

FACTORS INFLUENCING THE SPREAD OF SKELETON WEED IN THE  
VICTORIAN MALLEE

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Skeleton weed can colonize new areas by three possible mechanisms:

1. seedling establishment
2. establishment of several root pieces
3. formation of daughter rosettes following lateral root extension.

In a long-term experiment at the Mallee Research Station, a relationship was observed between the spread of the weed and two rotations which are practised throughout the Region. During two cycles of fallow-wheat (FW) from 1964/65 to 1968/69, the average skeleton weed population increased from 0.6 to 2.3 rosettes per ft<sup>2</sup> (6.4 to 24.8 rosettes per m<sup>2</sup>); while during one cycle of pasture-pasture-fallow-wheat (PPFW) for the same years, the weed population rose from only 0.04 to 0.3 rosettes per ft<sup>2</sup> (0.4 to 3.3 rosettes per m<sup>2</sup>). Some of the factors influencing these results were studied during 1966 to 1969.

In 1966, the significance of seedlings and root pieces in the spread of skeleton weed was studied on three of the treatments. In August, there was an equal number of seedlings in the stubble year of both rotations, but fewer seedlings were present in the dense pasture prior to fallowing the PPFW rotation. None of the seedlings survived fallowing, and only one root piece regenerated a rosette. In the crop the following year, no seedlings were found and only one root piece was transplanted. Some seedlings had established in the second-year pasture treatment.

The effect of each phase of both rotations on seedling establishment of skeleton weed was studied from 1967 to 1969. Each year, seed was sown on ten permanent quadrats on skeleton-weed-free areas within each treatment, and counts taken in the autumn (seedling emergence) and spring (establishment) are shown in the following table.

Seedling emergence was greater in the stubble year of the FW rotation than on any phase of the PPFW rotation. In both rotations, seedling emergence in the autumn prior to sowing the wheat crop was similar, but very few of these (1968 and 1969) survived the autumn cultivation and sowing operation. The difference in the total phosphorus applied to the two rotations has been shown in a pot experiment not to influence seedling emergence.

TABLE  
Skeleton Weed Counts per ft<sup>2</sup> (per m<sup>2</sup>)

<u>Rotation</u>	<u>Autumn Condition of Land</u>	<u>1967</u>		<u>1968</u>		<u>1969</u>	
		<u>Autumn</u>	<u>Spring</u>	<u>Autumn</u>	<u>Spring</u>	<u>Autumn</u>	<u>Spring</u>
FW	Fallow	0 (0)	0 (0)	1.51 (16.3)	0 (0)	0.32 (3.4)	0 (0)
	Stubble	1.4 (15.2)	0 (0)	2.58 (27.8)	0.72 (7.7)	1.00 (10.8)	0.29 (3.1)
PPFW	Fallow	0 (0)	0 (0)	1.17 (12.6)	0.03 (0.3)	0.29 (3.1)	0.06 (0.6)
	Pasture (3rd year)	0 (0)	0 (0)	0.86 (9.3)	0.14 (1.5)	0.20 (2.2)	0.06 (0.6)
	Pasture (2nd year)	0.08 (0.9)	0 (0)	1.58 (17.0)	0.48 (5.2)	0.11 (1.2)	0.06 (0.6)
	Stubble (1st year pasture)	0.14 (1.5)	0 (0)	1.49 (16.0)	0.77 (8.3)	0.29 (3.1)	0.06 (0.6)