

## STRATEGIC FORCING – RAPIDLY ALTERING PLANT HABIT FOR BETTER NATURAL POLLINATION - 3/6/16

By rapidly altering the plant growth habit, elevating bloom and opening the canopy during early spring growth, we facilitated improved natural pollination by wind, gravity and insects, while coincidentally reducing bloom contamination from ground residue and splashing. Please see dated e-mail photos 4125 – Typical Open – Tight Canopy Plant, and photo 4119 STRATEGICALLY FORCED Row Covered Plant – Elevating Bloom and Opening Canopy, and photo 4170 STRATEGICALLY FORCED Row Covered Plant, forcing COMPLETE.

I believe that we will not have true wisdom or a clear picture of the complex interactions of our world until we meet our Creator. Until then, the best we can hope for is developing a limited knowledge and rather cloudy picture from the shared perspectives of others and careful personal observations. Overall weather, ground temperatures, canopy temperatures, as well as the potential application and value of different tools vary for each farm and location. The following is just a shared perspective from our farm location.

Until about 10 years ago, we worked hard to keep strawberry plants totally dormant during winter months. HOWEVER, we were then totally dependent on nature gradually bringing plants out of dormancy during some extremely variable weather, when our honeybees seldom worked. The dormant plants had maintained a TIGHT canopy desired to protect crowns from cold extremes of winter. The early buds and flowers then developed UNDER that same tight canopy. Those early king flowers were developing UNDER the plant canopy, often in direct contact with decaying leaves/vegetation where they were highly susceptible to gray mold infections. Those early flowers were not as conspicuous to bees and they were too low and tightly held to vibrate with the wind, (Not Blowing in the Wind). They stayed wet longer and were susceptible to water splash cross contamination from the plant and the plastic.

We observed a large number of those very early flowers develop into CULLS, (FEO FRESAS), that we had to pay to have discarded. The exact cause of those culls was uncertain, as some were attributed to winter cold damage, others to partial sterility (cold ground temperature induced), but MANY to poor pollination.

With the advent of some new tools that could rapidly affect the microclimate, we recognized we could use them during a very specific period to change the plant habit to the more desirable OPEN habit of mid season. We recognized that the increased and moderated ground temperature would RAPIDLY end dormancy and jump start growth. We also recognized that with reduced light penetration, the rapidly growing stamens and petioles would STRETCH UPWARD or reach out for the light. Rapid elevation of early bloom was desired to facilitate more wind driven pollination, (estimated at over 80% of early pollination), remove the bloom from co-occupancy with decaying tissue and water splashing, and make them more conspicuous to insects (ANY BEES WORKING). However that required selecting a very limited period (window of modified microclimate). Unfortunately the same tool used to change the

plant dormant habit to an open, elevated habit also clearly reduces wind affects and totally precluded pollinators. We felt that to work as desired it would have to be done STRATEGICALLY for a short period, specific to each farm. We understood that if deployed too early or for too long, the results would be COUNTERPRODUCTIVE. We refer to the very limited window of opportunity as “STRATEGIC FORCING”.

We found that pollination requirements are not generally well understood, especially as they relate to the plant habit, as it changes from tight winter canopy dormant, to open mid season. Information seems to suggest that when pollination is between plants that are from a single clone, the main transfer agents are wind, gravity, and insects. Studies indicated that strawberries are primarily pollinated by wind and gravity, and that over 80% of pollination was attributable to wind vibrating the flowers causing them to shed pollen and gravity helping it journey from the anther onto the pistils. Other studies have confirmed over 60% culls resulting from isolated flowers compared to less than 15% culls with non-isolated flowers (open to wind and bees). Studies seem to indicate that perfect pollination may require both wind driven pollination and many repeat visits by pollinators, and the latter doesn't usually happen at our location in early spring. The weather during the natural hours of pollinator foraging during late February and March (often wet, windy, cloudy or below 60F), may not be controllable to enhance bee activity, but the canopy can be changed to promote more wind activity and make the flowers more conspicuous and attractive to any pollinators that will work. This appears to work at our specific location, but must be tied closely to the end of dormancy, (ground temperature dependent), and ended quickly to permit more natural wind and pollinator access. Hope this info is helpful.

Sincerely,

Clyde