

---

# The influence of seeding rate on the production of grazed dry-land lucerne in the Overberg and Heidelberg Vlakte

Johann M van Heerden  
Agricultural Research Council – Animal Production, Stellenbosch  
jmvh@sun.ac.za

---

**L**ucerne is the most productive pasture legume in the Rûens area of the Western Cape. The Overberg region lies between Caledon and Botrivier in the western corner of the Rûens, while the Heidelberg Vlakte lies more to the east and south of Riversdal and Heidelberg. Most lucerne pastures in the area are traditionally sown to the land race cultivar SA Standard, which is persistent under grazing, but has poor resistance to endemic insects and other pests.

The presence of the blue-green aphid and the even more destructive spotted aphid, resulted in intensified efforts to introduce more aphid resistant cultivars and to test them country wide. Other more productive, grazing resistant and persistent lucerne cultivars have, therefore, been identified. As the seed of the new cultivars is expensive, lower seeding rates were evaluated as a means to optimize returns. Trials were conducted on the farms Uitsig, near Heidelberg (2003 to 2006), and Roodebloem, near Caledon (2006 to 2009) under dryland conditions.

At Heidelberg the cultivars SAS, WL414, WL320, PAN4764, PAN4546, Alfagraze, Aurora, SA Select, Aquarius and Genesis were sown at two seeding rates, 6 and 12 kg/ha, respectively. In the trial at Caledon cultivar WL 414, was sown at four different seeding rates, 3, 6, 9 and 12 kg/ha, respectively. Before sowing the soils of the trial sites were fertilised with P, K and lime, based on soil analyses and well cultivated.

All seeds were inoculated with standard commercial lucerne root nodule bacteria before sowing. The trials both were part of large commercial and grazed pasture paddocks of approximately 30 ha. Production was determined by cutting samples eight weekly in- and outside enclosure cages. All lucerne samples were dried at 60 °C and weighed.

The average seasonal rainfall at the two trial sites, Caledon and Heidelberg, is shown in Figure 1.

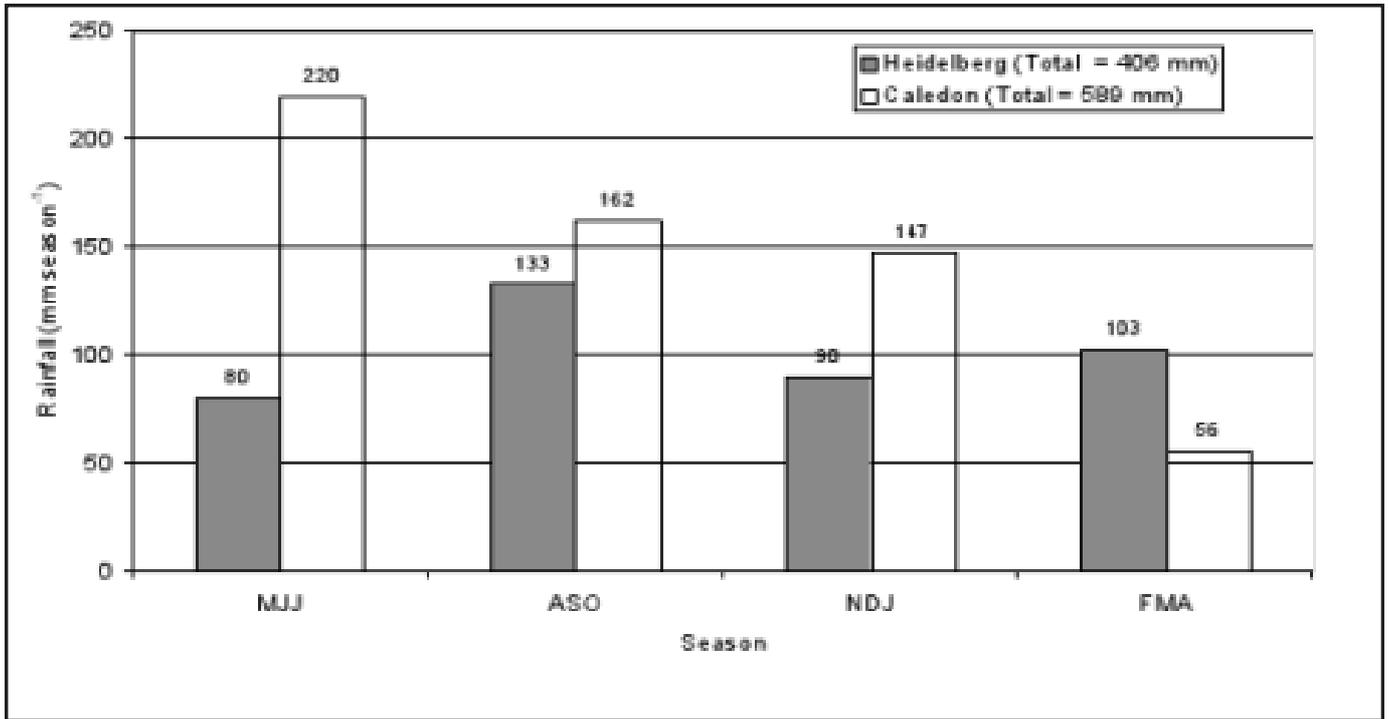


Figure 1. Average seasonal rainfall at Heidelberg (2003 to 2006) and Caledon (2006 to 2009)

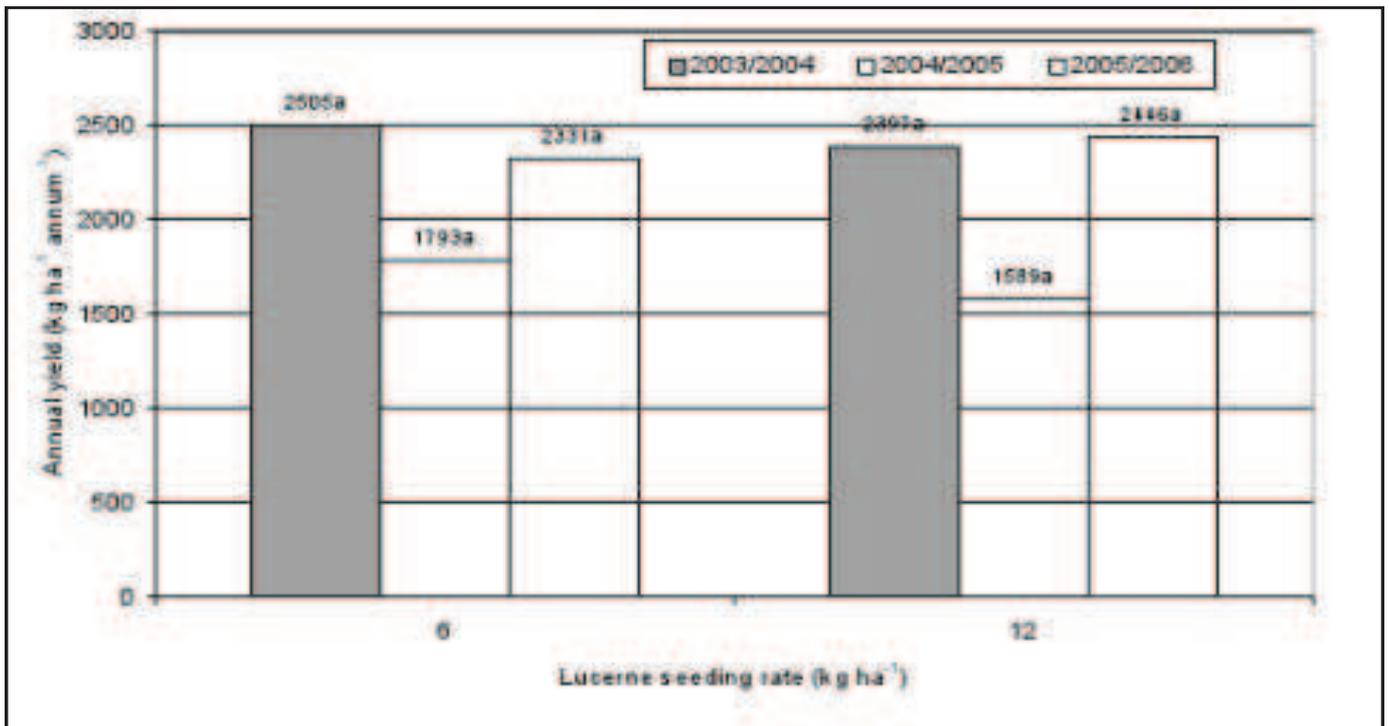


Figure 2. Influence of lucerne seeding rate on the annual lucerne yield during three seasons at Uitsig, Heidelberg

The rainfall was lower, but better distributed at Heidelberg, than at Caledon. The production of the ten cultivars did not respond differently to seeding rate at Heidelberg. The average annual lucerne dry matter yield over all ten cultivars at the two seeding rates (6 and 12 kg.ha<sup>-1</sup>) at Heidelberg is therefore shown in Figure 2.

There was no significant difference in the dry matter yield of lucerne at the two seeding rates during all three seasons. This was very surprising as 6 kg.ha<sup>-1</sup> was only 50% of the generally recommended seeding rate of 12 kg.ha<sup>-1</sup>. This resulted in the second trial being planted at Caledon in which lower and a greater number of seeding rates 3, 6, 9 and 12 kg.ha<sup>-1</sup> were evaluated. There was no significant influence of seeding rate on lucerne dry matter yield during the first season (2006/2007). During the periods 2007/2008 to 2008/2009 the lucerne yield was, however, highest at the 9 kg.ha<sup>-1</sup> seeding rate. The data of the two trials showed that dryland lucerne seeding rates can be lowered from the standard 12 kg/ha to at least 8 or 9 kg.ha<sup>-1</sup>.

Using a seeding rate of only 9 kg.ha<sup>-1</sup> should make possible a saving of 25 to 30% in seed cost. The yield of the new more productive cultivars in previous trials over a four of five year period was from 80% to 100% higher than that of SA Standard.

The combined effect of a lower seeding rate and higher productivity therefore makes the use of the new cultivars much more viable in spite of the higher cost per kg of seed. If the seeding rate is lowered by 25% the seed cost of a particular cultivar like WL 414 has to be more than 300% higher than that of SA Standard before the latter cultivar can be reconsidered to be used.

