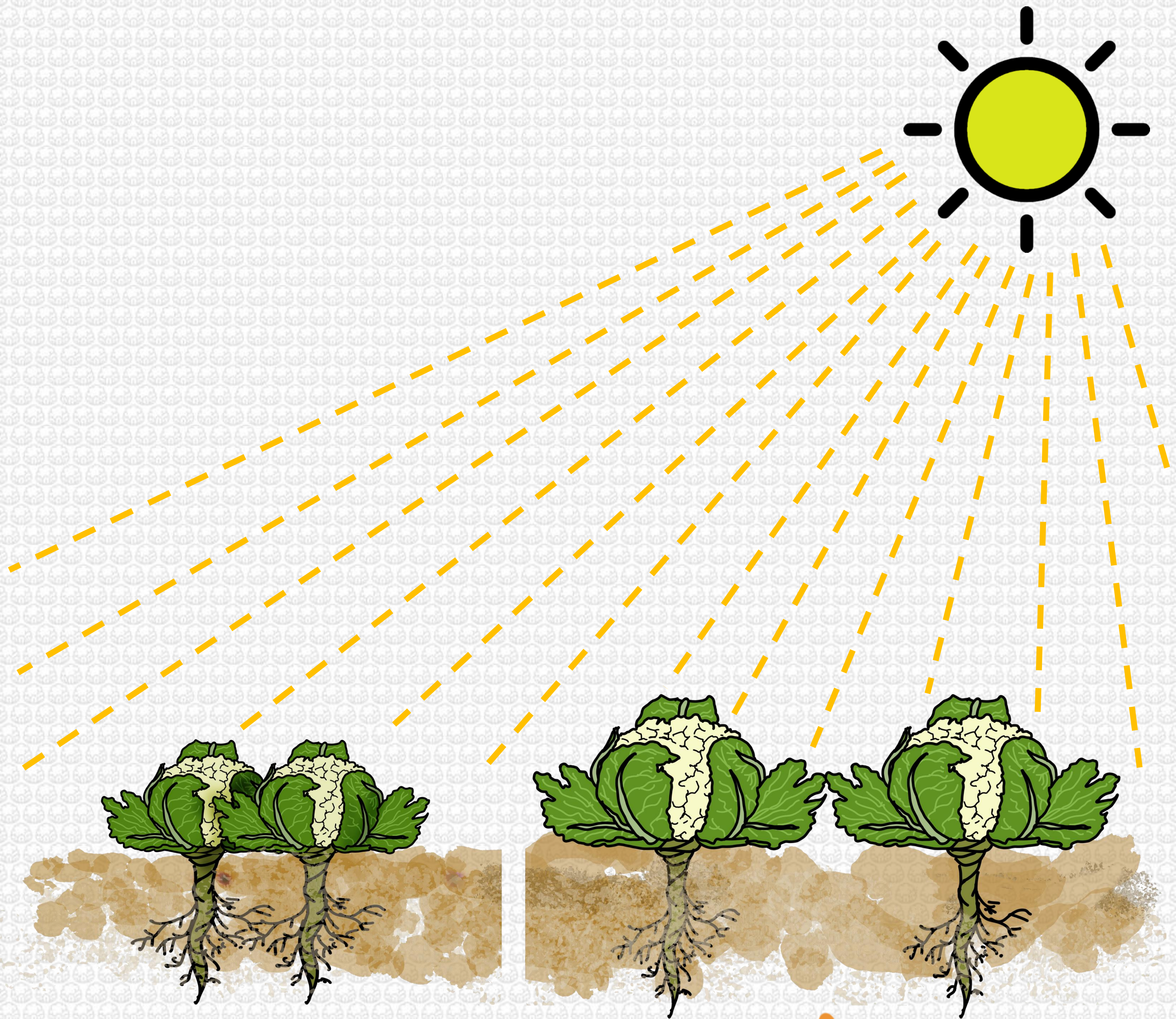
Irrigate nursery 2-4 hrs. before uprooting



Uproot seedlings with root soil and transplant as soon as possible



PLANTING DISTANCE



Close spacing
increases competition
for nutrients and lights



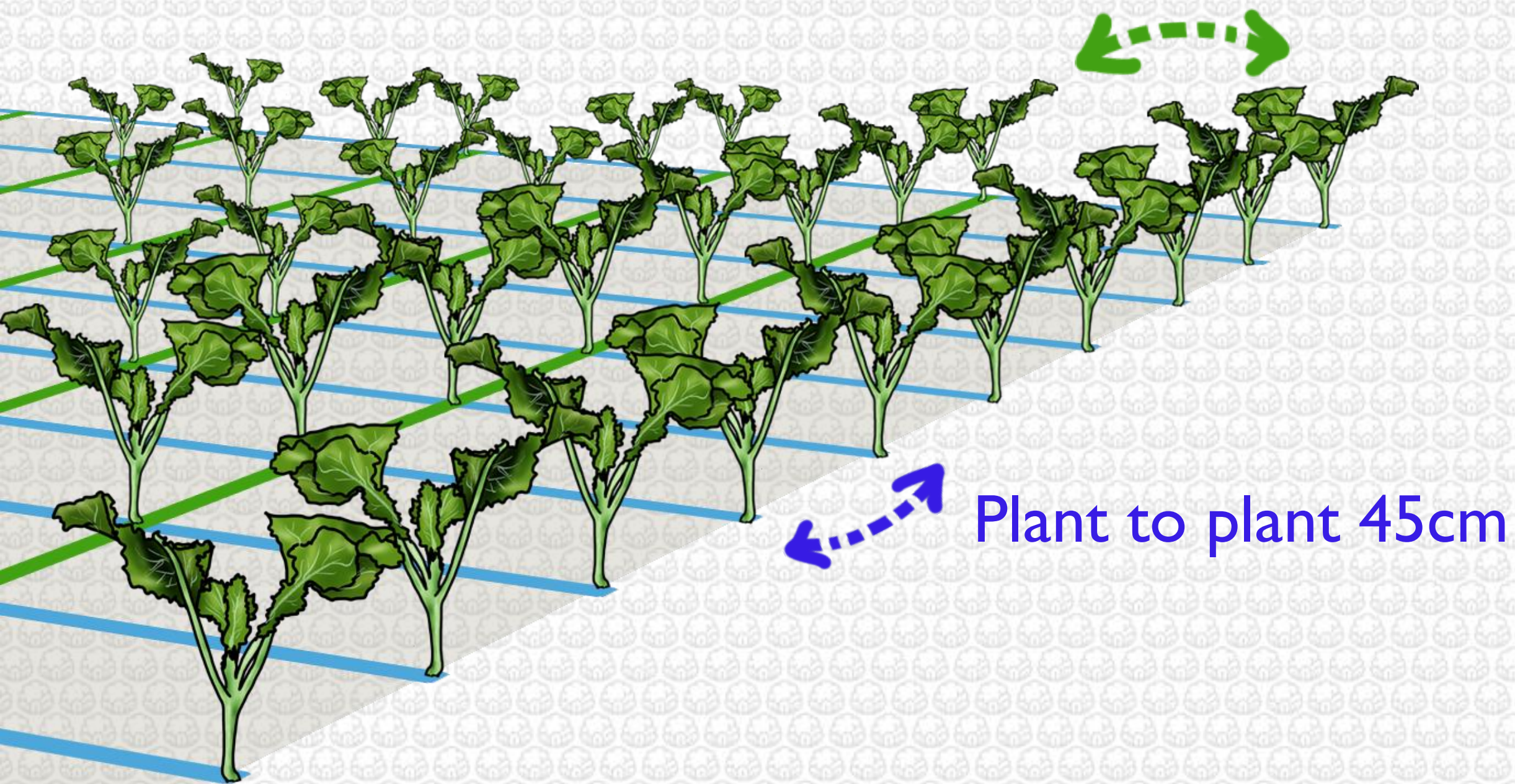
Wider spacing
reduces nutrient and
light use efficiencies

PLANTING DISTANCE

4

EARLY VARIETY

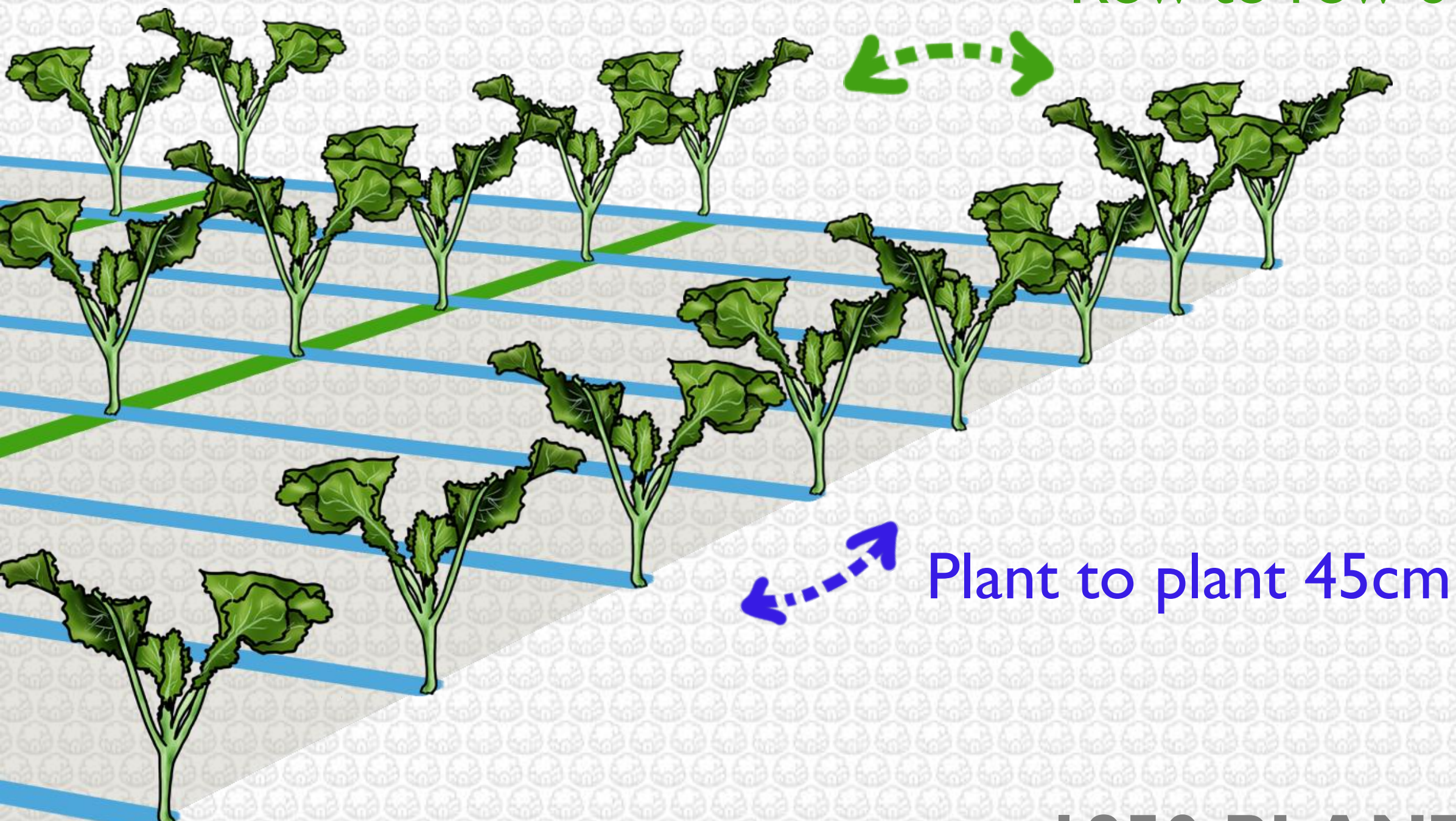
Row to row 45cm



2450 PLANTS/ROPANI

MID AND LATE VARIETIES

Row to row 60cm

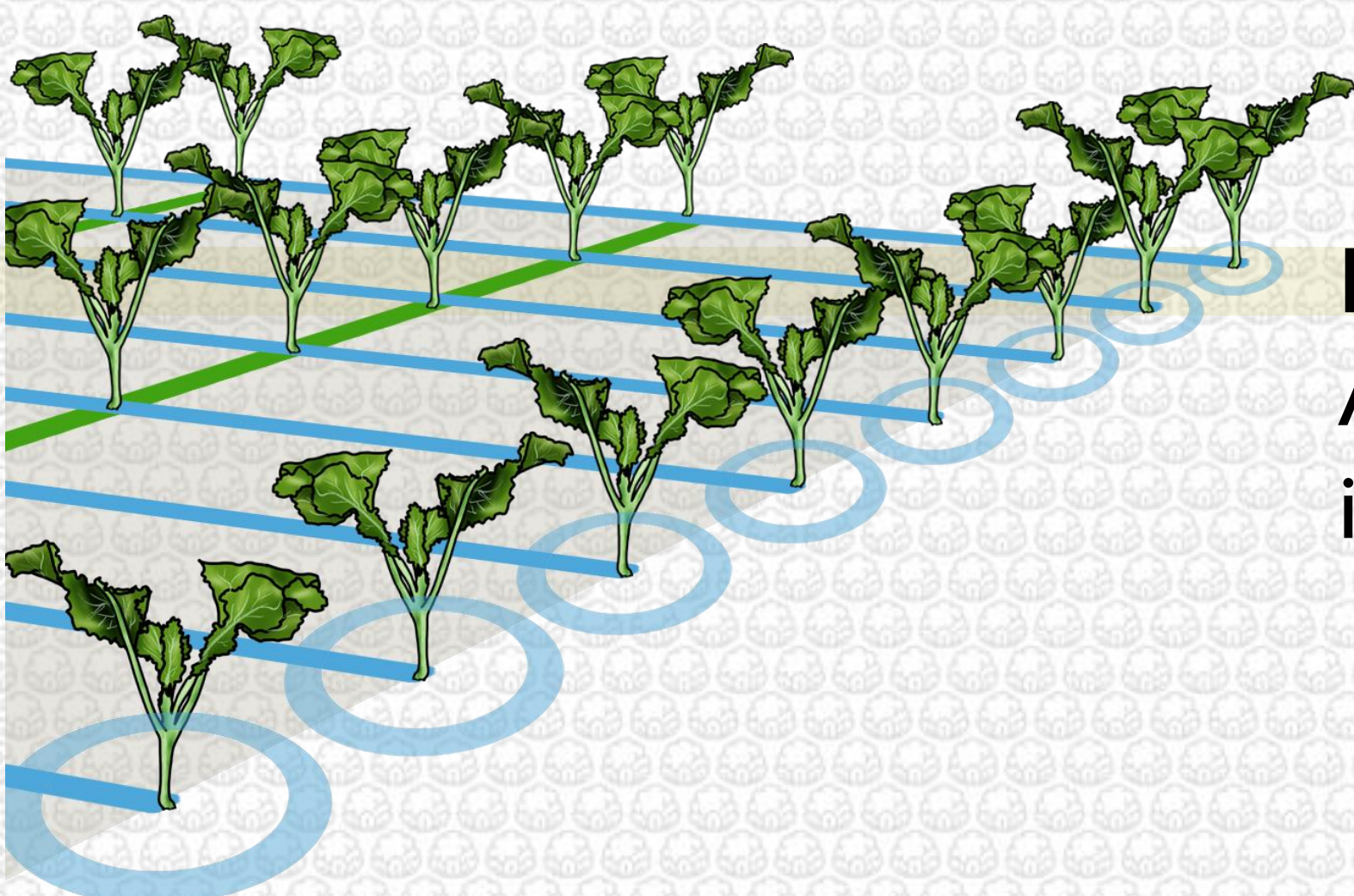
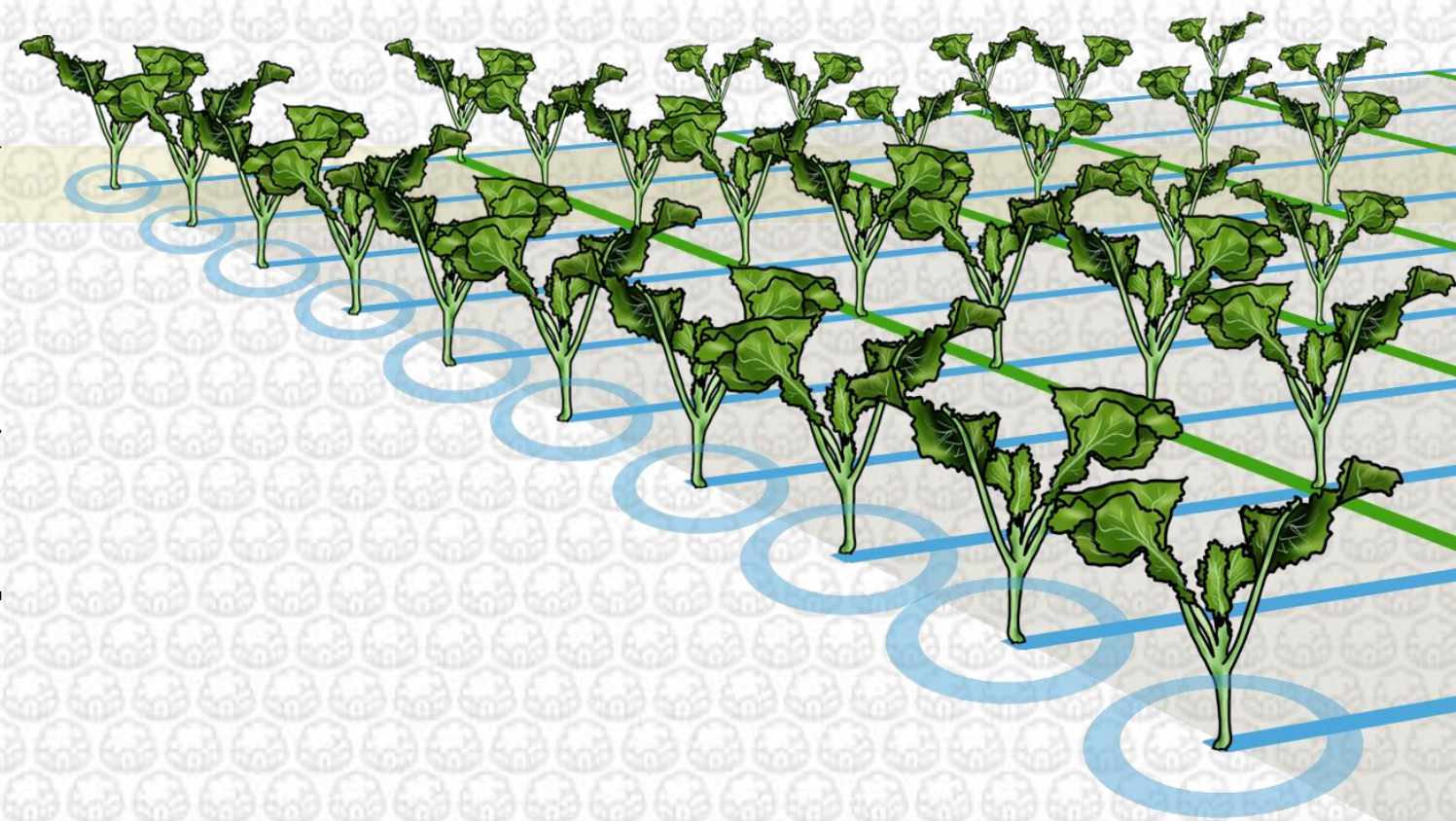


1850 PLANTS/ROPANI



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

FOR EARLY VARIETY
Apply 5.3gm DAP and 3.4gm MOP in rings or spots per plant

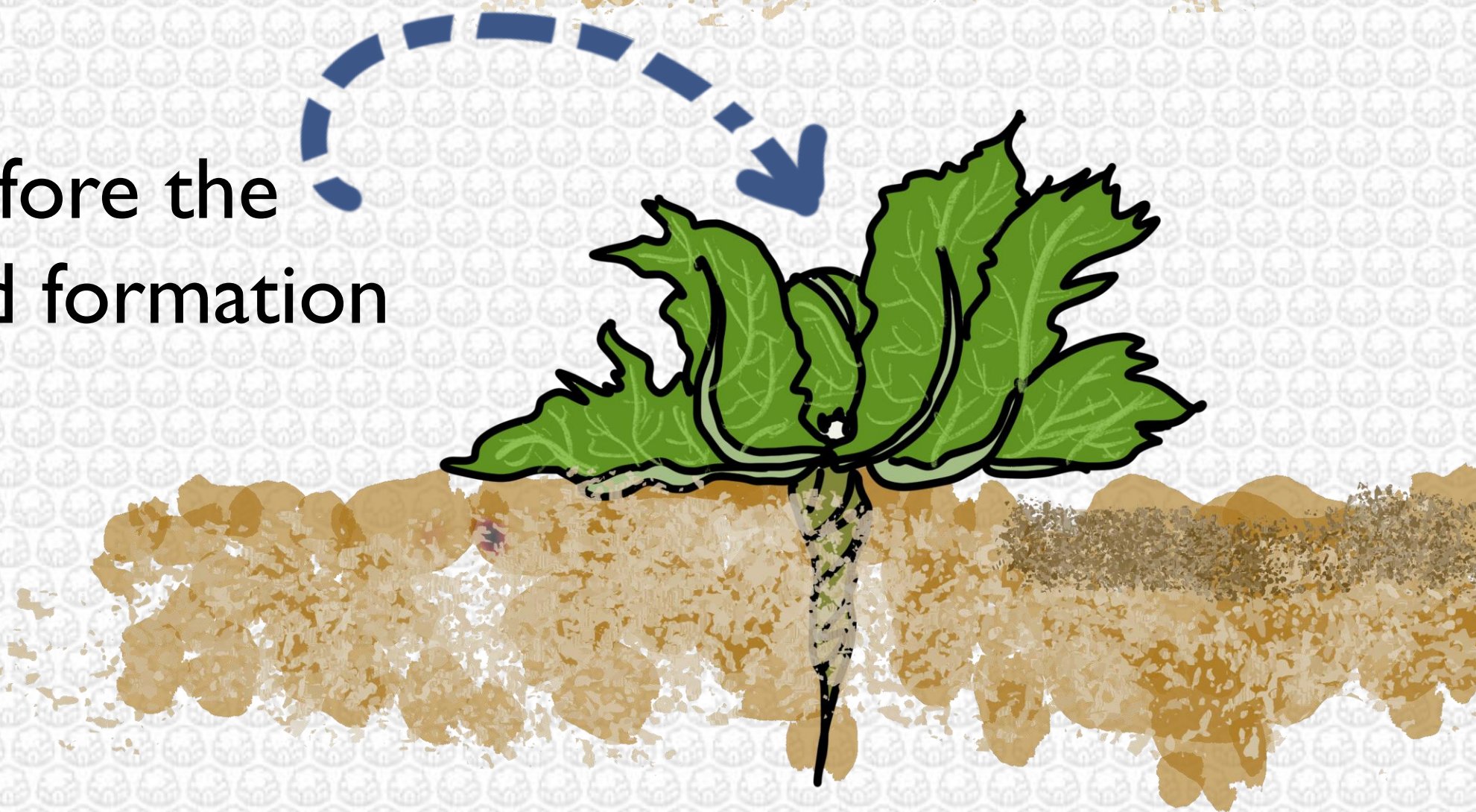


FOR MID AND LATE VARIETY
Apply 7gm DAP and 4.5gm MOP in rings or spots per plant

First, just before 30 days after transplantation



Second, right before the initiation of curd formation

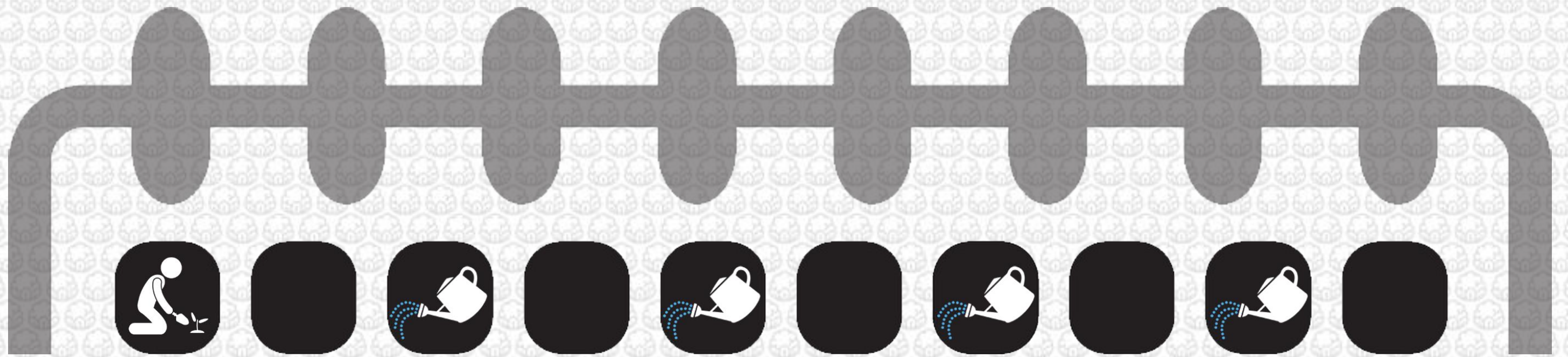


Earthing up is done to cover up to 5cm of stem of the plants



IRRIGATION AND DRAINAGE

7



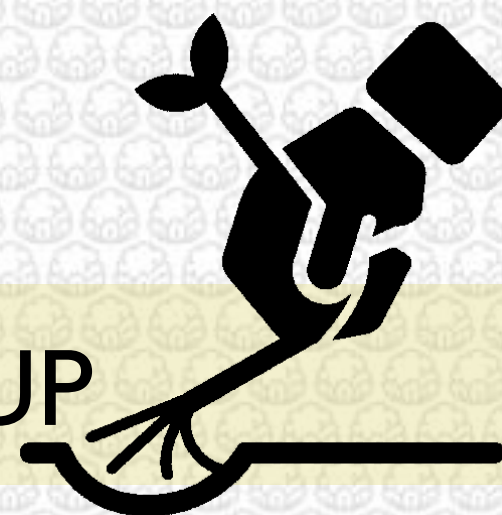
Irrigation is done on alternate days up to 7-10 days after transplanting

Critical stages of irrigation:

AFTER TRANSPLANTING



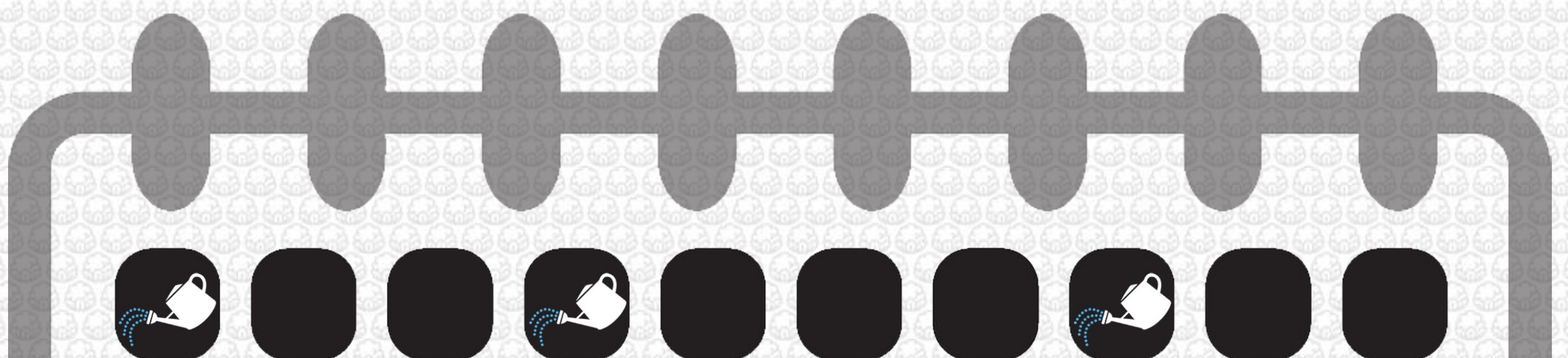
AFTER WEEDING AND EARTHING UP



BEFORE TOPDRESSING



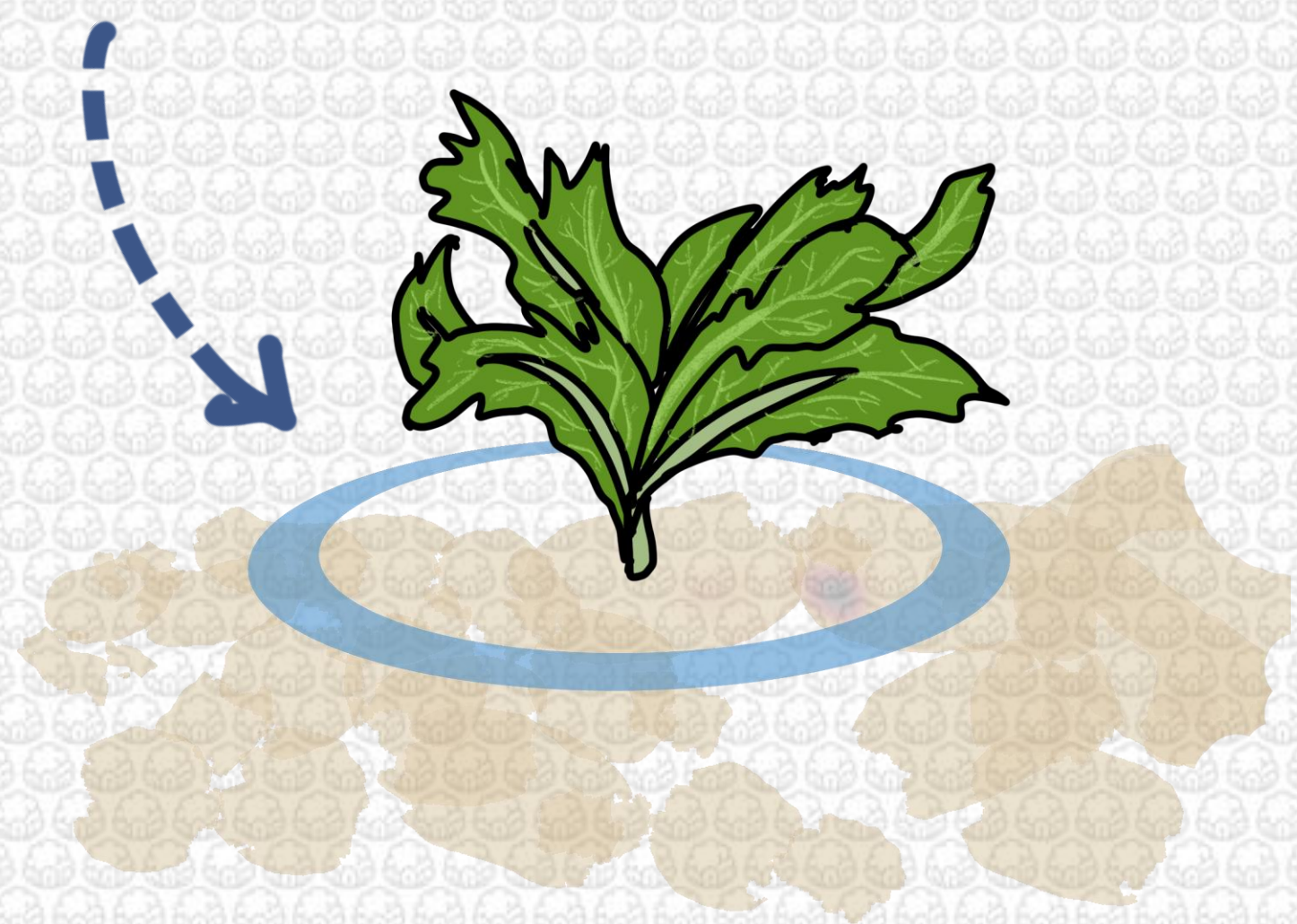
DURING CURD FORMATION



Irrigate at every 4-5 days interval depending on moisture in soil

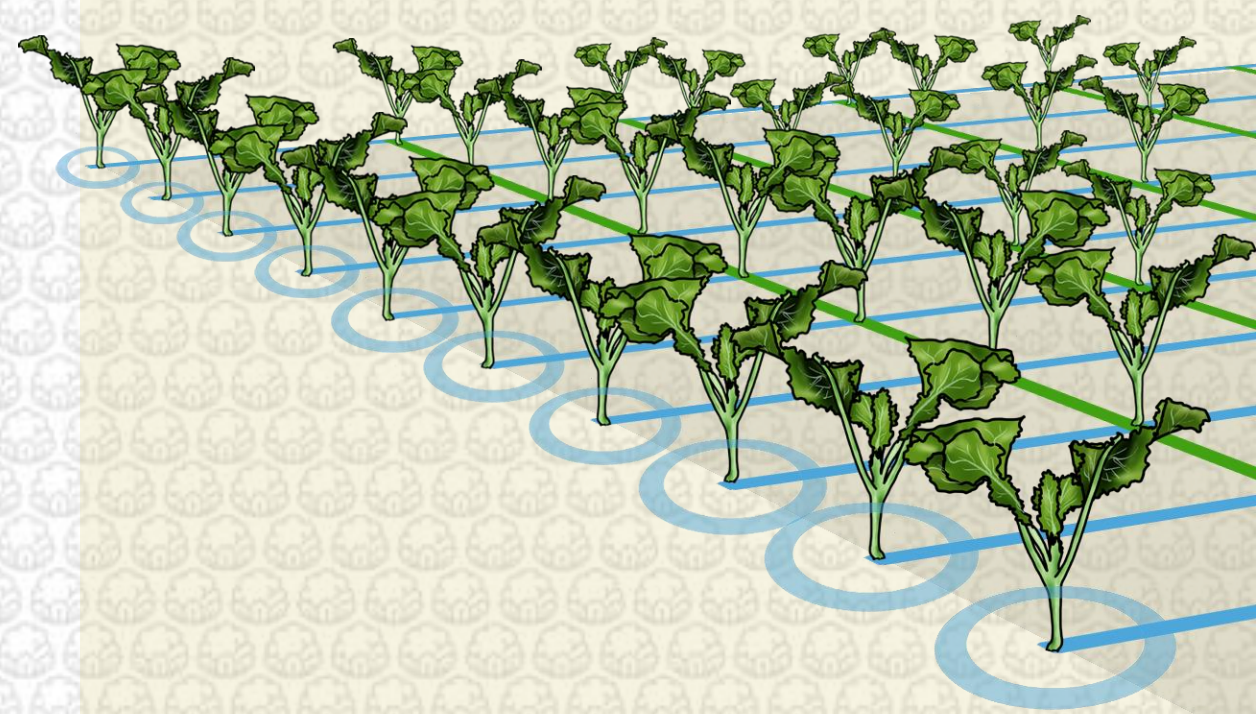
FIRST TOPDRESSING AT 30 DAYS AFTER TRANSPLANTING

Applied in ring around the plant or spot placement 5-7cm away from the plants



TOPDRESSING EARLY VARIETIES

Apply 3.4gm urea per plant both times

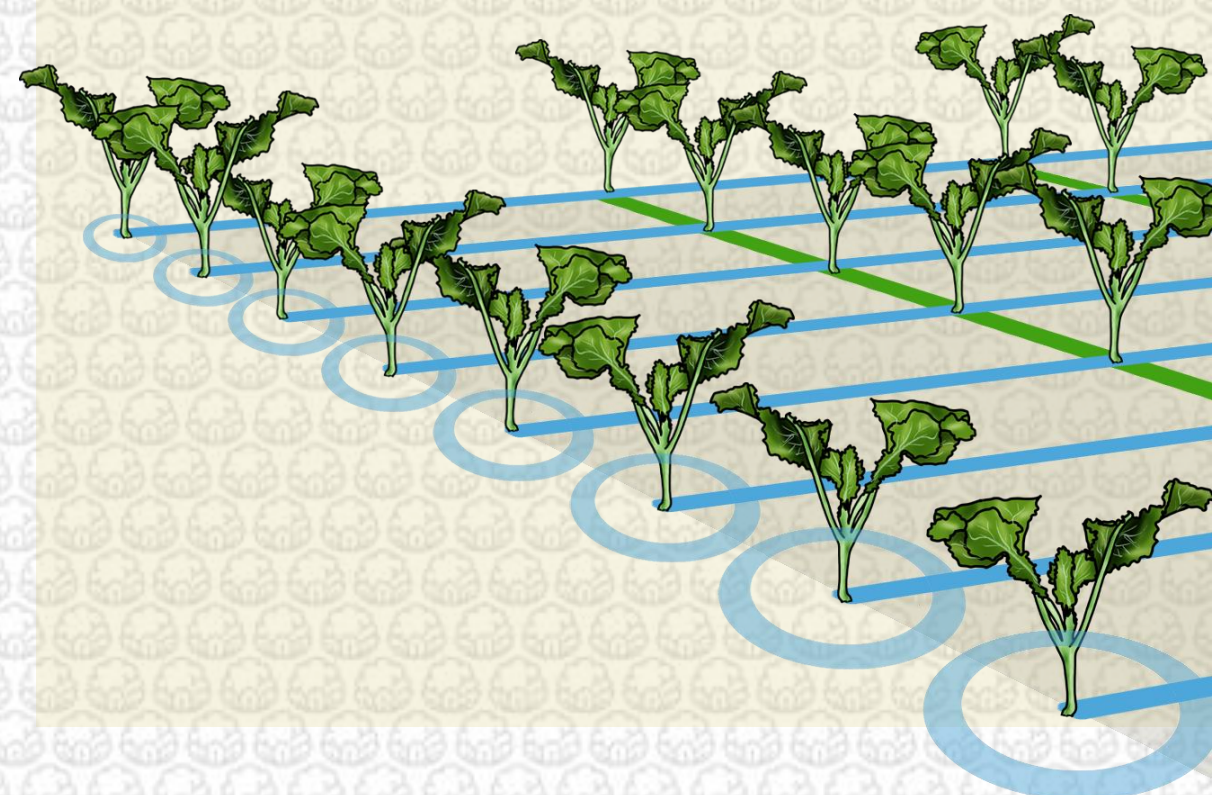


SECOND TOPDRESSING AT CURD FORMATION STAGE



TOPDRESSING MID & LATE VARIETIES

Apply 4.5gm urea per plant both times



16.6KG UREA IS APPLIED PER ROPANI IN TWO DOSES



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CAULIFLOWER PART THREE HARVESTING & POSTHARVEST



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HARVESTING

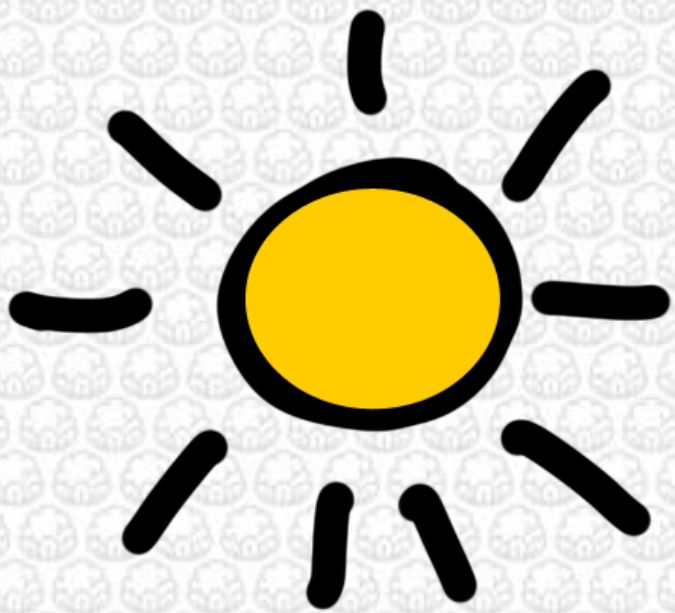
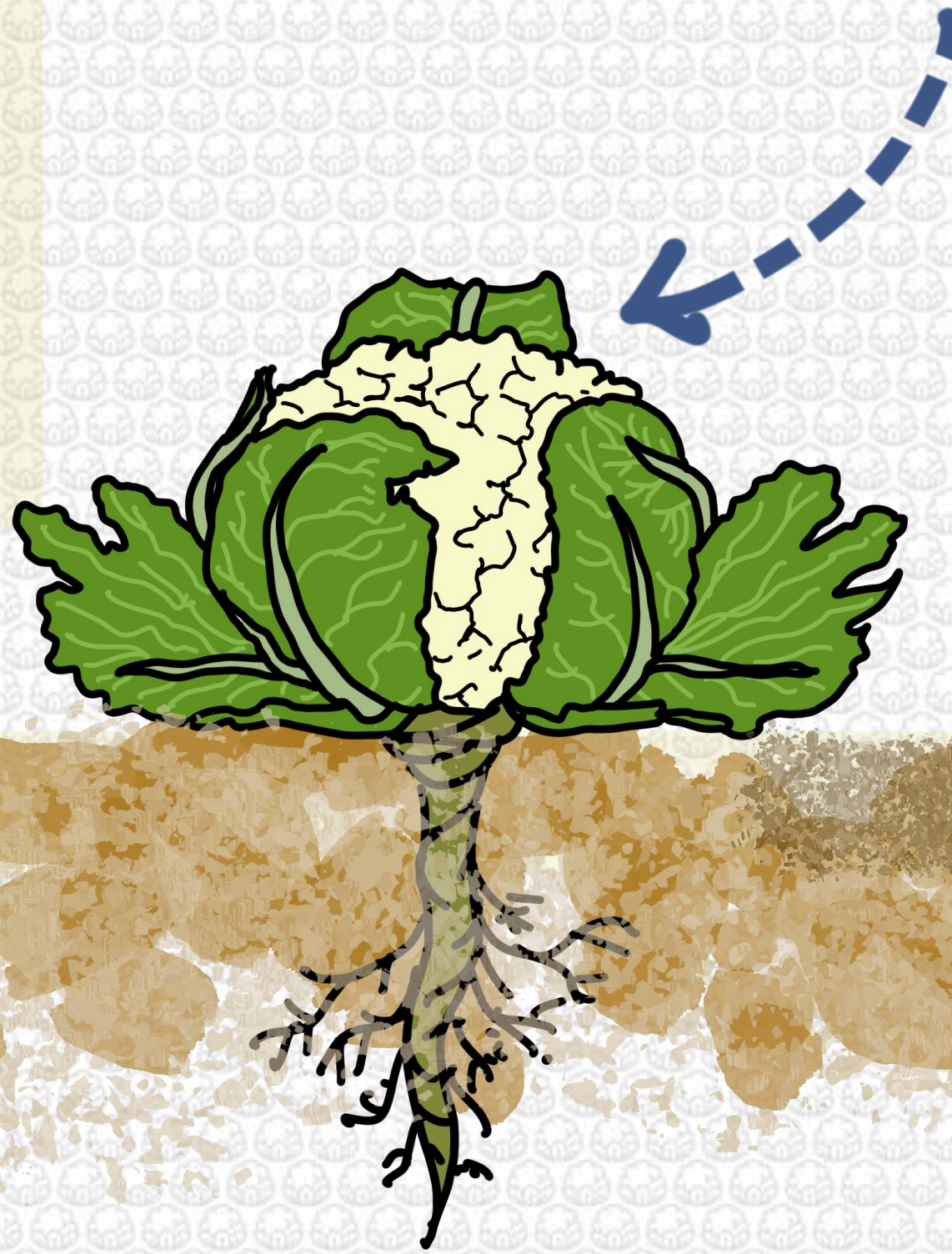
Cauliflowers are harvested when curds are fully developed, compact and white.

HARVESTING TIME

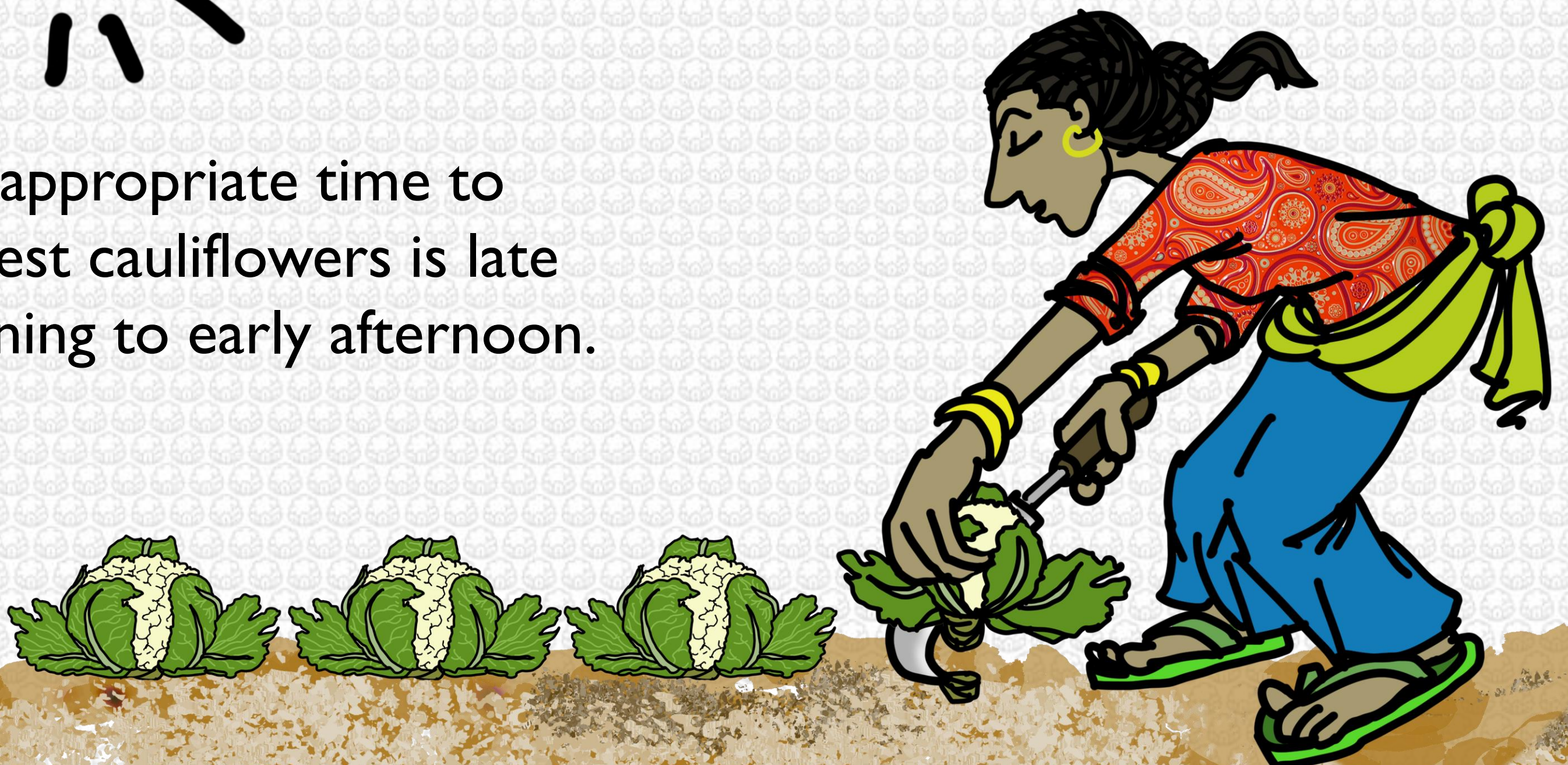
Early varieties: 65-75 days

Mid varieties: 90-100 days

Late varieties: 110-130 days



The appropriate time to harvest cauliflowers is late morning to early afternoon.



SORTING

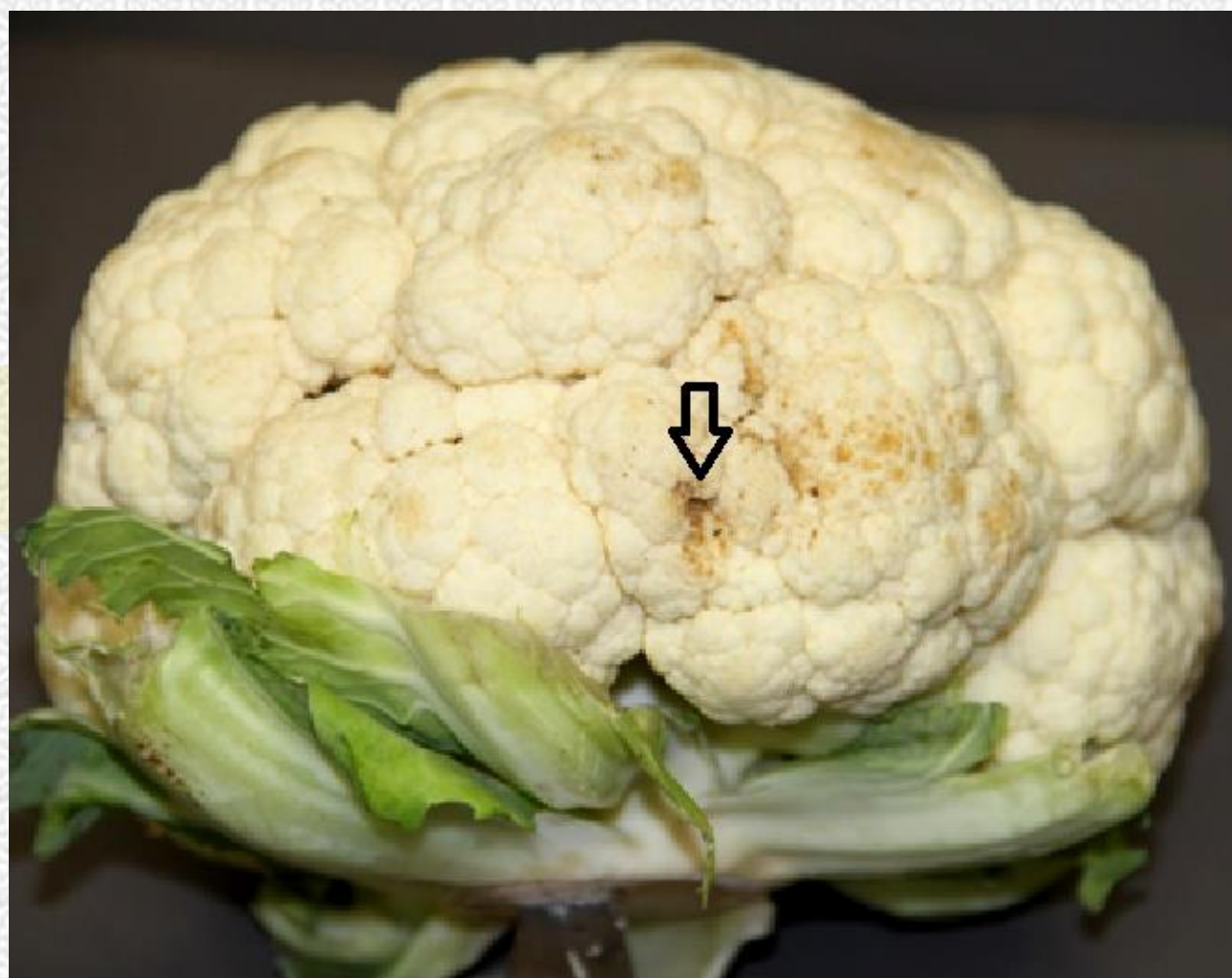
2

SORT OUT curds that are:

DISEASED



PEST INFESTED



DEFORMED/DAMAGED



TRIM

excess leaves
and stems away



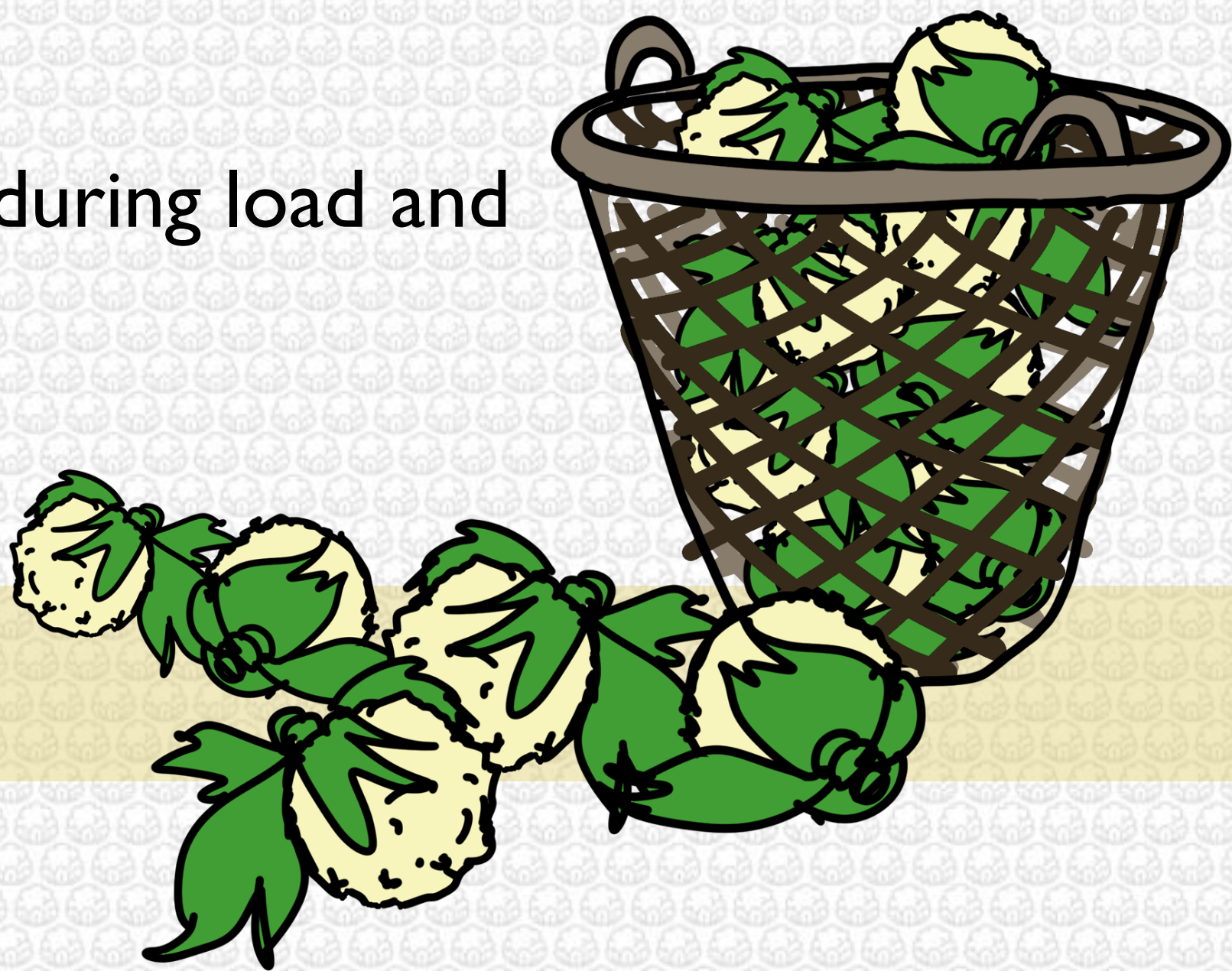


Cauliflower is a very delicate product. Handle it with care to not damage it and to not reduce the market price.



Cauliflower should not be thrown to the *dokos* or crates but kept gently during harvest.

Avoid rough handling during load and unload.



GRADE on the basis of

Uniformity of color



Shape and Size



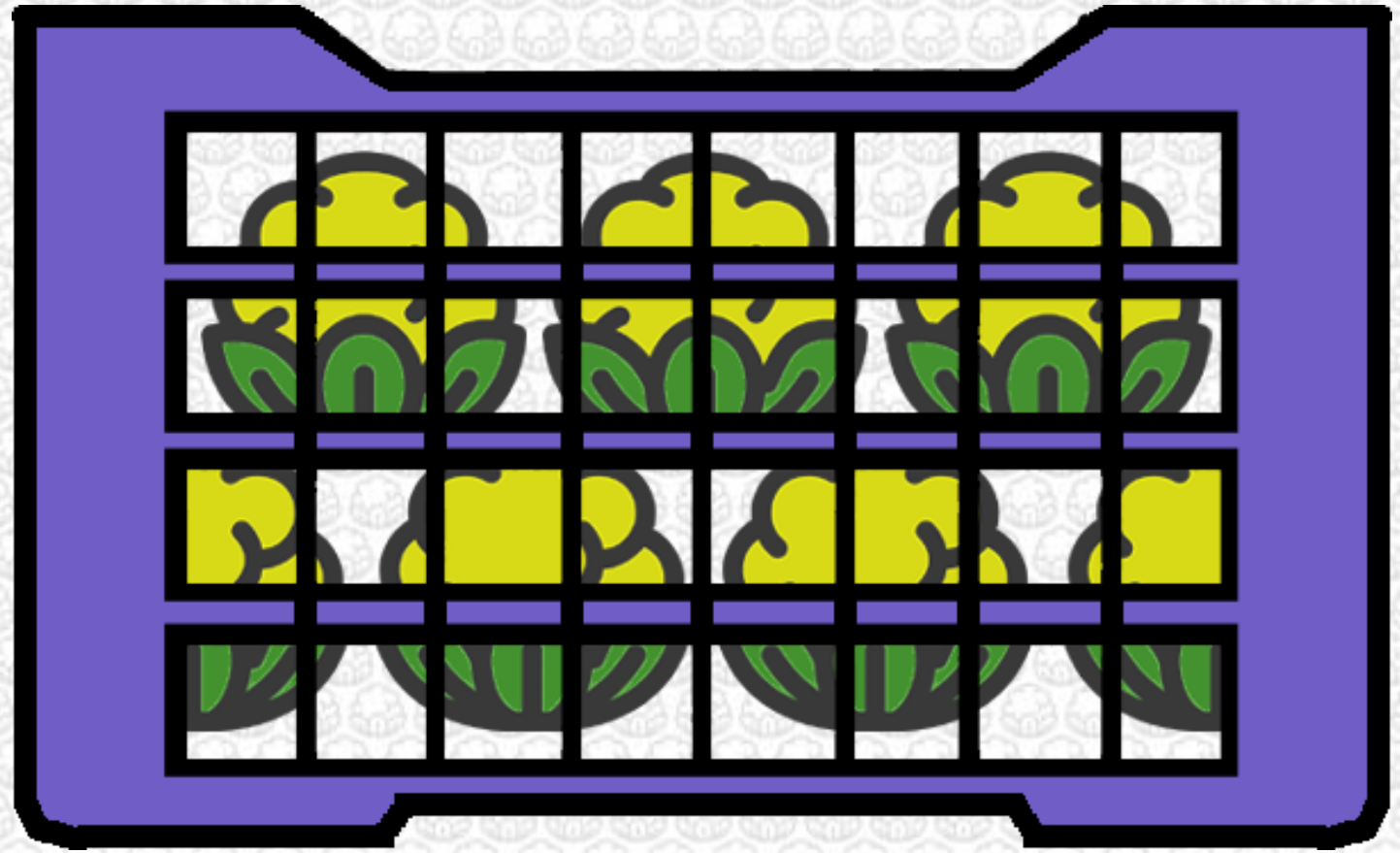
Compactness



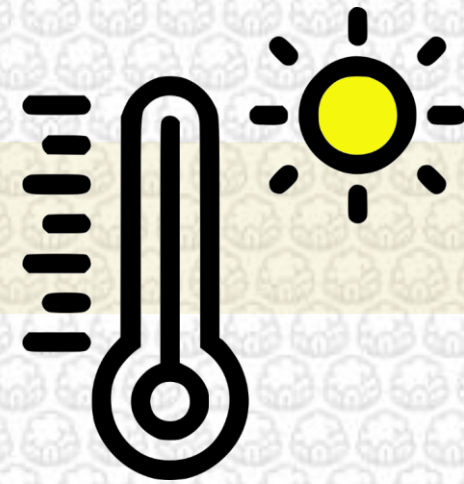
Freshness and Cleanliness



The best container for cauliflower curds-
PLASTIC CRATE
because of its smooth
inside finish



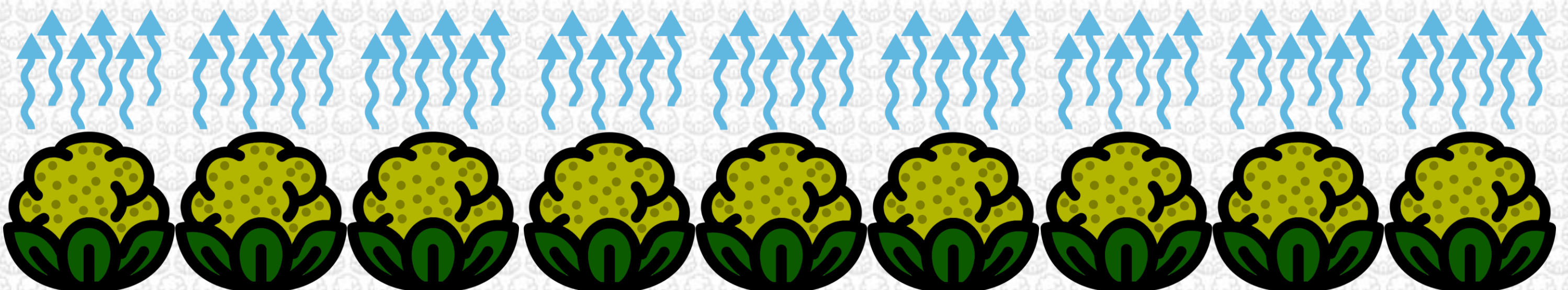
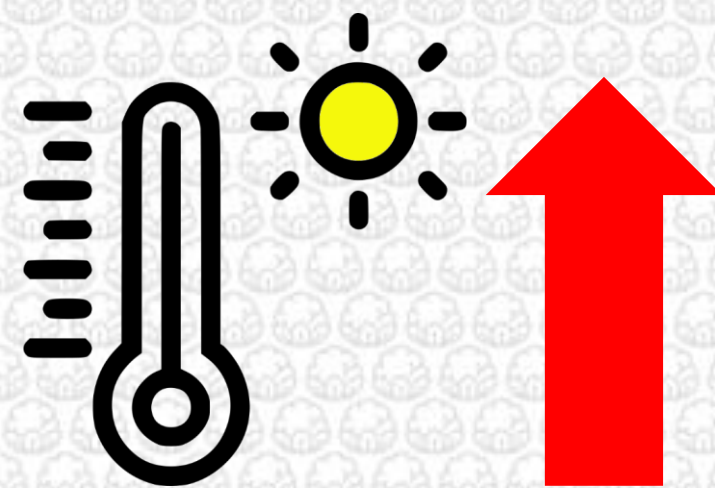
STORAGE TEMPERATURE **0°C**



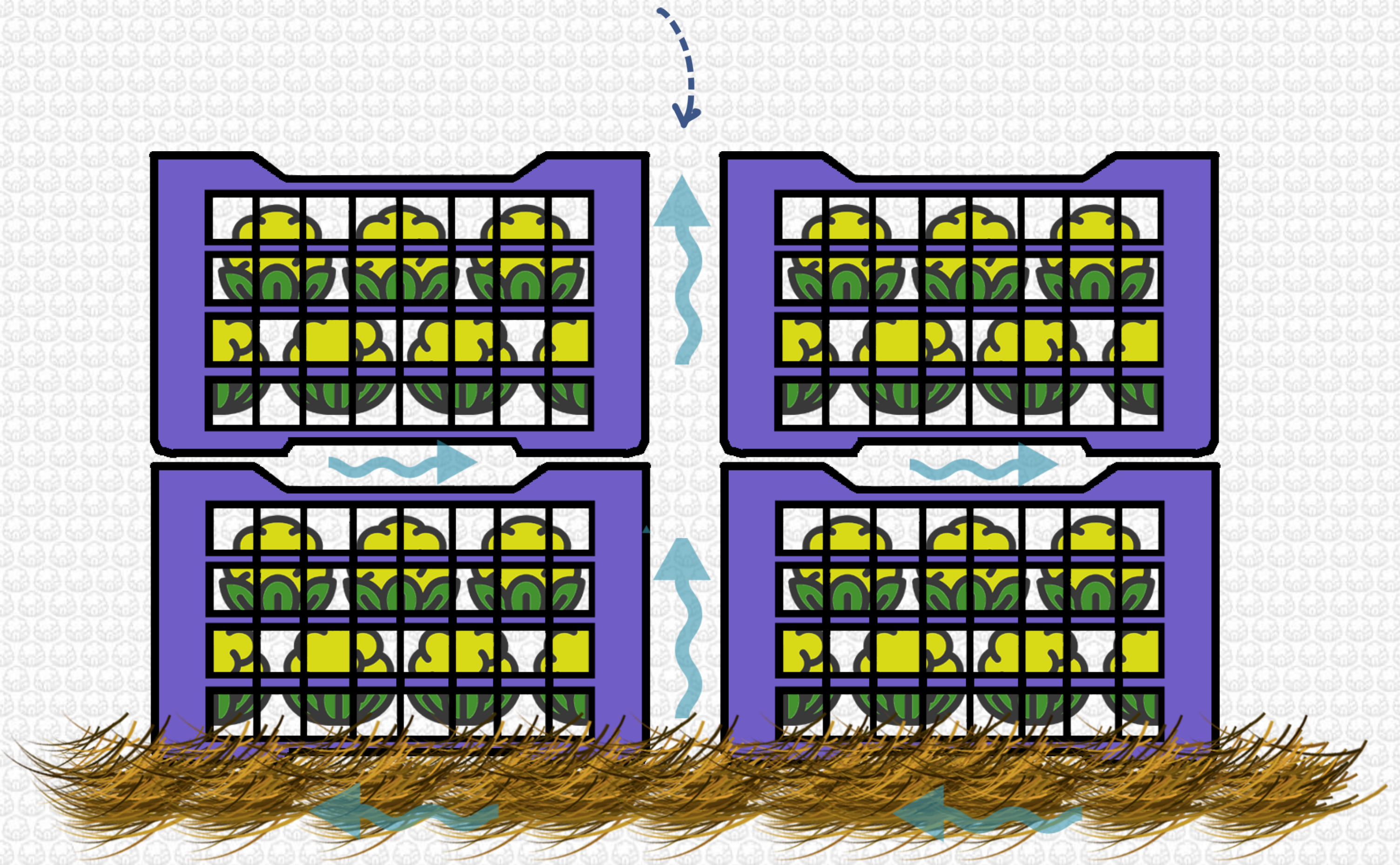
RELATIVE HUMIDITY **95%**



Storage at high temperature rapidly causes deterioration of cauliflower quality and shelf life.



ALLOW AIR CIRCULATION in the stacks or piles of produce by providing space in between stacks



STRAW CUSHION is used to minimize damage due to rough road and heat

TRANSPORT at night and cool weather

