THE STONEWOOL ALTERNATIVE

By Barry K. Witt

In the search for a replacement for Methyl Bromide, many people are looking for chemical replacements or other means of soil treatment that would allow growers to continue their production processes relatively unchanged. This approach overlooks not only the advantages of growing in media other than soil, but also the limitations, costs and dangers of continued production in soil.

Growers of food crops (ex. Tomatoes, Peppers, Cucumbers and Strawberries) and ornamentals (ex. potted flowering and foliage plants) who are growing in stonewool or stonewool-amended soilless media have realized significant increases in yields (20% to 50%) as well as increases in quality and uniformity. Those increases have led not only to greater profit per acre but also lower labor because of less need for grading of product.

The nature of stonewool, which is made from volcanic rock that is melted and spun into fibers, allows for greater air availability and greater water and nutrient availability than soils. These fibers act as a reservoir for air, water and nutrients. Also, since Stonewool has virtually no cation exchange capacity, then almost all nutrients and water (96%) that are added are immediately available to the crop. This enables growers to control the growth of their crops with a much greater level of precision than ever before, thus creating higher yields.

Because these media are completely free of pathogens and pests to start with, and normal growing procedures will keep them that way, there is no need for expensive sterilization. This also greatly reduces the potential of developing resistant pathogens, since these production systems are not nearly as dependent on chemicals as a means for disease control. Since growing in stonewool is done in the controlled environment of a greenhouse, the possibility for greatly reduced pesticide usage (by the use of biological pest controls) has become a reality for many commercial vegetable growers. Also, because Stonewool does not react with most fungicides, growers can take advantage of the more efficient use of active ingredients and reduce their fungicide concentrations, sometimes by as much as 85%.

A matter of increasing importance for growers (especially in states like California) are concerns about ground water contamination. Conventional production methods in soil inevitably lead to ground water contamination by applied fertilizers and other chemicals. Researchers at Grodania A/S (Hedehusene, Denmark) have pioneered the development of water recirculation systems using Stonewool and there are growers all over the world using these systems profitably. The same political forces that have made such systems mandatory in many countries in Europe are beginning to be felt in parts of North America. It seems likely that this trend will continue into the 21st century.

Another area of concern is the availability and the rising cost of land for agriculture. Growing crops in Stonewool allows growers a great deal of flexibility in choosing a production site as well as needing less total area for the same amount of production in soil. As population pressures increase, the relative cost of land will increase proportionately more for soil grown crops than for crops grown in stonewool.

On the other hand, the limitations of growing crops in soil are many. The lack of control over weather conditions for farmers means that at times those growers have little or no control over watering, nutrition, diseases, or growth rate (ask many California farmers after this past winter). For those growers in soil in greenhouses, the higher yields from Stonewool make that controlled environment much more profitable. This lack of control (and the fact that soil is simply a less productive growing medium than Stonewool) leads to lower yields and quality.

The costs of growing in soil include not just the lower production and the higher labor cost of picking and grading lower quality crops, but also the dependence on more and more expensive chemicals for pest and disease control. To make matters worse, these chemicals are becoming more difficult to obtain due to higher costs of registration and restrictions by the EPA. Development of resistance to these chemicals makes this situation worse still.

The dangers include the potential for ground water contamination, and possible threats to worker safety, public safety and environmental safety from large scale use of pesticides.

Predicting the future is always tricky, but I believe that the trends and experiences of growers in Europe give us a good idea of where we are going in North America. While traditional methods of production will be with us for some time to come, I believe that rather than investing large amounts of time and money in perpetuating production systems whose viability is waning, we should instead be looking to facilitate the transition to more efficient systems. There are thousands of businesses growing in Stonewool in North America and around the world today, using techniques developed by Grodania A/S and others over the last 25 years. These techniques are cost effective now and will continue to become more cost effective into the future.