

## **Trees Ain't Cotton! Guidelines for Transitioning from Agronomy to Pomology**

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### **Introduction**

In the 27 years I have worked in grapes, tree fruit and nut crops, I have lost track of the number of farm calls paid to top-notch agronomic crop farmers now planning to “take the plunge” into tree crops. There is no question they know how to farm, because they have done well enough over the years to afford the huge initial investment needed to establish a long-lived perennial and wait four to six years before the first crop is harvested. However, it is this well developed row crop skill set that often makes it very difficult to advise them on the transitions they face in tree production and the importance of executing them with the intensity they applied to their former crops. This paper briefly outlines the factors to be considered in successfully making this expensive and risky transition.

### **Know your Ground**

The fact that your future orchard soil produces four-bale cotton is not the standard by which to measure its potential for high tree yields. Granted, it says something about soil quality, but most agronomic crops are substantially more salt tolerant than trees, with the exception of pistachio. They have recently been shown to tolerate total salt levels ( $EC_e$ ) of at least 5 dS/m in the soil and 4 dS/m in the irrigation water. In contrast, almonds can be adversely affected by  $EC_e$ 's above 2 dS/m, depending upon the concentration of specific cations represented in the saturation extract. For example, exchangeable sodium percentages (ESP) greater than 5 can negatively affect almond productivity. Other elements of concern are boron and chlorides. Salt content of the irrigation water should not be above 1.1 dS/m. Therefore, not knowing the salinity tolerance of your selected tree crop and the soil chemistry of the planting site can be the perfect recipe for transition disaster.

It therefore is of critical importance for transition growers to consult their local soil survey and dig backhoe pits to physically examine their soil with someone knowledgeable about the requirements of your intended tree crop. Backhoe pits allow identification of stratified soil horizons (layering), assessment of perched water tables, and selected soil sampling for salinity evaluation within the future root zone. Notes should also be taken on the rooting depth of past crops. Land used for row crops often has compaction and salinity accumulation at about three feet. This is the result of cultivation and soil water extraction patterns associated with cotton, corn, and alfalfa rotation cycles. Soils typically used for agronomic crops are also usually located near the edge of floodplains or alluvial fans. These soil types can have considerable texture differences with depth. Failure to homogenize them by slipplogging as deeply as six feet can adversely affect root development and water movement through the future tree root zone. Many new tree growers have ignored the need to aggressively modify layered soils and instead, performed chiseling common to preparing for another season of row cropping. The result can be shallow root development and susceptibility to blowover, soil water saturation within the root

zone from restricted movement, uneven tree growth, shortened tree life, and less than optimal production.

In areas with suspected high water tables, backhoe pits should be left open overnight to allow accurate assessment of effective rooting depth. On smaller properties, one pit per ten acres is not excessive. When evaluating a section of land, one pit per 40 acres may be sufficient, unless the soil types or salinity are highly variable. Locate the pits where known differences in soil type or crop performance are evident. Backhoe pit depth should be at least five feet, with one end sloped like a ramp to allow easy access. Always have a second person present for safety and never enter pits that are excessively sandy. Loss of life from caving in has occurred. Observations of soil profiles may also influence decisions on the irrigation system selected. Shallow, sandier soils may be best farmed with drip or mini-sprinklers rather than flood, especially if water costs are high. In summary, the value of backhoe pits should not be overlooked. They are the single greatest investment a grower can make to insure identification of problems before tree establishment.

### **Know Yourself**

We all have strengths and weaknesses. The grower transitioning to tree crops will greatly benefit from having a plan for capitalizing upon their strengths and obtaining professional assistance in areas where one is less capable. If you are a great mechanic or bookkeeper, it may be an unnecessary cost to farm those out. However, if you have never designed an irrigation system or laid out an orchard, now is the time to quickly admit assistance is needed for project success. This self-assessment applies to the following multitude of new issues faced by growers changing from row to tree crops:

1. What resources am I going to use to make all these new decisions on what to plant, nursery source, soil modification requirements, orchard design, irrigation system, planting method, and initial tree care?
2. Where do I plan to acquire the technical knowledge or expertise needed for irrigation management, pest and disease control, nutrition, tree training, and problem identification?
3. To what degree do I wish to be technically capable of participating in these new management decisions? How am I going to acquire this expertise? How much time is it going to take from my other responsibilities?
4. How much decision-making do I want to do, and what do I wish to delegate? How do these allocations affect the potential success of my planting? How do I assess the quality of the decisions I delegate to others?
5. Who is going to be in charge of record keeping, so that we know what we did, when we did it, and how much it cost?
6. How am I going to develop or acquire the skilled labor force to execute my management plan? Can my existing employees be successfully retrained to carry out most of my needs?
7. Who do I wish to involve in assessing at the end of the season what worked, what did not and why?

Granted, these are all things, as a farmer, that you presently do. However, you are now performing them on a crop you are unfamiliar with. What you used to perform routinely with confidence, is now contemplated and discussed. With the row crops, you knew exactly what to expect and look out for, but now you must rely upon newly acquired knowledge and

professional support to avoid getting caught off guard. The result of these new challenges is stress, because the economic ball you are rolling is a sizeable one. Having a plan in place to address the above issues will help secure your success and hopefully reduce the daily turmoil.

### **Timing , Execution, and Communication: Keys to Success**

When it came to the cotton, you knew when to plant, how you wanted to prepare your beds, the depth to plant, and all the other scores of activities necessary to produce large quantities of high quality cotton. The timing and execution of these events was second nature and you knew the “window” available for accomplishing them successfully. Now, that has all changed. You must learn “new windows” for tasks such as dormant spraying, insect and disease management, fertilization, orchard floor weed control, tree training, and harvest, to name a few. Attempting to apply your old windows to your new crop without understanding its fit can cause you trouble and frustrate those you have hired to assist you in your transition. An example would be mite management. Having looked at the orchard yourself, you decide that “the mites aren’t too bad” based upon your experience in row crops, and begin to irrigate without first communicating with your pest consultant. You are therefore unaware that his presence/absence sampling shows the mite population has risen significantly in the past seven days, and predation is low. He has already made arrangements to treat, but is dumbfounded to find the water running upon his arrival. This scenario is common among new and experienced tree farmers. Whether the cause is ignorance or poor planning, the result is the same; poor timing, execution, and communication places your new, expensive tree crop at greater risk, and makes the banker nervous. Much of this can be avoided by having a plan and following it. Creating well-defined lines of authority, responsibility, and communication greatly facilitates timely and proper execution of new farming events. It is the same framework that made you a successful agronomic farmer.

### **Conclusion**

Making the transition from agronomic to tree crops is costly, stressful, and mentally demanding. These challenges in no way reflect a lesser skill set, but simply a different one! Rapid recognition of these differences allow the transitioning farmer to assimilate perennial plant technology and apply it to their benefit, rather than being met with the frustration and disappointment of discovering “what you should have done” after it is too late. Acquisition of this new knowledge involves identification and utilization of reliable information sources, establishment of effective working relationships with service-providing professionals, and application of one’s farming experience to address and resolve key issues faced during the transition. The result can be exciting, satisfying, and profitable!