

## THE UNIVERSITY OF ARIZONA Cooperative Extension

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## May 2019 Garden & Landscape Newsletter

U of A Cooperative Extension, Pinal County 820 E. Cottonwood Lane, Bldg. C., Casa Grande, AZ 85122 (520) 836-5221 http://extension.arizona.edu/pinal

#### **SLOW RELEASE FERTILIZER**

If you are having trouble keeping your indoor and outdoor plants from turning yellow because of nitrogen deficiency, you might want to try a slow-release nitrogen fertilizer.

For best results, it is important to provide a steady supply of nitrogen to just about all plants. The exceptions would be legume plants and cacti. They get their nitrogen from other sources.

Nitrogen is a basic component of many cellular structures within the plant and a shortage of nitrogen turns leaves yellow, becomes a limiting factor when it comes to plant biological activity, and slows down growth. It is almost always lacking in our desert soils so regular applications of a nitrogen-containing fertilizer is an important step in the gardening process.

In addition to nitrogen, there are fifteen other essential nutrients, any of which can become limiting factors themselves when in short supply. Many of the slow-release fertilizers available on the market will often include one or more of these other nutrients, but since nitrogen is a key requirement for plant growth, and almost always in short supply here in the desert, we will focus on this important nutrient.

Nitrogen can be added to soil in many different ways. It is a basic component of plant-based fertilizers, such as compost, animal manures, and worm castings. Many choose to feed their plants with these materials. Others choose to use a commercial fertilizer, such as ammonium sulfate or ammonium phosphate. Each of these, and others, are excellent choices, but proper use, and maximum benefit to plants, require that we understand basic plant needs, and what we need to do to properly meet those needs. The bottom line is that most plants need constant access to free nitrogen in a form that it can take up and use in order to grow and produce well.

Most full-size trees and shrubs will need access to a minimum of one pound of actual nitrogen per plant, per year. For lawns, the recommendation is one pound per 1,000 square feet of turf. For ammonium sulfate, 21-0-0, that translates to about five pounds of product per tree, per year. For ammonium sulfate, 16-20-0, that turns into about four pounds. The actual rate for any fertilizer can be easily calculated by dividing 100 percent by the number in the first slot on the bag of fertilizer, and then multiplying the result by the recommended fertilizer rate, which in most cases is generally one pound. Thus, 100 divided by 21 results in a recommended rate of about five pounds for ammonium sulfate per tree per year.

SLOW RELEASE FERTILIZER ... CONTINUED ON PAGE 2

IN THIS ISSUE:	
Slow Release Fertilizer	1
The Rubber Plant as an Indoor Plant	3
Lepidopterous Insects Command Our Respect	5
TIP FOR MAINTAINING GARDEN HAND TOOLS	7

#### SLOW RELEASE FERTILIZER ... CONTINUED FROM PAGE 1

Now, to be perfectly clear, we do not feed it all in one application. That would most likely damage the roots of the plant. In reality, we divide up the total weight of the fertilizer into a minimum of three applications. Five pounds of ammonium sulfate divided into three applications will make each application about one and one-half pounds.

While that works pretty well for most plants, it is not completely without its challenges. The problem is that nitrogen in the soil is mobile, meaning that it does not attach itself to the soil particles like potassium, iron, and other nutrients. Because it is mobile in the soil, there is danger that the individual nitrogen molecules could be washed out of the root zones by the irrigations constantly being applied. Because of these losses to leaching, and the fact that plants are constantly removing available nitrogen for plant use, sometimes the soil is depleted of nitrogen before the next scheduled fertilization. That can lead to that slower growth and those yellow leaves.

What are the solutions? There are several. First, we can increase the number of fertilizations per year. Instead of three, we can do four, five, or more. It just means more work and a good calendar to remind us when to make the next application. This works well if we do not mind the heat of summer and we do not leave for extended periods of time.

Another alternative is to use ammonium nitrate (34-0-0) as a fertilizer. Ammonium nitrate gives an extended release because of the two types of nutrient involved. The nitrate part is immediately available to plants while the ammonium nitrogen will be delayed one or two weeks as it converts to nitrate in the soil. The downside is that most of the conversion activity could take place and the nitrate be absorbed by the plant before the next scheduled application. Again, a deficiency at one time or another is possible.

The last option is to spread out the availability of nitrogen by using slow-release fertilizer formulations. These types of fertilizer formulations release nitrogen and other nutrients at a rate that makes them available to plants over a longer period of time, perhaps up to six months. Instead of the "feast or famine" approach of three applications per year, now the nutrient can be available "on time, every time" to the benefit of the plant.

Slow-release fertilizers are based on one of three release mechanisms. These are: 1) granular materials with coatings that control the rate of nutrient release, 2) materials requiring decomposition by soil microorganisms to release nitrogen, and 3) materials that dissolve slowly.

According to our new Master Gardener Handbook, Jim Walworth states, "Sulfur-coated urea is a slow-release fertilizer consisting of urea prills, or pellets, coated with sulfur, as the name implies. The thickness of the sulfur coating controls the rate of nitrogen release, which occurs when the sulfur coat bursts. Release rates increase with temperature, is not affected by watering, and is faster if incorporated into the soil rather than left on the soil surface."

He continues, "Slow-release fertilizers that depend on microbial activity include urea formaldehyde and organic fertilizers. The rate at which these fertilizers release nutrients is dependent on soil temperature and moisture, as well as properties of the fertilizer. Slowly soluble nitrogen forms include IBDU (isobutydine diruea) and urea formaldehyde."

Fertilizers that employ one of these mechanisms can often be found on local nursery shelves.

Caution, however, should be used when applying slow-release fertilizers around trees or shrubs late in the growing season. Because nitrogen can encourage growth, young tender leaves appearing just before a frost or freeze could be damaged. Always use fertilizer products in accord with the directions printed on the label.

Slow release nitrogen fertilizers may not be the best choice for every garden situation, but for small gardens, fruit trees, container plants, and other confined areas, they can provide excellent, long-term benefits.

### THE RUBBER TREE AS AN INDOOR PLANT

One of the most popular of indoor plants, and also one of the most visually striking, is the rubber tree.

There are many members of the fig or Ficus family that can be grown indoors, but the rubber tree may be the one most selected to grace an entry way or provide an eye-catching feature next to a large window. It does not flower indoors, but the foliage and sheer size make it attractive.

Fairly easy to grow and, for that reason, a good plant on which to learn the basics of indoor plant care, the rubber tree is a mainstay for many who appreciate the many positive benefits of growing plants indoors. Perhaps you already have one under cultivation, or you are thinking about getting one for that sunny spot in your home. If so, here are a few tips that might help you keep your plant looking good.

The rubber tree is not fussy about its growing conditions, for the most part. Yes, abused plants may struggle from time to time. Lengthy periods of problems in lighting, temperature, and moisture may even lead to plant death. The bottom line with the rubber plant, however, it that given reasonable care, it can provide many years of spectacular service.

You should know that in its native habitat in India, it can grow up to one hundred feet tall. Aggressive growth and becoming a tall plant is simply part of its genes. However, by limiting root space, that is, by selecting the right size of container, and with appropriate trimming, it is possible to keep it well within the space parameters allowed by the home, patio, or office.

Because of the botanical law of energy which states that there must be a balance of energy distributed between the top of the plant and the bottom (roots) of the plant, the restricted root ball of a plant in a container will tend to keep the upper part of the plant smaller than what its genes say it can become. In an indoor location with a tall ceiling, that fact alone may be enough to keep the plant from growing up to and touching the ceiling.

However, because the plant can and does grow rapidly, even with marginal care, it may require careful and judicious pruning to keep it in check. The good news is that the plant responds well to this treatment. The process is easy. Just nip back the central stock to a location just above a leaf and its bud. The cuttings are easy to root into new plants. These make excellent gifts, or they can be used as replacements for struggling plants.

It is important to say here that there are many varieties of rubber plant on the market. If you see one plant advertised as a rubber plant and it looks completely different from the one on your shelf at home, do not become concerned. The variability of characteristics within the species is both fascinating and useful from an indoor landscape standpoint. If you enjoy one type, perhaps a slightly different form may create greater interest and diversity within your collection.

Most rubber plants have deep green and high gloss leaves that can be up to twelve inches in length. The generally oval leaves typically have a point on the tip of the leaf which helps to identify it as a rubber plant. The leaves alternate along the stem and tend to droop down slightly The main growth region is right at the upper tip of the plant and new leaves unfold out of a large bud which forms as the plant grows. The emerging leaves, as they unfold, will have a fresh light green color that can add interest to the plant.

Large, vigorous plants like the rubber tree with its long, broad leaves require a constant supply of water to keep them happy. The rubber tree should be watered once or twice a week in the summer but less in the winter. For best results, the plant should be fed every second watering or so with a liquid plant food, especially during the summer months when it is actively growing. More frequent fertilizations may force the plant into a more rapid growth rate which could defeat attempts to keep the plant from quickly outgrowing its allotted space.



- THE RUBBER TREE . . . CONTINUED ON PAGE 4

#### THE RUBBER TREE . . . CONTINUED FROM PG.3

Leaves that droop or wilt are sure signs that the plant is not receiving enough water. If the plant reaches this point, it may be good therapy to place the container into a tub of lukewarm water. The root ball will absorb the water through the holes in the bottom of the container and be pulled upward through the soil in the container until the entire root ball is soaked. Once the entire root ball has been thoroughly wetted, the plant in its container should be removed from the water and the root system allowed to drain. Afterwards, it may be a good idea to play close attention to the water needs of the plant.

Two additional and important key factors in keeping a rubber tree happy are to make sure that 1) the plant receives the correct amount of light and that 2) it is placed in a location where it will be exposed to its preferred range of temperature. Failure to do either of these key factors could lead to problems.

Rubber trees that are placed in a low light situation often drop their leaves as an adjustment to conditions. Loss of leaves can lead to weakened plants that do not look their best. Select a window where there is a good supply of filtered light, such as a large east-facing window, and place the plant so that a majority of leaves receive the benefit of the light. For smaller plants, there might be a need for a small table upon which to set the plant so that the leaves are up close to the window. Taller plants may not need such consideration.

The typical symptom of too little light, or too much water for that matter, are leaves that turn yellow before they fall. Since both conditions tend to show up in winter, the cooler months are the time to pay particular attention to these details. It is important to cut back on water frequencies or to move the plant to a place of higher light before leaf fall occurs.

Rubber trees prefer a temperature range of between 70 and 77° F. This range of temperatures fortunately coincides with the temperatures generally accepted as correct for the inside of homes and businesses. The winter temperatures should never go below 55° F. Because of this, rubber plants that are planted in protected areas outside, such as under a trellis, or in an Arizona room, may need to be brought inside, or provided external heat, for the duration of the cold weather season. Again, if the temperatures go too low, or too high, leaves may fall from the plant.

Spider mites and mealy bugs can occasionally be a problem. Spider mites are small eight-legged critters that leave telltale webs on the leaves and yellow dots within the leaf tissue caused by their feeding. They are hard to spot but if you can dust the suspected leaf onto your hand and if you see dust-sized particles start moving around, it is a good possibility that spider mites may be the problem. Taking the plant outside and washing it completely with a strong stream of water to remove the mites from the plant may be the best solution. If greater assistance is needed, the use of an insecticidal soap may be warranted. Make sure to follow label directions.

Mealy bugs, on the other hand, are easy to spot and identify. These insects from a protective shell around themselves that looks like a fluffy fungus growing on the leaves. Even though it looks like it is a fungus, don't be fooled. It is an insect that is causing this problem.

Mealy bugs do not move around except in their early stages; this stage is called the crawler stage by entomologists who study them. When the crawler finds a likely spot, it will stop and insert its feeding tube down into the tissue of the leaf. From that time on, it will remain in that same location for most, if not all, of its life. The solution to mealy bugs is similar to that of spider mites. Washing the plant with a strong stream of water, followed up by a treatment with insecticidal soap may be warranted.

The rubber tree is an attractive and easy to grow indoor plant that many find attractive. Providing proper care will ensure the long term health and attractiveness of the tree.

#### LEPIDOPTEROUS INSECTS COMMAND OUR RESPECT

Sometimes they are friends, and sometimes they are not; but either way, the moths and butterflies must command our respect.

Because of their color, size, and form, butterflies are usually welcome in most yards. In many cases, they tend to flit in and out without staying in any one place too long. However, many people have found that the meandering journeys of these insects can often be delayed when they offer them some form of food and shelter. If we are among those that value butterflies for their beauty, we often place in our yards their favorite plants that provide them with that food and shelter. On the other hand, if we are among those who have an aversion to insects in any form, we may look at them with a so-so attitude and let them go on their merry way.

Moths, on the other hand, are usually not considered beautiful, except by those hardened individuals who actually love all insects, no matter what they look like. Moth adults tend to be rather quiet in their color patterns. Mostly grey or mottled grey appearance, they do not generally measure up to the beauty standards of their more flashy butterfly relatives. In fact, they are generally considered by many to be more of a pest than a friend.

Either way, it is important to know from a gardening point of view that both butterflies and moths, in the larval stage, have chewing mouthparts and eat plant material for food. Because they bite and chew their food, they remove plant parts and leave gaping holes that are tough for the plant to replace. Heavy populations can cause significant damage, so whether we respect them for the beauty and interest they bring to our yards, or whether we begrudgingly respect them for the damage they can cause, very few people view these interesting animals with anything less than admiration or concern, depending upon their point of view.

I happen to be one who enjoys both butterflies and moths no matter what they look like or what they do. I am one who respects them for both reasons mentioned above, and sometimes for both reasons at the same time. I do like the beauty and diversity of the butterflies and moths, and respect them for that, but having been eaten out of house and home in my own garden by these insects, I have a healthy respect for what they can do, and the damage that they can inflict. I suspect that there may be avid gardeners out there who understand exactly what I am saying. With all of that said, then, let us answer a few questions and then search for ideas where we can enjoy them without being taken to the cleaners when they show up in the garden.

First, we must address the question of identity. Who are these animals, how do we recognize them, and what will their feeding damage look like? Once we understand a little about them, we can answer questions relating to control and protection.

Butterflies and moths all belong to an order of insects, called the Lepidoptera. The name is rooted in the Latin language and roughly translated means "wings that have scales on them," which is one of the identifying characteristics of this insect order. All in all, there are approximately 180,000 species within this group which makes them one of the largest groups of animals in the world. Not all of these, of course, are found in Arizona, but we do have a fairly hefty supply.

Butterflies and moths come in many different shapes, colors, and sizes, but they are all quite similar in various aspects of their lifestyle and their makeup. We must remember, however, that they are quite different from all other types of insects, such as the beetles, the termites, and they plant bugs. What may work for one type of insect may not work for the butterflies and moths, and vice versa. By knowing these differences, and exploiting them, we can protect our plants while still enjoying the beauty and diversity of these animals.

It is important to know that these insects pass through each of four stages during their life cycle. They start off the cycle in an egg form which is laid by the adult female. Usually deposited on a leaf or stem that will provide food for her offspring, the egg contents develop into a caterpillar, or larva. Upon exiting the egg shell, the larva goes to work

LEPIDOPTEROUS INSECTS . . . CONTINUED ON PAGE 6

#### **LEPIDOPTEROUS INSECTS -** CONTINUED FROM PAGE 5

eating, and then eating some more. The larva may go through up to five molts, or enlargements, storing up energy for the transformation ahead. The third stage is a resting stage and usually takes place as a pupa buried in the ground or in some other protected area. When the pupa matures, it will exit as an adult and, in the course of life, mate and begin the cycle again. If controls are to be applied, it is usually while the insect is in the larval stage.

While there are many different butterfly or moth insects in Arizona, we will here just briefly mention four that are common in the garden. These are the orange dog caterpillar, the corn earworm, the beet armyworm, and the cabbage looper. A fifth, the Tecoma leaf tier is becoming ever more common, but we have already discussed this animal in a recent column.

The orange dog caterpillar is a mottled, black and white, slow-moving caterpillar that feeds on citrus leaves. Unless there are many larvae located on a young tree, I just ignore them in the larval stage because they turn into a large, showy swallowtail butterfly that most people enjoy. A little feeding damage, in my opinion, is a small price to pay for the eventual visual treat. If the population on one tree becomes too heavy, and significant damage is occurring, it is a simple matter to hand pick the larvae off the plant and dispose of them. As an example of what they resemble, my predecessor, Jim Little, called them animated bird droppings because of their color, markings, and their slow rate of movement when disturbed.

Most people are familiar with the corn earworm. It is the larva of a moth and damages the ears of fresh sweet corn. Many people simply cut off the damaged kernels and continue with the meal preparation. However, insects entering an ear of corn early in its development can do a lot of damage and may not leave enough of the ear untouched for us to enjoy. For that reason, it is important to apply control treatments as soon as the ears appear.

The beet army worm is the larva of another moth. It likes a number of different types of garden plants and is fairly common in our area. It once completely destroyed a fine display of cilantro in my own garden. Their voracious appetites require us to keep a careful watch for them to prevent serious damage.

The cabbage looper is another moth larva. More commonly know it as an "inch worm," it chews holes in head lettuce, cabbage, and other garden vegetables. Its feeding damage quickly makes a head of cabbage or lettuce unappealing and inedible.

For all of these insects, there are two common control mechanisms. As mentioned before, light populations can be searched out visually and then removed by hand. Heavier populations can be controlled using a bacterial disease agent, called Bacillus thuriengiensis, or b.t. for short. Products containing this disease allow placement of the bacteria on the tissues of the plant where they will be consumed by the insect. Once infected, the insects cease to feed, become ill, and die. It is approved for organic gardening systems and has no effect on humans. Like all registered pesticides, it must be used according to label instructions.

If you grow plants in the garden, 1) you need to watch out for the feeding of moth or butterfly insect pests, 2) be aware of the type of damage that they cause, and 3) know how to apply the prober controls when their feeding damage becomes intolerable.

Trade names used in this publication are for identification only and do not imply endorsement of products named or criticism of similar products not mentioned.

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#### **TIP FOR MAINTAINING GARDEN HAND TOOLS**

With the spring gardening season in full swing, now is a good time to stop and think about those garden tools, especially the hand tools, upon which we are so dependent. Are we giving them the best possible care?

In the course of planting, maintaining, and protecting garden and landscape plants, we use many different types of tools. Made from an assortment of metal, plastic, and wood, these tools always last longer, and work better if they are properly maintained. There are, of course, right ways and wrong ways of protecting equipment and I find that with a just a few minutes of work scattered throughout the season, I can save myself a lot of hassle down the road.

When we acquire gardening tools, we typically try to purchase the best quality possible because these always seem to work better and last longer than the less expensive kinds. Since proper care can extend their productive life and prevent the extra effort and hassle that inevitably comes from allowing tools to rust and otherwise degrade over time, wouldn't it seem to make good sense to take care of them properly?

Pruning equipment, for example, properly maintained, cuts crisper and with less damage to the twigs and branches of the plant than those that are allowed to become dull or rusted. Tools with wooden handles will remain stronger and have to be replaced less often if their inner strength is maintained by proper care. Shovels, rakes, and hoes are easier to sharpen and will maintain their ability to do their job correctly when they are kept free of mud and rust. Tools kept in good order help us finish the job with less effort and in less time. Cutting tools, like pruning equipment, shovels, hoes, and other tools, when kept sharp, will slip through the work with much less effort than if the tools are dull, and all tools properly maintained are generally safer to use because they help us avoid strains, pulled muscles, and other work-related injuries.

Tool maintenance is all about keeping the tools in good working order. This means that tools with moving parts should operate smoothly and easily. Tools that are designed to cut something should be sharp at all times. Tools that slide back and forth, like pruning saws, should do so easily. These kinds of expectations are just normal for all of us, but our decisions to maintain or not to maintain play a key role in whether or not they will do what they are designed to do.

Let's first talk about tools that cut. Shovels, chopping and push-pull hoes, pruning shears and loppers, and similar equipment are designed to cut something and come from the manufacturer with a sharp edge. It should be our goal to keep those tools with the same degree of sharpness as when they come from the manufacturer. Just think about that first shovel slice, the first branch that is cut, or the first weed that is removed and how easy it was to do that task with a sharp edge. That should be motivation enough to schedule in to our busy schedules sufficient time to sharpen tools.

There are other reasons to sharpen tools, of course. The duller the cutting edge, the greater the effort that will need to be expended to do the job. That is, it takes more work to do the job with a dull tool than with one that is sharp. The more energy we have to apply, the quicker we will get tired, and when we get tired, we think about giving up the job altogether. Fatigue can take all of the fun our of gardening, especially during warm weather.

Allowing the tool to become dull before sharpening only makes it that much harder to return the tool to its proper degree of sharpness. The longer we delay, the more difficult the sharpening job will become. Most professional workers carry with them or located conveniently close by a good file to sharpen the tool even as the work proceeds. It is simply easier to keep a tool sharp than it is to rehabilitate one that has been abused.

I would submit that it is much better to take a few seconds after using the tool to clean the tool of debris and then quickly run a metal file over the sharp edge to maintain its cutting ability. Then and only then should the tool be stored in its proper place. The metal file should be applied across the entire blade of the tool, at an angle that matches the sharp edge angle placed there during the manufacturing process. By so doing, the tool will be kept perennially sharp.

If a tool has been neglected and has become impossibly dull, it may be a good idea to enlist the services of a professional tool worker that specializes in sharpening tools. Check the advertising pages in the newspaper, look online, or search the bulletin boards at nurseries and garden centers for reputable professionals.

GARDEN HAND TOOLS . . CONTINUED ON PAGE 8

#### GARDEN HAND TOOLS . . . CONTINUED FROM PAGE 7

It is a given that with use, gardening tools are going to become caked with mud, dust, and debris from the job. Mud from digging in the soil, sap from trees while making pruning cuts, rust from exposure to moisture, and other uninvited and unwanted debris accumulates while performing gardening projects. Like sharpening tools, cleaning and oiling tools become much easier when performed frequently instead of waiting until the tools become caked or damaged. Accumulated sap and rust can be cleaned from pruning shears and saws by using just a dab of a light oil and then using steel wool to loosen and remove the debris. Don't worry about the cutting edge of the tool. Sharpening will take care of that surface. Pruning saws will slide easier through the wood if a little paraffin is rubbed onto the blade.

Some have found that a barbeque brush with a scraper is the perfect tool to clean mud and other debris off of tools. Shovels rakes, hoes, mechanical tillers, and other related tools can be easily kept clean of mud using this method. The bristles of the brush are perfect for applying the finishing touches. Mud removal is important for many reasons, including the prevention of rust, which is a major threat to metal tools.

Speaking of rust, many gardeners apply a light coat of rust-proofing paint before putting away their tools, especially at the end of the season. A spray can of your favorite color paint, handy on the shelf, makes this an easy task.

Many tools have handles made of wood which demand special care. In our harsh climate, wood tends to weather quickly and left exposed to sun, rain, wind, and blowing sand will soon parch, peel, and crack. Anytime this happens, the strength of the wood can be compromised. On the other hand, garden tools with wooden handles will last for many years if the wood is kept clean and oiled. Mud should be removed. Rough edges may need to be sanded, and frequently it is a good idea to apply a light coat of boiled linseed oil. The oil fills the cracks and protects the wood from the elements. Use a fine brush or a soft cloth to apply the oil. I like to store my tools in a protected area to minimize weathering damage.

As we finish this discussion about tool maintenance, it is important to remember the specific benefits that result from proper tool care: 1) it makes the work easier to perform, 2) it saves time and energy, 3) it saves money from replacing tools, and 4) it can make the tools safer to use.

By properly maintaining garden tools, the actual time we spend in the garden can become the relaxing pastime that we all wish to enjoy.

If you have questions about this newsletter, have any plant related problems, or wish to have a publication sent to you, please call (520) 836-5221 x204 or (520) 374-6263 and leave a message. If you have a plant problem and are able to email a picture, please send a picture with any information you can provide about the plant, and your contact information to our diagnostic team at macmastergardener@gmail.com and a Master Gardener will contact you.

This newsletter is available to view on our website at: <u>http://extension.arizona.edu/pinal</u>

Richard Subson

Richard D. Gibson Extension Agent, Agriculture

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59 mailed copies 262 emailed



## Successful Desert Gardening Series

This will be a practical, in-depth view of the principles required to grow healthy outdoor plants in the desert southwest. Get answers to your gardening questions. The cost of the class is \$10 per person, paid by cash, check or money order. (Sorry, cannot accept credit cards). Space is limited, so please RSVP to save a seat by contacting either BJ Seemuth at (520) 431-6167 bjseem@cox.net or Theresa Ellsworth at (520) 836-5221 x202 tellswor@cals.arizona.edu

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