PENGURUSAN HASIL PASCA TUAI TANAMAN BUAH-BUAHAN TEMPATAN

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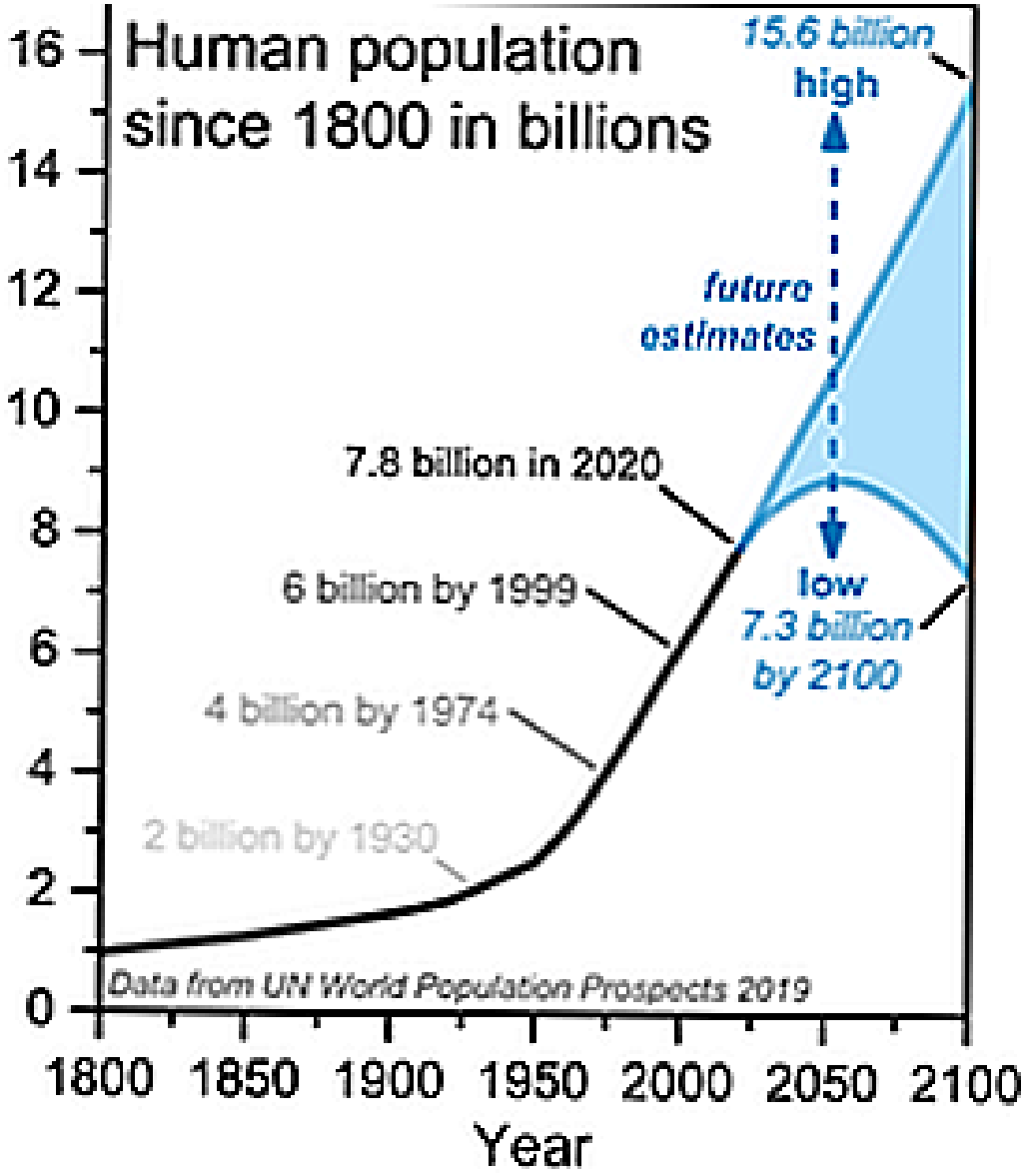
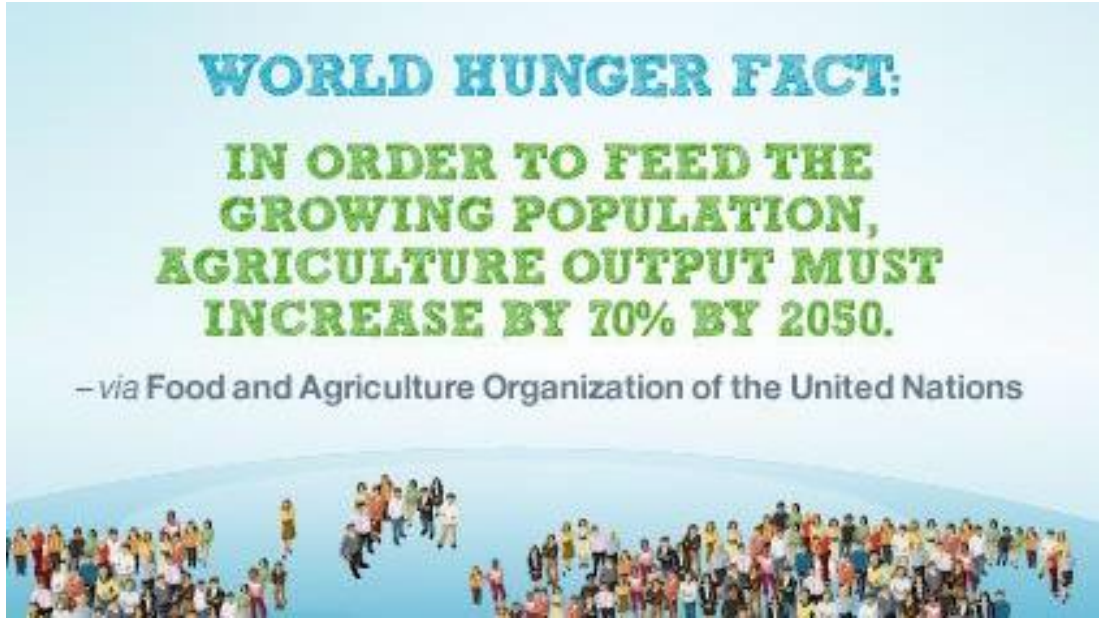
JABATAN SAINS TANAMAN

FAKULTI PERTANIAN

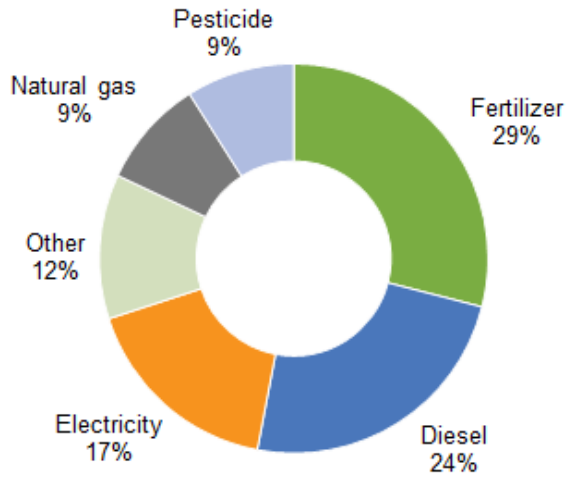
UPM


Human population since 1800 in billions
15.6 billion high
future estimates
7.8 billion in 2020
6 billion by 1999
4 billion by 1974
2 billion by 1930
low 7.3 billion by 2100
Data from UN World Population Prospects 2019
16
14
12
10
8
6
4
2
0
1800
1850
1900
1950
2000
2050
2100
Year


WORLD HUNGER FACT:
IN ORDER TO FEED THE GROWING POPULATION, AGRICULTURE OUTPUT MUST INCREASE BY 70% BY 2050.
– via Food and Agriculture Organization of the United Nations

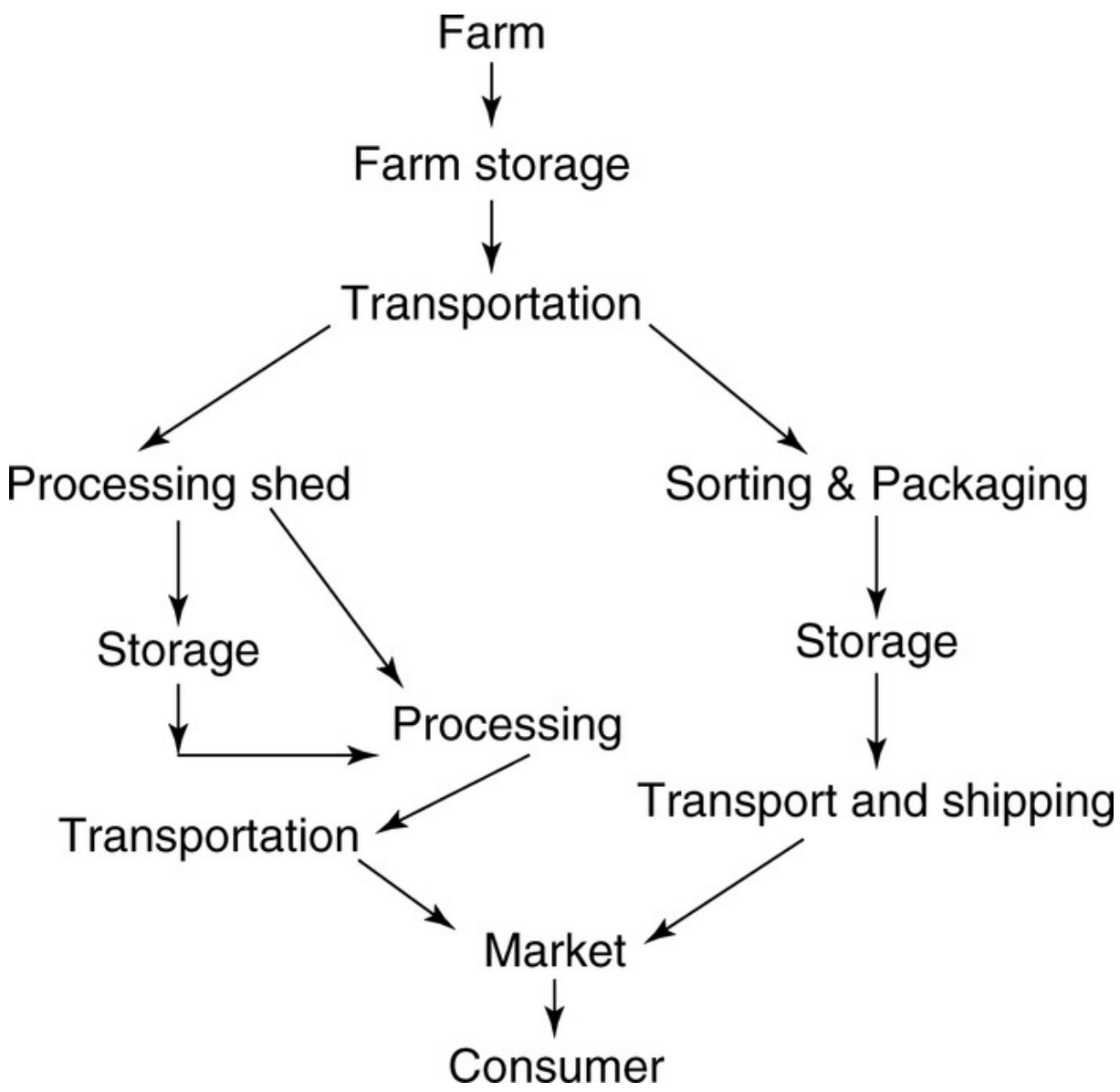
KEKANGAN UNTUK MENINGKATKAN HASIL PERTANIAN

- Tanah
- Air
- Tenaga

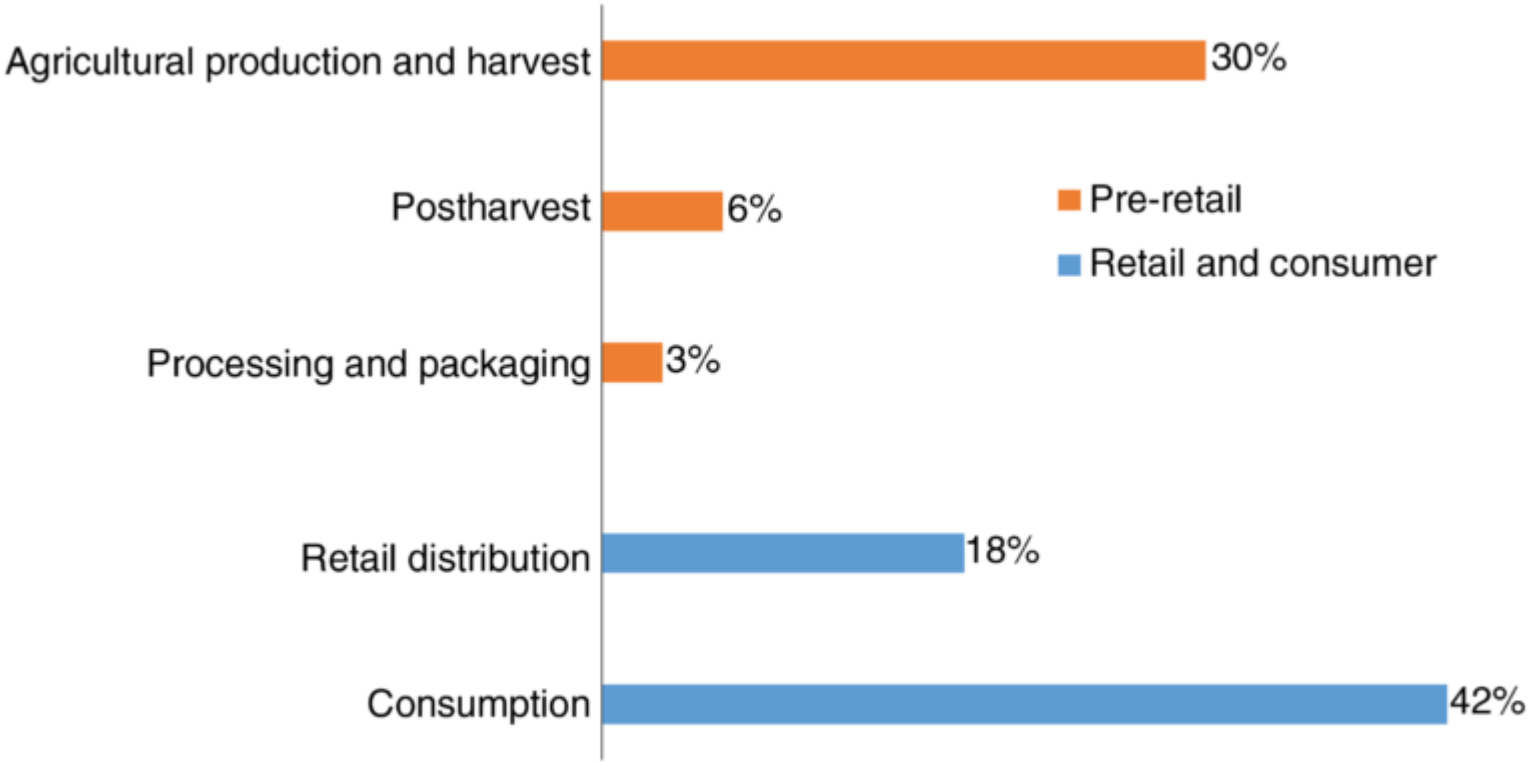


Note: "Other" includes liquid propane and gasoline.
© E Source; data from the US Department of Agriculture

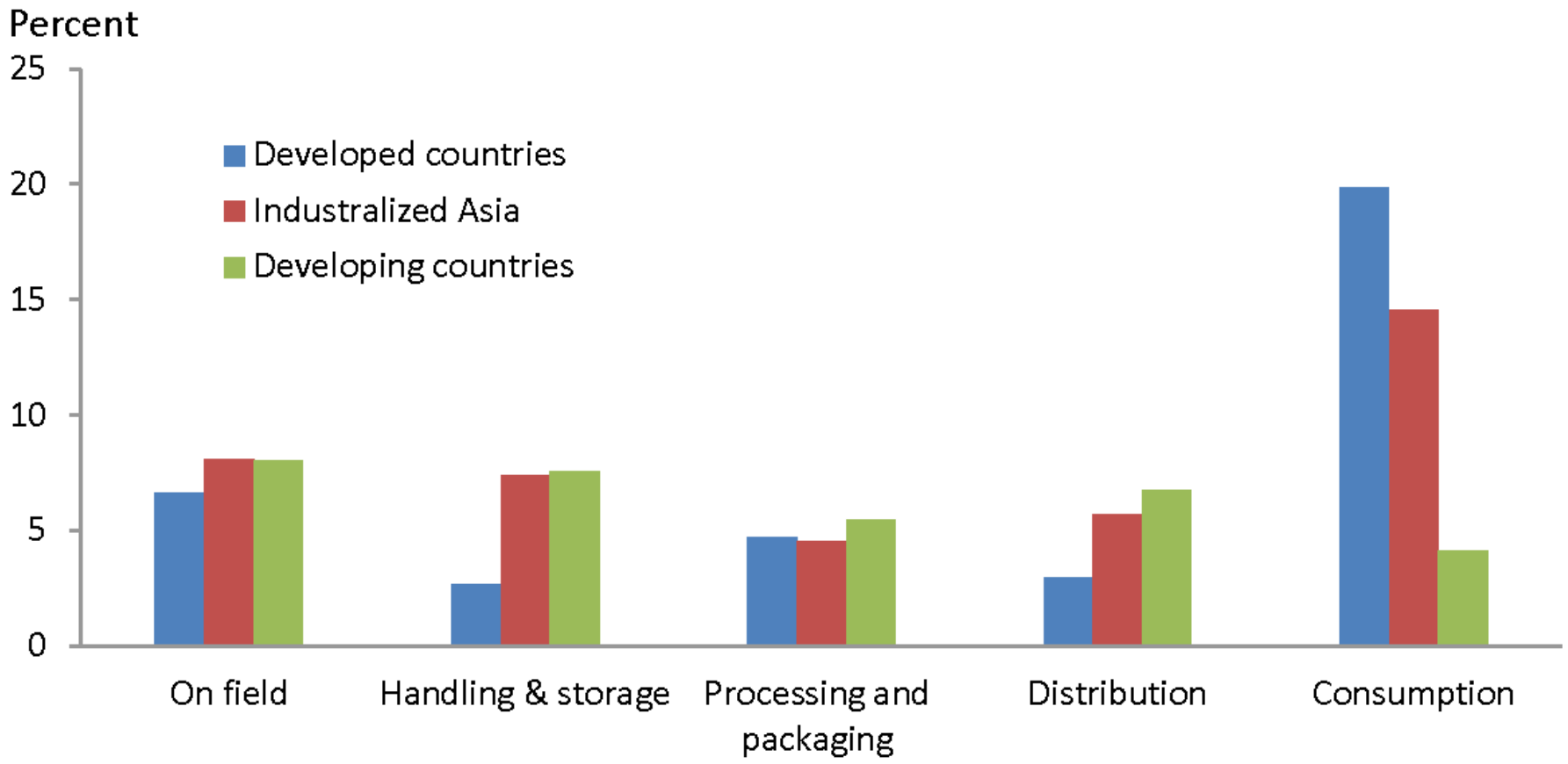
ALTERNATIF ??????


Farm
Farm storage
Transportation
Processing shed
Sorting & Packaging
Storage
Storage
Processing
Transport and shipping
Transportation
Market
Consumer

KEHILANGAN PASCA TUAI?



Note: Numbers do not add to 100 due to rounding. Product loss is estimated by weight.
Source: USDA, Economic Research Service using data from the Food and Agriculture Organization

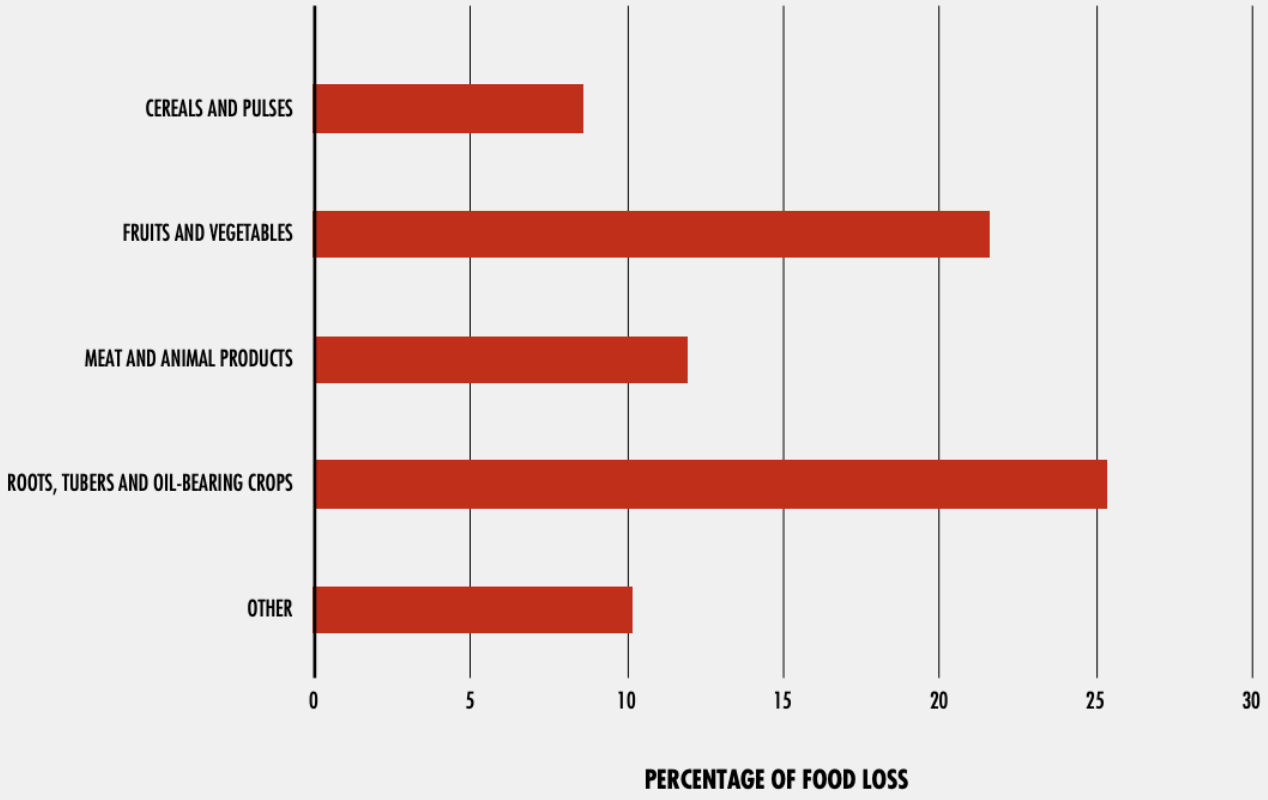


Source: Author calculations using loss parameters from Gustavsson et al. (2011) and 2009 production data from the FAO.

Note: Bars denote percent of supply at each stage which is lost.

FIGURE 4

FOOD LOSS FROM POST-HARVEST TO DISTRIBUTION IN 2016, PERCENTAGES BY COMMODITY GROUPS

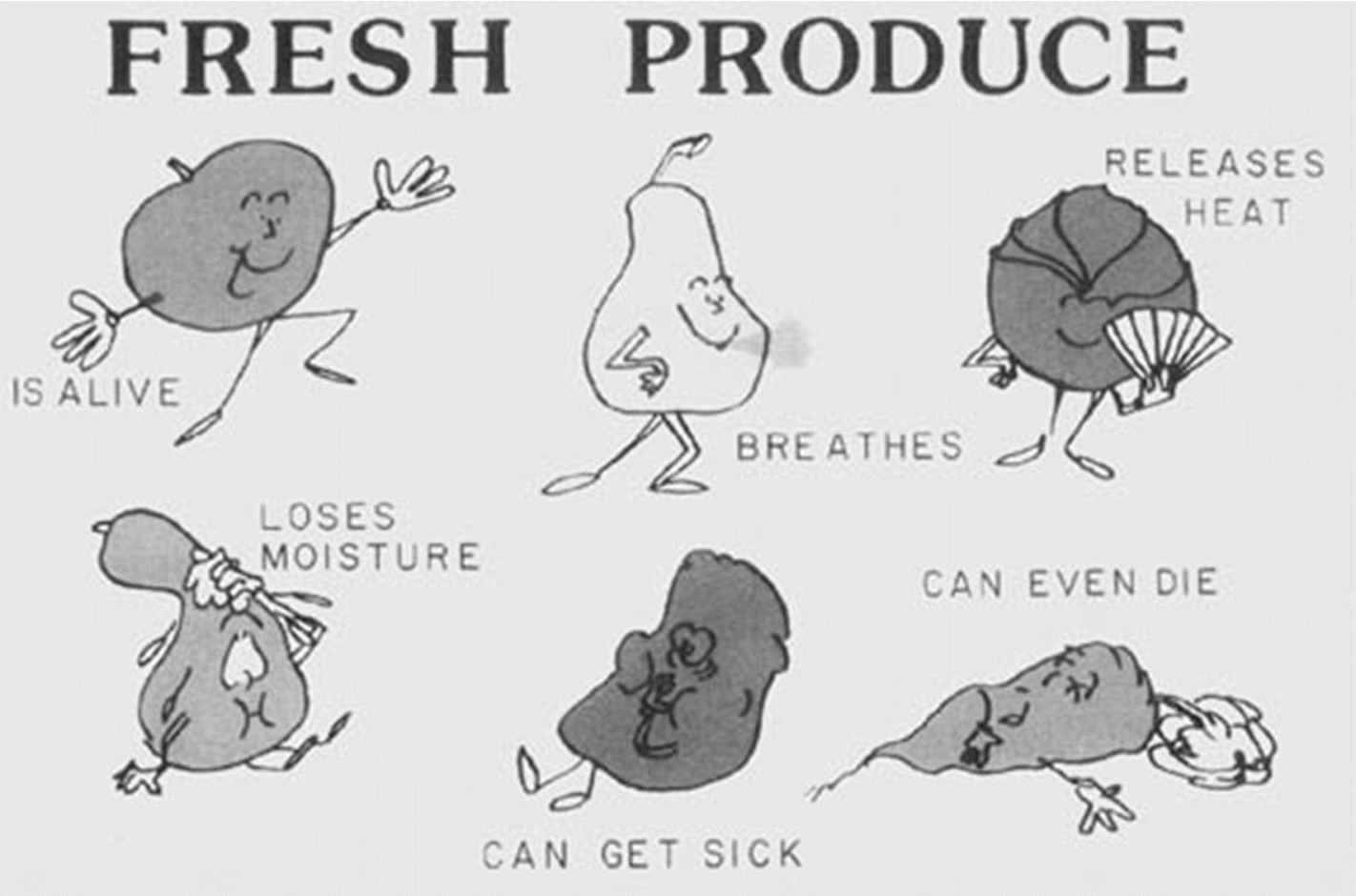


NOTE: Percentage of food loss refers to the physical quantity lost for different commodities divided by the amount produced. An economic weight is used to aggregate percentages at regional or commodity group levels, so that higher-value commodities carry more weight in loss estimation than lower-value ones.

SOURCE: FAO, 2019[12]

MENGAPA PENGURUSAN PASCA TUAI PENTING?

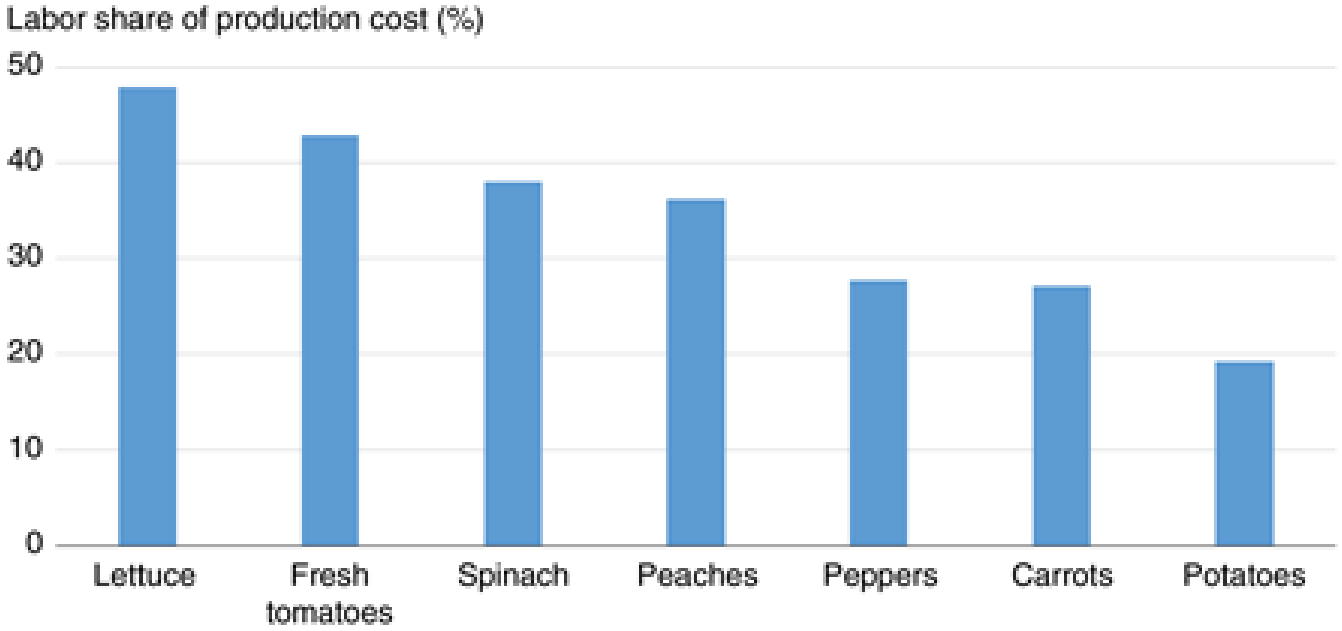
KEHILANGAN PASCA TUAI?



A. GROWERS?

- Naik turun harga
- Kos buruh
- Kualiti piawaian
- Kemudahan infrastruktur penyejukan
- Kekangan polisi

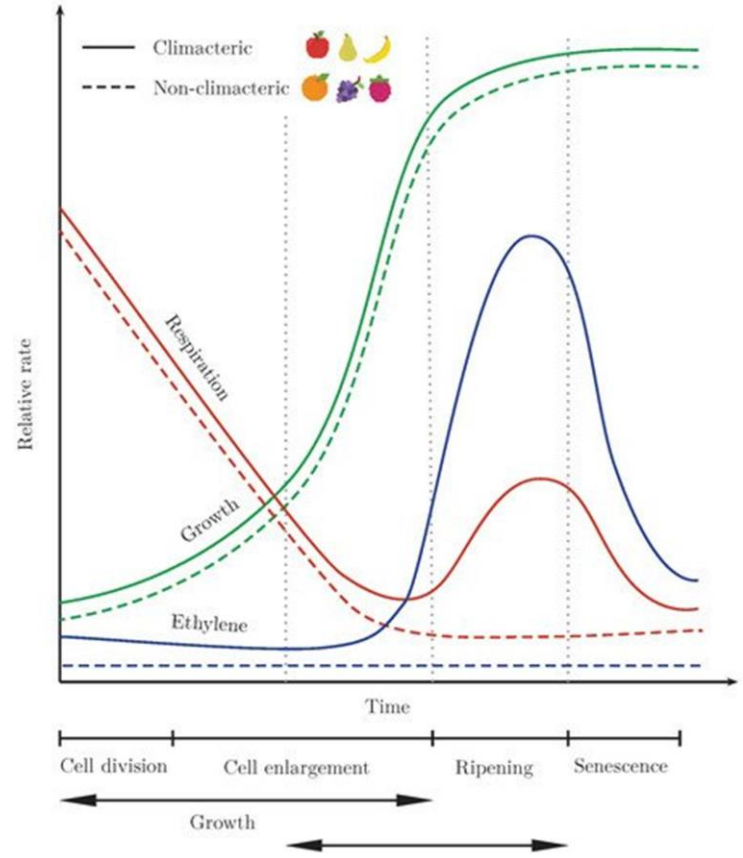
Average share of production costs comprised by labor (including harvest labor) for selected produce crops

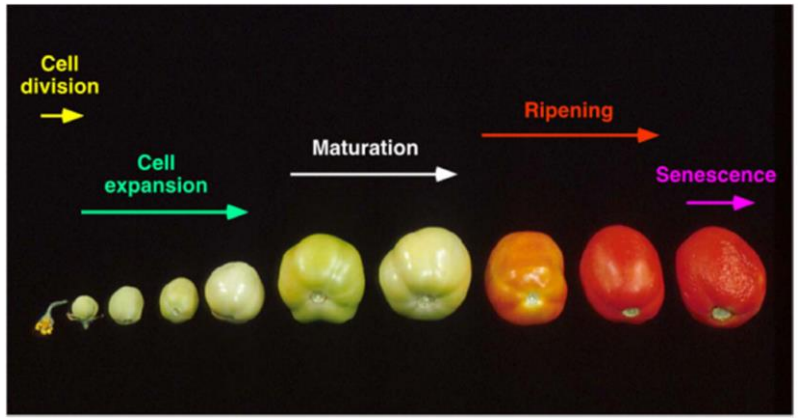


Source: Enterprise budgets used by USDA, Economic Research Service in the Regional Environment and Agriculture Programming (REAP) model, originally documented by Johansson et al. (2007), as updated in 2018. Only enterprise budgets with a separate cost category for labor were included, and the average labor share of total costs is included. Budgets differ in how they allocate costs across categories. Costs presented are average total costs per activity, measured at the operation level.

2. FISIOLOGI?

- Indeks kematangan
- Respirasi
- Penghasilan etilena
- Senesen secara semulajadi

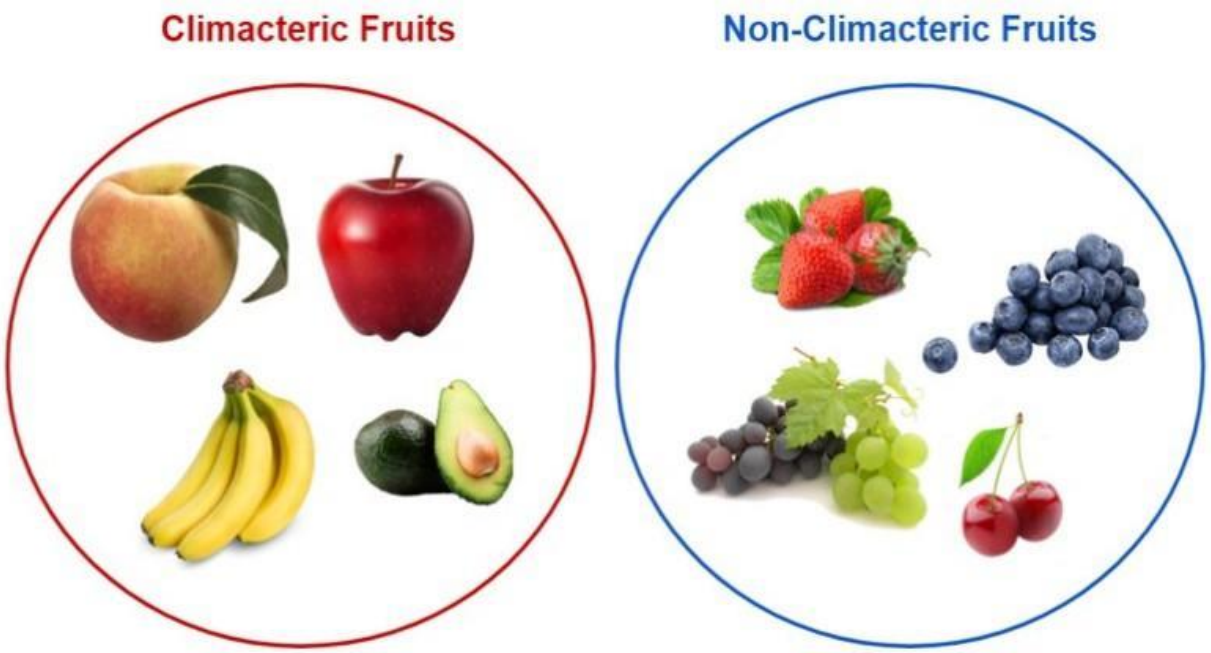




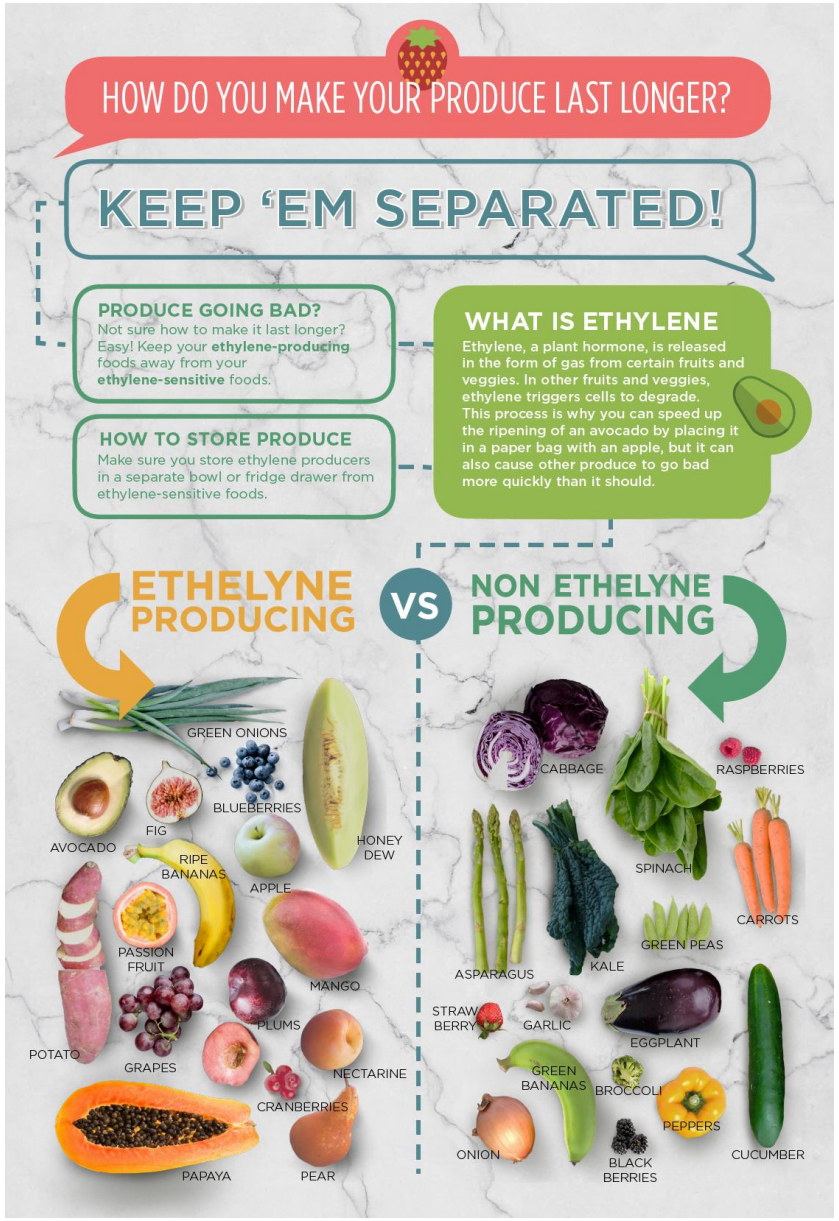
Climacteric fruit	Non-climacteric fruit
apple	blackberry
apricot	carambola
avocado	cherry
banana	cucumber
blueberry	eggplant
custard apple	grape
guava	grapefruit
kiwi fruit	lemon
mango	lime
melon	longan
nectarine	lychee
pawpaw (papaya)	mandarin
passionfruit	orange
peach	peas
pear	pineapple
persimmon	raspberry
plum	strawberry
tomato	watermelon

KLIMAKTRIK VS NON KLIMAKTRIK

- Klimaktrik:
  - Proses peranuman berlaku selepas penuaian
  - Menghasilkan gas etilena pada kuantiti yang tinggi
  - Sangat sensitif terhadap etilena
  - Ranum pada kadar yang cepat
- Non kimaktrik:
  - Proses peranuman berhenti selepas penuaian
  - Tidak sensitif terhadap etilena

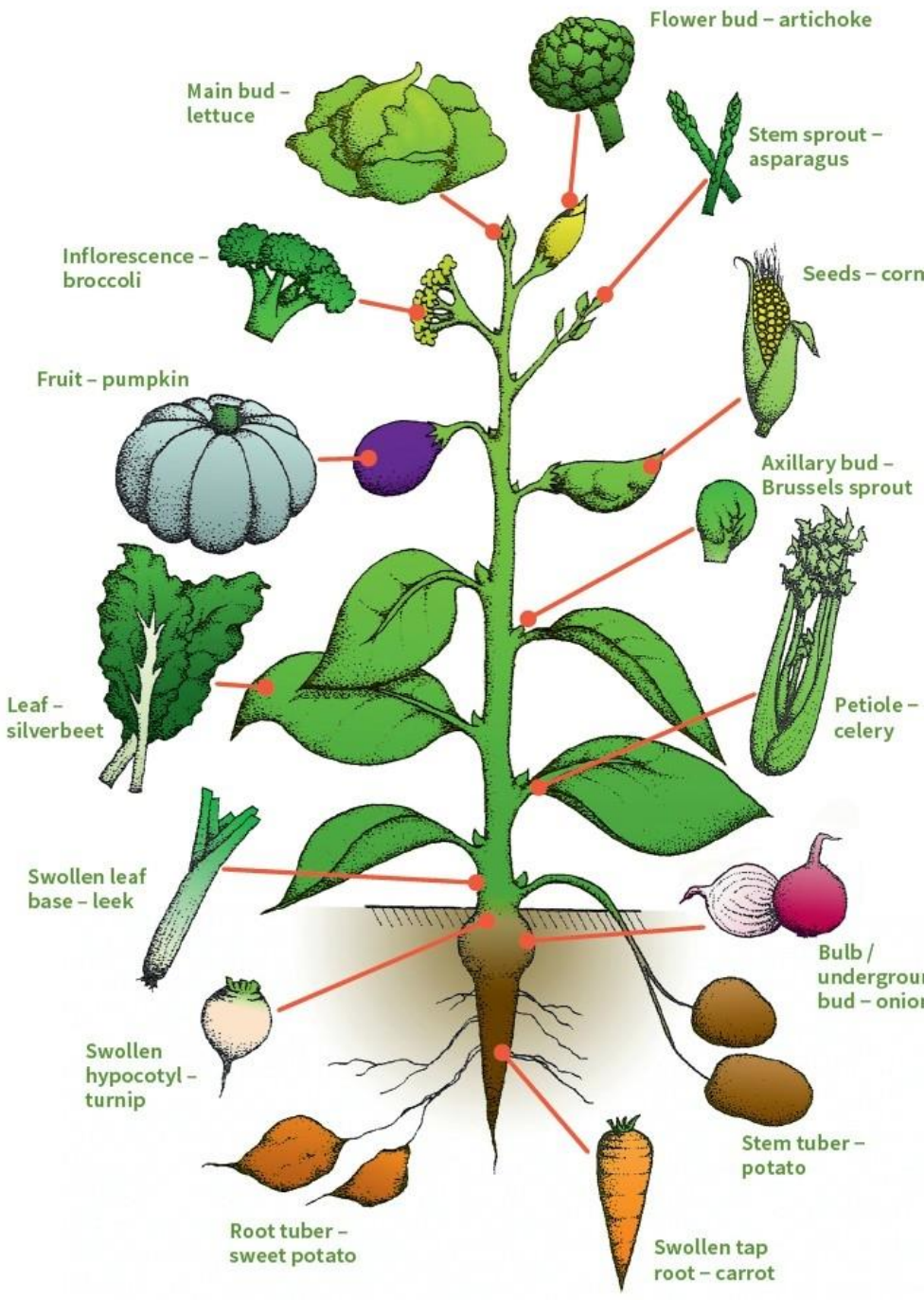


BUAH-BUAHAN KLIMAKTRIK TIDAK BOLEH DISIMPAN BERSAMA BUAH YANG MEMPUNYAI KADAR SENSITIVITI TERHADAP ETILENA YANG TINGGI



FAKTOR YANG MEMPENGARUHI RESPIRASI

- Jenis komoditi
- Suhu
- Kadar oksigen
- Kadar karbon dioksida
- Sensitiviti terhadap etilena
- Tahap kematangan



3. HANDLING

BAGAIMANAKAH CARA UNTUK KITA MENGURANGKAN KEHILANGAN PASCA TUAI?

SEBELUM PENUAIAN

- Pemilihan varieti buah dan sayur
- Penggunaan netting dan sungkupan
- Kawalan perosak
- Penyediaan batas yang sesuai
- Penyediaan

SEMASA PENUAIAN

- Masa menuai (waktu pagi 8-9)
- Tuai dengan cara yang betul (tangan/alatan)
- Tuai buah yang matang sahaja
- Elak untuk melakukan kerosakan mekanikal kepada buah
- Jangan letak buah terlalu penuh dan tekan buah
- Pekerja hendaklah memastikan tangan dan alatan yang berkaitan dalam keadaan yang bersih

SELEPAS BUAH DITUAI

- Letakkan buah di bawah teduhan
- Pra penyejukan
- Air cooling/forced air cooling
- Simpan dalam ruang penyimpanan pada suhu yang sesuai
- Pastikan tempat simpanan mempunyai RH yang bersesuaian
- Simpan buah pada bekas/pembungkusan yang bersesuaian (pergerakan udara)

STANDARD PIAWAIAN BUAH DAN SAYURAN

- https://www.fama.gov.my/spesifikasi-gred-dan-piawaian1

MANGGA

- https://www.fama.gov.my/documents/20143/0/Mangga.pdf/c13c52f5-05b3-8b72-f894-6f6f82a98017

CIKU

- https://www.fama.gov.my/documents/20143/0/ciku+red.pdf/d9806cbe-55d3-03ad-6875-b65bce6d6330

NANGKA

- https://www.fama.gov.my/documents/20143/0/nangka+baru.pdf/15ed0e57-336a-a099-f007-ab83d3cb5bef

JAMBU BATU

- https://www.fama.gov.my/documents/20143/0/Jambu.pdf/8bb68a6a-0fe9-cb20-2e18-73d7129ffdfe
- https://asean.org/wp-content/uploads/2012/05/7-ASEAN-STANDARD-FOR-GUAVA-2008.pdf
- https://www.fao.org/3/w7169e/w7169e0j.htm

AMALAN PENGURUSAN LEPAS TUAI

- Menentukan indeks kematangan
- Masa penuaian
- Proses penuaian- galah berjaring
- Rawatan pasca tuai

OPERASI LEPAS TUAI

- **Aktiviti yang dilakukan untuk memenuhi keperluan pasaran**
- **Dilakukan di ladang, pusat pengumpulan atau pusat pembungkusan**
- **Pusat pembungkusan hendaklah menyediakan perlindungan daripada panas dan hujan**
- **Tiada haiwan peliharaan**
- **Pekerja mengamalkan kebersihan diri**
- **Pusat pengumpulan mestilah sentiasa kemas dan bersih**

- *Trimming*
- Desapping
- Pemilihan dan penggredan
- Kawalan penyakit
  - Hot water treatment

HOT WATER TREATMENT

- Green mature fruits are dipped for 5 to 10 minutes in water heated to 52–55°C

POTENSI PRODUK HILIR

TERIMA KASIH

RUJUKAN

- https://www.fao.org/3/i8239en/I8239EN.pdf
- https://www.fama.gov.my/spesifikasi-gred-dan-piawaian1