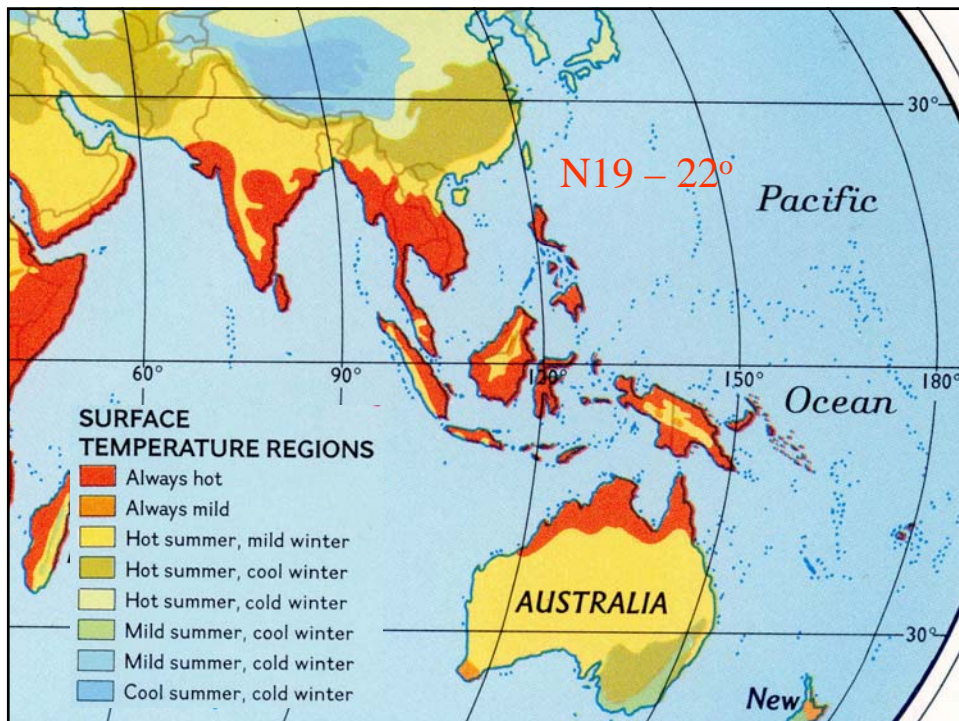


Performance of low chill stonefruits in highlands of subtropical Asia

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Typical climatic condition

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mild tempt. (min 4 – 12; max 17 – 22 °C)

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- Winter: short period (mid Nov. – mid Jan.)
mild tempt. (min 4 – 12; max 17 – 22 °C)
- Summer: drought due to dry season (Nov. – May)
hilly topography limits large reservoir
- Monsoon: long period (June – October)
heavy rain (1700 – 2400 mm)
high humidity (60 – 95 %)

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Present research goals

- Suitable cultivars (scion and rootstock):
 - Varietal testing/evaluation
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- Physiological response to climatic condition:
 - Mild winter temperature

Introduction of low-chill stonefruits

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3 clones from TAMU-UF

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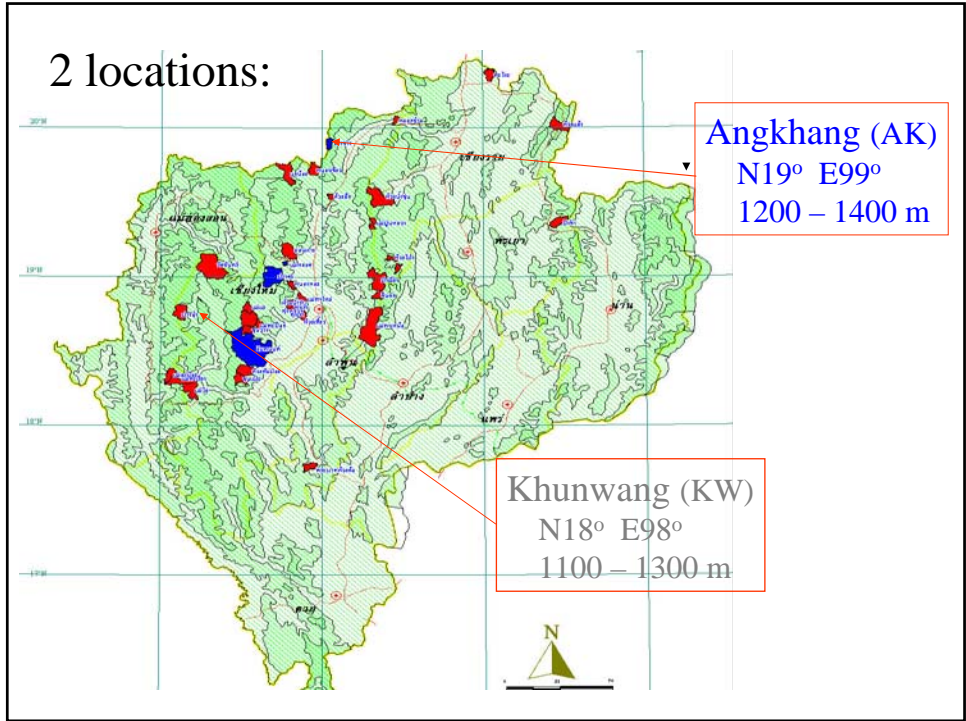
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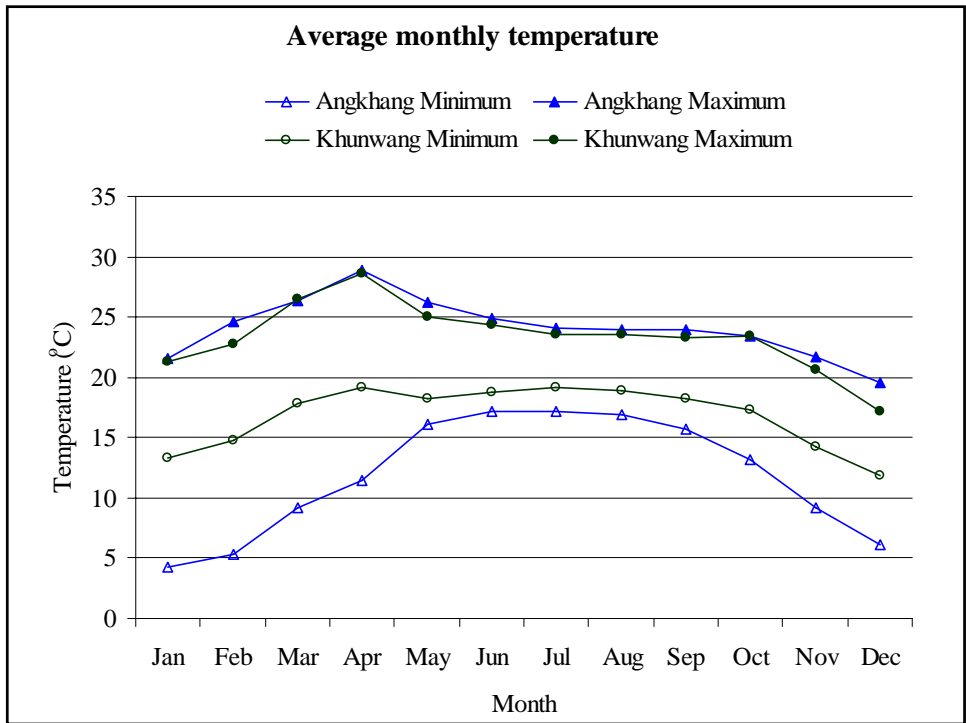
1998: 18 clones from Brazil (BZ)

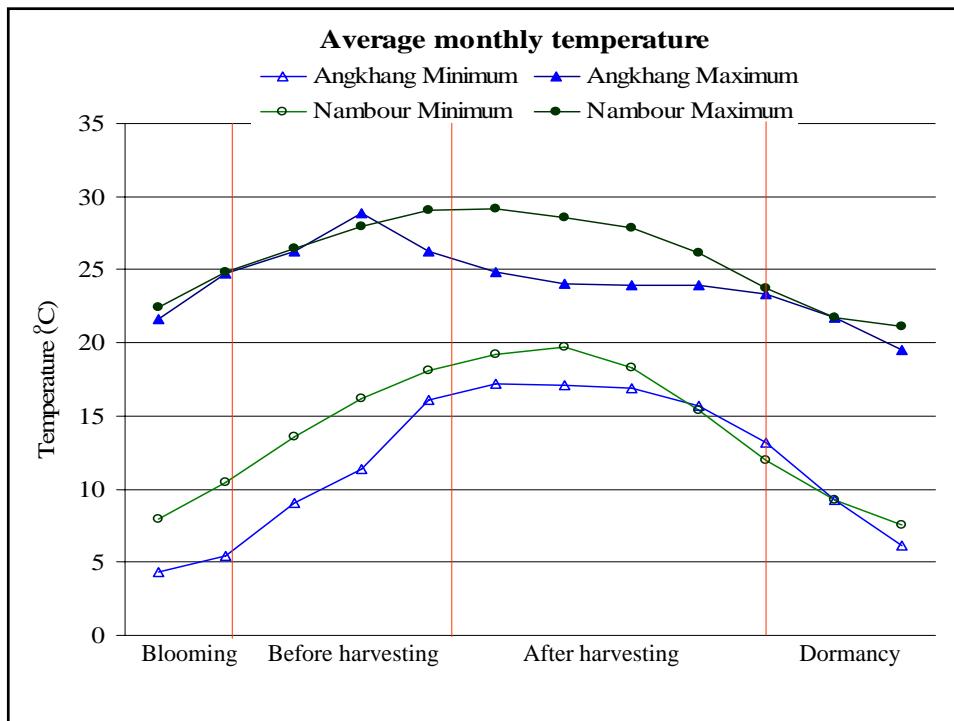
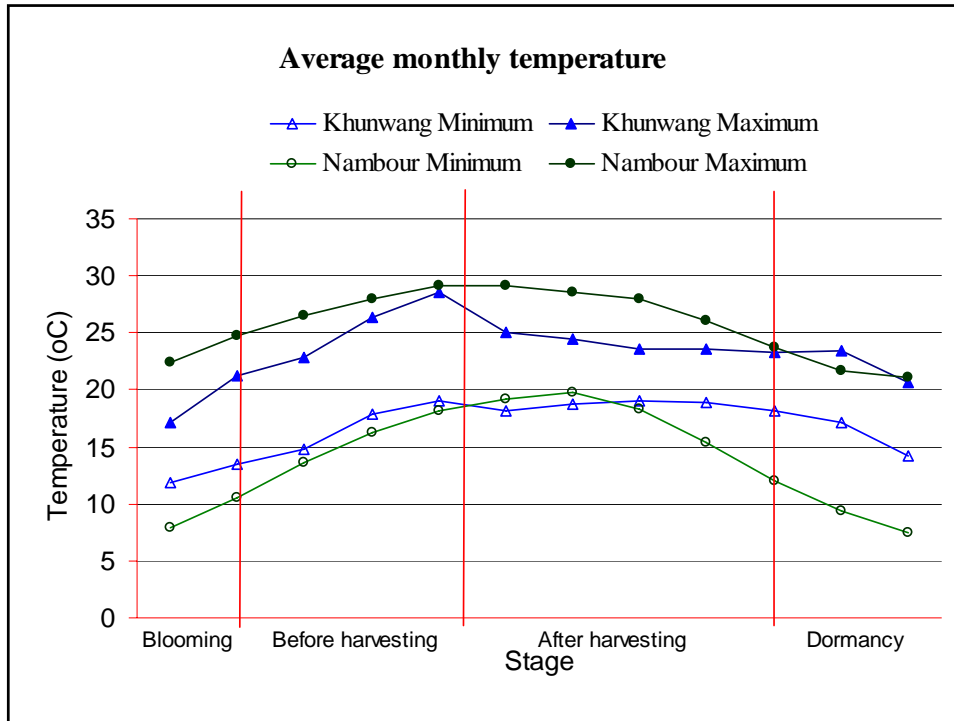
2003: 3 clones from Taiwan (TARI)

2 locations:



Average monthly temperature





Performance of TAMU clones

- Very low chill: 150 – 250 CU
- Moderate growth: 4x5 - 4x6 m open center
- Moderate flower/leaf bud density
- No resistance to shot-hole and rust
- Early (90 – 110 days) to mid (110 – 140 days) season
- Yellow, melting and high acid
- Good shape and firmness; high color
- Avg. yield 15 – 25 kg/tree (6 – 10 M tons/hectare)

TXW1193-1

CR : 150 CU

Flower: moderate

Leaf : moderate

Resistance: no

Yield : 15-20 kg/tree

Harvesting: early March – early April (early season)

Fruit qualities: high acid, melting, semi-freestone, excellent shape, high color



TXW1C4

CR : 150 CU

Flower: moderate

Leaf : moderate

Resistance: no

Yield : 22-24 kg/tree

Harvesting: mid March – mid April (mid season)

Fruit qualities: high acid, melting, freestone, excellent firmness and shape, high color



TXW1491-1

CR : 150 CU

Flower: moderate

Leaf : moderate

Resistance: no

Yield : 15-20 kg/tree

Harvesting: early April – early May (mid season)

Fruit qualities: high acid, melting, freestone, excellent firmness and shape, marginal color



Performance of UF clones

- Low chill: 150 – 450 CU
- Moderate growth: 4x5 - 4x6 m open center
- Excellent flower bud density in nectarines
- Early (90 – 110 days) to mid (110 – 140 days) season
- Yellow, melting and high acid
- Marginal shape, firmness and color
- Avg. yield 10 – 20 kg/tree (4 – 8 M tons/hectare)

Flordaprince

CR : 150 CU

Flower: moderate

Leaf : moderate

Resistance: no

Yield : 15-20 kg/tree

Harvesting: mid March – mid April

Fruit qualities: high acid, melting, marginal firmness and shape, high fuzz



SunWright

CR : 150 CU

Flower: Excellent

Leaf : moderate

Resistance: no

Yield : 10-12 kg/tree (low yield due to skin cracking)

Harvesting: mid March – mid April

Fruit qualities: high acid, melting, marginal firmness



TropicBeauty (TAMU-UF)

CR : 150 CU

Flower: moderate

Leaf : moderate

Resistance: no

Yield : 15-20 kg/tree

Harvesting: late March – late April

Fruit qualities: high acid, melting, good shape and firmness



Performance of BZ clones

- Low to medium chill: 250 – 600 CU
- Vigorous growth: > 4x6 m open center
- Moderate disease resistance to shot-hole and rust
- Mid season (110 – 140 days) to late season (>160 days)
- Various type of fruits: melting/non-melting; yellow/white; low/high acid
- Marginal shape and color; poor firmness in melting
- Excellent yield 20 – 40 kg/tree (8-14 M tons/hectare)

Jade

CR : 300 CU

Flower: Good

Leaf : Good

Resistance: moderate resistance to shot-hole and rust

Yield : 30-40 kg/tree

Harvesting: early May – late May

Fruit qualities: high acid, non-melting, marginal shape when receiving insufficient chilling



Sinuelo

CR : > 500 CU

Flower: moderate

Leaf : moderate

Resistance: no

Yield : 12-16 kg/tree

Harvesting: late May – early June (late season)

Fruit qualities: low acid, melting, poor shape and firmness



Performance of TW clones

- Low chill: 250 – 300 CU
- Moderate growth: 4x5 or 4x6 m open center
- Moderate flower/leaf bud density
- Mid season (110 – 125 days)
- White flesh, melting and low acid
- Marginal shape and color; very soft when ripe

TW6

CR : 250 CU

Flower: moderate

Leaf : moderate

Resistance: NA

Yield : NA

Harvesting: late April – late May

Fruit qualities: low acid, melting, marginal shape and color;
very soft when ripe



Physiological responses to winter temperature

- AK (5 – 21 °C): < 400 CU clones successfully
- KW (12 – 18 °C): < 150 CU clones marginally; breaking chemical could alleviate insufficient chilling

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- AK (5 – 21 °C): < 400 CU clones successfully
- KW (12 – 18 °C): <150 CU clones marginally; breaking chemical could alleviate insufficient chilling
- Blooming and harvesting of the same clones could be up to 1 month different (KW before AK) ■
- Fruit quality, particularly shape, is greatly affected by insufficient chilling ■

Summary

- TAMU clones are more suitable due to their lower chilling, good shape (round to flat round), good firmness (> 20 N)
- BZ clones are useful (in breeding) for non-melting, low acid and moderate diseases resistance
- Available UF and TW clones were not interesting

Summary

- Winter temperature suitable for 150 CU:
 - Average min. < 12 °C (more critical)
 - Average max. < 20 °C
- In case of marginal winter chilling:
 - Other techniques: breaking chemical; site selection could be used

Ideal cultivars in sub-tropical Asia

- Very low chill requirement: < 150 CU
- Short fruit development period (FDP): < 100 days
- Good fruit qualities: shape and firmness
- Disease resistance: shot-hole, rust and gummosis



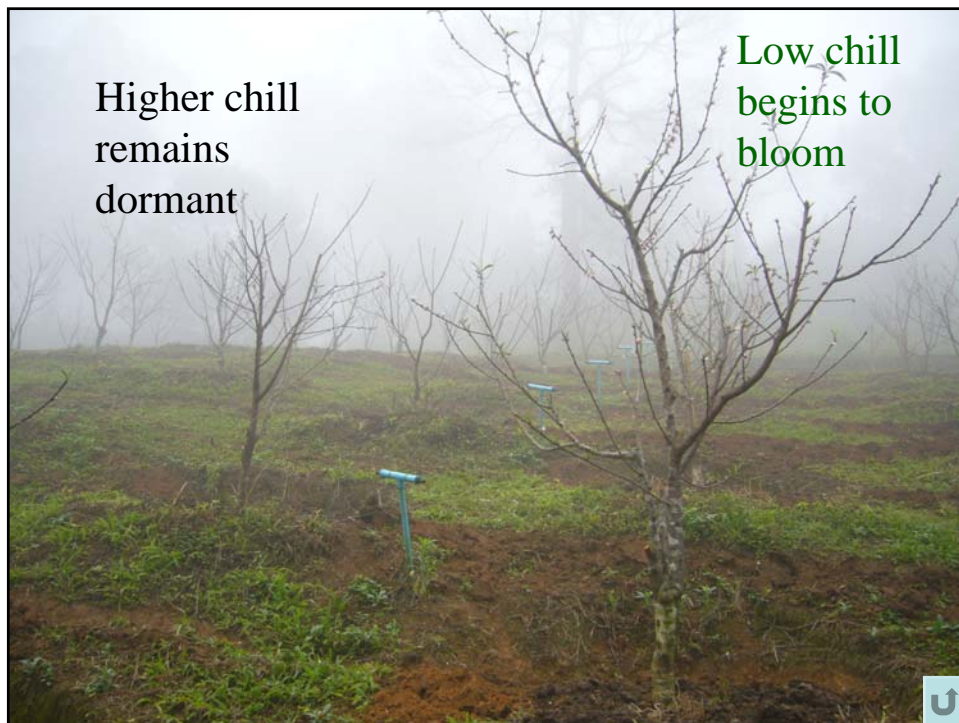
Incorporation of Chinese flat peach (peen tao) into low chill germplasm

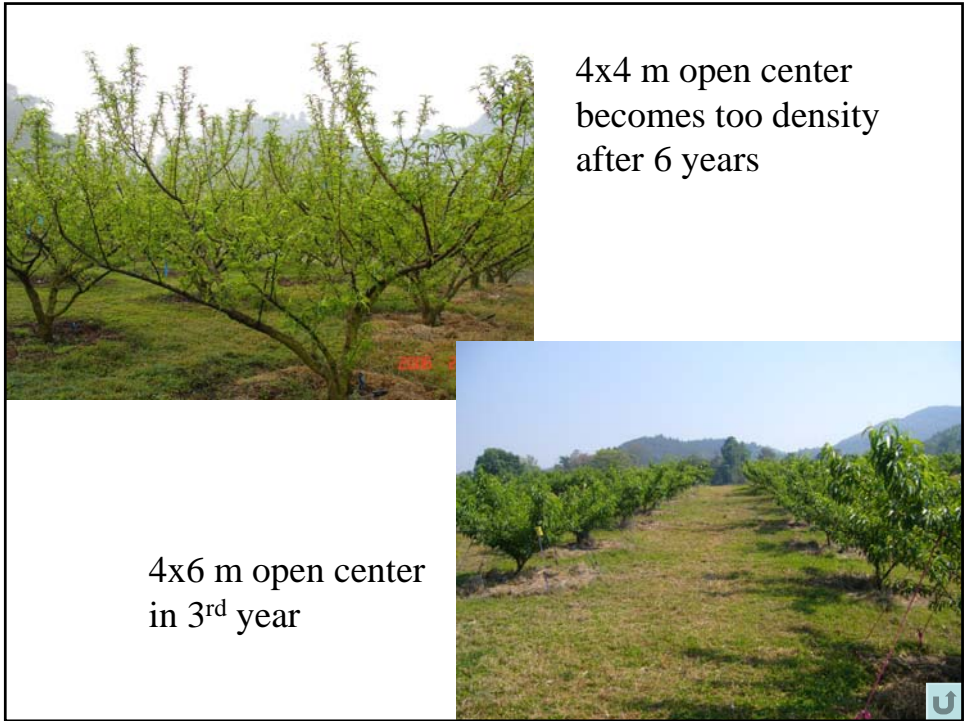
High fruit qualities of Japanese peach into low chill germplasm



Low chill plums

Thank you





Harvesting of
Flordaprince:

KW: early-mid March



AK: early-mid April



Fruit shape greatly
affected by
insufficient chilling

Flordadawn at KW



Flordadawn at AK

