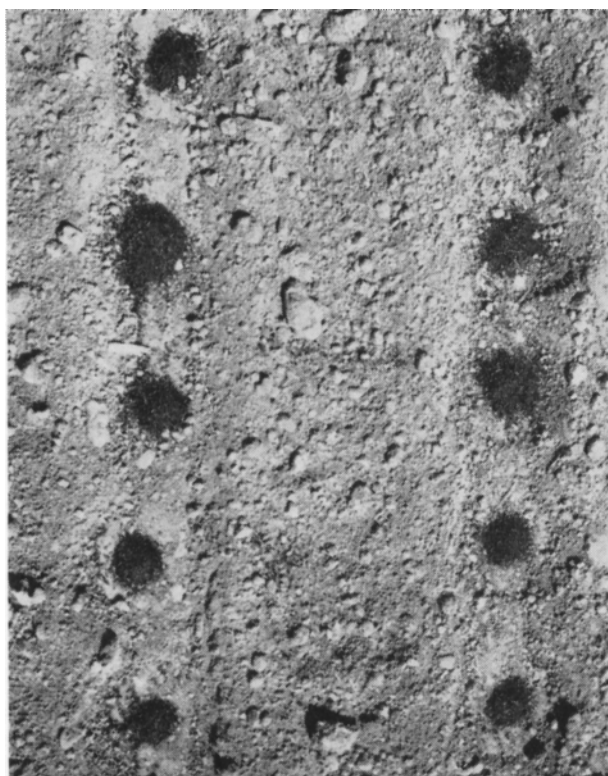




# Soil Crust Prevention Aids Lettuce Seed Emergence

Two of the anticrusting materials used in lettuce seed planting trials at Salinas included gypsum, top photo, and coke, bottom photo—both placed directly above precision-planted seed.



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LETTUCE SEEDLING EMERGENCE WITH ANTI-CRUSTING MATERIALS IN SALINAS TRIALS, 1964

Trial no.	1	2	3
Soil:	Salinas clay loam	Salinas clay loam	Macho fine sandy loam
Date planted	1-15-64	3-7-64	4-11-64
Date counted	2-4-64	4-1-64	4-24-64
<b>STAND PERCENTAGE</b> (Number of seedlings counted ÷ number of seed planted × 100)			
Material	46	40	24
Check	94	94	84
Vermiculite + PVA	94	88	68
Vermiculite + Q.P.			72
Tiño			52
Loamite			56
Manure		64	88
Coke		92	36
Rack		50	52
Petroleum mulch		25	20
Gypsum		74	
Latex		64	
Krilium-treated			

MATERIALS USED IN ANTICRUSTING TRIALS  
AT SALINAS, 1964

Vermiculite - P.V.A.	Moderately fine vermiculite placed above seed and sprayed with water-soluble polyvinyl acetate.
Vermiculite - Q.P.	Moderately fine vermiculite sprayed with water-soluble cellulose material.
Tillo*	Composted rice hulls and sewerage sludge placed above seed.
Loomite*	Parous lignin (acid-treated redwood sawdust).
Manure	Moderately fine feed lot manure (partly composted) placed above seed.
Coke	A medium-sized petroleum coke.
Gypsum	Fine-grained agricultural-grade calcium sulfate.
Latex	A water-soluble latex sprayed on the soil surface.
Petroleum mulch	A water-soluble petroleum mulch (asphalt) sprayed on the soil surface.
Krilium*-treated	Soil treated with .05% krilium and placed over the seed.
Rock	A medium-fine porous rock placed above the seed.

\*Trade names.

**S**OIL CRUSTING has long been recognized as an obstacle to seedling emergence. This is particularly true with small-sized seed. Soil crusts will often result after a soil is wetted by rain or sprinkling and then dried. Seeds planted during the winter or spring months in much of California stand a very good chance of being rained on, allowing a crust to form above the seed before emergence. Overplanting the number of seeds required is the customary way to assure an adequate stand of row crops under these conditions. However, mechanization of many row crops depends in part on planting the crop to a stand, or at least spacing the individual plants so they can be mechanically thinned.

### Emphasis

Particular emphasis was placed on anti-soil-crusting in relation to precision-planted lettuce during the past year. A number of different materials were evaluated under field conditions in the Salinas area. Lettuce seeds were individually planted and the soil above was either treated or replaced with an anti-crusting material.

Circular holes  $\frac{3}{4}$  inch across and  $\frac{3}{4}$  inch deep were punched into the soil at selected intervals varying from 4 to 12 inches. One lettuce seed was placed into each hole and covered.

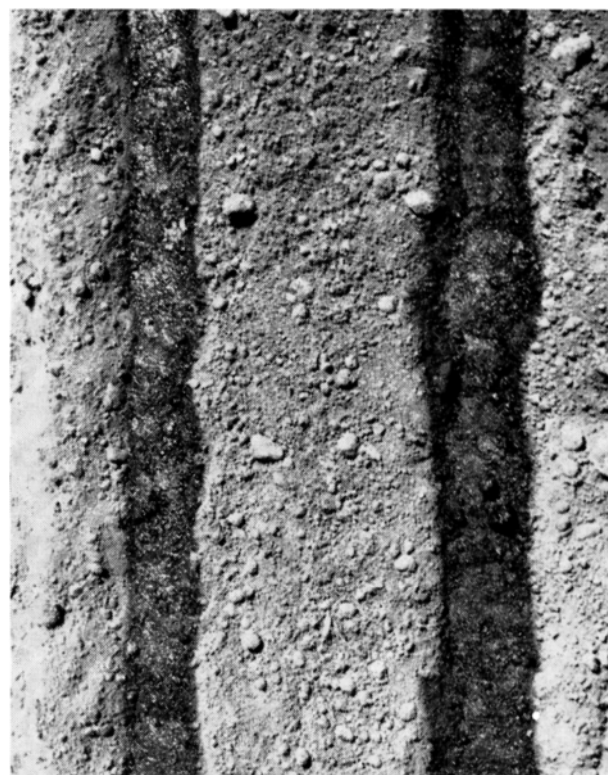
A description of some of the covering materials is listed and the results of three trials with these materials are given in

the table. These precision-planted trials were small, but were carefully replicated and were part of a grower's regular planting. All of the trials were sprinkler irrigated shortly after planting, and a rain followed the sprinkling twice. Sufficient drying weather followed the sprinkling or rain to form a soil crust hard enough to prevent plant emergence.

In all the trials, the soil crusts cracked at intervals of two to four inches along the weed row. This allowed enough plants to emerge in the grower's overplanted portion of the field to allow an adequate

percentage of stand is not adjusted to the germination percentage. In other words, 94% stand, obtained with vermiculite plus polyvinyl acetate (PVA) on the January 15 planting, is approximately a 100% stand.

The trials indicate that best results can be expected when the soil above the seed is replaced with an anticrusting material. Weight of material, as well as ease in handling, become important considerations when this method of application is considered in commercial field applications. Since vermiculite treated with



Petroleum mulch, another of the materials used in lettuce seed planting trials at Salinas, is shown in photo to right applied directly above seed rows.

stand of lettuce. The cracks were far enough apart, however, to prevent emergence of sufficient precision-planted seeds for an adequate stand of lettuce.

### Results

A summary of the results from the three trials is reported in the table. Results are expressed in terms of the percentage of plants obtained from the seeds planted. Due to the shape and size of lettuce seed, some lettuce seed is clay pelleted to aid single placement. All the materials were used with unpelleted seeds. Pelleted seed was used in trial 3. Results indicated there was slightly less lettuce seed emergence with pelleted seed than with unpelleted seed—although not significantly less. Seed germination in trials 1 and 2 was 95%, while seed germination in trial 3 was 87%. The per-

centage of stand is not adjusted to the germination percentage. In other words, 94% stand, obtained with vermiculite plus polyvinyl acetate (PVA) on the January 15 planting, is approximately a 100% stand.

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