

This Week's Citation Classic

Donald C M. Competition among crop and pasture plants. *Advan. Agron.* **15**:1-118, 1963. [University of Adelaide, Waite Agricultural Research Institute, South Australia]

The paper analyses competition in artificial plant communities. The depauperate growth of individual plants within a crop is emphasised. Competition for water, light and nutrients and the interactions between them are considered. Productivity and competitive ability are distinct plant attributes, not positively related. [The SCI® indicates that this paper has been cited over 150 times since 1963.]

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July 12, 1978

"Nothing is more pleasing to an author than to learn that someone has read his paper. And when it transpires that not one but many people have read it, he can dare to hope that he may have lighted a small candle.

"My interest in plant competition was derived from work on native and sown grasslands in Australia. It was particularly stimulated in 1940 by two small incidents in the United States. During a one-day visit to Madison, H. L. Ahlgren showed me cultures in which he and O. S. Aamodt (later a companion of mine in a survey of Mediterranean fodder production) had found a mutual depression in the yield of two grasses when they were competing together in a mixture. It made my adrenalin flow and I resolved to examine these relationships. Then, later that year, while with J. E. Weaver at the

University of Nebraska, studying the ecology of the prairies, I took a light metre outside Besey Hall, the Botany School, one hot sunny day and was astonished at the darkness beneath a sward of Kentucky bluegrass. Simple but unexpected—and promoting an interest in the factors for which competition occurs among plants.

"My paper was based on lectures I gave at Cornell University in 1959. In retrospect I note my emphasis on the distinction and independence between competitive ability and yield in crop and grassland species, and too, my conclusion against the popular belief that two species in a mixture can exploit the environment more fully than the better of them alone. Some other thoughts may be little more than truisms, but to me, they were sunbeams at the time—that the individual plant in any crop suffers acute stress; that competition for light can be as intense in brightly lit regions as in those with overcast skies; and that competition for two factors may be of synergistic intensity. Perhaps it was helpful also to present a model of the relationship between optimum leaf area index, ceiling leaf area index, ceiling yield and growth rate, though I am sometimes criticised for a tendency to formalise my views unduly.

"My thought for 1979 is an echo from 1963—that there is need to look not only at the isolated plant, as the physiologist does, nor only at the crop, as the agronomist does, but also at the depauperate plant within the crop.

"I like to believe it was these thoughts that interested others. And to all who have read my paper—fraternal good wishes."