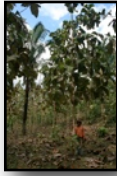


Bauers Family Tree Farms News

A Semi-Annual Newsletter

Issue N° - 8 March 2011

Farm Update
Four Great Years of Growth
 Page 1



Costa Rican Parrots
 Page 2



Timber!
Green in Many Ways
 Page 3



Farm Update - March 2011

While the rest of the Northern hemisphere is still locked in winter, Costa Rica is in the middle of its summer season. Sunshine and substantially less rain define the summer months in this country. Verano (Spanish for summer) starts in December and ends in April, and Invierno (Spanish for winter) runs May through November. In Costa Rica there are only two distinct seasons -- spring and fall do not come to this tropical country.

These two very distinct seasons are critical for growing teak. In the wet winter months on the farm, it



rains an average of 12-15 inches per month. By comparison, it rains an average of less than 1 inch per month in the dry summer. For the seven incredibly rainy months, the teak trees on the farm grow aggressively, averaging over a foot of vertical growth per month. When the winter rains stop, the teak trees also stop growing; they lose their leaves, and their wood hardens and contracts. It is this hardening process during the dry season that makes teak wood so valuable.

The past four rainy seasons in Costa Rica have been well above average. Many of the surrounding communities have had bridges washed out due to all the rain. Evidence of all this rain can be seen on the farm road as well. Sections of the road have been eroded more than six feet deep and one of the concrete drainage culverts has been completely washed out. Crews will be out at the end of the dry season to repair the farm road.

Unlike the surrounding infrastructure, the trees on the farm have thoroughly enjoyed all the extra rain. Most of the trees on the farm have now grown to 30-40 feet tall and are approximately 4-6 inches in diameter. Because of the tree farm's excellent maintenance, heavy rain and erosion are not problems. By looking at pictures of the trees on the farm you can see that there is always undergrowth. The undergrowth plants are critical in keeping the soil stable during deluges. One of the major maintenance responsibilities on the farm is to machete down the undergrowth to a height of about 12 inches. If the undergrowth is allowed to grow too tall it can stifle the



trees and take away valuable water and nutrients. However, if the undergrowth is cut too short the soil can erode exposing tree roots and even causing trees to fall over. It's for this reason that the undergrowth must be kept in place and trimmed regularly.

Although it is summertime in Costa Rica, the teak trees on the farm look more like trees in the United States look right now. The majority of the leaves have fallen from the teak trees, and much of the surrounding plant life is browning. Even though the trees are not growing at this time, we know the trees are going through their hardening process, making teak one of the densest and most beautiful wood grains on the planet.

Parrots of Costa Rica's Pacific Northwest



Costa Rica claims 16 of the world's 330 or so parrot species, including six species of parakeets and two species of macaws, the giants of the parrot kingdom. The parrots are predominantly green, with short, truncated tails (parakeets and macaws, however, have long tails), and varying degrees of colored markings. All are voluble, screeching raucously as they barrel overhead in fast-flight formation.

The four most common parrots seen in the area around the farm are the Yellow-Naped Amazon, the White-Fronted Amazon, the Orange-fronted Conure, and the Orange-chinned Parakeet. All of these parrots are predominantly green with different colored markings in oranges, yellows, whites, reds and blues.

Diet:

Although they will eat fruit, flowers and nectar, and occasionally insects, parrots are largely seed eaters. As a result, they have to work harder to find suitable food than do fruit eating birds whose host plants actively recruit animals to visit them. Parrots must deal with diverse and complex protections that plants create to protect their seeds. These include hard capsules, spines, and toxic or distasteful

chemicals in the seeds. The powerful hooked bill of parrots surely evolved as a tool for gaining access to seeds. Some parrots regularly eat clay or other earth deposits. It is thought that these materials help absorb toxins that were ingested with the seeds. Parrots are exceedingly dextrous with their feet which they use one at a time to hold large fruits or seed pods while eating. Parrots tend to favor one foot just as humans favor one hand: many of the local species are said to be largely left-footed, although there are clearly exceptions as in humans.

Home Range:

Another consequence of the seed-eating diets of parrots is that they have much larger home ranges than do birds in other groups but of similar body size. As a result, they do not defend territories like many sympatric insectivorous or nectarivorous birds.

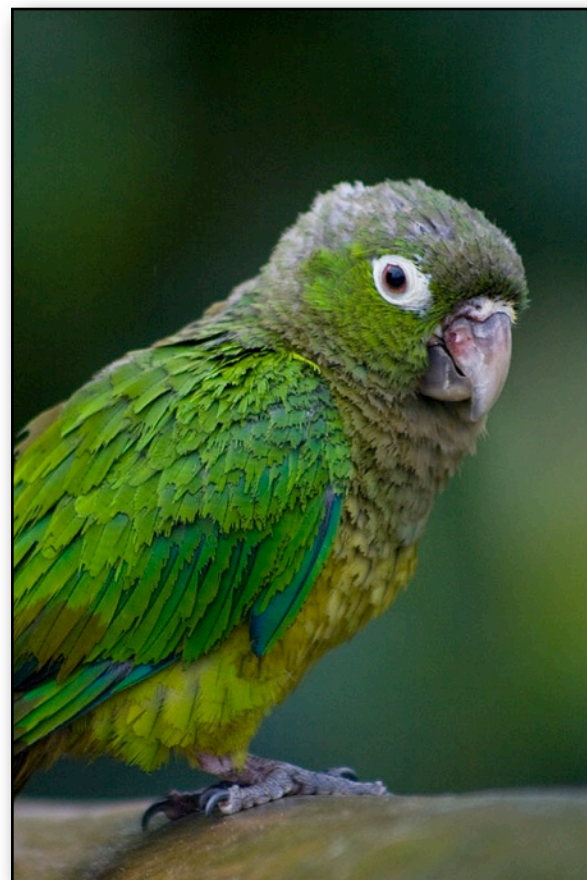
Breeding:

Nearly all parrots are hole-nesters and these Costa Rican parrots are ostensibly monogamous year around. Most rely on natural cavities in trees or palms for nest sites. For many parrots, suitable nest sites may be a limiting resource resulting in competition between pairs for good nest sites and reuse of the same nesting site in successive years.. In most species, the female does all the incubation and is fed by the male at intervals during this period. Because eggs are incubated soon after the first is laid, eggs hatch asynchronously and chicks in the same nest may be at quite different developmental stages. Both parents feed the offspring with at least one parent insuring that the smaller less competitive chicks get their share.

Flock Dynamics:

Except during the breeding season, these parrots are usually found in small foraging flocks during the day. Larger night

roost associations break up after dawn into foraging flocks of 6-20 birds that radiate out from the night roost in all directions. During the next 2-3 hours, each flock ranges over large areas hitting a rapid succession of different foraging sites. In mid-morning, flocks that find themselves in the same area land at a common site and fuse into a larger aggregation. Here they preen, sleep, and play for several hours. Play is very common at this time: mates bite each other's feet, hang upside down, chew sticks and branches, and spar. Midday is usually a period of sleep and repose for these parrots. In early afternoon, the sleeping and play associations break up again into smaller flocks for more foraging. By late afternoon, flocks are refusing again at night roost staging areas. The daily life of these species is thus a continuous succession of fission and fusion of social units.



The Environmental Benefits of Trees

You'll notice we are replacing the section that we typically use to write about timber's investment characteristics with the environmental benefits of trees.



As things stand in February of 2011 it seems the economy is starting to head in a positive direction, albeit slowly, and equity markets are on much better footing than they have been for the last couple of years. That being said, the times we have just come through remind us of why we like timber. The trees grew from seedlings to 30 to 40 foot tall trees with 4 to 6 inch diameters without regard to what was happening in any of the world economies.

We haven't written about the environmental benefits of planting trees for some time now and now seemed like a good time to remember that not all we do is simply for economic gain.

Trees provide a wealth of environmental benefits with two of the biggest being the reduction of air and water pollution.

As it relates to air pollution trees affect air quality in three main ways. They are the removal of air pollutants, temperature reduction, and the emission of volatile organic com-

pounds.

Removal of air pollutants

Trees remove gaseous air pollution primarily by uptake via leaf stomata. (Stomata are the special spores that allow the passage of material. The majority of the stomata are on the underside of leaves.) Typically fast growing species of trees in wet areas such as teak have much higher stomata count and therefore have a much greater ability to uptake gaseous air pollutants. Once inside the leaf, gases diffuse into intercellular spaces and get absorbed. Trees also remove pollution by intercepting airborne particles.

Temperature Reduction:

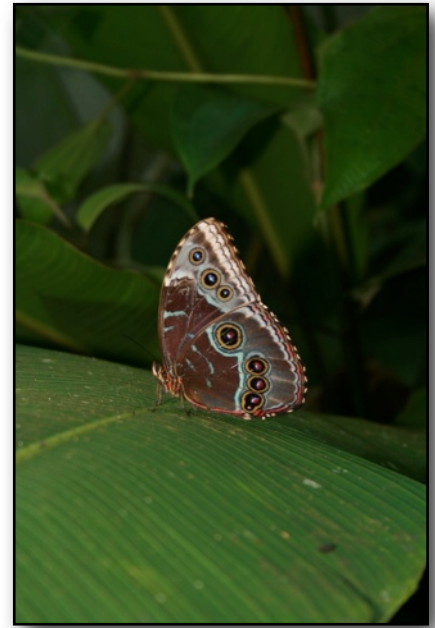
Tree transpiration and tree canopies affect air temperature, radiation absorption and heat storage, wind speed, relative humidity, turbulence, surface winds and mid-level atmospheric air flow. (Transpiration is the evaporation of water from plants. It occurs chiefly at the leaves while their stomata are open for the passage of CO₂ and O₂ during photosynthesis.) The reduction in temperature and wind and the increase in humidity are very important to the environment as they provide a more hospitable ecosystem for the growth of other plants and animals in the area. The decrease in heat absorption by the earth is also important component in reducing global warming.

Emission of Volatile Organic Compounds (VOCs):

Emissions of volatile organic compounds by trees can contribute to the formation of ozone and carbon monoxide adding back to the ozone layer, which protects the earth from harmful rays and reduces global warming.

As it relates to water pollution, trees affect water quality in two main ways. They are the reduction of erosion

and the absorption of pollutants by the trees.



Erosion:

The deep root systems of trees absorb storm water and stabilize the soil to reduce erosion. Trees and their roots also slow any surface runoff water; as water is not able to accelerate the damage it can cause to the soils is much less.

Absorption of Pollutants

Trees capture sediments in runoff as well as large amounts of chemical pollutants such as pesticides, nitrogen and phosphorus. Trees also alleviate pollution as they are an important part of the water cycle. As water falls to earth in the form of precipitation, plants intercept or catch some of the water before it falls to the ground. This is called interception. Plants also put water back into the air through transpiration. As water is cycled through the tree the pollutants are absorbed by the tree, broken down and stored.

We hope these environmental benefits give you another reason to be proud of the trees you are growing.

Thank You

We feel extremely lucky to be able to watch the farm take shape. We hope you do too.

Jake, Joe, Jaime

