Carina is a high spur bearing with a compact to medium canopy that may suit higher orchard densities. The hull flares away from the shell in a ‘banana’ fashion and the semi-hard shell reduces kernel quality downgrades and late season bird damage.

**KEY POINTS**
- Self-fertile variety
- Spur bearing
- Early harvest
- Early pollinator for Nonpareil

**POMOLOGICAL TRAITS**
- Growth habit: Spreading
- Branching density: Medium high
- Nut location: Spurs and one year old wood
- Flowering time: Early mid, full bloom 4 days earlier than Nonpareil
- S compatibility genotype: S7Sf
- Pollination: Self-fertile variety. Cross pollination unnecessary. Good level of autogamy.
- Compatible Pollinators: Nonpareil, Monterey, Peerless, Price, Rhea
- Flowering density: High
- Length of flowering: Long, approx. 4 weeks
- Bearing precocity: Precocious
- Cropping capacity: High
- Cropping regularity: Good. Little to no alternate bearing
- Bacterial spot tolerance: Very good
- Harvest season: Early
- Harvest ease: Good
- Husking ease: Good. Hull is easily separated from shell

**COMMERCIAL TRAITS**
- Nut shape: Ovate
- Kernel size: Medium (1.13 g)
- Crackout percentage: 28.6%
- Shell texture: Semihard shell
- Double kernels: No doubles
- Kernel appearance: Attractive, skin colour light plump kernel
- Kernel composition: Oil 57.4%; oleic acid 62.3%; Vitamin E 53.8 mg/100g oil

**GLOBAL ASSESSMENT**
Carina is a highly precocious variety that has consistently out yielded the current industry benchmark, Nonpareil by 12% (eight years of yield assessments). It has superior fruit characteristics with a semi-hard shell, fully sealed shell and sweet tasting, lightly coloured kernel. The kernel is less likely to be damaged by insects and moisture due to the fully sealed shell, enabling a higher quality kernel. The semi-hard shell is less likely to result in bird damage during the growing season. It can be used as an early pollinator for Nonpareil, replacing Peerless, Price or Monterey. The growth habit is slightly spreading similar to Nonpareil but crops mostly on spurs. The hull detaches easily from the shell at harvest, a characteristic that may lend itself to in-field de-hulling in the future. Carina is self-fertile and can pollinate itself in single variety orchards.
### TRAIT | ASSESSMENT CRITERIA | RATING (/10) | NON PAREIL | CARINA
--- | --- | --- | --- | ---
#### PRODUCTION
Flowering date | Preferable same as Nonpareil, -3 to +14 days for sf, -3 to +7 for non-sf | 5 | 8
Flowering | Spur bearing, flower to fruit set ratio | 6 | 6
S Incompatibility group | Self-compatible pollen, flower autogamy, bag sf’s, bring bees | 0 | 10 (sf)
Precocious | Precocious, first crop year 3, yield to canopy volume ratio | 6 | 8
Vigour | Intermediate to high but must be balanced with fruitfulness | 7 | 7
Growth habit | Upright, limbs at 40° from vertical, non-weeping, no blind wood | 8 | 8
Branching density | No blindwood | 6 | 6
Ease of training and pruning | Non-weeping | 8 | 8
Harvest Time | No later than Nonpareil plus 30 days (i.e. < Monterey) | 6 | 6
Fruit retention - Minimal windfalls | Minimise food safety risk, facilitate shake and catch | 6 | 5
Fruit retention - Minimal mummies | No stick tights | 3 | 3
High yielding | 2.5 - 3.0 tonnes/ hectare, yield to canopy volume ratio | 7 | 8
Regular production | No alternate bearing | 7 | N/A
#### PEST & DISEASE RESISTANCE
Rust | 6 | 6
Hull rot | 0 | 3
Bacterial spot | 8 | 8
Anthracnose | 6 | 6
Monilinia | 7 | 7
NIBF | 6 | **
Carob moth | 0 | 7
Mites | 5 | 5
Black Peach Aphids | 5 | 5
#### PROCESSING
Hulling and shelling ease | Thin hull, easily removed with minimal damage to kernel | 8 | 8
Shell type | Less than or equal to “hard” | 5 | 7
Shell seal | Well sealed to avoid insect damage and mould contamination | 0 | 10
Crackout ratio | Good kernel to waste (hull and shell) ratio | 7 | 8
Roasting | Good after roasting in terms of flavour; flesh colour; life | 7 | **
Blanching | Easily blanched | 7 | **
#### PRODUCT QUALITY
Double kernels | Less than 5% | 7 | 7
Kernel size/ weight | Minimum 1.24g; optimum range 18-24 kernel per ounce | 7 | 9
Kernel shape | Oval, smooth | 8 | 8
Testa colour | Golden testa; “clean” & “clear” | 9 | 9
Testa pubescence | Smooth, “clean”, no “dusty” appearance | 9 | 9
Kernel meat | White, no brown areas | 9 | 9
Staining propensity | Shell and kernel | 0 | 7
Oil content | High but not quantified (Nonpareil 56.5% in 2013 Riverland) | 7 | 8
Flavour | Sweet, strong almond flavour, typical, non-bitter | 6 | 6
Storage life | Shelf life of processed product | 6 | **

** Yet to be assessed.