

Precision viticulture in the true sense of word

Precision viticulture is a scientific technique used by large wineries to manage accordingly large vineyard areas. However, the possibly smallest wine producer in the Cape, Bein Private Cellar, puts it to fine-tune their tiny vineyard of 2.2 ha. And the results are surprising: four distinctly different wines of excellent quality from one single vineyard!

The influence on wines by the variability between vineyards has been recognized since centuries. These differences in soil, elevation, climate and last but not least the effect of human activities based on local traditions typically form the basis of the notion of *terroir*.

Variability within the vineyard, however, is for Ingrid and Luca Bein as important as the primary site effect. And with the help of Precision Viticulture, they manage to use this variability in their favour. By harvesting and vinifying the different batches separately according to their individual potential, they could develop and lift the overall quality of their entire range, with now four distinctly different wines of superior quality each from one single vineyard!

Terroir, as Dr. Richard Smart says : "... there is the effect of vineyard size. Some New World vineyards are hundreds of acres in size, while some in the more traditional parts of Europe are a few acres in size. This also means that when large vineyard blocks are machine harvested in the New World, grapes from different terroirs are blended, and their individual winemaking attributes are never discovered. In Europe on the other hand, ferment sizes can be small and limited to fruit from smaller land parcels. And this can be repeated year after year, so terroir effects are observed."

Precision Viticulture is a scientific approach to manage vineyard variability. It is based on vineyard analysis by means of advanced sensor technology, the most popular being aerial imagery in the red and near-infrared range. This provides images depicting vineyard conditions, allowing the differentiation of zones of different vine performance.

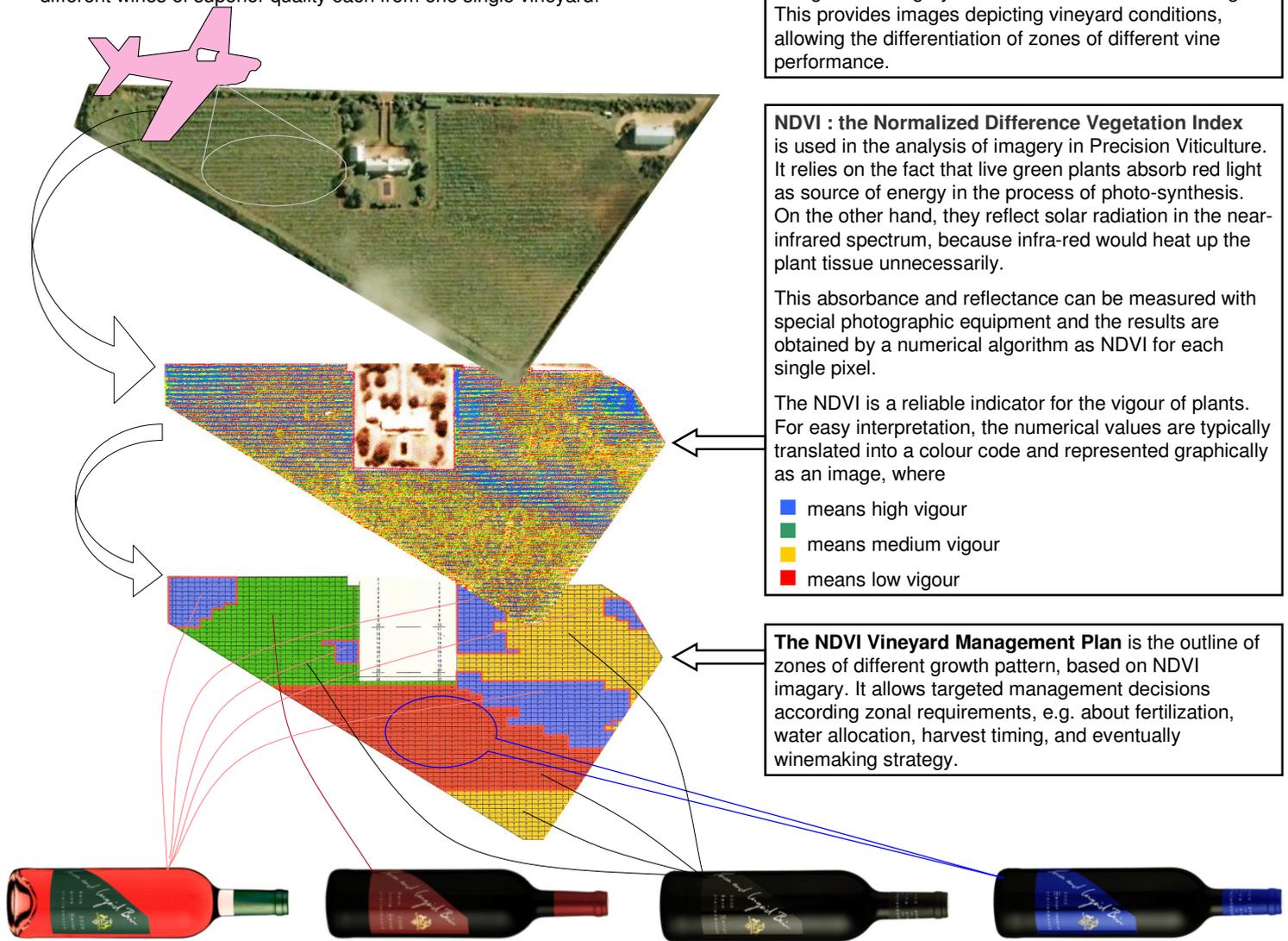
NDVI : the Normalized Difference Vegetation Index is used in the analysis of imagery in Precision Viticulture. It relies on the fact that live green plants absorb red light as source of energy in the process of photo-synthesis. On the other hand, they reflect solar radiation in the near-infrared spectrum, because infra-red would heat up the plant tissue unnecessarily.

This absorbance and reflectance can be measured with special photographic equipment and the results are obtained by a numerical algorithm as NDVI for each single pixel.

The NDVI is a reliable indicator for the vigour of plants. For easy interpretation, the numerical values are typically translated into a colour code and represented graphically as an image, where

- means high vigour
- means medium vigour
- means low vigour

The NDVI Vineyard Management Plan is the outline of zones of different growth pattern, based on NDVI imagery. It allows targeted management decisions according zonal requirements, e.g. about fertilization, water allocation, harvest timing, and eventually winemaking strategy.



The Pink Merlot

is a fruity-dry Rosé, made of grapes from the lush parts of our vineyard. Earlier harvested and slowly cold-fermented to preserve the fresh fruit flavours, it is the perfect wine for any occasion, as aperitif or as versatile companion to many summer dishes. Or simply enjoy on its own as the ideal sundowner to match the always stunning pink sunsets of Africa!

The Little Merlot

derives from the moderately vigorous parts of our vineyard, promoting the more fruity side of this variety. Matured in 3rd and 4th fill oak barrels, this wine offers early drinking pleasure, convincing with attractive red-berry flavours and a silky texture. A versatile wine that sits well on any table, from vegetarian to richly sauced beef.

The Bein Merlot

is our flagship wine. It is the finest combination of the wines from our various batches, reflecting best the integrated terroir of our cool southern slope. Matured in 50% new and 50% 2nd fill barriques, this wine strives for perfect balance between primary fruit and sweet-spicy barrel flavours. It can be enjoyed young, yet will continue to grow rich with age.

The Reserve Merlot

originates from a micro-site within our vineyard, identified for its potential by means of PV. It is characterised by more total tannins with finer texture, deeper colour, greater volume, and intense dark berry flavours. Only produced in special years and matured in new French oak, it is a wine of great complexity, rich and full-bodied. This wine is very alluring in its youth, but will age gracefully!