

POME FRUIT CULTIVAR MATRIX

2024 – 2027 (Jan 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 pome 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 PEAR CULTIVAR MATRIX (UPDATED 2024)

CRITERIA	REQUIREMENT	IMPORTANCE **(1-5 WITH 5 = CRITICAL)	COMMENTS / DIFFERENT MARKET REQUIREMENT
External appearance	Cosmetic appearance: No imperfections	4	New cultivars – focus on blush. Green pear needs to be very special / unique.
	Blush	5	
	Bright red/ full red	3	
	Pear shaped, not round	3	
	Uniform shape (typical European pear shaped, defined hips)	4	
	Smooth, green uniform shape pear	4	
Size	Range of sizes required from the tree. Peak at 60/70/80. (Mk 6). Ave size not smaller than count 80.	5	
Production	Should be precocious and fertile to ensure that high yields of suitable quality can be attained. (High number of packed cartons).	5	
	Should not be prone to alternate bearing.	4	
	Easy growing / managing.	4	
	Not too many production / handling issues or require elaborate post-harvest and storage measures to achieve acceptable quality. ROBUST PEAR!	4	
Packout %	Max export fruit. (>70% on tree)	5	Local market demand - low
	Low susceptibility to wind/ rub marks (pre- & postharvest, no prone to pack line markings)	4	
	No sunburn	4	
	Have a long "elastic" stem, not cause puncture damage.	4	
	Maintain red blush in hot conditions.	5	
Other production aspects	Self-pollinated	3	
	Parthenocarpic with the help of GA	3	
	Has an option for chemical thinning.	3	
	Limited November drop	2	
	Longer harvesting window (2-3weeks)	3	
	Further rootstock evaluation needed. Compatibility with quince should be assessed during evaluation – but compatibility is not a requirement.	3	
	Disease resistance	3	
Chill requirement	(≤800 Infruitec Units) Cultivar should not be susceptible to prolonged dormancy symptoms.	4	
Keeping quality	Min, 6 weeks legs	5	If the cultivar has the capability to store, then it can be stretched to 6 and then 12 months when evaluating the cultivar.
	Should not collapse!		
Storability	Summer pears 3-4 months		
	Winter pears: 10-12 months		
	Niche variety: 3-4 months		
	No loss of any colour		
	Keep in mind normal CA vs SmartFresh treated CA cost-benefit of SmartFresh.		
Internal quality & Consistent eating quality	Min. 12° BRIX (>12% TSS) (on the market)	5	
	Not susceptible to internal browning	5	
	Not astringent or mealy	5	
Pests & diseases	Not susceptible to postharvest rots	3	
	Fire blight resistance	3	
New/ niche products	Unique flesh colour		
	Hybrids with unique/ bright red appearance		
	Asian pears; must have flavour		
	Note that some discarded selections, could make very good cross-pollinators.		
	Mutations / clones		
	Budwood must be "True to type"		

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

3.2 APPLE CULTIVAR MATRIX (UPDATED 2024)

CRITERIA	REQUIREMENT	IMPORTANCE **(1-5 WITH 5 = CRITICAL)	COMMENTS / DIFFERENT MARKET REQUIREMENT
External appearance	Bright colour (not dull/ brown)	5	Blush = > 50% coloured Dark red to purple / black types to be included in "Full red"
	Full red, Bi colour (70% colour)	4	
	Blush (>50% blush)	4	
	Red, Green, Yellow, Pink	4	
	"Green" Golden Delicious	5	
	Non-russeted: Stem end vs Netiform russeting	3	
	Clean, Robust, No cracks	4	
	No sunburn (<10%)	3	
Size	Not genetically small (equal or bigger than Gala unless it is a snack apple)	5	
	Within the commercial size range		
Production	Should be precocious and fertile (balanced)	4	
	Alternation, if any, should be manageable	5	
Other production aspects	Robustness	4	
Packout %	Minimum packable fruit off the tree of 4 000 export cartons/ha (MK6)	4	
Chill requirement	Not extreme (>1000 Infruitec Units)	5	Cultivar not susceptible to prolonged dormancy symptoms.
	400- 800 and not dependent on rest breaking applications in traditional areas.	5	
	Adaptability to SA conditions.	5	
Keeping quality / Storability	Longer is better. Min of 4 months RA	5	CA evaluations as a next step in the eval process
	Commodity CV's = min of 8 months.	4	
	Fit into existing CA / DCA recipes – take note of latent defects.	3	
Internal quality (eating quality)	Good to great eating experience in terms of taste and flavour	5	
	Sweet, balanced or tarty taste, depending on market segment.		
	Aromatic and juicy. Crunchy and crisp eating experience throughout storage and after shelf life.		
	Within commercial acceptability eating experience		
	• Min. 12° BRIX (>12% TSS) @ harvest		
Pests & diseases	• Fungal resistance	3	
	• Multi-gene resistance	3	
	• High tolerance to pests and diseases	3	
New/ niche products	• Unique flesh colour – intensity % & consistency	3	
	• GMO's – CIS Genetics (CRISPR)	3	
	• Climate adapted cultivars / lower chill cultivars	4	

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