

**WINE GRAPE CLONES AND VARIETIES
For
FUTURE PROPAGATION AND EVALUATION**

Report For:

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INTRODUCTION

The following varieties and clones are rated as the “Top” sources of superior planting material, recommended for expansion and future development of the wine grape industry. In some cases what are called “clones” are in fact “Selections” made from vineyards with a high reputation or which may have an improved virus status over other currently available material. A clone is a proven genetic variant that displays similar attributes over a range of sites.

Examples of selections available to the New Zealand industry include “Erindale”, “Pask”, “Rothsay”, “Buck”, “Corbans”, “Abel”, “Chave”.

Examples of Clones include those varieties having “Gm”, “UCD”, “BDX”, “BVRC”, “B” or “CL” after their name such as “Chardonnay UCD15” or “Pinot Noir B777”.

These clones have a known performance that makes them unique within the variety and able to be identified in a range of vineyard environments.

VIRUS

As well as choosing planting material with known good genetic attributes (i.e. clonal), it is also important to choose material free of the known debilitating virus disorders.

In New Zealand Leafroll Type III, which can spread, can greatly compromise both yield and quality and especially for red wine varieties. Choosing material known to be regularly tested for Leafroll Type III is important when ordering planting material from a nursery.

THE NUMBERING SYSTEM

The “TK” numbers outlined in this publication are a unique numbering system that denotes each import or introduction of material into the industry. We encourage you to use them when referring to material, and they should be quoted when ordering from a nursery for example.

The performance data described in this publication is limited in a number of cases and particularly relating to the new clones outlined. Comments are based on industry feeling and experience and will change with time.

The new clones described should be planted with some caution at this stage until commercial evaluations have given better indications in the seasons ahead.

Growers should not rely on a single clone for any vineyard planting. In Europe it is common policy to have more than one clone to not only ensure more consistent yields but also to provide complexity to the resulting wines.

Further imports continue to further expand the clonal base of the industry’s planting material. Both private imports and those made by industry bodies, such as the New Zealand Grape Vine Improvement Group, are occurring each year.

The New Zealand Grape Vine Improvement Group Inc. plays an industry role in supplying quality planting material, and membership is encouraged to all new entrants to the grape and wine industry. Vine Improvement is an ever dynamic process encompassing disease elimination, clonal selection, breeding, imports. Their aims are to make the best available material today readily accessible to all industry participants and tomorrow will see even further improvement occur.

CHARDONNAY

The industry is well served by a good range of Chardonnay clones, which are tending to fit into the various price and quality market segments the industry has developed for this variety.

- **Clone UCD15 (TK06519):**

Imported from the University of California Plant Materials Foundation Service and originated from Prosser, Washington State. Has medium size clusters similar to Clone 6 but in some years is slightly looser than Clone 6. Tends to be more prone to Couloure (poor set) in exposed situations. A moderate yielder and similar ripening time to Clone 6.

The most widely planted clone in recent years due to its good wine quality. However, Clone 95 is now also growing rapidly in popularity (see Dijon 95 below).

- **Clone “Mendoza” (TK05108):**

Previously the most widely planted clone in the country. Also known as “McRae” or “Manutuke” clone where it originated from trials done by the Department of Agriculture. A low yielding clone (7 tonnes/ha or lower) with small bunches producing many “shot” or hen and chicken berries. It is still rated by many wine makers as our premium wine quality clone but has been superseded to some extent by the popularity of UCD15.

- **Dijon 95 (TK06575):**

Imported from Dr R. Bernard at Dijon University, this clone originates from Mersault (Cote D’Or). It is described in France as “moderate yielding with superior sugar content and producing full rich and balanced wines with fine aromas”. Produces good quality in any situation”.

Indications in New Zealand are that it will produce premium wine and demand for vines is now growing rapidly.

- **Clone UCD6 (TK06058):**

Also called “I10V1” in Australia and New Zealand. Bunches are medium sized and similar to UCD15 but well filled and yields about 10-14 tonnes/ha of quality fruit. Although it has lost some popularity in recent times it is still, with good management, producing quality wines and should be included in any vineyard plantings.

- **Clone 2/23 (TK05110):**

Thought to have originated in Switzerland, this clone yields similarly to clones UCD6 and 15. Although it was acclaimed to be of high quality and particularly popular in Marlborough, it has lost ground in recent years to UCD15, 6 and Dijon 95.

- **Clone MVIG1:**

A Chardonnay clone that was previously called "Aligote". It was possibly sourced from the old Department of Agriculture trial at Manutuke, Gisborne in the mid 1970's. Rediscovered in Marlborough and initially popular because of it's reliable setting, but has now declined because of better wine quality clones available.

- **Clones UCD4 (TK06130) and UCD5 (TK06131):**

These clones are both high yielding (20-25 tonnes/ha) with large very tight clusters and are late ripening. They can be prone to Bunch Rot in wet seasons.

These clones have been widely used for sparkling and lower priced bottled varietal wines. Because they are late ripening they are likely to be better suited to Hawkes Bay, Gisborne and Auckland.

- **Clone UCD7 (TK06584):**

An increasingly popular clone, with similar sized clusters to Clone 6. Has produced some good quality early maturing wines. Along with Dijon 95, is in demand for new plantings in New Zealand and recommended for evaluation.

- **Dijon 96 (TK06576):**

Imported at the same time as Dijon 95, this clone is described in France as a "highly productive clone of moderate sugar content and producing balanced, aromatic wines with regular and good quality production". This clone has been wrongly called a "Champagne" clone in New Zealand and deserves more evaluation to assess its suitability and market niche.

- **Clone Bordeaux 8021 (TK06562):**

A clone from INRA (Institute National de la Recherché Agronomique) at Bordeaux. This clone is not recorded under this number in the French literature, but has produced low - moderate yields of good quality in New Zealand and wines that may develop well with age. Requires further evaluation.

SAUVIGNON BLANC

- **Clone UCD1 (TK05196):**

The basis of most commercial plantings in the country. Yields are 9-12 tonnes/ha of compact medium size clusters, which can be Bunch Rot prone. Use of leaf plucking techniques has tended to reduce Bunch Rot risk and produced a wider range of flavours and wine styles.

- **New Clones of Sauvignon Blanc:**

A range of new French clones, as well as from California are being evaluated in New Zealand (below).

- **Clone BDX 316 (TK06565) and BDX 317 (TK06566):**

These two French clones are both moderate yielders and less than UCD1. They produce crops with “moderate sugar content” and “dry aromatic and typical wine” according to French sources. Clone 317 is also used for Sauternes style wines in France. Both these clones are receiving wide interest in New Zealand to potentially increase the opportunity to further diversify wine styles. They may have a useful place in cooler years when ripening may be more satisfactory than the older productive clones.

- **Clone BDX 5385 (TK06573):**

Has been a high yielding clone with moderate quality wines produced. Early indications are that the wine may not have the intensity of BDX 316 and 317.

- **Clone 2413 (TK06503):**

This is a Californian clone more correctly named “F4V6”. Wines are of moderate quality.

RIESLING

A wide range of imports from Germany have been made over the past 15 years and although no comparative clonal evaluations of the grapes of wine have been done, the following clones all appear to perform and ripen well in the field and produce high quality wine. All yield similarly (10-13 tonnes/ha). Late ripening.

- **Clone Gm 239 (TK06060):**

Has performed well in all districts. Not tested for Leafroll virus.

- **Clone Gm 239-10 (TK05059):**

Imported by the Wine Institute on the recommendation of the late Dr Helmut Becker, Geisenheim Institute. This is a reselection of Gm 239 (a second generation clone) likely to be selected on yield and less susceptibility to Bunch Rot. A new release with no trials record in New Zealand as yet. Second generation clones such as this are now widely planted in Germany.

- **Clone Gm 198 (TK05208 and TK05403):**

Both sources of this clone have performed well. TK05208 has been reindexed and found negative for Leafroll. The other source has not been tested, but has performed well in Lincoln University trials (Canterbury).

- **Clone Gm 198-19 (TK06021):**

Imported by the Wine Institute and is a second generation clone of Gm 198. Has produced good crops in Blenheim and recommended. Widely accepted in Germany.

- **Clone Gm 110 (TK05186 and TK06023):**

Another good performer from Geisenheim, Germany and is widely planted in the industry. TK05186 has tested negative to Leafroll whereas TK06023 has not been tested.

- **Clone Gm 94 (TK05128):**

A Geisenheim clone evaluated at Lincoln University where it was a good performer.

PINOT NOIR

With the dramatic rise in plantings of Pinot Noir for red wine production in New Zealand, strong interest in choosing the best clones for this purpose has occurred in recent years. Pinot Noir is now the most widely planted red wine variety in New Zealand.

Relatively recent imports of the so called “Bernard” or “Dijon” clones from France have proven popular and most plantings that are occurring in New Zealand are with these selections.

Previously most plantings were with the Swiss selection “AM 10/5” which has now been superseded by the French material. UCD5 from the University of California is still popular and a local selection called “Abel” has also attracted interest.

- **French Clones:**

Often called the “Bernard” or “Dijon” clones, a range of this material is proving to be most popular in new plantings. Their origin is primarily from Chateau Morey St Denis in Burgundy. They are part of a wide range of French government selections.

- **113:**

Moderate yielding but sometimes irregular production. “Balanced but light wine” according to French data. Planted in limited amounts in New Zealand.

- **114:**

Moderate yielding with sometimes irregular production. Typical wines with aromas and body. Rather interesting for blending according to French data. Planted in limited amounts in New Zealand.

- **115:**

Moderate yielding with regular production. “A clone producing good quality wines which are typical, rich and bodied” according to French data. This clone is now the most widely planted in New Zealand and is popular in Oregon.

- **667:**

Moderate yielding with fine and aromatic wines and keeping qualities. Has attracted considerable interest in New Zealand.

- **777:**

Moderate cropping and produces complete and very typical wines. A clone of very good quality with good keeping qualities according to French data. Attracting high interest in New Zealand.

- **743:**

A recent release of the NZ Vine Improvement Group. A sparkling wine clone according to the French literature.
- **871:**

A recent release of the NZ Vine Improvement Group. A sparkling wine clone according to the French literature.
- **375:**

A highly productive clone producing red wines that are “balanced, supple but fairly typical” according to the French literature. The better opportunity for this clone may be sparkling wine.
- **BDX 8042:**

Ex Bordeaux Research Station (INRA). It may now exist under another ENTAV-INRA number, but to date there has been no success in sourcing information from France.
- **California Clones (ex UCD) UCD5, UCD4 (FPMS4):**

Has been called “Pommard” in New Zealand and is thought to be the same as the “Pommard” clone in Oregon which was one of the two most widely planted in their industry. However, the Oregon “Pommard” is FPMS4 and whether UCD5 = FPMS4 needs clarification. UCD5 has performed well in New Zealand for red wine production. UCD4 (FPMS4) is now available in limited quantity through the NZ Vine Improvement Group.
- **Swiss Clones AM 10/5:**

Was the most widely planted in New Zealand until the French material was available. The old workhorse selection, which still has favour. Requires extensive crop thinning as it is a productive clone.
- **Mariefeld Reselection 3:**

A productive clone that produces wines of average quality. Requires extensive crop thinning and may be better suited for sparkling wine.
- **Abel Selection:**

Thought to have been imported by Malcolm Abel, a Pinot enthusiast in the 1970’s who imported the material into his Auckland vineyard. Has attracted interest as a quality wine producer.

PINOT GRIS

Pinot Gris has existed in the industry for many years but has gone through a rebirth due to better understanding of canopy exposure and crop loading. Pinot Gris is a genetic mutation of Pinot Noir and like the latter tends to require a greater leaf : fruit ratio to produce quality, particularly in cooler climates such as New Zealand, than most other varieties. Hence the need to produce moderate crops (5-7.5+/ha) to achieve high quality wine.

Like Pinot Noir it is a very adaptable variety being grown successfully from the Far North to the Far South, but which is sensitive to Bunch Rot during ripening. The main clones planted to date are the Geisenheim (Gm), "Rulander" selections introduced to New Zealand by the late Dr Helmut Becker in the early 1980's. As well, an old selection called "Sel Oville" has been propagated.

The selection called "Rongapai" is now confirmed by DNA profiling to be the variety "Flora" - a Gewürztraminer cross with Semillon. A range of new material has also been released by the NZ Vine Improvement Group.

- **German (Geisenheim) Clones:**

Clones from the Geisenheim Research Station were introduced to New Zealand by Dr Helmut Becker in the 1980's and are called the "Gm" clones.

- **Gm "2-15", "2-16", "2-21":**

3 clones from Geisenheim. All are productive and ripen well, but require crop thinning to produce quality. They are currently the most widely planted selections in New Zealand and have, with good management, performed well. All are susceptible to Bunch Rot in wet seasons.

- **"Selection Oville" ex Switzerland:**

Imported from Switzerland. This selection like the Geisenheim selections requires crop thinning to ensure good wine quality. The "Barry" selection may be the same as this import.

- **7A, 40A, 326I ex South Africa:**

The origin of these is unclear, but are thought to be "heat treated" selections of Rulander clones ex Geisenheim and which were imported from South Africa. Little is known about their performance and they require evaluation in New Zealand before any extensive plantings are contemplated. Available through NZ Vine Improvement Group.

PINOT BLANC

Although interest is still relatively minor for this variety the development of cooler regions such as south Canterbury and Otago has led to some renewed interest in Pinot Blanc. Like Pinot Gris it is a white mutation of Pinot Noir and requires similar management to these two varieties.

- **Clones Gm1 (TK06022), Gm2 (TK06063), Gm7 (TK06083):**

These Weisburgunder clones are from Germany introduced by Dr Becker in the 1980's. No information on their performance has been recorded except that all three clones yield well and require crop thinning.

MERLOT

Merlot is now the second most widely planted red wine variety after Pinot Noir. All clones are prone to Couloure (poor fruit set) in cool seasons. A range of clones are available.

- **French Clones BDX “481” (TK06617)”, “181” and “2096”:**

It has been assumed that “481” and “181” are the same clone but this cannot be proven at present. BDX “481” was imported from the INRA Research Station, Bordeaux along with “2096” in 1988. “481” is probably the most widely planted clone of Merlot in New Zealand.

“481” has proven to produce good quality and is slightly advanced in maturity over “2096” which is slightly higher in acidity. Both produce good quality wines.

“181” is a Bordeaux clone and is described as “having small clusters with high sugar content and producing wines within the type of the variety”. It is a government clone that is considered of high quality in the Medoc and St Emillion areas of Bordeaux. “181” should be considered in any planting of Merlot and is available in limited quantity through the NZ Vine Improvement Group.

- **347:**

A variety of moderate fertility but considered one of the quality clones in St Emillion and other areas of Bordeaux. A new release from the NZ Vine Improvement Group. Should be evaluated in any new plantings.

- **California (UCD) Clones - UCD3 (TK05151) and UCD6 (TK05150):**

These have been available for sometime in the industry but no longer favoured. An unknown UCD selection (TK05149) has also been bypassed for the newer French material mainly “481”.

CABERNET SAUVIGNON

Although Cabernet Sauvignon has taken a back seat to Pinot Noir and Merlot in recent years, its importance as a component of red wine production, in Bordeaux variety blends, remains high. Select, warm sites are required to ripen this variety. Although little attention to clones has been taken in the last 15 years, some new releases may generate new interest.

- **TK05103, TK05109, TK05220, TK05221:**

All of these are local selections probably originally located at the Te Kauwhata Research Station and which received heat treatment at the DSIR Mt Albert Research Station by Dr Chamberlain in the 1960's.

- **Clone UCD7:**

Also known as "G9V3" in Australia where it was one of the most widely planted clones. It has produced good quality wine in New Zealand. In Australia it has been superseded by other local clones including "LC10".

- **Clone UCD8:**

Very similar characteristics to UCD7.

- **Clone "LC10":**

A new clone from Australia where it is now being propagated extensively. The clone was one of a number of candidates picked from an old Cabernet Sauvignon Vineyard at Langhorne Creek and evaluated by the South Australia Department of Agriculture. Should be evaluated in any new plantings of this variety. New clone.

- **Clone 15:**

According to the French literature it is a high producing clone but when yields are controlled producers "balanced and bodied wines". Should be evaluated in any new plantings. New clone.

- **Clone 338:**

Another French clone with moderate yields and producing wines "within the type of the variety". Should be evaluated in any new plantings. New clone.

CABERNET FRANC

Like Cabernet Sauvignon, Cabernet Franc is receiving more interest in blends, along with Merlot, or as a straight varietal, but most imports to date have been made for virus indexing purposes (it is a good Leafroll indicator) rather than for their wine performance. However, two new French clones should attract interest back to this variety.

- **TK05104, TK05102, TK06556, “Erindale”:**

Either mass selections and/or “clones” whose origin is unknown. These four selections from France, Australia, California and New Zealand respectively make up the majority of the existing plantings in New Zealand. As stated earlier, they have no overseas wine performance and were originally imported to act as indicator material for Leafroll virus indexing. They have acted as good initial indicators of the potential of Cabernet Franc in New Zealand but the need for further imports of overseas material with good wine track records was obvious, and the Auckland Vine Improvement Group actioned this with some recent imports from France namely 214 and 326.

- **214:**

A low yielding, medium clustered clone producing high sugar content and wines that are “bodied with strength and finesse” according to French data. Initial trials with this clone look promising and worthy of inclusion for evaluation in any new plantings.

- **326:**

A low yielding, medium clustered clone producing high sugar and wines which are “rich and well bodied” according to French data. This clone along with 327 and 331 were suggested to the author as good choices for planting by St Emillion producers. Again, recommended for evaluation in any new plantings. May be slightly later in maturity than 214 but both clones ripen in advance of the old mass selected material in New Zealand.

- **F4 (TK06637):**

From Italy, this clone has produced low yields and “no yield” in cool springs in some districts. However, wine quality is high. The clone is only to be planted in warm sites. The French clones are now likely to attract more interest.

SYRAH (Shiraz)

Until recently, there were very few imports of Syrah in the country and most of these were mass selections or material that had lost its clonal identity after release from quarantine. Recently new clones from France have been imported and released to industry and are now being commercially evaluated.

Interest in Syrah is growing rapidly particularly in Hawkes Bay and Auckland-Northland. The variety is very adaptable to a range of climates and sites and like Merlot, ripens earlier than Cabernet Sauvignon or Cabernet Franc.

- **TK05136:**

Thought to be from California and the basis of most existing plantings. A heavy cropper requiring crop thinning and restricted pruning to ensure quality wine is produced.

- **New Releases ex France:**

Three selections and clones have been released to industry recently. All require careful evaluation at this stage. All are from the Rhone Valley.

- **“Chave” Selection:**

From the famous Chave Vineyard in the Rhone. Appears to be vigorous with large leaves and long bunches. Requires crop thinning.

- **470:**

According to French data this clone has quite low fertility with small clusters but with good ripeness and “bodied and coloured wines”. Early indications are that it is also a weak producer in New Zealand, but with good quality and peppery characteristics. Because of its low yield it should perhaps be planted along with other more productive clones to be economic.

- **174:**

According to French data it produces good crops of moderate sugar content and “wines within the type of the variety”. “Production correlated to pruning” and “erect attitude”. Early experiences in New Zealand suggest that it produces good quality with peppery character when crop thinned.

Other new selections and clones will be released in the seasons ahead.

PINOTAGE

Although having a checkered career as a variety, Pinotage can produce good quality red wine in New Zealand with careful site selection and choosing healthy Leafroll indexed planting material.

The two sources of commercial plant material are:

TK06607 - Mass Selection

TK06568 - Clone Stellenbosch 1/48

The latter clone tends to be more productive than the former and requires crop thinning to ensure quality is achieved.

SEMILLON

This variety is going through a limited revival in the industry for blending with Sauvignon Blanc or to make as a straight varietal wine. Late harvest wines are also being produced from Semillon. Semillon is very sensitive to Bunch Rot.

- **Clone UCD 2 (TK05200):**

It has a loose cluster, which is unusual for Semillon and is advantageous in our climate in avoiding high Bunch Rot risk. This particular source is Leafroll free but there are many plantings in industry that shows extensive symptoms and care is needed in sourcing material. Ripens well in most districts and yields 10-12 tonnes/ha.

- **Clone BVRC 14 (TK06501):**

From the Baroosa Valley Vine Improvement Scheme and the best clone in South Australia. More compact bunches, susceptible to rot but earlier ripening. This clone is now the most popular selection in New Zealand plantings.

- **New Clones of Semillon:**

A range of UCD material from California (UCD 2, 3, 6, 7 and 9) and a Bordeaux clone ENTAV-INRA 315 (TK06567) are now receiving evaluation in industry. BDX315 is more Bunch Rot prone than BVRC 14 or UCD2 and is probably more suited to Marlborough - North Canterbury.

VIOGNIER

From the northern Rhone Valley this white variety is aromatic and produces distinctive wines. Commercial plantings in Hawkes Bay, Gisborne and Northland are producing wines of quality. Ripens well but like Semillon can lose acidity rapidly. It is sometimes blended with Syrah. Growers should evaluate this variety before planting extensively.

- **640:**

The only French government clone so far and is described as “rather productive” and “wines within the type of the variety”.

- **Koorlong HTK Selection:**

Recently released by the Auckland Vine Improvement Group and is material ex CSIRO Koorlong Research Station in the Riverland, Australia.

MONTEPULCIANO (TK06640)

A selection of this variety was imported in 1988 from Piedmont, North Italy. Although labelled a variety in its own right, it is sometimes argued that Montepulciano is a clone of Sangiovese - the key Tuscan red wine variety. Montepulciano is very productive and requires crop thinning to maximise quality. It is adaptable to a range of sites suitable for Cabernet, Merlot or Syrah. Wines are deeply coloured and distinctive.

GEWURZTRAMINER

Producing very distinctive, spicy wines, the variety constitutes less than 5% of New Zealand's plantings, most of it consumed domestically. Renewed interest in plantings occurs from time to time and there is a steady market for the variety.

Yields can be variable due to its sensitivity to Couloure (cool temperatures leading to reduced fruit set at flowering). Ripens early - mid season, depending on the season and crop level. A wide range of clones are available, but most plantings are either with the Geisenheim, or Colmar clones. Any attempts at selecting more reliable and heavier yielding clones have generally lead to compromises in wine quality.

- **Gewürztraminer Gm 11, Gm 12, Gm 14:**

Clones imported from the Geisenheim Institute Germany by the late Dr Helmut Becker. Of these Gun 14 has had some following due to its more distinctive character.

- **Clomar Clones** 456
457
1106
1148

These are from the INRA Research Station, Colmar, Alsace. Clones 456 and 457 produce wines 'typical of the variety'. 1106 approaches 457 for wine quality and production while 1148 appears to have greater productivity, but with less distinctive wine character.

The key to production of quality Gewürztraminer is good bunch exposure to maximise colour and crop regulation in heavier seasons.