

Effect of Mixes on Seed Germination

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Over the years many bedding plant growers have experienced difficulties immediately following the germination of the seed of numerous plants. Immediately following germination the emerging shoot appeared to be infected with *Pythium* or *Rhizoctonia*. Frequently, the shoots would be severed from the seeds, falling onto the mix, sometimes rooting, then continuing to grow. The problems were blamed on poor quality seed, non-viable seed, disease problems, etc

Investigations were conducted in commercial grower operations and the following germination conditions were found: germination medium, Peat-lite mix; germinating environment, 70 to 75°F ambient; media temperatures, 70°F; relative humidity, 60 to 100%, light levels, 4000 to 6000 ft-c, and moisture of the mix was uniform and adequate.

Numerous investigations were conducted to determine the cause of these losses. It was found that the presence of surfactants and/or fungicides in mixes influenced these effects. Under controlled conditions in the laboratory the symptoms seen under grower conditions could be duplicated with any of the surfactants or fungicides available to the trade. Thus, further investigations led to modifying the Peat-lite mix (Table 1) that would successfully germinate seed without any losses. Table 1 also shows the conventional growing mix commonly used in plant production. These and other studies have led the author to believe the surfactants per se are not the causal factor but may trigger a series of organic chemical reactions to occur to stimulate these effects. Further studies need to be completed to understand the reasons for these occurrences.

Fungicides should not be applied until the seedlings are established.

Table 1. Peat-lite mix for growing plants and germinating seed

| Materials | Amt/cu yard | |
|--------------------------------|-------------|-------------|
| | Growing mix | Seeding mix |
| Peat moss | 13bu | 13bu |
| Vermiculite | 13bu | 13bu |
| Dolomitic limestone | 5 lb | 5 lb |
| Treble superphosphate (0-46-0) | 1/2 lb | 1/2 lb |
| Gypsum | 2 lb | 2 lb |
| Potassium nitrate (12-0-44) | 1/2 lb | 1/2 lb |
| Calcium nitrate (15-0-0) | 1/2 lb | 1/2 lb |
| Trace elements (use one only) | | |
| Esmigram | 5 lb | -- |
| Perk | 5 lb | -- |
| Micromax | 1 5 lb | -- |
| AquaGro granular | 1 lb | -- |

All materials must be uniformly blended together for best results

Treble superphosphate, gypsum, and dolomitic limestone should be in a powdered form before inclusion into the mix

There are 26 bushels per cubic yard (this allows for shrinkage of the mix when the peat and vermiculite are mixed together) To make a one bushel measure the inside dimensions should be 13 in x 13 ft x 13 in