

Within the past few years, loose rockwool and more recently granulated rockwool have been promoted as components for soilless mixes. Loose rockwool comes in rather coarse wads which resemble the formulation used for insulation while the granulated formulation is much finer with a crumb-like appearance. The granulated product was made to facilitate easier blending with other components.

Those rockwool products formulated for horticultural use vary considerably in physical and chemical properties among manufacturers. Some product lines have been treated to make the wool more hydrophilic (attract water), while other lines are essentially hydrophobic (repel water). Blends of the two lines can be used to achieve a specific water holding capacity.

Rockwool is utilized because it can be manufactured to uniform standards and does not break down from bacterial or chemical action. When protected from excessive compaction, rockwool provides aeration but lacks notable cation exchange capacity and nutrient supply of its own.

Adoption of rockwool as a component for soilless mixes will depend upon its cost effectiveness when compared with other products which are used to provide noncapillary pore space in potting mixes. The greatest potential for this amendment is in the high quality greenhouse pot plant market. Rockwool is currently being sold in the United States under the names Grodan<sup>®</sup> and Hortwool<sup>®</sup>.

**Calcined clays.** There are now a number of companies in the United States which quarry clay and heat it in specialized kilns which cause the clay to expand under high temperature into a highly porous fused structure which is physically and chemically stable.

The next steps involve crushing large chunks of calcined clay into smaller particles which are subsequently graded into specific particle size ranges. Light weight concrete products and road surfacing additives are two popular applications.

Significant applications for calcined clays in horticulture and agronomy were developed during the 1950s as it was demonstrated that the substrate for heavy traffic turf areas such as golf greens could be improved through clay products such as Turface<sup>®</sup>. When a substantial amount of calcined clay is added to mineral soils which receive heavy foot traffic, the calcined clay maintains good aeration and drainage properties needed for turf growth.

During the 1950s and early 1960s, Turface was also marketed to the Nursery industry as a potting medium component with limited success. Rather high bulk density and cost of the product were major factors limiting its acceptance during a period when modified field soils were used extensively for potting media.

After a long period of rejection by nurserymen, calcined clay is receiving some attention again by a few commercial soil formulators as an amendment in some of the highest quality peat-like mixes. Although the cost of calcined clays is still high, many growers of long-lived pot plants recognize that the quality of the potting mix is frequently the factor most limiting the successful management of their product once in the hands of the consumer.

Many calcined clays have properties which make them desirable as potting media components. Those clays which are receiving the most attention are more porous and therefore considerably lighter in weight than Turface. Calcined clays are essentially indestructible

particles, which provide non-capillary pore space to a mix due to the large spaces created between particles, and hold water internally within their open-pore particle structure. Most calcined clays have good cation exchange capacity which helps in the retention of nutrients but have no nutrient value of their own.

It is suspected that justification for more extensive use of calcined clay will come as the long term management of tropical plants is better understood by interiorscapers. Potting mixes which decompose and shrink once installed in commercial interiorscapes are difficult to manage and often contribute to premature plant replacements. The cost of plant replacements and the additional labor required to manage interior plants growing in low-quality mixes is far more costly in the long term than paying a little more for plants produced in high-quality, physically-stable potting mixes. Some large interior plants can be kept in place for a period of 5 to 10 years with proper care and use of a good potting medium.

In Florida, a calcined clay product for potting mixes is available from Florida Solite Company in Green Cove Springs. The firm has the ability to obtain a specified particle size range through crushing and screening, and sells a product called Solite<sup>®</sup> which is suitable as a container medium component. Calcined clays are also available from other states, Europe and South America.

## **Formulating a growth medium for each production system**

It is possible to formulate a growth medium for a specific container size, growth environment, management intensity and the plant's requirements. It has been