



Experiences with KISSS sub-surface drip system at Hanwood Vineyards NSW.

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In late 1999 David Hinton from IWT approached us to see if we would be interested in trialling a new type of buried drip irrigation tube. At the time we were planting a further 143 ha of new vineyard on heavy red/grey clays typical of old rice ground. The block available was being planted to Shiraz.

Despite a healthy dose of scepticism because of assumed issues likely from emitter blockages, we agreed to install five rows, each of 650 metres length.

The drip tube was prepared using emitters the same as the rest of our above ground system, however for manufacturing reasons the tube was the light drip tape similar to that used in vegetable production, and the geo-textile was some 250 mm wide.

Installation machinery was also experimental at the time and the closest we could get to the newly planted vines was 500mm, so that is where the tube was placed, at 300mm depth.

1. Vine Establishment.

The only water the new vines received was through the KISSS system and on the same schedule as the above ground (on surface) drip lines in the remainder of the shift. The weather was by then getting quite warm. The rootling vines in the KISSS block never looked back despite being 500mm from the water source. Not what we expected and, if anything, better than the above ground drip placed on the planting line where it was struggling to wet to the vines that were mid way between drippers (600mm spacing in both instances).

2. Water Use.

Unfortunately we have never measured if KISSS can achieve water savings because it is connected to the same shift as the above ground system. Water use was not the issue back then that it is now. The Shiraz block typically uses 3.5 ML per season with full RDI.

3. Vine Growth.

Again we have not measured yields/ pruning weights because the aim was simply to see if the system would work. We are doing further detailed work at present, but visually there is no difference in vine vigour between the two systems.

4. Weed Growth.

Because the KISSS system never wets to the soil surface, weed growth can only be driven by rain events, and as our rainfall is low we have had greatly reduced weed issues compared to the above ground drip. We estimate a 60 % reduction in weed pressure that translates to less herbicide applications and often lower rates. The

difference is particularly obvious by late autumn when long periods have passed with no weed control because of harvest operations.

5. Compaction.

By necessity our KISSS was installed practically under the wheel line of tractors and equipment. Surprisingly this has produced no obvious problems from wheelings or compaction limiting water spread. The compaction layer is there when inspected, but does not extend fully to the KISSS level.

6. Root Intrusion.

We have had to repair leaks in the KISSS tube a few times over the years, brought about by the light duty of the tube used at the time. However the type of tube is designed to last only a year or two, but after ten years is still performing perfectly. Current KISSS production tube is different altogether and appears unlikely to have similar problems. When doing these repairs and also from recently dug inspection pits we have not observed root intrusion or blockages to the emitters. Root distribution was remarkably even along the geo-textile and there was no accumulation of clay or silt around the tube.

7. Other Operations.

Because there are no drip tubes on wires or on the surface, there have been considerable advantages for other vineyard operations such as pruning, sweeping, feral animal attack, and in particular desuckering (extensive damage each year). There has simply been no drip tube maintenance required as a result of these factors, in itself a decent cost saving each year apart from the inconvenience prevented.

8. Regrets.

What was intended to be a look-see trial has extended to a remarkably hassle free 10 year period using only the first experimental form of the KISSS.

With hindsight we regret not measuring and recording more of the vine/water parameters over the years, however we are convinced beyond doubt about the success of the concept. We are currently planning redevelopment plantings using KISSS to replace the existing above ground system.



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