

STONE FRUIT CULTIVAR MATRIX

2024 – 2027 (Feb 2024)



1. GUIDING PRINCIPLES

- We (organised industry) strive for maximum accessibility to cultivars for all growers.
- We (organised industry) are aiming to minimise the risk for growers when planting new cultivars by striving to increase and standardise the screening of new cultivars and selections throughout industry by making use of the Pro-Hort evaluation sites and being evaluated by Provar.

2. OBJECTIVES

2.1 There is a requirement to update the stone fruit cultivar matrix. There are 2 broad objectives of establishing the matrix.

2.1.1 The first is to provide some broad strategic guidance to breeding programmes & IP owners as to what gaps exist in the pome fruit cultivar profile.

2.1.2 Secondly to guide the Hortgro cultivar evaluation process conducted by Provar.

3. CULTIVAR NEEDS

3.1 APRICOT CULTIVAR MATRIX (UPDATED 2024)

CRITERIA	REQUIREMENT	PRIORITY IMPORTANCE: ** (1-5 WITH 5 = CRITICAL)	DEAL BREAKER	COMMENTS / DIFFERENT MARKET REQUIREMENT
External appearance	Full red or orange with a red blush over 40+% of surface	3		Preference market: If can find a later variety then it will open up specific markets. NB: Consistency of same product throughout the season.
	Round, not flattened	3		
	No green tinge or background / no green seam	5	DB	
Size	Large to extra large - XL, XXL = 70% of the total tree volume	5		
Internal quality (taste)	High flavour	4		Most limiting issue is access to the correct breeding genes.
	Good TSS: TA balance – not sour taste with a focus on the right balance.	4		Apricots must have colour (French character).
	*Early (weeks 44-48) 11° BRIX (TSS 11%)	4		EU: Must meet the required profile?
	Medium to late (weeks 10-11) 15° BRIX (TSS 16%)	4		Respecting the local genetics (suitable to local conditions) i.e. bred locally to suit conditions.
	Firm texture	3		Need "workhorse" cultivars before you focus on the "Fancy" cultivars.
	No gel breakdown	5	DB	Question around the browning around the pip - query importance especially on late cultivars.
	Juicy - needs to have free juice. Not mealy	4		Need "workhorse" cultivars.
Keeping quality	6 weeks, 7 weeks ideal	5	DB	Need at least 6 weeks storage (minimum).
Harvest period	Weeks 44-15 – competition with e.g. early Spanish apricots (early to as late as possible)	4		Early to as late as possible.
Yield	Early – 20-30 tonnes. No alternate bearing.	4		
	Late – 30+ tonnes. No alternate bearing.	4		
Packout %	80+ % on tree packout.	5		
	No inherent defects.	5		
	Not susceptible to cracking after rain.	5	DB	
	No rub marks NB	5		
Chill requirement	Low - < 300 Infruitec units (Dry areas are generally in lower chill regions)	3		
	Ultra-high – (300-500 max Infruitec)			
Other production aspects	Self-pollination requisite! (History has shown that this is critical in the regions planted at present)	5		
	Alternatively a suitable cross pollinator = need to be proven	5		
Pests & diseases	Tolerant to Xanthomonas, Pseudomonas, fruit rots	5	DB	
New / niche products	"Black" apricots / interspecifics - locally bred	1		

** Key: 1 = low; 2 = marginal; 3 = important; 4 = very important; 5 = critical (Deal breaker)

3.2 NECTARINE CULTIVAR MATRIX (UPDATED 2024)

CRITERIA	REQUIREMENT	GENERIC IMPORTANCE: ** (1-5 WITH 5 = CRITICAL)	DEAL BREAKER	COMMENTS / DIFFERENT MARKET REQUIREMENT
External appearance	Red – bright red, pink-red on white flesh, bi-colors with aim at 80+% blush for the EU/ VK but should be at least >60%.	5		UK & EU 60%+ red blush - just no green tinge
	Round shape	5		
	No points, softening of seams - often a factor of climate in specific regions - therefore take region into account.	5	DB	
	Spots not a problem – shouldn't form crust BUT NO RUSSET (distinguish from Sugar Spots). Sugar spots should not develop into cracks / russets.	5		This is often a factor of climate
Harvest period	Week 40 – 15 (gaps W48 - 50 & W3-6)	5		
Melt / non-melt	Firm melting – due to bruising, firm melting better than melting	4		UK - melting / EU&ME - firm melting / FE - firm to non melting
Internal quality (taste)	Market requirement: yellow flesh 60:40 white flesh			USA - Yellow; China - sweet (white) soft eating experience
	White flesh – sub acid	5		Melting
	UK: Balanced taste			Non- melting / balanced taste
	EU: yellow flesh – prefer balanced taste			Firm melting - like a fibreless mango
	No wooliness - juicy	5	DB	
Keeping quality	42 - 49 days (49 ideal)	5		
	Air freight opportunities			
	No wooliness in late cultivars			
	Withstand cold steri regime			
Yield	Early – min 20 tonnes	5		
	Late – 35+ tonnes (August Red the optimum) with fruitsize	5		
Size	<W45 - W52 – aim for count 20	5		
	>W1 – aim for count 18			
	<W45 - aim for 23 count			
	NB: Aim for genetically large.			
Packout %	Early cultivars – 4000-6000 export Class 1 cartons within the required size spec / ha	5		
	Late cultivars – 8 - 10,000+ export CI 1 cartons with the right size / ha	5		
Chill requirement	Low – no “kaalnekke” (blind wood) / prolonged dormancy symptoms	4		
Other production aspects	Water marks (inking)	5		
	No split pit	5		
	Preferably clingstones	5		
	No cracking	5		
Pest & diseases	Tolerant to Xanthomonas, Pseudomonas, fruit rots	5		
	Leaf curl tolerance	4		
New / niche products		5		

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3.3 DESSERT PEACHES CULTIVAR MATRIX (UPDATED 2024)

CRITERIA	REQUIREMENT	GENERIC IMPORTANCE: **(1-5 WITH 5 = CRITICAL)	DEAL BREAKER	COMMENTS / DIFFERENT MARKET REQUIREMENT
External appearance	Few/ short hairs, well coloured	5	DB NB	
	No green ground colour / background colour			
	*Bright colour – not dull (black) red			
Size	<W45 - W52 – aim for count 20	5		For China - need bigger fruit
	>W1 – aim for count 18			
	<W45 - aim for 23 count			
	Not too large (Ideal 18-20)			
Flesh colour & Harvest period	Need white peaches with good storability - continuity (no gaps)	5		General comment: raise the bar - early to late
	Week 40 – 15			
	(gaps W48 - 50 & W3-6)			
	Need late peaches			Need continuity - no gaps
Internal quality (taste)	Market requirement: yellow flesh 60:40 white flesh	5		15-20% price so need a higher yield and packout
	White flesh – sub acid			
	UK: Balanced taste			
	EU: yellow flesh – prefer balanced taste			
	No wooliness - juicy	5	DB	
Keeping quality	42 - 49 days - 49 ideal	5		
	Air freight opportunities			
	No wooliness in late cultivars			
	Withstand cold steri regime			
Yield	Early – min 20 tonnes	5		
	Late – 35+ tonnes (August Red the optimum) with fruitsize	5		
Packout %	Early cultivars – 4000 - 6000 export Class 1 cartons within the required size spec / ha	5		
	Late cultivars – 8 - 10,000+ export CI 1 cartons with the right size / ha	5		
Chill requirement	Low – no “kaalnekke” (blind wood) / prolonged dormancy symptoms	4		
Pests & diseases	Tolerant to Xanthomonas, Pseudomonas, fruit rots	5		
	Leaf curl tolerance	4		
Other production aspects	Water marks (inking)	5		
	No split pit	5		
	Preferably clingstones	5		
	No cracking	5		

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3.4 FLAT PEACHES CULTIVAR MATRIX (UPDATED 2024)

CRITERIA	REQUIREMENT	GENERIC IMPORTANCE: ** (1-5 WITH 5 = CRITICAL)	DEAL BREAKER	COMMENTS / DIFFERENT MARKET REQUIREMENT
External appearance	Few/ short hairs, well coloured	5	DB	
	NB: closed calyx end			
	*Bright colour – not dull (black) red			
Size	Large - 18 - 20 ideal			
Flesh colour & Harvest period	Early to late			
	White flesh preferred. Yellow must be good eating quality & with continuity			
Internal quality (taste)	Aim at 12% BRIX to differentiate preferably with a dense texture. Check propensity to bruise	5		Currently in EU it is not a niche product in their market. If it is not unique re taste etc then not viable.
Keeping quality	As for peaches 42 days minimum			
Yield	NB: Torn-out stems similar to peaches / nect at different time slot in season		DB	
Packout %	Higher than nectarines > 70% Class 1 Export			
Chill requirement	Focus on low chill			
Other production aspects	As for nectarines			
Pests & diseases	As for nectarines			

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3.5 PLUMS CULTIVAR MATRIX (UPDATED 2024)

CRITERIA	REQUIREMENT	GENERIC IMPORTANCE: ** (1-5 WITH 5 = CRITICAL)	DEAL BREAKER	COMMENTS / DIFFERENT MARKET REQUIREMENT
External appearance	Red skin - early to late	5	DB 1	UK Market decreasing value.
	Purple skin - early to late	5	DB 2	
	Black skin - early to late	5		Markets can change over time.
	Yellow skin - early to late	5		Need options.
	Red flesh / dark	4		Preference for red flesh now but this could change.
	Red should be fully red to black	5		
	Yellow should be completely yellow with no green. <i>Opportunity for yellow cvs not susceptible to rub, water marks</i>	5		Niche cultivars in traditional markets - lower demand.
	Round shape	4		
	Dapple	3		
Size	Pre-Christmas – AA	5		New cult focus on > AA
	New year – AA (should peak AA)			AAA preferred to aim at
	Warmer areas - AA			Large fruit cultivars give higher yield - need genetically large fruit that does not compromise fruit quality.
Internal quality (taste)	Skin not sour. <i>If skin is not sour, TSS is less of an issue</i>	5	DB	NB: Combination of phenotype & genotype. General comment: Angeleno type - use as a benchmark as it requires requires less inputs (thinning) and single harvest. High storability given average taste - <u>therefore require an Angeleno with size and taste - in all weeks!</u> It can take the battling - therefore it is robust. <u>If peaked on AAA or AA with taste - with red skin and flesh then it is a winner in US & China. A known, stable cultivar that preforms well.</u>
	No split pit/ broken stones – genetically controlled. Use parents that aren't susceptible	5+	DB	Taste and Aroma: Please combine your experience with the taste and aroma of the fruit. External qualities should not affect your score. Taste refers to sweetness, salt, bitter, astringent and sourness or acidity. A balanced taste is a desired and well-balanced ratio between the sugar and acid content. Aroma includes aspects related to the sense of smell. Aroma and bouquet are used to describe favourable odours. Odours are tiny volatilised compounds giving a favourable or unfavourable smelling experience.
	Should stay firm (crispy) for long – storage life perceptions	5		
	Sugars high at high firmness *Early – 12° BRIX (TSS > 12%)	4		Texture: Texture refers to how a product feels when eaten, including crunchiness, firmness, and fineness. For instance, the difference between a mealy apple and a crispy apple, a mushy apricot and a crunchy apricot, or a soft grape berry versus a firm, bursting berry. External qualities should not affect your score.
	Medium to late – >12+° BRIX (TSS > 12%) with the right balance (aroma). Consistence, texture “firm melting” juicy similar to African Delight & Ruby Sun - with substance (<i>digte vleis</i>).	4		UK - sweet / sour; ME - sweet; FE - dense flesh! (<i>digte vleis</i>)
	>W5 ideal 15% BRIX (TSS 15%) maw aim for higher including storability			

CRITERIA	REQUIREMENT	GENERIC IMPORTANCE: **(1-5 WITH 5 = CRITICAL)	DEAL BREAKER	COMMENTS / DIFFERENT MARKET REQUIREMENT
Keeping quality	Single temperature storage <i>*Harvest riper so postharvest handling becomes more important.</i>	5		Preference, not DB but important.
	Limited Moisture loss/ shrivelling NB! Not more than 5 % affected fruit of sample.	5		SA Cultivars seem to be more prone to shrivell.
	42-49 days – 49 days ideal	5	DB	
Harvest period	Opportunity for early (week 45-46) if full colour at harvest, A size, good taste, 12° BRIX minimum (TSS 12%).	4		
	Early cvs (weeks 45-48) problems re taste, size, keeping quality, TSS. Early cvs should address all these issues.	4		
	Fill the gap between week 3-6 - red plums	5		Raise the bar in each time slot / cultivar.
	End of season (Mar to mid-Apr) – AA peak, but also AAA – NB. Fruit quality NB for late.	5		
Yield	Early – 25+ tonnes constant	5		
	Late – 35+, 40 tonnes constant	5		
Packout %	Early – 4000 cartons	5		With the right fruit size >AA
	Late – 5000 cartons	5		
Chill requirement	300-550 ICU in low chill environments such as Berg River (Boland etc) 400-650 ICU in medium chill environments (some micro-climates get up as high as 700 ICU) 650 -750 ICU medium to high chill environments (Warm Bokkeveld, Wolsely, Breerivier Valley) >750 ICU high chill environment such as Koue Bokkeveld	4		Time of blossom ideally mid Aug - mid Sept (5-15 Sept ideal) Don't want to get into "hittegolwe" usually towards end of September. *Note: Imported cultivars generally have too high a chill requirement - less adaptable with poor storability & less tolerance to wet springs that impact on trunk diseases.
Other production aspects	Preferably long stems – fruit fall if too short	4		
	Not susceptible to rub and wind damage	5		
	Not susceptible to sunburn	3		
	Not susceptible to cracking (rain) *Should record vigour during evaluation – important consideration for growers	5		
	Adaptability to high heat	4		
	Propensity to Other cracking	3		
Pests & diseases	Xanthomonas, Pseudomonas, fruit rots tolerance	5	DB	

3.6 PRUNES CULTIVAR MATRIX (UPDATED 2024)

CRITERIA	REQUIREMENT	GENERIC IMPORTANCE: **(1-5 WITH 5 = CRITICAL)	DEAL BREAKER	COMMENTS / DIFFERENT MARKET REQUIREMENT
New & niche products	Problems with interspecific cultivars – disease resistance, yield, cross pollination, keeping quality, growth habit			Small marketing opportunity
	Sugars – 19+° BRIX	5		
	Size- large	5		