Seedling competition from

Resident Range Cover

often cause of seeding failures

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Frequently, failures of range seeding have been blamed on one or many factors such as exposures, rainfall, soil depth and type, temperatures, and depredations by birds and by rodents. Early, excessive, competition from the resident seedling plants is often given too little attention.

To illustrate the potential early competing power of the rapidly growing resident weedy annual species, three one-square-foot samples of surface soil were collected at four locations. All seeds found in the samples were removed, identified, counted, and weighed. Germination tests were conducted and all reported counts and weights were corrected to viable seed. The mean number of seeds per species per sample area was used to determine the pounds of seed per acre. Standard errors were calculated for species and for the plot totals only as an illustration of the wide variations found. The results of the survey are shown in the accompanying table. The samples are too few to represent true values for each area but the results do illustrate the competition for any introduced seedling.

Species composition varied among the four locations, and ripgut, rattail fescue, and soft chess dominated except in the dust blow area of Kings County. The presence of sub-clover and a large amount of ryegrass suggests that the Sonoma II plot may have been seeded at some earlier date.

Seeding such areas can not match natural seeding—seed for seed—nor can much success be expected by seeding at normal rates of from 10 to perhaps 40 seeds per square foot. To minimize natural competition it may be necessary to develop grazing practices that limit the seed production of resident species before and after reseeding, or—where possible—to fallow and then seed into a prepared seedbed.

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Seed Crop of Resident Annuals

Species	Germ. %	Sonoma I*		Sonoma II*		Mariposa*		Kings Co. Dust Blow Area	
		Seeds/ sq. ft.	Lbs. seed/acre	Seeds/ sq ft.	Lbs. seed/acre	Seeds/sq. ft.	Lbs. seed/acre	Seeds/ sq ft.	Lbs. seed/acre
Ripgut (Bromus rigidus)	81	133 ± 115	119	21 ± 10	20				
Mediterranean barley (Hordeum hystrix)	93	8 ± 14	3	.3 ± 5	.2	460 ± 471	193		
Rattail fescue (Festuca myuros, F. megalura)	71	215 ± 373	11	892 ± 127	59	97 ± 89			
Red brome (Bromus rubens)	77							24 ± 37	4
Filaree (Erodium cicutarium)	55	53 ± 58	14	2 ± 2	.4	6 ± 4	2	6 ± 4	2
Soft chess (Bromus mollis)	83	997 ± 777	167	523 ± 248	107	1,553 ± 1,568	219		
Wild oats (Avena fatua)		3 ± 4	8	.7 ± 1	2				
Ryegrass (Lolium sp.)	66	.7 ± 1	.1	421 ± 327	65				
Bur clover (Medicago hispida)	11 85% Hard seed	3 ± 4	.4	8 ± 6	5	.4 ± 6	.1		
Sub-clover (Trifolium subterraneum)				2 ± 4	1				
Squirreltail (Sitanion jubatum)				2 ± 3	.8				
Tree clover (Trifolium ciliolatum)				1 ± 2	.2				
Mean of three samples from each plot		1,412 ± 621	322.5	1,873 ± 1,124	260	2,116 ± 1,170	419	30 ± 38	6

* Sonoma I and II = Butte and Olympic loam and clay loam soils, shallow with rock outcropping.
Mariposa = Trabuco or trabuco-like, deep, medium texture, none calcic.

MECHANISMS OF OXIDATION

Many different biological processes taking place in the tissues of various animals depend on the activation of molecular oxygen. The metabolic utility of oxygen so activated is far reaching, extending from the building of proteins through the synthesis of certain amino acids to the actual control of metabolism through the production of the adrenal hormones. Intensive research is aimed toward greater understanding of the activation process.—*Sterling Chaykin, Dept. of Biochemistry, Davis.*