



By Amir
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Cover crop considerations for citrus

Cover crops protect the soil from sunlight, wind and heavy rain, which enhances soil microbial populations and improves soil structure, water infiltration and root penetration. A reduction in soil crusting, erosion, runoff and nutrient leaching are additional advantages. Through improved nitrogen cycling and nutrient retention, cover crops increase soil fertility.

ORGANIC MATTER SOURCE

Cover crops offer an inexpensive on-site source of organic matter. The ability of the soil to store nutrients and water is improved by increasing soil organic matter. Most of the phosphorus, sulfur and nearly all the nitrogen in the soil is found in organic matter.

The cation exchange capacity of the soil is increased by soil organic matter, which also improves the soil's ability to store macronutrients like potassium, calcium and magnesium. In sandy soils, organic matter improves soil water-holding capacity. In heavy clay soils, it enhances water percolation.

In the case of Florida citrus, greening disease has an impact on nutrient uptake and the soil microbial community, leading to a decline in many soil microorganisms crucial to the nitrogen cycling required for plant survival. The roots of the trees are attacked by the disease, which prevents them from absorb-

ing the nutrients and water that the trees require to survive. The physical characteristics of the soil are also impacted. Soil organic matter helps to improve soil tilth by stabilizing soil structure.

MATCHING NUTRIENT DEMAND

In comparison to chemical fertilizers, the release of nutrients from organic materials is more controlled by biological processes and climatic factors. The amount of cover crop that will be grown and its related nutritional content are difficult to predict. It is challenging to predict how quickly this material will break down (mineralize) in the soil. However, a few fundamental principles may make it easier to match the release of nutrients from cover crops with the nutritional requirements of succeeding commercial crops.

For example, most of the nitrogen is released in the first 30 days after incorporated legume cover crop residues decompose. In many cases, this does not match the nutrient requirements of most future crops. Under adequate fertility levels, grass cover crops typically yield more biomass than legumes while having a lower nitrogen content.

TIMING OF PLANTINGS

The ability of cover crops to germinate and grow without irrigation or fertilizer is a key advan-

tage. For successful germination and growth, cover crop planting must be timed with the rainy season.

Seasonal cover crops are most frequently used. Different cover crops need to be planted all year long in a citrus grove to maintain cover crop biomass. Typically, during the wet season, summer cover crops are planted (June–September). In January and February, a winter/spring mix is planted. It is crucial to select varieties of cover crops that are appropriate for these seasons, especially the winter crop because there won't be much precipitation.

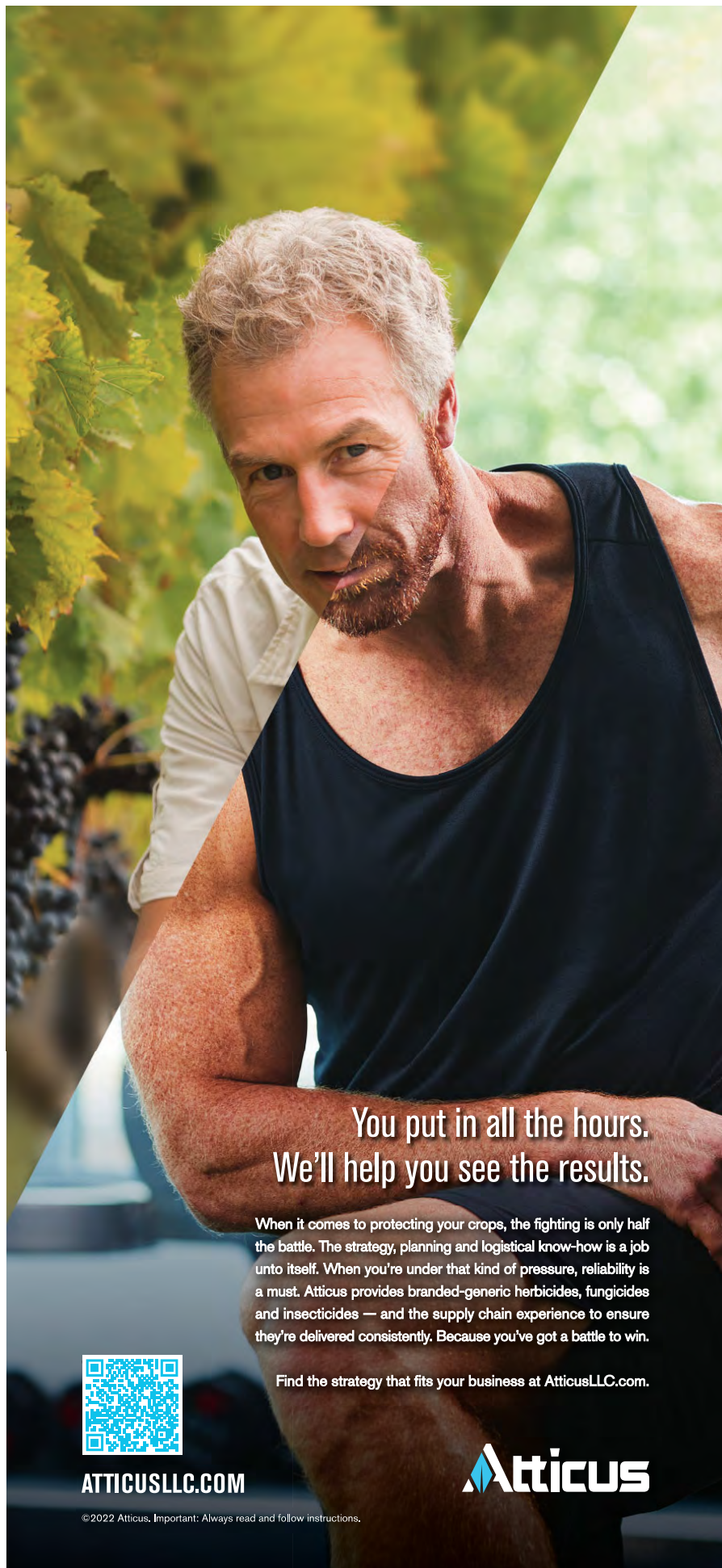
It's important to consider the time required for cover crop varieties to establish. Perennial peanut can grow well in Florida soils and has been tested for use in citrus, but it can take a while to establish itself. In citrus groves, other peanut types might grow faster and be a better choice for planting.

Irrigation or rainfall shortly after planting is ideal for cover crops and significantly improves germination and early stand development. The timing of planting and the growth rate of the cover crops will determine how frequently they need to be mowed. Standard mowing techniques will keep the biomass in the center of the rows, supplying more soil carbon and nutrients to that area of the grove.

MORE KNOWLEDGE NEEDED

While the effects of cover crops on soil health and root development in annual crops have received much research, their effects on perennial crops, such as citrus, are less well understood. Therefore, it is unclear how many nutrients, especially those that boost nitrogen fixation, are released into the soil by cover crops grown in citrus groves. Additionally, little is known about the financial advantages of Florida's citrus industry adopting cover crops. To answer these inquiries, University of Florida researchers are currently conducting field tests with commercial growers. 🍊


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