

# A Cycad Fertilizer for Western and Arid Climate Soils

by Maurice Levin, Jurassic Garden

Over the past 15 years, in our nursery and in clients' gardens, we have worked with numerous fertilizers to find the best way to augment cycads' healthy growth. During that time, through trial, error, reading and seeing both good results and bad ones, we've come up with a fertilizer solution for growing cycads in Western US and arid climate soils.

In order to understand this solution, it may be helpful to discuss the challenges growers face in the Western US and other arid climates, and why using the correct fertilizer is important to growing healthy cycads.

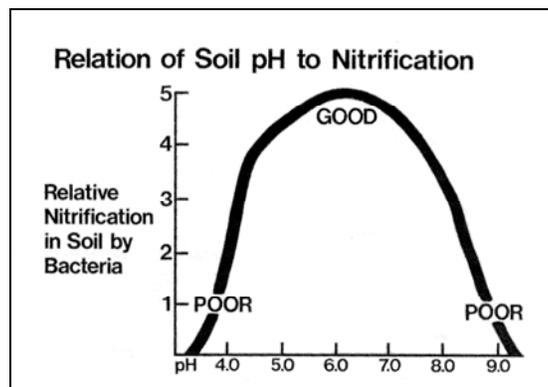
Let's start off by assessing the challenge:

1. Western and Southwestern soils and waters offer unique challenges
2. Cycads have special nutritional needs

## Western Soil and Waters

The Western US growing environment is unique, because Western soils and water tend to be in arid regions, resulting in soil high in alkalinity and salts, and low in iron and organic material. This presents specific problems for plants that come from non-arid regions, because they need soil with organic content, healthy, living soil that grows robust, pest-resistant plants. Arid climate soils often combine high pH (alkaline) soil and sparse organic matter (humus) which can present challenges for plant growth.

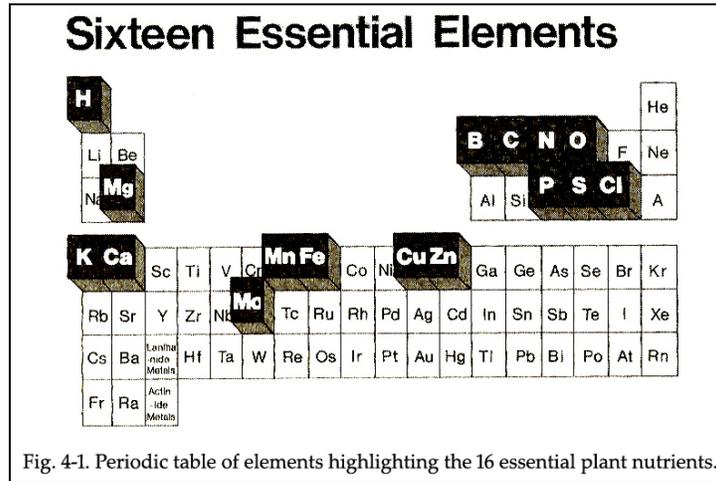
Let's discuss high pH first (high alkalinity). As you'll see in the graph below from the Western Fertilizer Handbook, nitrification (Nitrogen becoming available to a plant) is best at a pH of 4.5-7.5. So, if you want to use your fertilizer effectively (and economically!), you need to be growing in a soil medium that is between 4.5 and 7.5 pH. If you're not acidifying or neutralizing your water, and your soil remains as it is, alkaline water and soils can prevent Nitrogen from being used by your plant.



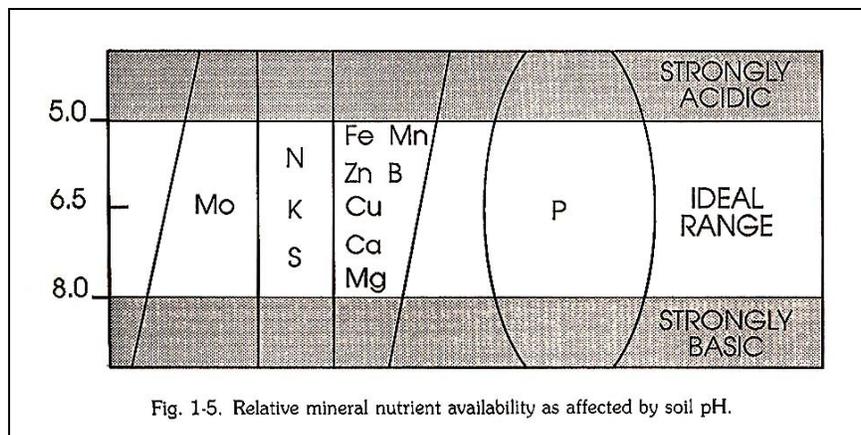
If you live in the City of Los Angeles, you may be surprised that the pH of water provided to Los Angeles area residents averages 8.0, and ranges up to 8.5 pH, based on recent data from the LA Department of Water and Power. Western soils, without organic or other amendments, typically range from 7.5-8.5 in pH as well.

In terms of other nutrients, according to the Western Fertilizer Handbook there are 16 Essential Elements necessary to grow healthy plants, which are:

- H – Hydrogen
- B – Boron
- C – Carbon
- N – Nitrogen
- O – Oxygen
- Mg – Magnesium
- P – Phosphorus
- S – Sulphur
- Cl – Chlorine
- K – Potassium
- Ca – Calcium
- Mn – Manganese
- F – Iron
- Cu – Copper
- Zn – Zinc
- Mo – Molybdenum



These elements must be available to your cycad (or other plant) for it to grow well. The chart below from the Western Fertilizer Handbook shows what pH does to these nutrients' availability to your plant:



High (alkaline) pH means results in your plant losing many key nutrients, except for Molybdenum, a trace element needed only in microscopic amounts.

Another key element is Iron. The chart above shows that iron is particularly unavailable in highly alkaline soils (above 8.0 pH). Photos of cycads in African habitats show dark orange/brown soils, indicating high iron soil. Cycads love iron, and our **Western soils are notoriously deficient in iron** (note our soil's often light tan color). When cycads grow well in places like Hawaii, it's not only that they're in the tropics, but also that the volcanic soil is iron rich. Look at the "Red Dirt" they're growing in! In both these locations, I've seen growers literally scoop soil from the ground and use it in their potting mix (see photos below)!



Hawaii



South Africa

To offset the lack of organic material in most western soils, we recommend you use lots of organic mulch, for all your plants not just your cycads. This helps neutralize soil pH and feeds your plants naturally.

## Cycad Nutrient Needs

Now to our second concern, Cycad-specific fertilizer needs. In his fundamentally important article on fertilizers, Tom Broome points out that fertilizing is an important tool for augmenting cycad growth and coning. His work has revealed that cycads benefit from higher Nitrogen, particularly soluble Nitrogen, to provide the energy needed to push forth large flushes of leaves and produce strong and viable cones. Tom points out that while cycads may look like palms, they have different fertilizer needs, writing

I find many people using palm fertilizer on cycads. They think because cycads look like palms, they are closely related. Of the seed bearing plants, cycads are about the farthest plant group away from palms. Most palm fertilizers are low in Nitrogen (with N around 7-10). To produce a high enough energy level so that previously mentioned results can be attained a fertilizer with a (higher) Nitrogen level ... needs to be used.

It is also well documented, both by Tom, and by others who grow cycads, that micronutrients are necessary for healthy cycad growth. This is one area which palms and cycads have in common.

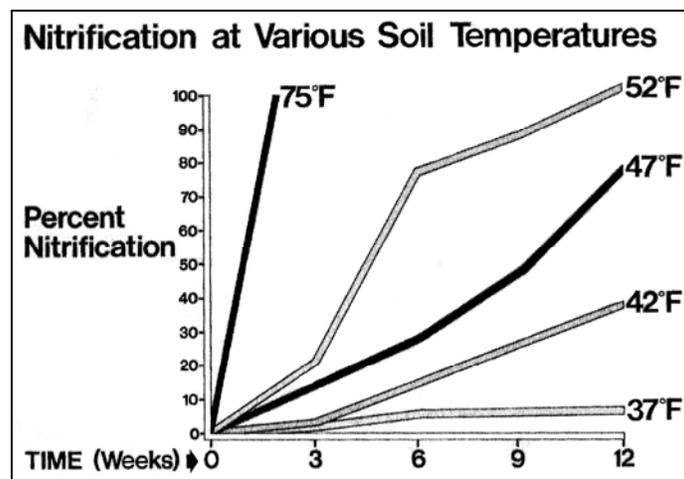
Additionally, most cycads prefer a slightly acidic soil. Many of them come from climates with winter dry/summer wet climates, and slightly acidic soil. This is just the opposite of what most arid climates offer.

### The Solution: A Fertilizer for Western and other Arid Climate Soils

We have developed a fertilizer that addresses the above concerns. It combines, from several sources a combination of organic and chemical fertilizers, blended to accomplish the following:

1. Addresses soil and water alkalinity, both short-term and long-term, through a combination of organic and chemical sources that not only feed the plant, they feed the soil
2. Adds the necessary iron which cycads need but is absent or unavailable in many soils
3. Adds organic material for the soil's and plant's long-term health
4. Provides a combination of Nitrogen sources, organic and chemical, soluble and insoluble, to give the plant its necessary energy for growth, and which also feeds the soil
5. Has a combination of chelated and non-chelated minerals for optimal nutrition

Finally, a suggestion regarding when to fertilize, here is another graph from the Western Fertilizer Handbook. If you fertilize when it's cold outside, then it takes the Nitrogen much longer to get to your plants. The weather should be warm when your cycads start pushing forth their new leaves. So, we'd recommend waiting until outside temperatures average in the 70's for a couple of weeks, before you apply fertilizer in the Spring. Then, apply fertilizer again in early to mid summer.



I wish you the best growing results, and hope this article is a helpful resource.

*Maurice Levin*