



SULCATA STATION

Diet Recommendations for Sulcata Tortoises

Why what you feed your sulcata matters

Sulcata tortoises evolved to deal with life in a semi-arid environment, where the only food available for much of the year is dry grasses and weeds. Be aware that your sulcata tortoise requires a very high-fiber, grass-based diet to stay healthy. If you feed the wrong foods to your tortoise, it will grow too quickly, develop a bumpy, pyramided shell, and it may develop other health problems that could drastically shorten its lifespan.

The Five Most Common Dietary Problems

There are five common dietary problems that owners of sulcata tortoises typically encounter when feeding their tortoises:

1. Not providing enough fiber
2. Providing too much protein
3. Giving fruit or other sugary foods to grazing tortoises like sulcata and leopard torts
4. Not providing enough calcium, or the right calcium/phosphorus balance
5. Generally overfeeding the tortoise

How to Avoid These Common Dietary Problems

You are responsible for the health and well-being of your tortoise, so you must make the effort to feed the right foods, and in the right quantities. Here are a few suggestions to help you avoid the typical dietary pitfalls:

1. Fiber: Provide enough fiber by feeding your tortoise a diet that is based predominantly on grasses with some edible weeds, leaves, and flowers, as described in more detail below.

2. Protein: AVOID giving your tortoise foods that contain high levels of protein. This means that **you should NEVER give your sulcata tortoise the following foods:**

- Cheese or dairy products of any kind
- Cat or dog food of any kind
- Legumes (peas, beans, green beans, soybeans or soy-based products like tofu)
- Commercially-available “tortoise diets” (such as Pretty Pets, Mazuri, Zoo Med, etc.)
- Grains and Grain products (corn [maize], wheat, barley, rye, etc.)

High protein diets stress the tortoise's kidneys and liver. High dietary protein, particularly when accompanied by inadequate hydration, has also been shown to cause pyramided shells in sulcata tortoises. For more information on this issue, download our [What Causes Pyramiding in Tortoises?](#) document.

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You should also avoid feeding your tortoise a steady diet of fresh or frozen/thawed vegetables. New owners are usually surprised to find out that these foods are high in protein. In fact, all types of produce grown for human consumption -- even dark leafy greens -- are too high in protein for sulcata tortoises to thrive on. However, SMALL quantities of dark, leafy greens, given ONCE IN A WHILE as a treat, don't seem to be harmful.

If your tortoise is hooked on a diet of fresh or frozen veggies, you need to download our Switching Your Tortoise to a Healthier Diet document.

3. Fruit: AVOID giving your sulcata tortoise fruit! Even though sulcata love fruit, it's best NOT to give them any, if possible. Grazing tortoise species such as leopard and sulcata rely on beneficial bacteria in their intestines to help them digest and extract nourishment from the grasses that they eat. If you give your tortoise large amounts of fruit, the acids and sugars in the fruit can actually change the pH of the tortoise's digestive tract, and this pH change can cause the beneficial bacteria in the tortoise's gut to die off. When large quantities of gut bacteria die, they release toxins that can cross the gut wall and enter the tortoise's bloodstream, causing the tortoise to experience a form of Toxic Shock Syndrome that can be fatal.

4. Calcium: Provide the right amounts of calcium and avoid or reduce giving foods that prevent calcium absorption. Sulcata tortoises require a great deal of calcium in their diet to help them grow healthy bones and shell. The Sahel area of Africa where sulcata naturally occur is a semi-arid region that has calcium-rich soils. Wild sulcata tortoises therefore get sufficient calcium by eating the grasses that grow in these calcium-laden soils.

Think about where you live and how you feed your tortoise. If you live in a semi-arid or arid area with little rainfall, the calcium levels in your local soil will be relatively high. Any grasses grown in such a calcium-rich soil will also be high in calcium, so if you allow your tortoise to graze at will on grasses grown in this soil, you might not have to give your tortoise as much in the way of calcium supplements.

However, if you live in a rainy, humid area, then the calcium levels in your soil will be very low because it is dissolved and removed from the soil by the frequent rainfall. Any grasses grown in your local soil will be calcium-poor. Therefore, you should provide your tortoise with calcium supplements on a regular basis.

In choosing a calcium supplement, make sure you choose one that does NOT contain Phosphorus. Calcium (Ca) and Phosphorus (P) are both necessary to build healthy bone tissue. However, the phosphorus available in most food items is used much more readily by the tortoise's body than calcium, so you really don't need to supply any additional phosphorus to your tortoise.

We've found that the easiest way to get calcium into our tortoises is to leave cuttlebones in their pens. We purchase cuttlebone in bulk from a supplier on the Internet. (Suppliers can change, so

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we recommend you use Google to find “cuttlebone in bulk”.) If you choose to use cuttlebone for your tortoise, make sure that you remove the hard shell-like backing from each cuttlebone (a small flat-blade screwdriver seems to work best to pop this backing off), then break the cuttlebone into pieces and spread it around your tortoise enclosures. Your tortoise should chew on the cuttlebone when it feels the need for additional calcium.

If you prefer to use a powdered calcium supplement, we recommend buying a human calcium supplement – one that contains calcium citrate and/or calcium maleate – in capsule form. Once a week, open a capsule (or grind up a tablet if your brand comes in tablet form) and mix the powder with a spoonful of canned pumpkin puree. (Sulcata love pumpkin puree, so anything mixed with the pumpkin will be eaten!) You could also sprinkle the powder lightly over dandelion greens instead (or any type of edible weeds) and offer it to your tortoise. Powdered supplements stick better to dampened greens, so wash the greens, shake off the excess water, then sprinkle the powdered supplements onto the greens.

5. Over-Feeding: AVOID over-feeding your tortoise. Sulcata tortoises can experience a variety of health problems when they are fed the wrong foods -- but they can also have problems when they are fed too much of the right foods. Overfeeding is the single biggest mistake that most tortoise keepers make. Reptiles have slower metabolisms than mammals like dogs or cats, so they really do not need to take in as much food as you might think.

You should also consider the activity level of your tortoise. Can he go outdoors and walk around a secure yard every day? Or does he stay indoors on a small tortoise table? If your tortoise is mostly sedentary, he doesn't need to be fed every day -- really! Every other day is fine, even though he may look up at you with pleading eyes in between feedings. A certain amount of “tough love” is required on your part to not give in.

Consider this analogy: A sedentary tortoise on a tortoise table is like an office worker stuck in a cubicle all day long. If the office worker eats a lot of fast food all the time and never gets any exercise, the chances are pretty good that he or she is going to be overweight, flabby, and have high cholesterol, high blood pressure, and other health problems. Tortoises who live indoors on a tortoise table and who are fed lots of vegetables (which are their equivalent of fast food!) on a daily basis are ALSO going to experience health problems. They will develop pyramided shells, they may be more susceptible to upper respiratory infections, and they may develop damage to their kidneys and livers.

Recommended Diet Items

Now, after reading about all the things that you shouldn't feed your tortoise, you may be thinking, “What on earth am I supposed to feed this little guy/gal?”

The goal in feeding your sulcata tortoise should be to imitate Mother Nature. You should try to provide those items that the tortoise would encounter in its natural range, and in roughly the same proportions that it would encounter. If you can do this, you will find that your tortoise has

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few, if any, health problems and will grow slowly and steadily, with little to no pyramiding.

Below is a list of items that SHOULD make up the diet of your sulcata tortoise:

1. Grasses: Grasses should make up at least 75 percent of your sulcata tortoise's diet. You should try to supply as many different grasses as you can from the following list:

- Buffalo grass (*Buchloe dactyloides*)
- Bermuda grass (*Cynodon dactylon* -- which actually originated in Africa!)
- Orchardgrass (*Dactylis glomerata*)
- Big Bluestem (*Andropogon gerardii*)
- Little Bluestem (*Andropogon scoparius*)
- Western wheatgrass (*Agropyron smithii*)
- Blue Grama (*Bouteloua gracilis*)
- Arizona Fescue (*Festuca arizonica*)
- Lawn Fescue (*Festuca arundinacea*)
- Sheep Fescue (*Festuca ovina*)
- Creeping Red Fescue (*Festuca rubra*)

The best way to provide the grass-based diet that a sulcata requires is to have a large, safely-enclosed outdoor yard in which you can plant various types of grasses for your sulcata to graze on. This will allow your tortoise to graze at will, while he gets exercise and exposure to sunlight. Owners who can provide a tortoise yard don't have to worry about overfeeding, or whether the tortoise is getting enough UV exposure.

2. Edible Weeds, Leaves, and Flowers: These items should make up the remaining 25 percent of the diet, if possible. Make sure that any plants you feed to your tortoise have not been treated with chemical fertilizers, pesticides, herbicides, or fungicides. If you buy a plant from a large chain store like Lowe's, Home Depot, Do-It-All, etc., re-pot the plant in organic potting soil and wait a couple of months to feed the plant to your tortoises -- it will take a while for all the fertilizers and/or pesticides used by the store to leach out of the plant. Here are some recommended plants for sulcata tortoises:

- Dandelion -- both the yellow flowers and the leaves
- Prickly Pear Cactus pads (*Opuntia* species) -- Scrape off the needles with a sharp knife or burn them off by holding the pad over the flame of a gas or propane camp stove.
- Broadleaf Plantain or Buckhorn Plantain (*Plantago major* or *Plantago lanceola*)
- Globe Mallow (*Sphaeralcea grossulariaefolia*) -- flowers and leaves
- Henbit (*Lamium amplexicaule*) -- flowers and leaves
- Hollyhock (*Alcea rosea*) -- flowers and leaves
- Roses (*Rosa* species) -- flowers only
- Sowthistle
- Chickweed
- Hibiscus (*Hibiscus* species) -- flowers and leaves

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- Mulberry (*Morus* species) -- leaves only; give the mulberry fruit to box turtles.
- Geranium (*Pelargonium* species) -- leaves and flowers
- Grape (*Vitis* species) -- leaves only; give the fruit to box turtles or make wine!

3. (OPTIONAL; FEED IN VERY SMALL QUANTITIES) Dark Leafy Greens. This means you can feed these items in VERY SMALL quantities, once or twice a week. These items are NOT necessary, but they can serve as a nice treat for your tortoise, or as a way to get them to eat calcium and vitamin supplements.

Some dark leafy greens contain significant levels of a compound called oxalic acid. This compound affects the way that the body absorbs calcium. If you can, choose greens that are lower in oxalic acid, and feed them only in small quantities as treats.

Leafy Greens that are relatively low in Oxalic Acid:	Leafy Greens that have higher levels of Oxalic Acid:
Romaine Lettuce	Mustard Greens
Arugula	Spinach
Collard Greens	Kale
Turnip Greens	Broccoli
Dandelion Greens	Cauliflower

Many people asked us to clarify this recommendation. Basically, a couple of kale or spinach leaves given to your tortoise once in a while is probably fine, if the tortoise is eating grasses and weeds most of the time. On the other hand, feeding your tortoise only kale and spinach will lead to it having health problems. The key concepts here are small quantities and infrequently.

4. (OPTIONAL; FEED IN VERY SMALL QUANTITIES): Pumpkin. About twice a month, we mix canned pumpkin puree with a small amount of powdered vitamin and calcium supplements and make sure that each tortoise receives a couple of spoonfuls. It's a painless way to get them to take supplements since they really love the color and taste of the pumpkin puree.

We also feed our tortoises whole pumpkins when they are in season. When the pumpkins ripen in the fall, we purchase three or four medium-sized ones for our tortoises. Once a week or so, we simply cut up a pumpkin using a hoe or shovel and distribute the pieces around the tortoise pen. Over the course of a day or two, the tortoises find and consume all the pumpkin pieces. Some people have reported to us that they freeze what they don't use immediately; even though the pumpkin chunks tend to get stringy after being thawed, most tortoises still love them as an occasional treat, rind and all.

Fall and Winter Feeding

Feeding large tortoises is tough enough during the spring and summer, but when fall and winter roll around, it can become even more challenging. (Remember: sulcata tortoises do NOT hibernate, so you must provide food year-around for your tortoise.)

If you live in the southwestern or southern parts of the USA or Europe, you are fortunate because your sulcata tortoises should be able to go outside and graze almost year-around. However, if you live in areas with snowy and/or wet, cold winters, you must plan in advance how you are going to feed your "shelled eating machine" during the wintertime when it cannot go outdoors to graze.

Basically, you have two choices for feeding your sulcata tortoise during the winter:

1. You can grow a variety of grasses and weeds indoors in pots or other containers; OR
2. You can buy grass hay and use it as the main staple for your tortoise.

Either way, you should keep feeding your tortoise a high percentage of grass, along with small amounts of dark leafy greens, throughout the winter, or for as long as your tortoise cannot go outdoors and graze on its own.

This topic is covered in more detail on our [Fall and Winter Feeding Recommendations](#) webpage.