

芭乐的种植和管理 (Part 1)

1	Flower, fruit and uses	花, 果实和用途
2	Health benefits	健康益处
3	Climate and Photoperiod	气候和光周期
4	Soil	土壤
5	Planting	种植
6	Fertilizing	施肥
7	Watering	浇水
8	Tree Care	果树管理
9	Overwintering	过冬保护
10	Propagation	繁殖
11	Pest management	虫害处理
12	Disease management	病害处理

(番石榴, 芭乐)

(Guava, *Psidium guajava*)

1. 芭乐的花,果实和用途

Guava flower, fruit and uses

两性花

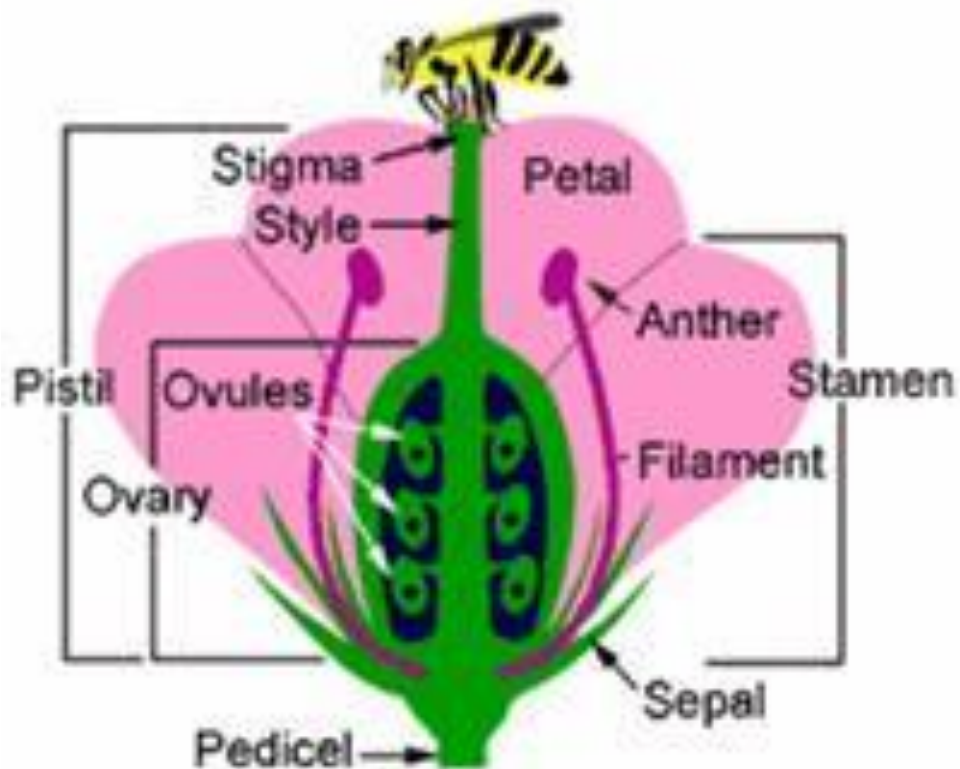
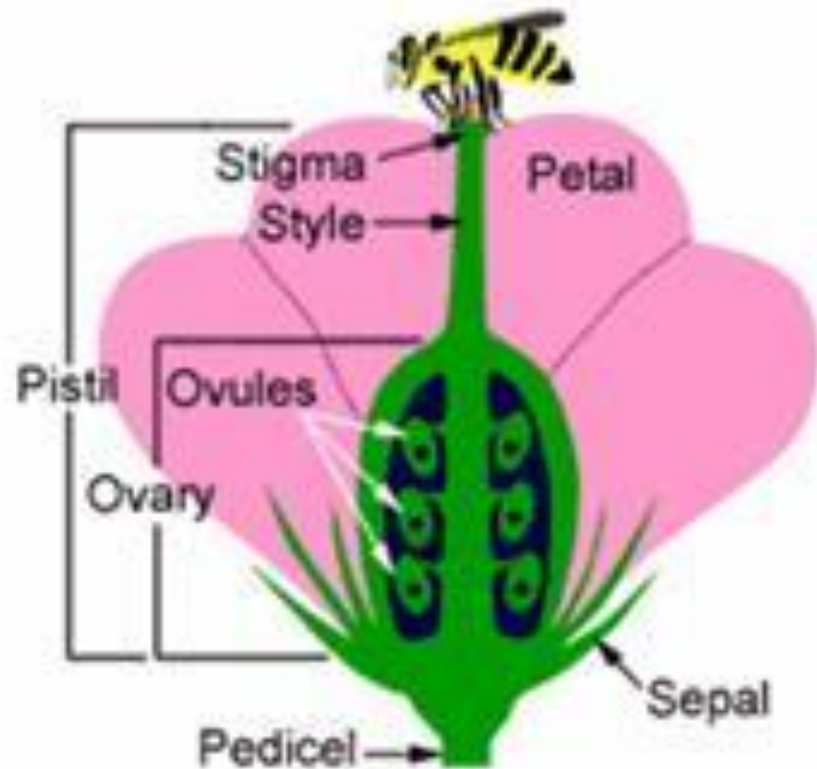


Figure 20. Complete flower structure

单性花



Imperfect (pistillate) flower structure

芭乐的花雌雄同株
Guava flower is bisexual







\$4.00

芭乐



\$3.00

芭乐



菠萝芭乐



Pineapple

Strawberry



Download from
Dreamstime.com

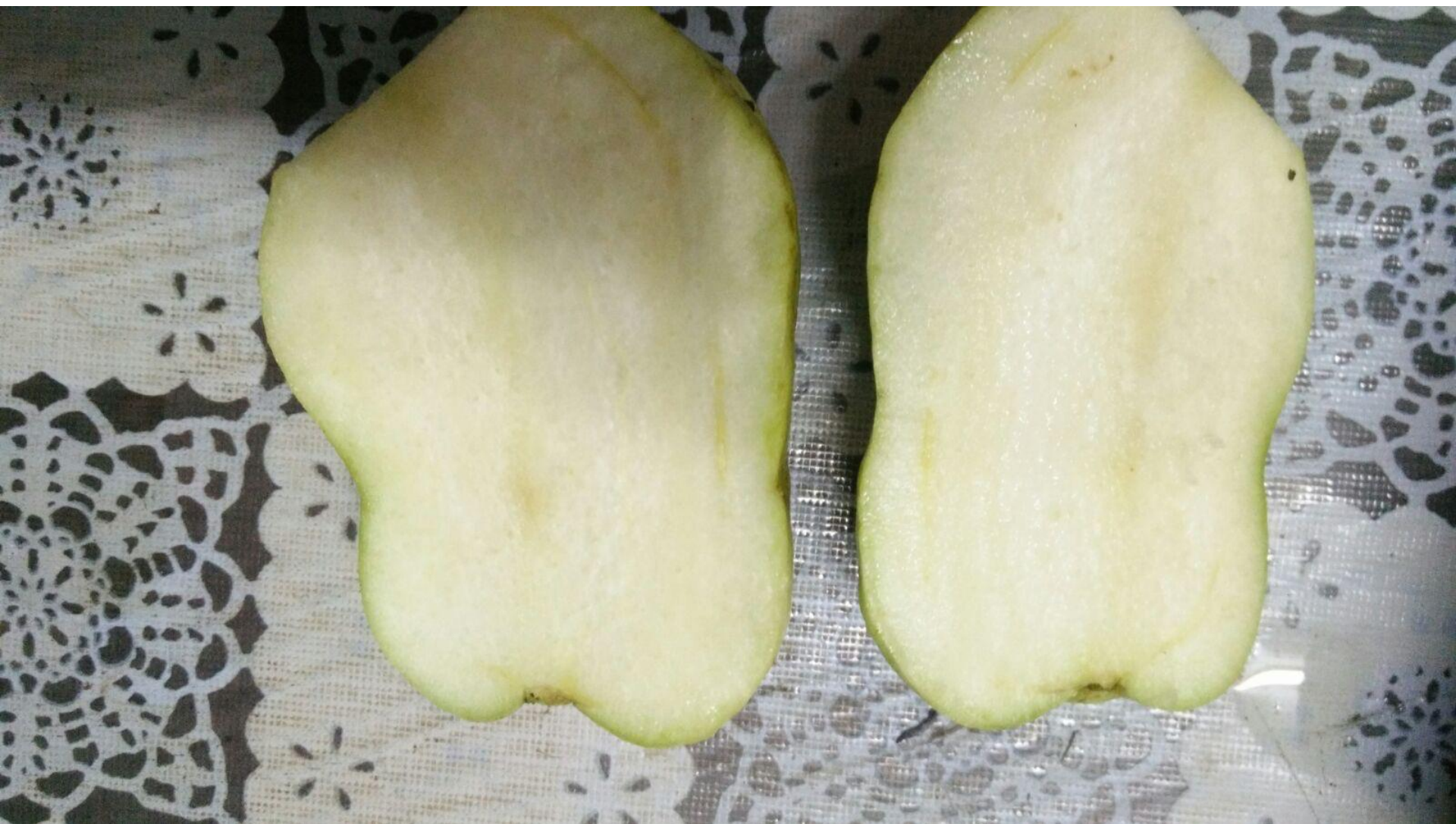
This watermarked comp image is for previewing purposes only.

ID 19751046

© Olga Franco | Dreamstime.com

\$5.00

无籽芭乐



\$5.00

芭乐



\$8.00

巨大番石榴



更大
更
美味



更大
更
美味



\$15.00





芭乐的花,果实和用途

註冊
商標
玉民

梅粉

品名:梅粉
成份:梅子、砂糖、鹽、甘草
重量:250公克
產地:台灣
公司行號:玉民麻油

製造2012.12.15
有效2013.12.14

營養標示:每100公克

熱量	130大卡
蛋白質	8.7公克
脂肪	0.04公克
碳水化合物	28.6公克
鈉	6317毫克
反式脂肪	0公克
飽和脂肪	0公克



4 712755 029903



























Guava Cosmetics





芭乐:维生素C之王



芭乐

2.健康益处

Medicinal properties of Guava fruit

1. Cancer prevention (防癌)
2. Lower Blood pressure (降血压)
3. Reduce Blood sugar (降血糖)

1. (防癌)

Cancer prevention



番石榴营养成分

成分	含量g/200g	成分	含量 g/200g
果肉	86.5	VB1	$0.05/10^{-3}$
水份	83.3	VB2	$0.03/10^{-3}$
干物质	19.5	VC (200-336.8)	$/10^{-3}$
灰分	0.66	磷	$29.5/10^{-3}$
粗纤维	3.80-5.57	叶绿素	$0.67/10^{-3}$
粗蛋白	0.76-1.06	叶黄素	$0.13/10^{-3}$
粗脂肪	0.36-0.94	胡萝卜素	$0.69/10^{-3}$
苹果酸	0.469	磷	$29.5/10^{-3}$
柠檬酸	0.523	铁	$1-1.82/10^{-3}$
乳酸	0.025	钾	$290/10^{-3}$
多糖	6.5	钠	$4/10^{-3}$
热量(kj/100g)	243.6	镁	$4/10^{-3}$



TABLE 1. SHOWS HOW A GUAVA (*the poor man's apple*) MEASURES UP TO A REAL APPLE & OTHER IMPORTED FRUITS

Imported Fruit

Created by
The Health-Nu Corner

	Guava	Apple	Grapes	Pear	Kiwi	Cantaloupe
100 g	(2.5 small)	(1 med)	(40 grapes)	(1 small)	(1 kiwi)	(1 wedge)
Energy	68	52	67	58	61	35
Protein	3 g	0 g	1 g	0 g	1 g	1 g
Fat	1 g	0 g	0 g	0 g	1 g	0 g
CHO	14 g	13 g	17 g	15 g	15 g	8 g
Fibre	5 g	2 g	1 g	3 g	3 g	1 g
Sugars	9 g	10 g	16 g	10 g	9 g	8 g
Ca	18 mg	6 g	14 mg	9 mg	34 mg	9 mg
K	417 mg	107 mg	0 g	119 mg	312 mg	267 mg
Na	2 mg	1 mg	2 mg	1 mg	3 mg	16 mg
P	40 mg	11 mg	10 mg	11 mg	34 mg	15 mg
Mg	22 mg	5 mg	5 mg	7 mg	17 mg	12 mg
Fe	0 mg	0 mg	0 mg	0 mg	0 mg	0 mg
Folate	49 mcg	3 mcg	4 mcg	7 mcg	25 mcg	21 mcg
Vit A	31 RAE	3 RAE	5 RAE	1 RAE	4 RAE	169 RAE
Vit C	228 mg	4.6 mg	4 mg	4 mg	93 mg	38 mg
Vit K	3 mcg	2 mcg	15 mcg	5 mcg	40 mg	3 mcg
Lycopene	5,204 mcg	0 mcg	0 mcg	0 mcg	0 mcg	0 mcg

纤维

Xiānwéi

钾

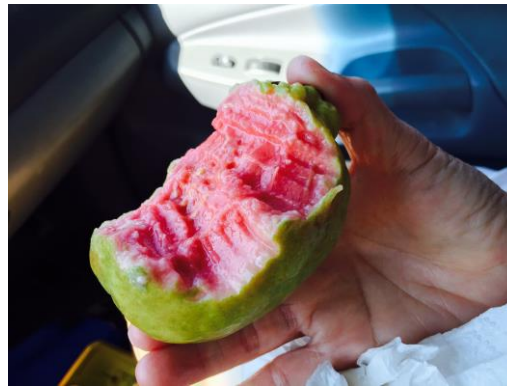
叶酸

番茄红素



叶酸

Some studies have found that **folic acid** taken by women before they become pregnant and during early pregnancy may reduce the chances of certain birth defects (neural tube defects).



番茄红素

Lycopene may cause low blood pressure. Caution is advised in people who have low blood pressure or those taking drugs or herbs and supplements that lower blood pressure.

Cancer prevention (general)

Although it has not been well studied in humans, early research suggests that **lycopene** may help prevent a number of different cancers, including **bladder cancer and skin cancer**. However, the reason behind this potential benefit remains unclear.



Intravenous (IV) **vitamin C** was studied in patients with breast cancer who were treated with adjuvant chemotherapy and radiation therapy. The study found that patients who received vitamin C had better quality of life and fewer side effects than those who did not.

The U.S. Food and Drug Administration (FDA) has not approved the use of high-dose vitamin C as a treatment for cancer or any other medical condition.

http://www.cancer.gov/about-cancer/treatment/cam/patient/vitamin-c-pdq#link/_18

维生素C is unstable

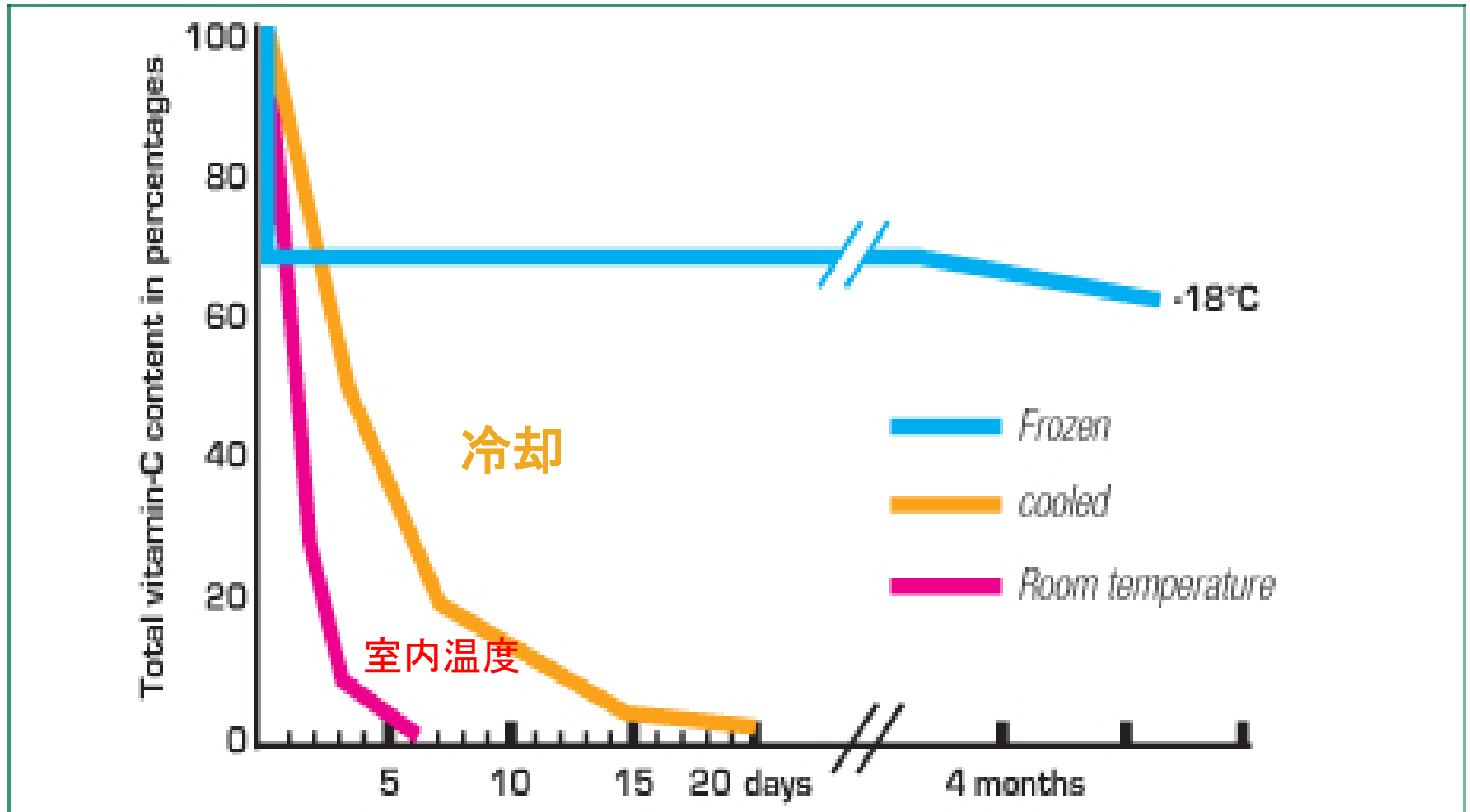
Table I. Vitamin C Contents in the Fruits Sample

Fruit	Average Concentration of Vitamin C (mg/100g)			Total Average (mg/100g)
	Half-ripe	Un ripe	Ripe	
Sour orange	21.89+1.02	33.1+0.78	16.42+0.89	23.83+6.98
Cashew	8.71+0.08	10.24+0.14	9.61+0.03	9.52+0.65
Watermelon	7.05+0.03	5.85+0.05	6.48+0.29	6.46+0.49
Apple	6.03+0.60	7.69+0.16	3.03+0.16	5.58+1.93
Mango	15.16+0.18	18.53+0.41	8.28+0.05	13.99+4.26
Pineapple	8.37+0.09	11.32+0.62	7.01+4.94	8.90+1.70
Orange	48.77+0.10	51.93+0.19	43.55+0.40	48.05+3.45
Guava	31.52+0.19	42.27+0.66	22.35+0.96	32.05+8.14



All the analytical data are the mean of triplicate measurements of three samples \pm standard deviation.

存储对蔬菜的维生素C含量的影响



The effect of storage on the vitamin-C content of vegetables

**但是， 我们没有直接证据
吃番石榴可以预防癌症**

But we do not have direct evidence
that eating guava could prevent cancer

2. 降血压

Lower Blood pressure

**Potassium deficiency
diseases - High blood
pressure**

J Hum Hypertens. 1993 Feb;7(1):33-8.

Direct evidence: Can guava fruit intake decrease blood pressure and blood lipids?

Singh RB1, Rastogi SS, Singh NK, Ghosh S, Gupta S, Niaz MA.

Author information

Abstract

A randomized, single-blind, controlled trial was conducted to examine the effects of guava fruit intake on BPs and blood lipids in patients with essential hypertension. Of 145 hypertensives that entered the trial, **72 patients** were assigned to take a soluble fibre and a potassium-rich diet containing 0.5-1.0 kg of guava daily (group A) and 73 patients to their usual diet (group B), while salt, fat, cholesterol, caffeine and alcohol intake were similar in both groups. Mean age, mean body weight and male sex, were similar, and so were risk factors, mean BPs, mean serum sodium, potassium, calcium, magnesium, triglycerides, cholesterol and HDL-cholesterol in both groups. Dietary adherence to guava intake was checked by a questionnaire. After **four weeks** of follow-up on an increased consumption of dietary **potassium** and low sodium/potassium ratio, group A patients were associated with 7.5/8.5 mmHg net decrease in mean systolic and diastolic pressures compared with group B. Increased intake of soluble dietary fibre (47.8 +/- 11.5 vs. 9.5 +/- 0.85 g/day) was associated with a significant decrease in serum total cholesterol (7.9%), triglycerides (7.0%) and an insignificant increase in HDL-cholesterol (4.6%) with a mild increase in the ratio of total cholesterol/HDL-cholesterol in group A patients compared with group B. **It is possible that an increased consumption of guava fruit can cause a substantial reduction in BPs and blood lipids with a lack of decrease in HDL-cholesterol due to its higher potassium and soluble fibre content, respectively.**

1. Cancer prevention (防癌)
2. Lower Blood pressure (降高血压)
3. Reduce Blood sugar (降血糖) ?

番石榴茶 010-57179794
13683361228
www.fanshiliucha.com

**Note this is Tea
and not Guava fruit**



预防
糖尿病、高血压、
高血脂
通便、纤体、抗菌



True for Guava Tea
But not guava fruit !!

番石榴干果茶

降糖 排便 增强免疫力

糖尿病患者的福音

咨询电话: 010-57179794 13683361228 www.fanshiliucha.com





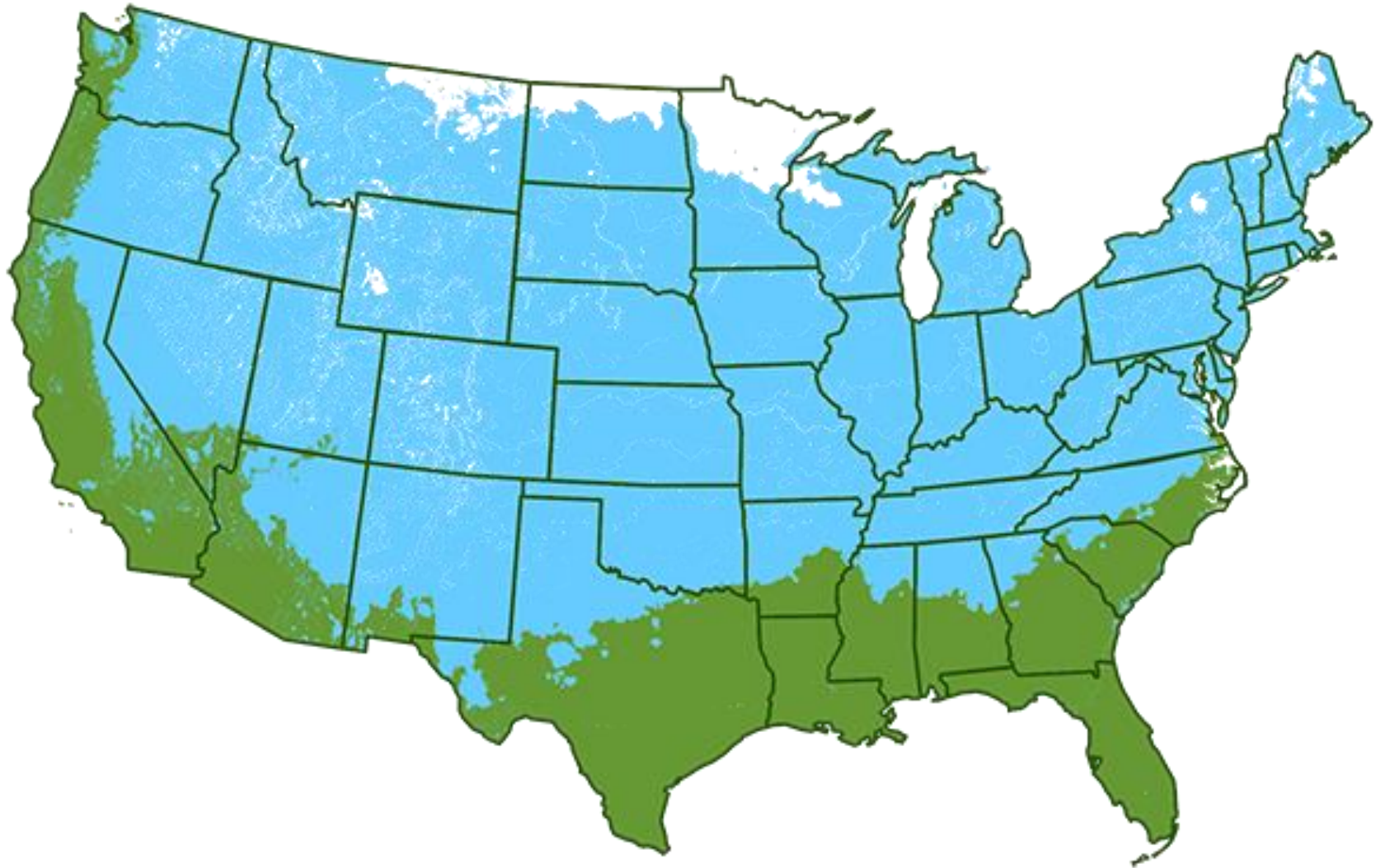


3.气候和光周期

Climate and photoperiod

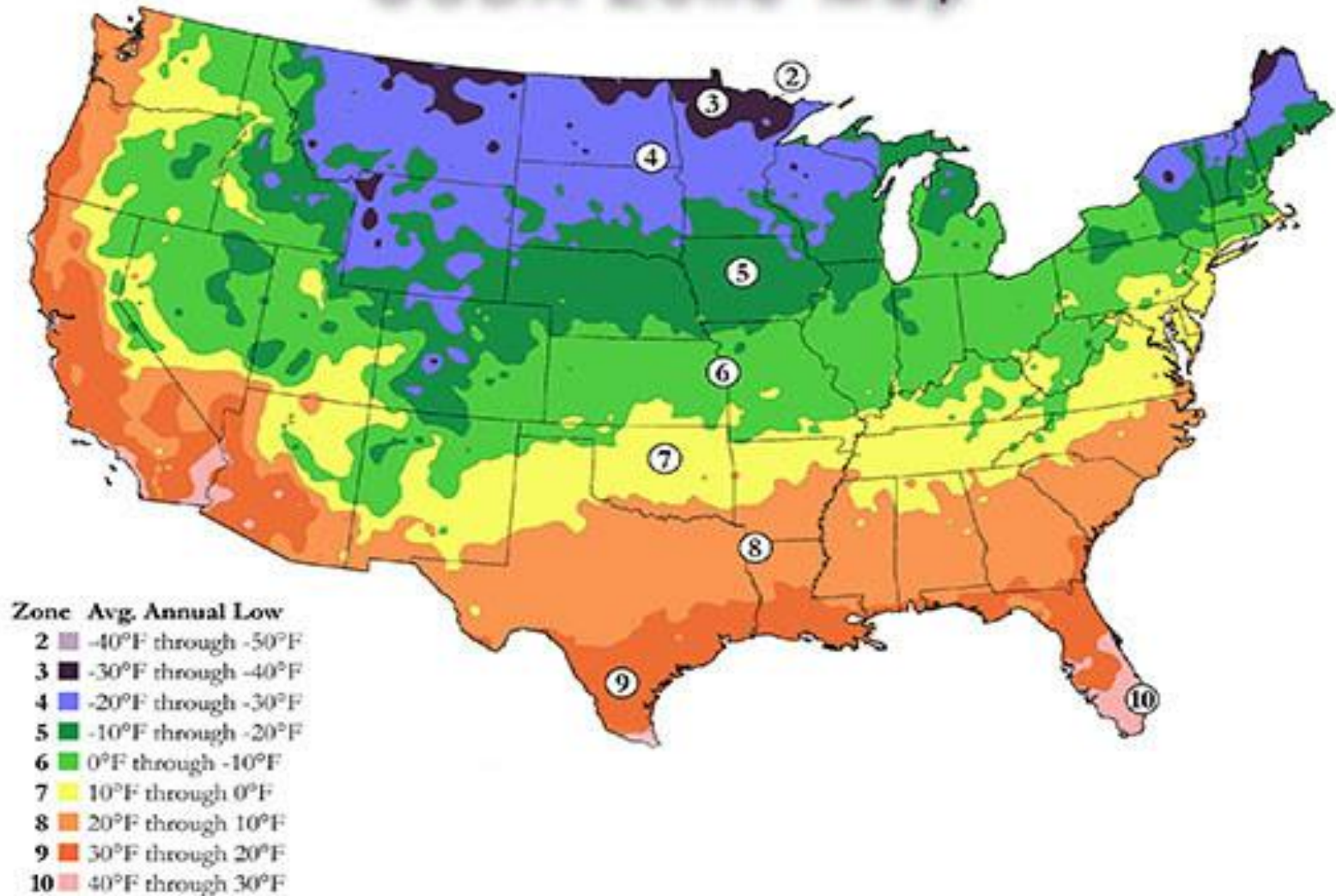
芭乐树销售地带

Guava Tree for Sale



Minimum temperature

USDA Zone Map



芭乐树

1. 热带到亚热带
(Tropical to sub-tropical)
2. 可达20英尺的高度
3. 冷天和冰冻时需要保护

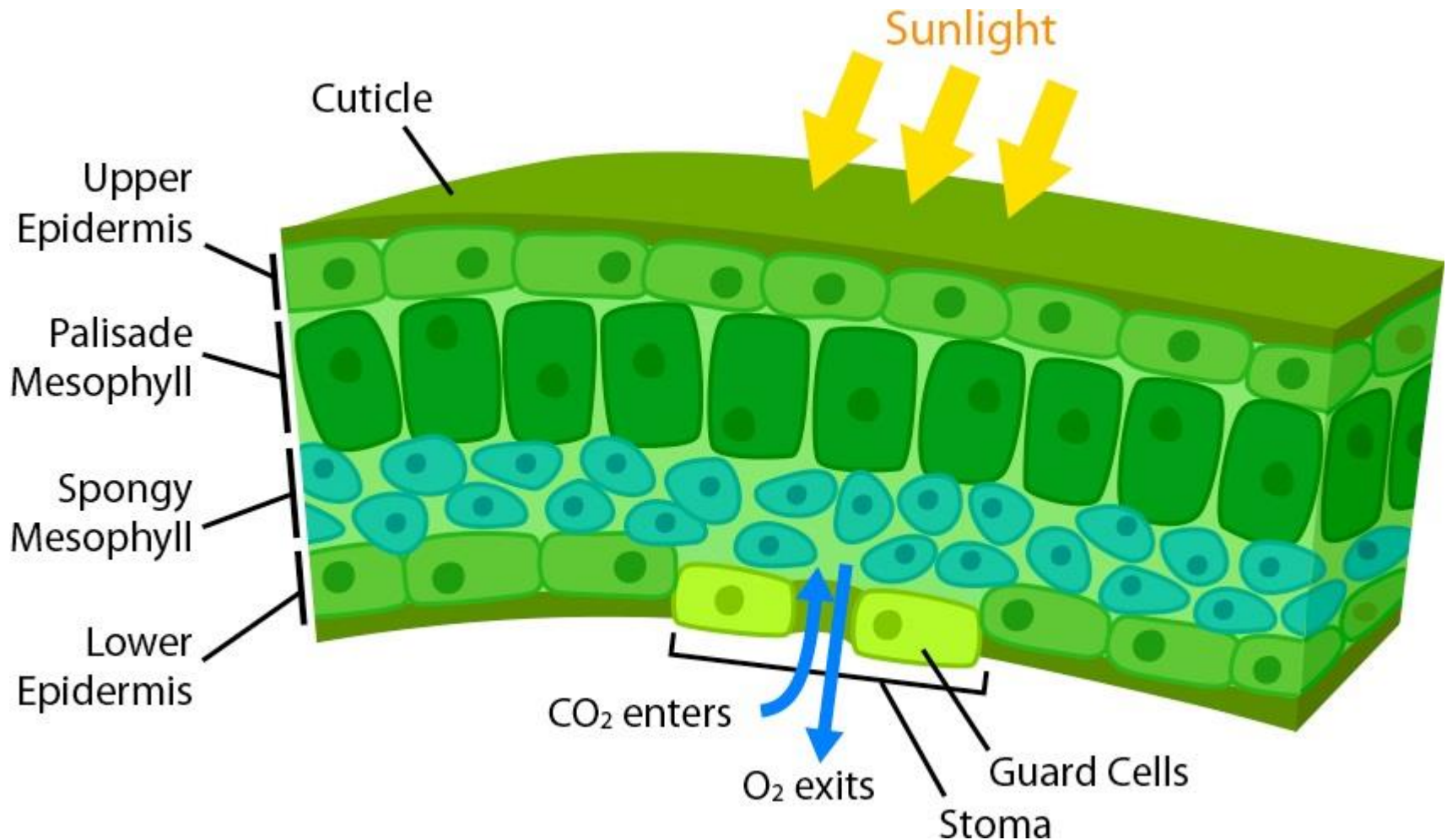
3.气候和光周期

光合作用

Photosynthesis

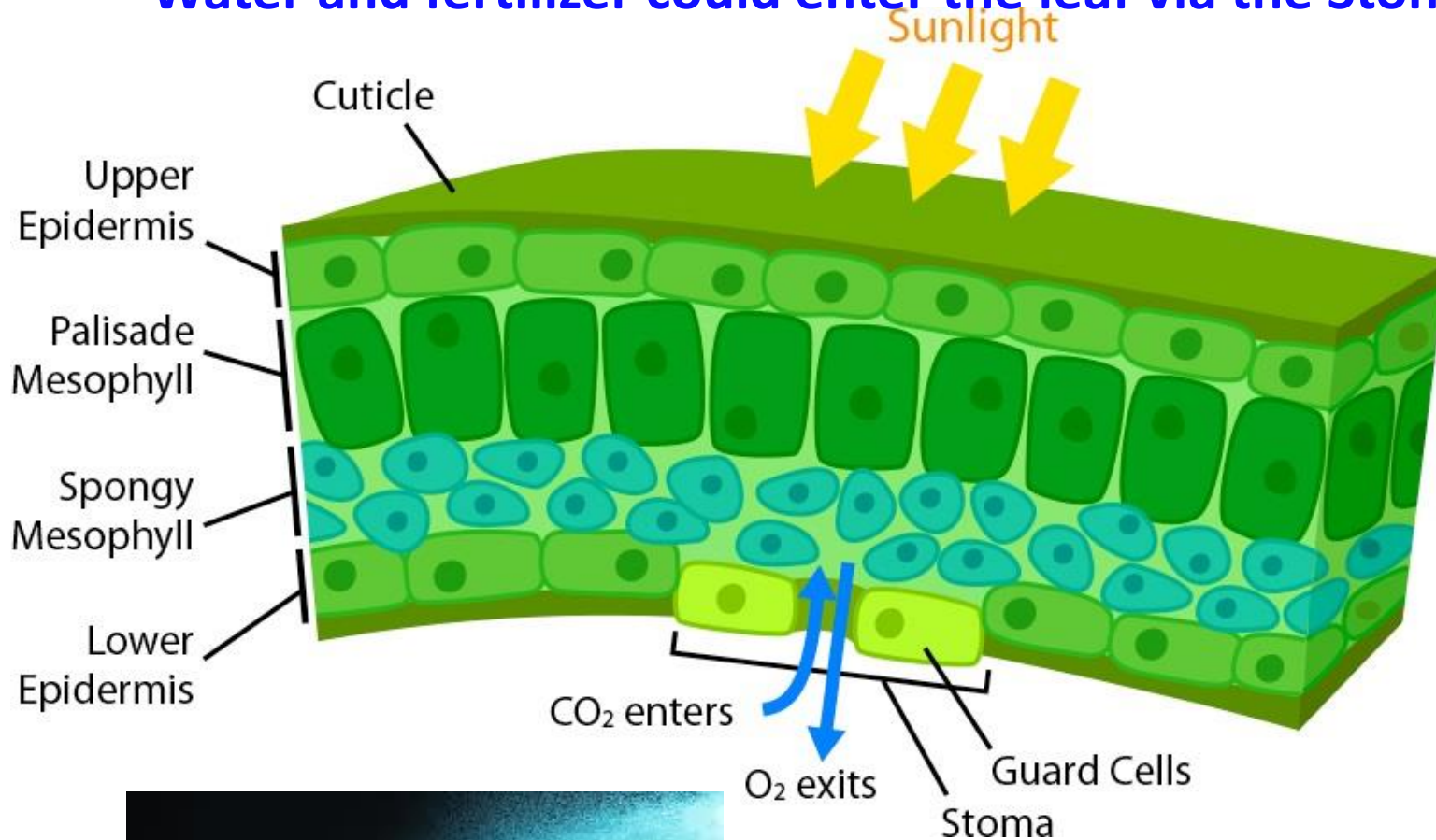


Stomata located underneath the leaf



水肥可以从气孔进入叶子吸收

Water and fertilizer could enter the leaf via the Stomata



Water
Fertilizer



Fig 16.4 Foliar fertilizers can be effective for quickly correcting nutrient deficiency symptoms.

满29
包邮

喷雾营养液



叶面肥

林夕园艺

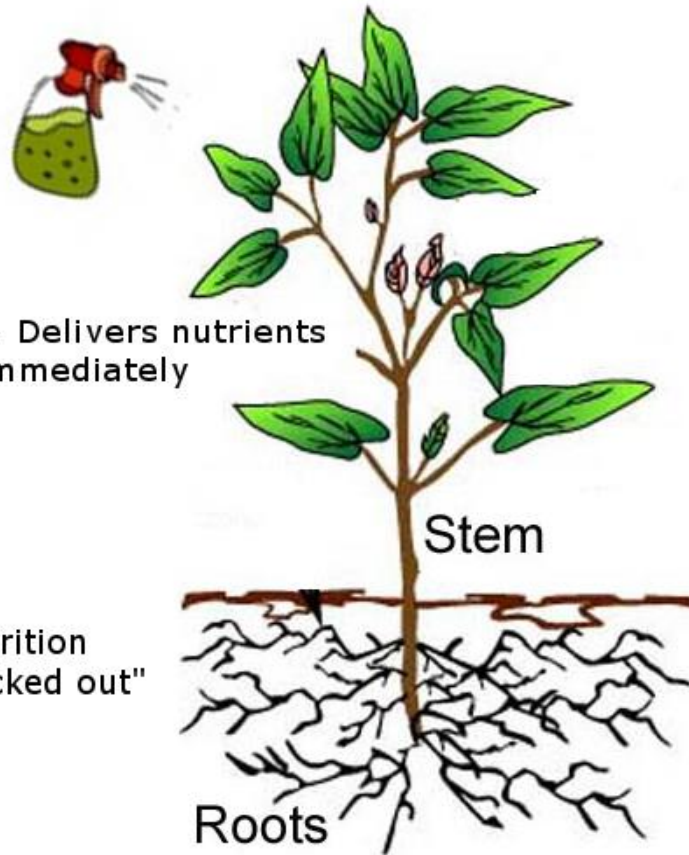
Benefits of Foliar Feeding

1. Saves Money - Reduces need for conventional fertilizers

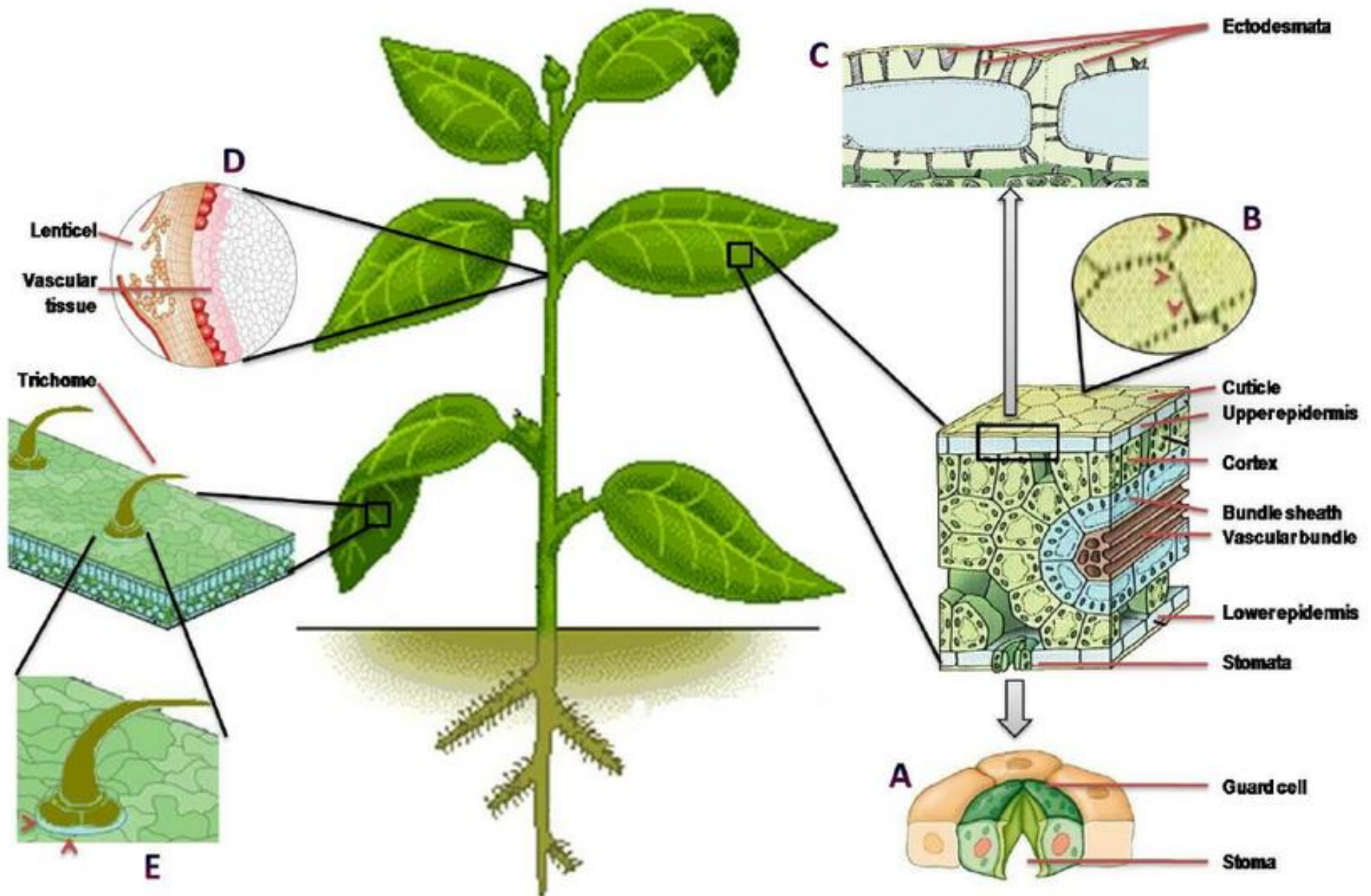
2. Fast Acting - Delivers nutrients to the leaves immediately

3. Provides nutrition if roots are "locked out"

4. Helps break through nutrient lockout

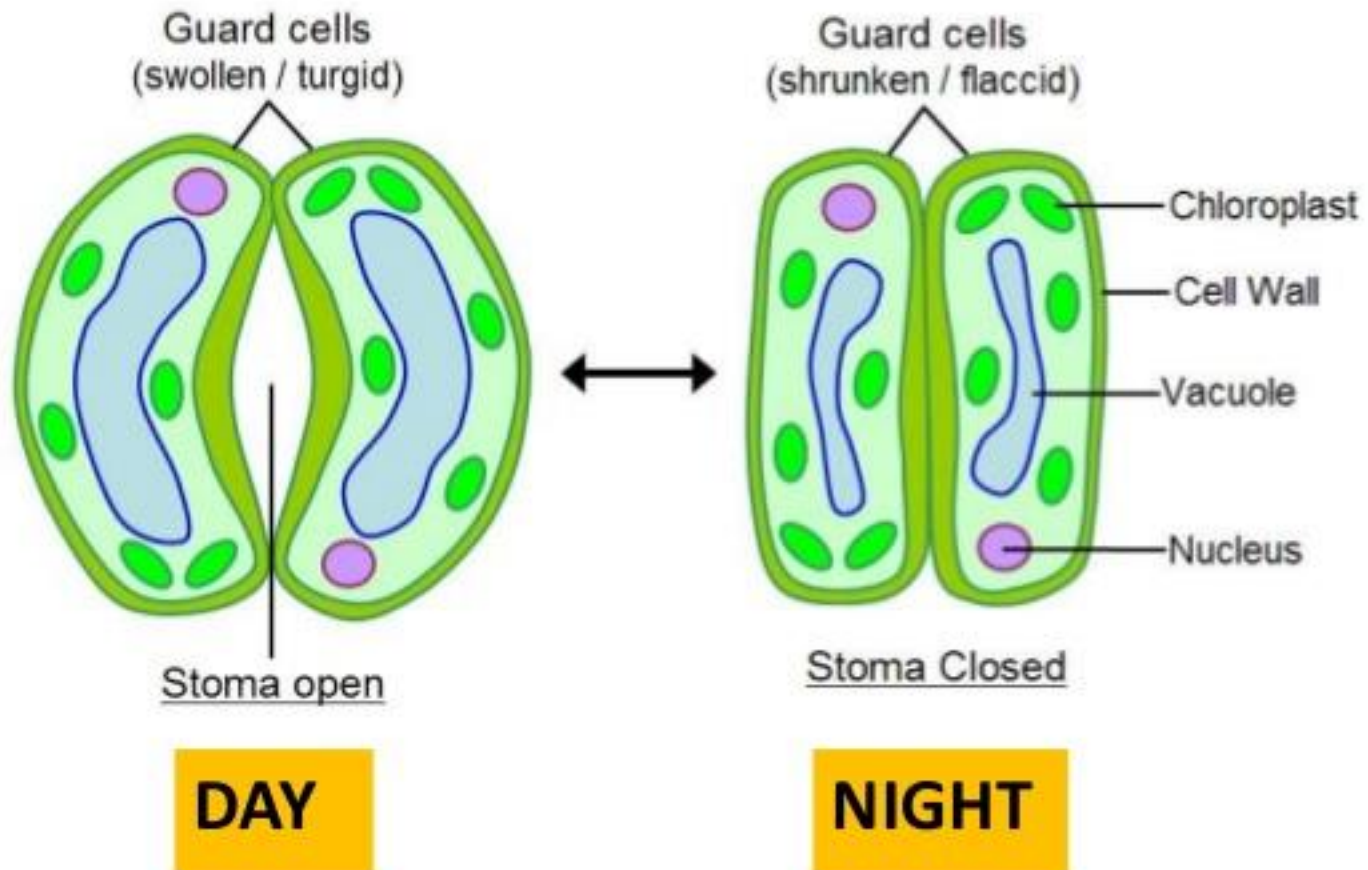


Various points of entry of Iron and phosphorus as foliar spray



Minimum 6 to 8 hrs of sunlight

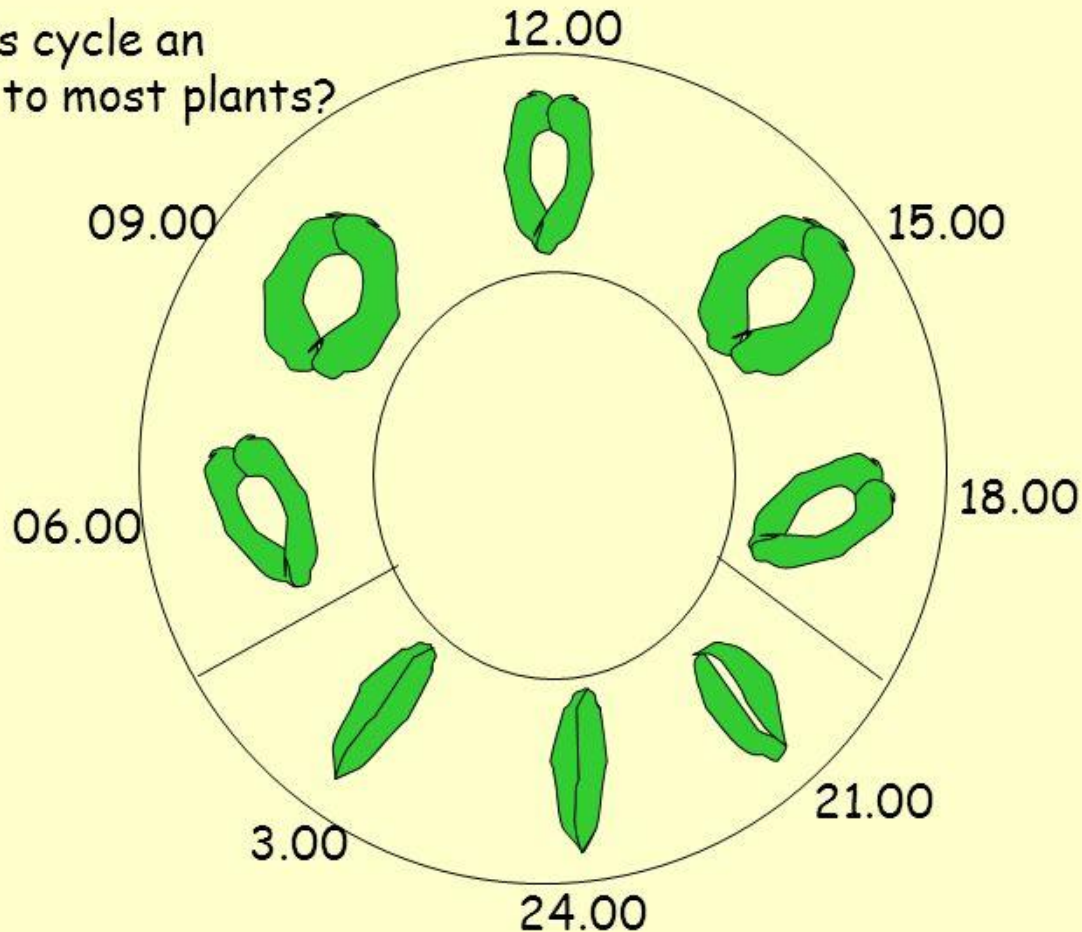
When are stomata open and when are they closed?



Knowledge of time of stomatal opening allows one to determine what day of sunlight is optimum for plant growth

24h Cycle of Stomatal Opening and Closing

Why is this cycle an advantage to most plants?



6 am
to
3 p.m

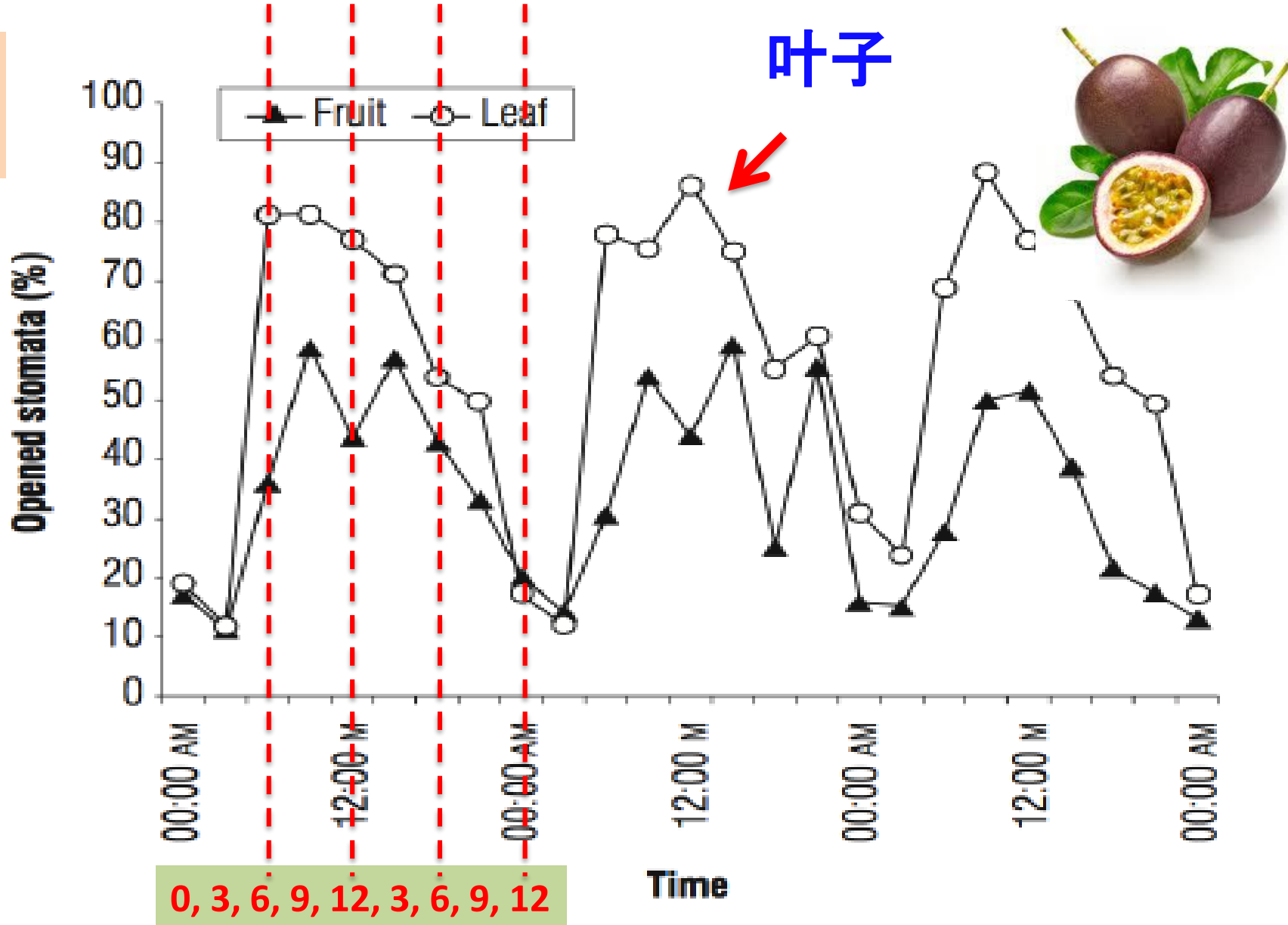
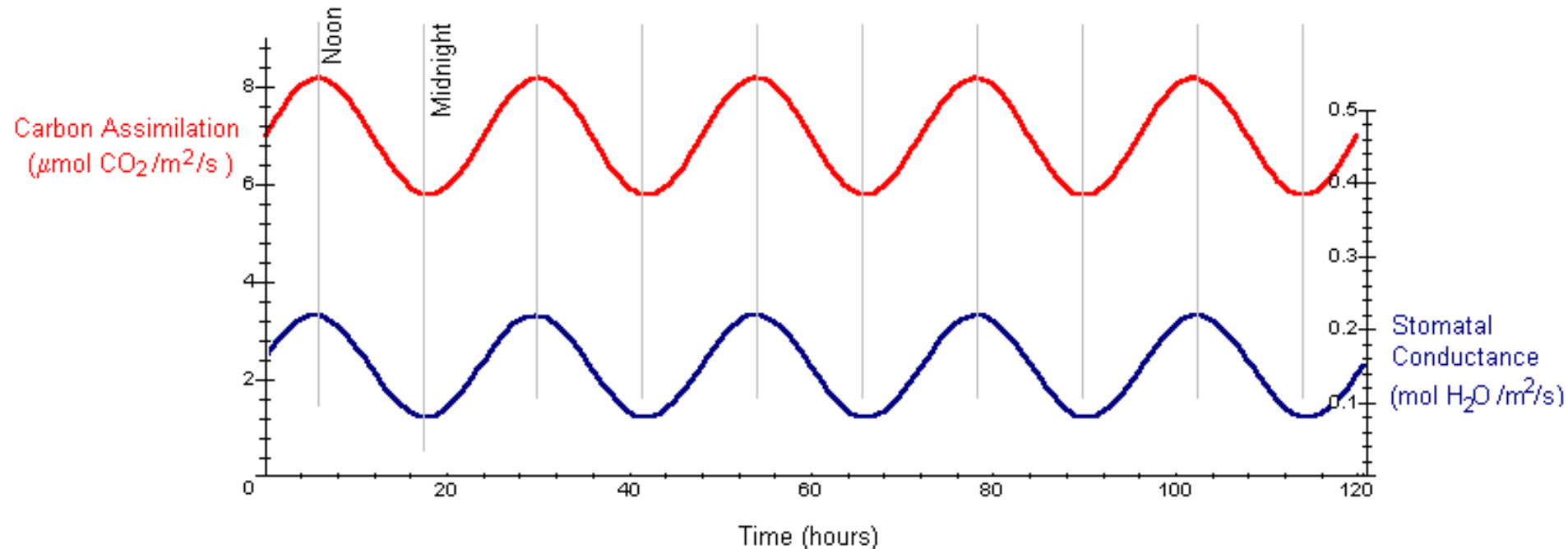


FIGURE 1. Opened stomata in fruits and leaves of the purple passion fruit over 72 h.

Stomata opening and photosynthesis share same rhythms

: -Time of opening of stomata is the same as time of food synthesis



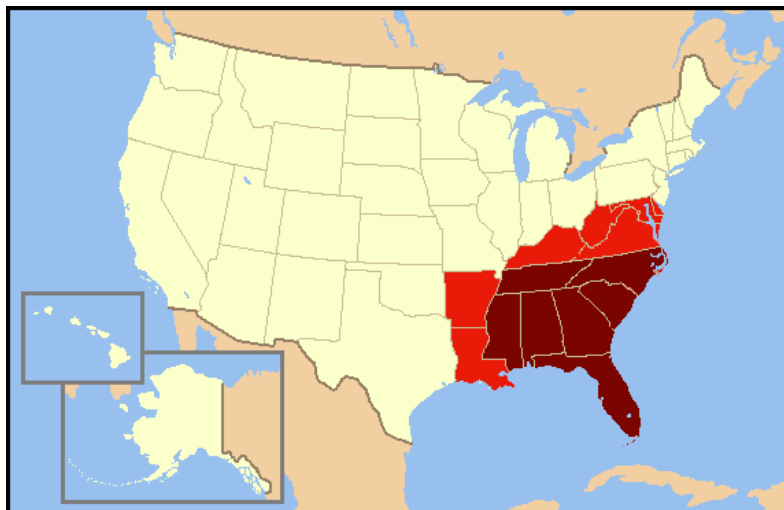
Under normal 24 hour day-night cycle or under constant moderate light and constant intercellular CO_2

Best time is 6 am to 3 p.m

需要至少6-8 个小时
的光照时间
最好的光照时间是6am-3pm

位置

向东南



避免西北冷风

4.土壤

The guava will tolerate many soil conditions, but will produce better in rich soils high in organic matter.

They also prefer a well-drained soil in the pH range of 5 to 7. The tree will take temporary waterlogging but will not tolerate salty soils.

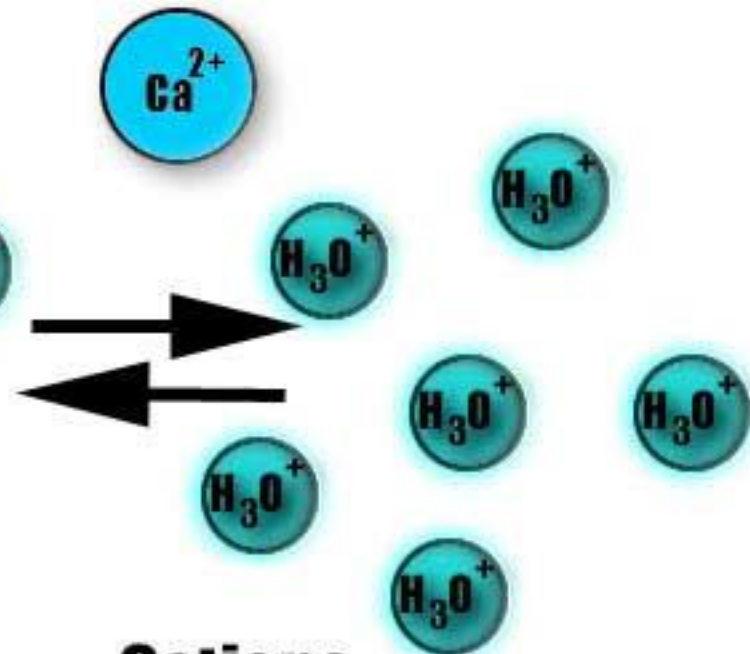
休斯顿的粘土层可达20 feet深



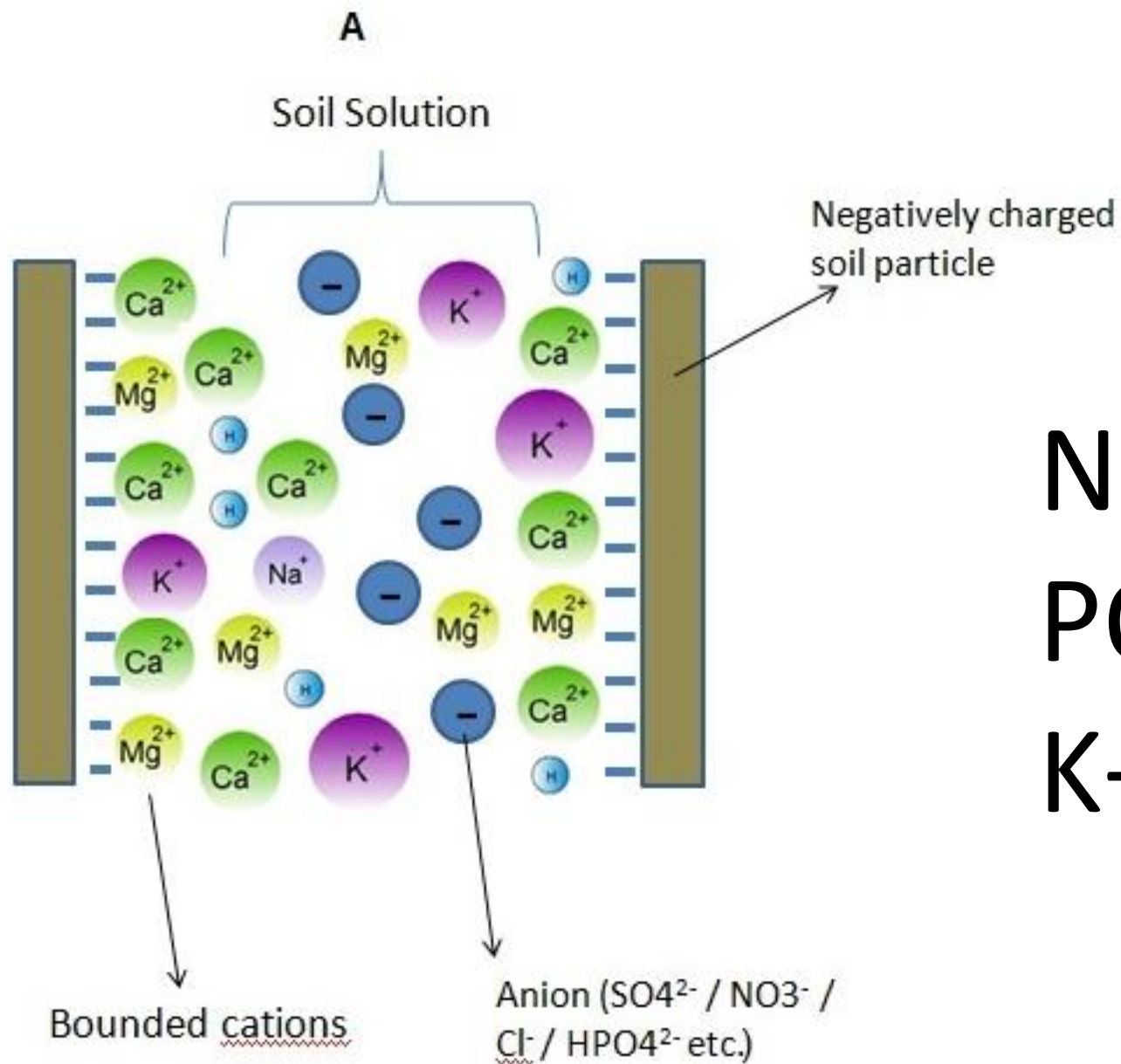
Houston Clay soil, up to 20 feet deep



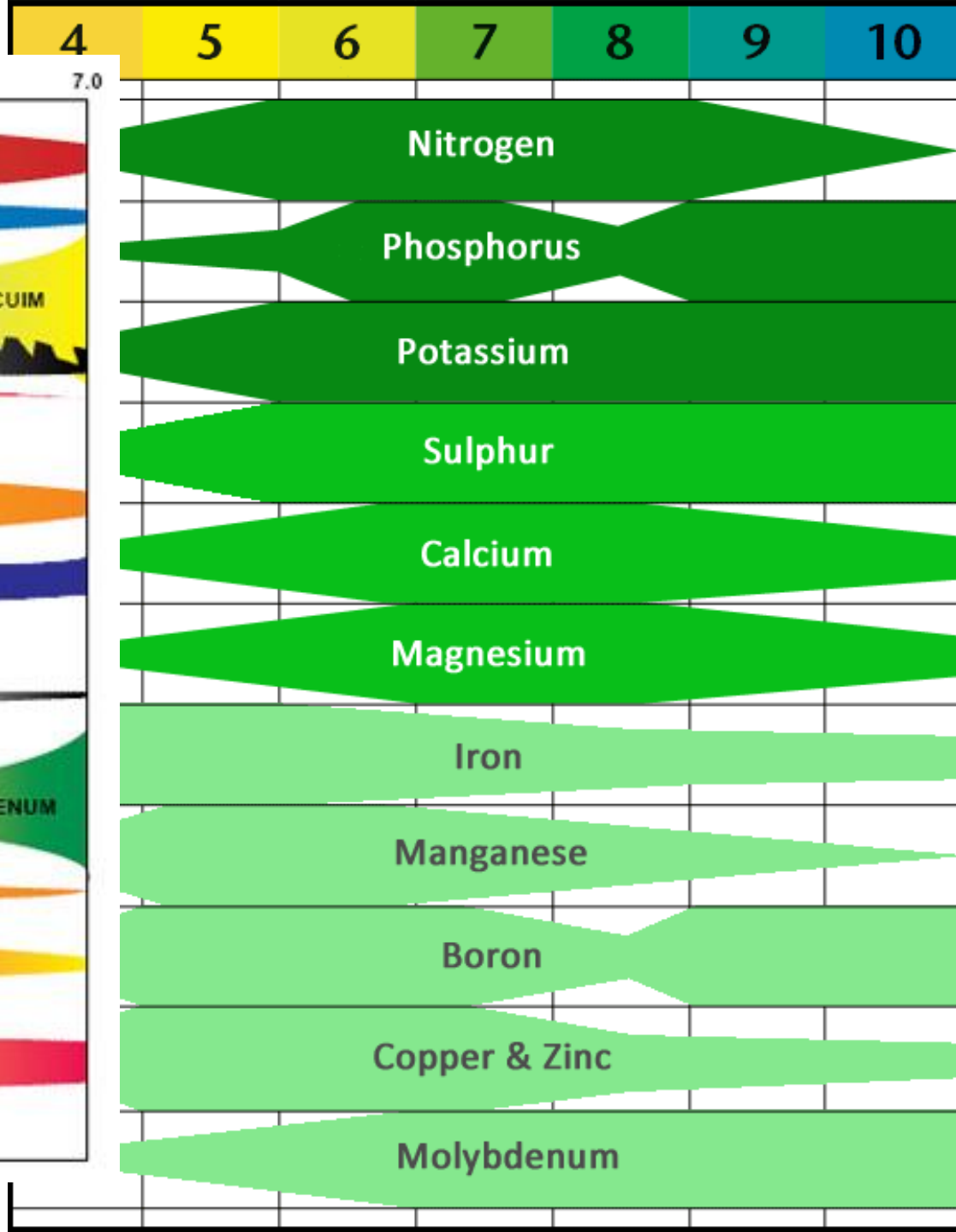
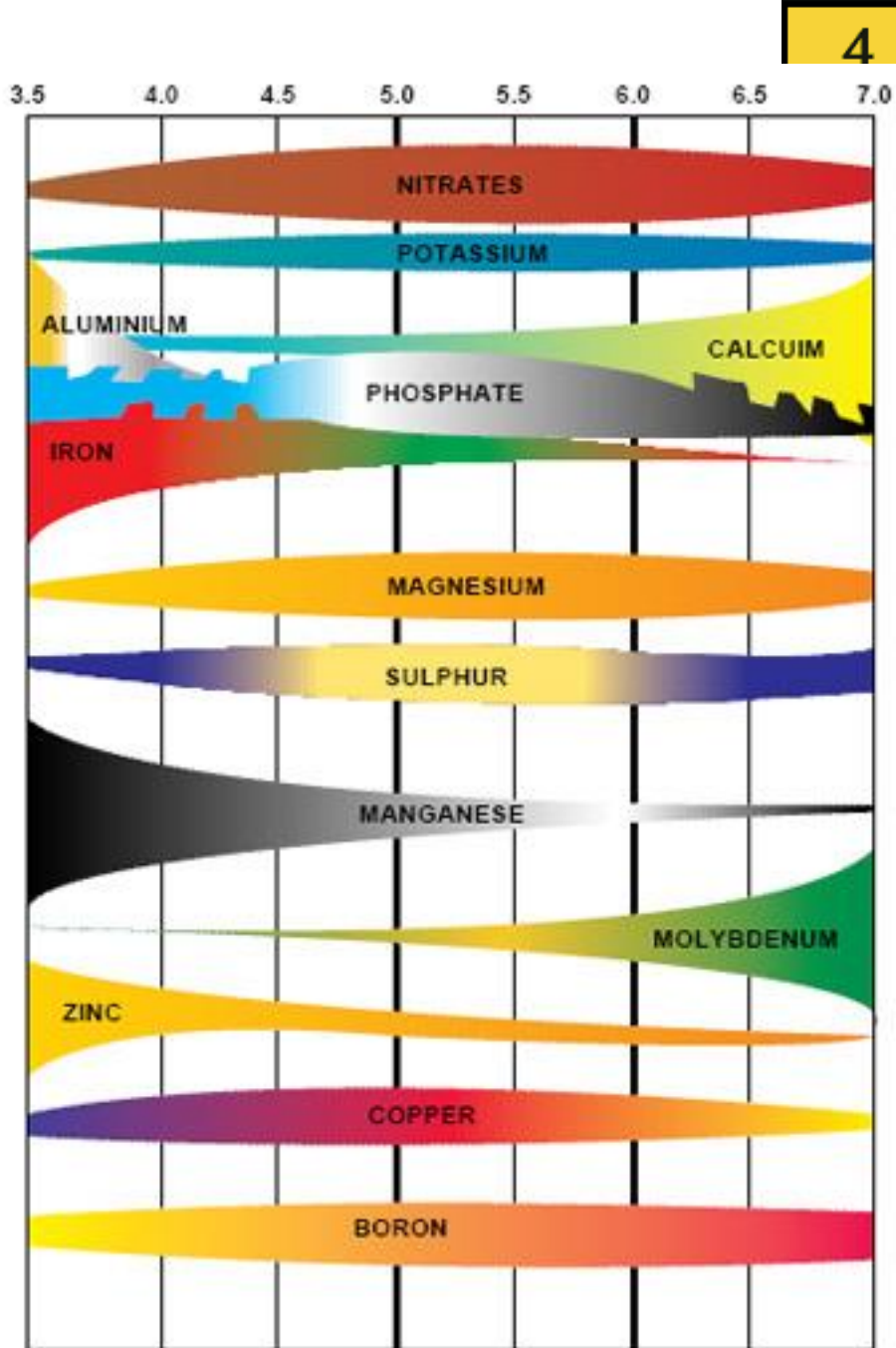
**Adsorbed
Cations**



**Cations
in Solution**



NO_3^-
 PO_4^-
 K^+





A grapefruit tree could bear 300 fruit every year with good compost and mulch





WHAT CAN I COMPOST?

YES!

THESE ITEMS CAN BE
COMPOSTED



EGG SHELLS



GRASS CLIPPINGS



FRUIT AND VEGETABLE
SCRAPS



TEA BAGS AND COFFEE
GROUNDS



HORSE, COW, CHICKEN
OR RABBIT MANURE



LEAVES AND GARDEN
PRUNINGS

NO!

DO NOT PUT THESE IN YOUR COMPOST

MEAT OR BONES

DAIRY PRODUCTS

BAKED PRODUCTS

COOKED RICE

NAPPIES

DOG POO

CAT LITTER

GLOSSY PAPER

WALNUT SHELLS

DISEASED PLANTS

WEEDS WITH SEEDS

NON-ORGANICS

PLASTIC BAGS

TREATED WOOD

SCRAPS



A grapefruit tree could bear 300 fruit every year with good compost and mulch

用1-2 英寸的有机腐殖土环绕果树

One to two inches of Organic compost
around the tree



Different grades
of gardening sol



earthworm

地膜, 以保持水

Mulch to keep moisture





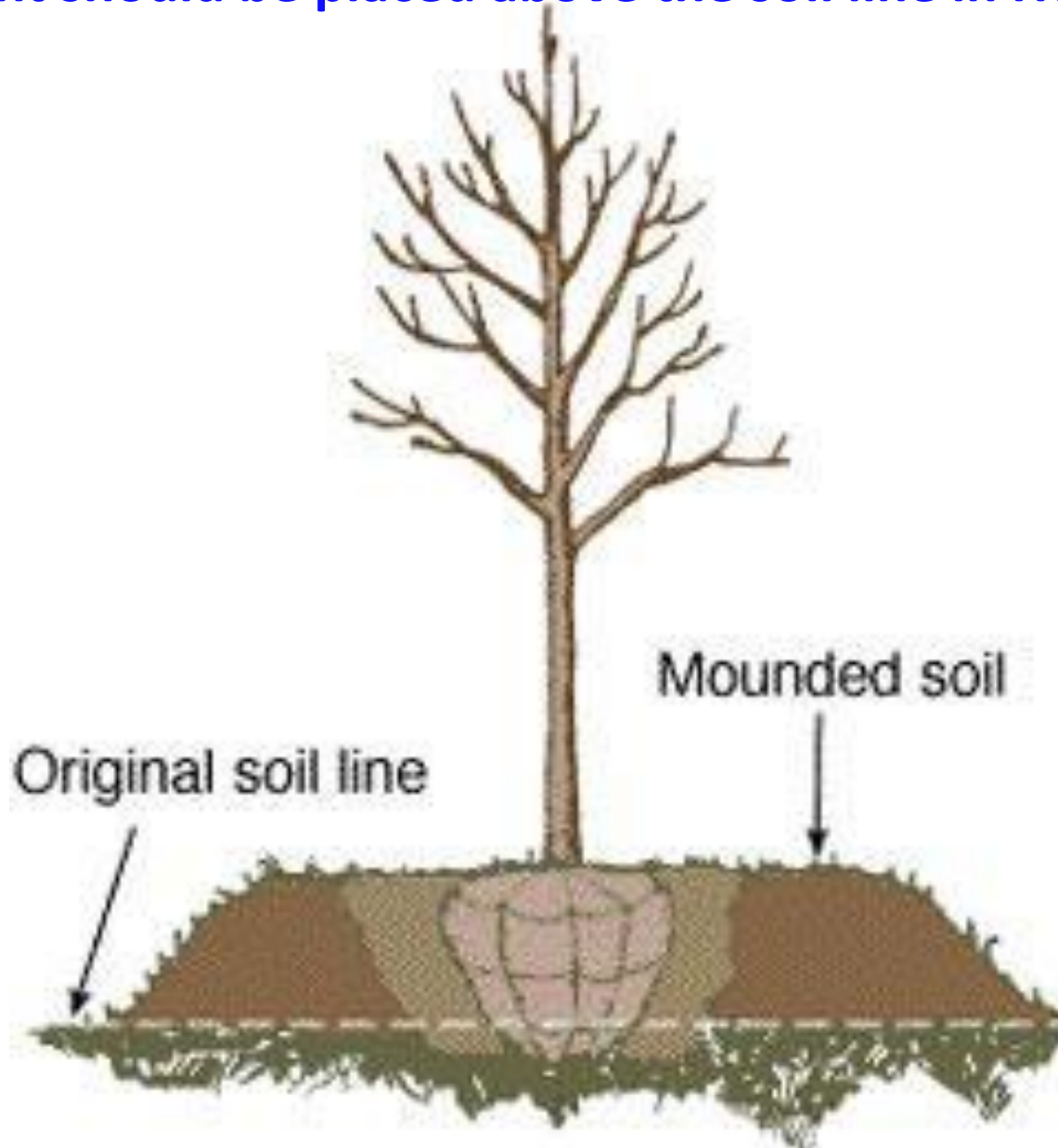
5. 种植 (Planting)

昨天看了种树积水的讨论，赶紧把新种的三角梅挖出来重种。果然是水坑呀



新移栽的果树要在土壤线以上

New plant should be placed above the soil line in Houston



Plant receive water, oxygen and nutrient via small root hairs

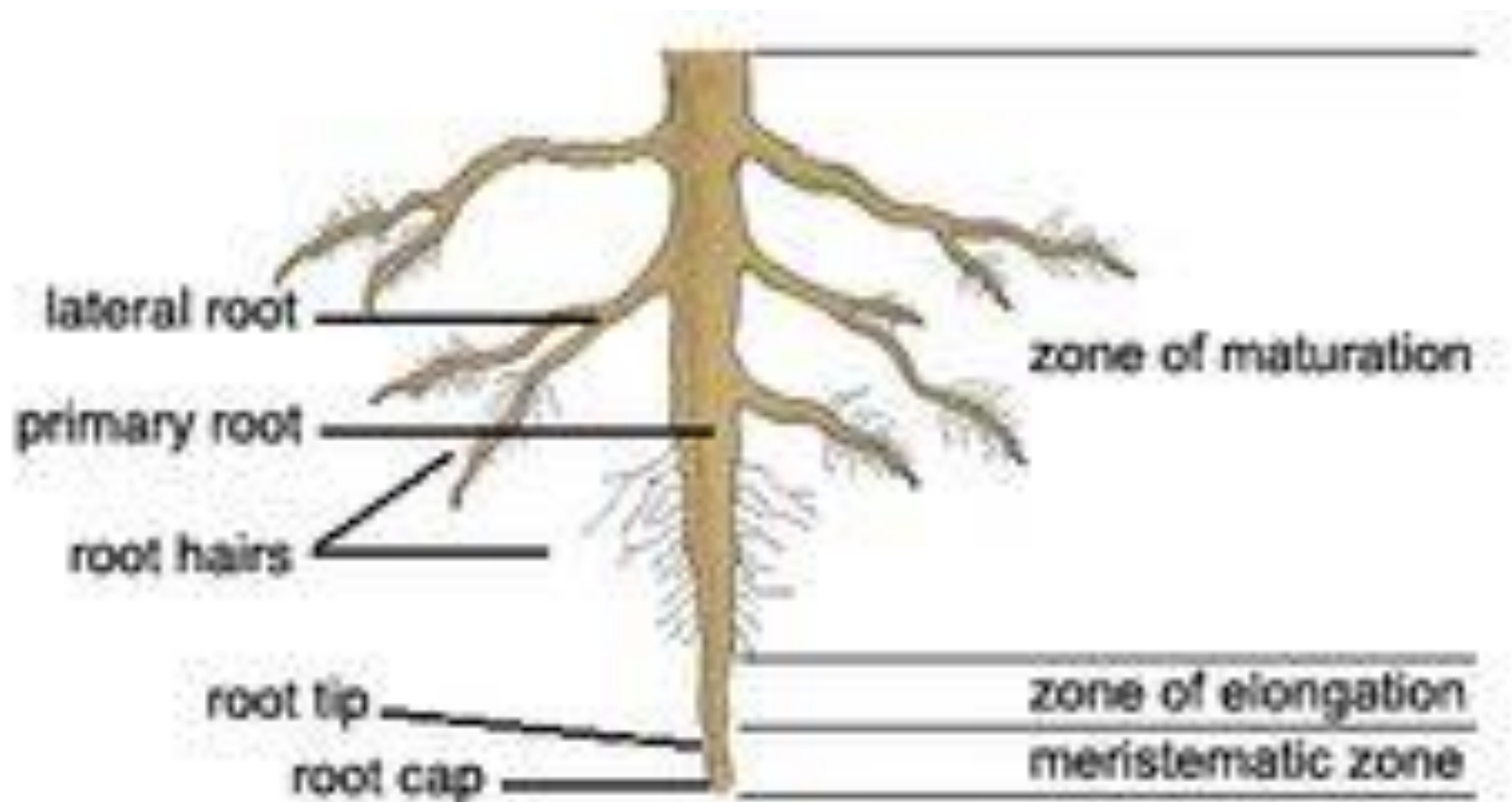
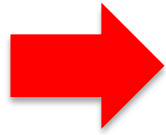


Figure 2. Root Structure



Cut an "X" across the bottom of the root ball and 4 vertical slices, if root-bound.



3 to 4 times wider than container





Break up the root system



Almost no soil



Break up the root system



Good root system

1. Buy small plant
2. Break up root
3. Do not buy root bound plant



用 Mulch 保持湿度



Where to buy rice straw ?

STANDLEE PREMIUM WESTERN FORAGE CERTIFIED STRAW GRAB & GO COMPRESSED
BALE, 50 LB. BALE

☆☆☆☆☆☆☆☆ 2.1 out of 5 stars. Read reviews.

\$10.99; SKU #102619099

**Tractor
Supply Co
(TSC)
Free UPS
Ship to
store**



树皮 Tree bark

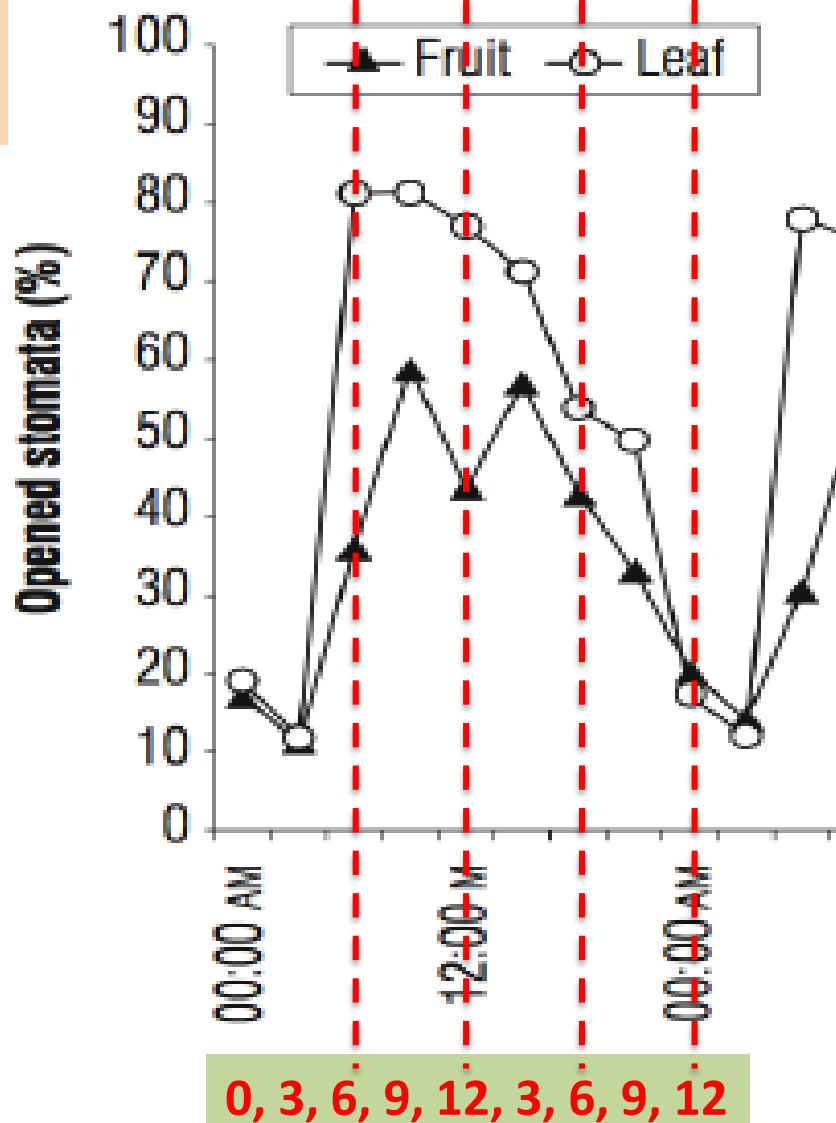


树的间距： 距其它的树15-25 英尺

Spacing:

Guava trees in the home landscape should be planted 15 to 25 ft (4.6-7.6 m) away from other trees

6 am
to
3 p.m



**Plant at site
with lots of
morning
Sunlight**

FIGURE 1. Opened stomata in fruits and leaves of the purple passion fruit over 72 h.