Rootstocks for intensive pear production
In the case of intensive production systems, the objective is to use a rootstock that restricts tree vigour, induces early cropping – is precocious – and results in a high yield efficiency.
In Australia, Pyrus calleryana D6 seedlings are the most commonly used rootstock for commercial pear production. However, D6 is slow bearing and excessively vigorous – producing very large trees that are unsuitable for intensive pear production.
BP1

- BP1 originated in South Africa and is reported to have vigour similar to Quince A and BA29 (75% of Pyrus calleryana) and good yield efficiency.
- There are no reported compatibility issues between BP series rootstocks and scion cultivars.
However, BP1 is highly susceptible to pear decline and fireblight and is difficult to propagate.

Susceptibility to pear decline has limited use of BP1 as a rootstock in Europe.
It has shown reduced vigour and improved yield efficiency compared with D6 for both Williams and Packham. BP1 is commercially available in Australia but numbers can be limited.
Pyrodwarf originated from a cross between Old Home and Bonne Luise d’Avranches. It reportedly has 50% lower vigour than D6 and good graft compatibility with European and some East-Asian pear varieties. Pyrodwarf has low susceptibility to iron chlorosis, is tolerant to water-logging and is winter hardy. However, evaluations in Europe suggest it’s still too vigorous for intensive systems.
Pyriam is a clonal rootstock developed by INRA in France through open pollination of Old Home. It has not been tested in Australia but is seen as a potential replacement for Quince BA29 in south-east France. It reportedly has good graft compatibility with Williams, is easily propagated, has a low susceptibility to fireblight and good growth and habit in the nursery.

Pyriam induces slightly higher vigour than BA29 but has equal productivity and fruit sizes. No published data is available to compare its performance to quince.
BM2000 originated in Australia as a result of open-pollination of likely parents Williams and Packham. It’s described as having medium vigour compared to D6. There is no experimental data regarding precocity, productivity or yield efficiency in the literature.
Quince rootstocks

- The most commonly used are:
  - BA29
  - Quince A
  - Quince Sydo
  - Quince Adams
  - Quince C
Many evaluations have been carried out with quince rootstocks.

Whilst there is often some variation in results between sites and scion cultivars, generally BA29 is considered the most vigorous followed by Quince A and Quince Sydo (both approximately 75% of seedling) and then Quince Adams.
Quince C is the least vigorous at approximately 60% of seedling.
Quince C and Quince Adams have the highest yield efficiency compared to BA29, Quince A and Sydo (which are all similar).
In more recent years three other promising quince clones have emerged –

- Quince EMH (developed at East Malling), C132 (a selection from the Caucasus region of Russia) and Eline® (a Romanian selection sourced from Fleuren Nurseries in the Netherlands)
These rootstocks are generally considered to perform similar to Quince C in terms of vigour control and yield efficiency.

However, in some trials they have exhibited traits that may make them more attractive than Quince C such as: improved fruit size (EMH and C132) and reduced russetting (Eline).
Management challenges with quince rootstocks

- Quince rootstocks provide good vigour control, but there are still key management challenges associated with their use.
- One major issue is the incompatibility of quince with many important European pear scion cultivars such as Williams, Beurre Bosc and Packham.
- This can be overcome with the use of interstems of compatible cultivars such as Beurre Hardy or Comice.
At present the most widely available rootstock for pear production is D6. Quince A, BM2000 and BP1 are expected to be more readily accessible in the coming years.
The APFIP pear rootstock trial is currently the only source of rootstock performance data under Australian conditions. Trail results can be found by visiting the APFIP website.
Innovations in Australian pear production practices are being showcased by the ‘Profitable Pears’ project and the ‘Pear Field Laboratory’ at DEPI Tatura.