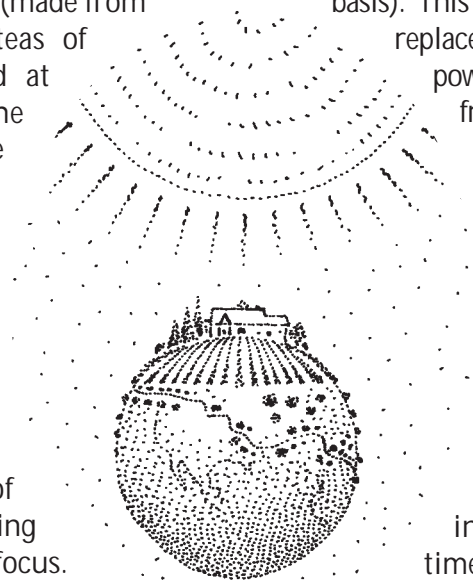


SKY

Biodynamic farming respects the natural rhythms of plants as they respond to the sun and the seasons. Not surprisingly, working with the natural timing and forces of nature instead of against them produces better results with less stress. In a return to “intuitive” farming, we must follow the vines’ own timetable, instead of conforming them to one of our own. Several Biodynamic preparations, (made from cow manure, silica or teas of certain plants), are used at specific times during the season to enhance these natural forces and produce noticeably



EARTH

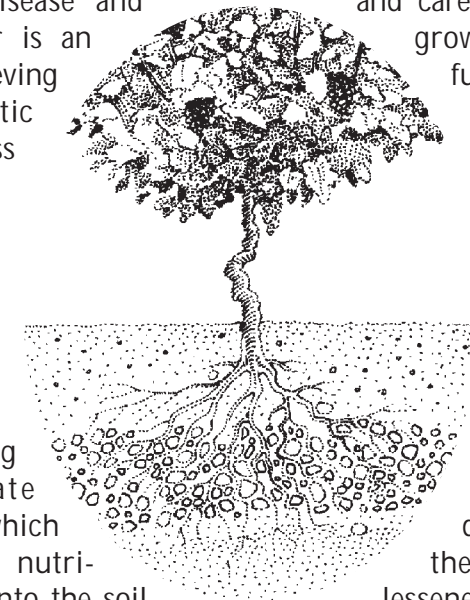
A healthy earth is one of the major goals of Biodynamics and managing fertility is a prime area of focus. Instead of using synthetic fertilizers, we employ compost and cover crops as the natural means to add organic material to feed the vines. By composting the entire winery residue and the effective use of cover crops, most of the fertility of the property can be returned to the soil. After all, only grape juice becomes wine; everything else is recycled back to the vineyard. About a half acre of vines was removed at Quivira to make room for the 500 cubic yard compost pile. We also manage fertility

improved results. Being good stewards of the land also involves thinking carefully and acting thoughtfully about air and light. At Quivira, we have recently installed a 53 kilowatt solar array on the southern-facing roof of our winery building. This grid-tied system employing 297 Sharp 185-watt panels will allow us to generate 100 percent of the electricity used at the winery, (on an annual net basis). This “clean” energy will entirely replace the use of conventional power and saves the atmosphere from hundreds of pounds of carbon dioxide that would have been released during its generation.

through specific cover crops whose tillage back into the soil is carefully timed. In areas of relatively high vigor, for instance, we mow the cover crop (consisting mostly of oats and radishes) and leave it untilled. In this way the nitrogen is not released to the vines during active growth. In low-vigor areas, the cover mix includes more legumes that “fix” nitrogen. When this cover crop is tilled into the soil in the spring, additional nutrients are made available to the vines. By regulating growth in this manner, balance and fruit quality are naturally promoted.

CANOPY

Healthy roots are important because they mine the soil for the inherent characteristics of the property. However, it is the above-ground portion of the plant that carries the vital fruit. Thus it is critical to the quality of the grapes that the plant above be in balance with the plant below. Biodynamics holds that understanding this simple truth is the key to averting the need for chemical intervention due to disease and pests. Controlling vigor is an important part of achieving plant balance. Synthetic fertilizers and excess water will result in



SOIL

Biodynamic farming practices help create healthy porous soils which allow water, gases and nutrients to penetrate deep into the soil strata. This fosters strong, wide, deep root growth that enables the vines to mine elements from the soil and transfer them as flavors to the fruit. The over-cultivating of dry soils leads to powdered and compacted soils. We find that timely cultivation using specially designed “sweeps” (that slide under the soil surface) instead of discs (that powder and dry out the soil) results in noticeably healthier cover crops and better-drained vineyards.

unnatural vegetative growth as well as higher crop loads. This in turn increases the disease pressure for mold and mildew by shading the fruit zone, packing grape clusters together and preventing airflow. Limiting vine vigor can avoid the need for synthetic fungicides that affect insect populations and natural yeasts. At Quivira, we achieve this goal by controlling soil fertility and carefully managing the canopy growth. Ensuring adequate diffused light on the fruit also promotes good tannin and color development and avoids vegetative flavors.

Surprisingly, this has resulted in a dramatic decrease in water stress in the vines and has materially lessened the need for irrigation in some vineyard blocks. In conventional viticulture, the health of the soil is often compromised in the desire for a weed-free vineyard floor. Synthetic herbicides are used which affect far more than just the weeds they kill. At Quivira, instead of chemicals, we use a “hoe plow” to smother most of the in-row weeds. The rest are removed by hand. Between rows, weeds are controlled by the mown cover crop or by tilling the soil.