

California AgrAbility



Finding Solutions for Californians Farming with Injuries and Disabilities

California AgrAbility Program

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*CalAgrAbility is a partnership
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Pterygium! Don't Just Wing It!

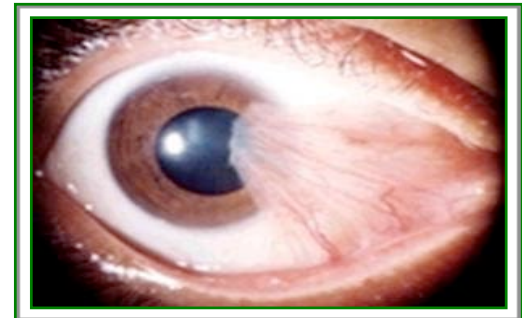
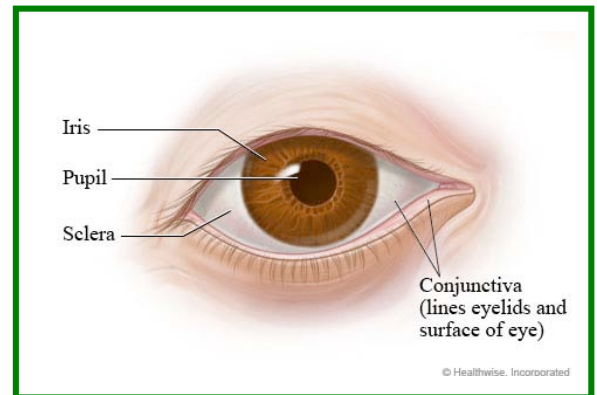
Over the past few years CalAgrAbility has received a number of calls from farmers regarding an unusual-sounding condition affecting the eyes. It is a non-cancerous growth of the clear thin tissue that lays over the white part of the eye or conjunctiva (nih.gov/medline) (Fig. 1). A pterygium commonly grows from the nasal side of the sclera.

Pterygium is from the Greek word, *pterygos*, which means “little wing.” A **pterygium** in one’s eye resembles the wing of a small insect or bird (Fig. 2). Pterygium is pronounced “*ter ig’ ee um*” and the plural is **pterygia**.

CalAgrAbility has seen mild cases, which also show redness, dryness, and irritation in the eye. We have also seen farmers with severe cases affecting the cornea causing impaired vision, and even blindness in the affected eye.

In many cases, pterygia cause no major problems and are treated topically with eye drops. The treatment for severe cases is surgical removal of the growth. Once removed, sometimes pterygia can grow back; and, in some cases, can return more than once.

The exact cause of a pterygium is not known. However, it is thought to be caused by ultraviolet-light exposure (e.g. sunlight), low humidity, and dust. Farms are ideal places to develop it. It occurs most frequently in people exposed to excessive sun, dust, and wind. Farmers, ranchers, agricultural workers, fishermen, etc. are



Figures 1&2: Eye anatomy showing conjunctiva and an eye with Pterygium. (healthline.com)

especially susceptible to developing pterygia, as are those living near the equator. Some research shows that more men than women get pterygia, which is most prevalent in individuals over 40 years old.⁽¹⁾

There has been little research documenting the disease among farm populations. However, a study of 304 Latino farmworkers in North Carolina confirmed the presence of pterygia in at least one eye in 23+% of those workers. The study showed age was significantly associated with this condition.⁽²⁾

⁽¹⁾Coroneo, MT, 1993, British J of Ophthalmology, 77 (11): 734-9

⁽²⁾ Taylor S.L; Coates, M.L., et al. Archives of Environmental & Occupational Health, V 61:1: 27-32, 2006

Pterygium! *Continued*

Resources

Eye Wear Lingo

UV protective sunglasses should block 100% of UVA & UVB rays and ***should be labeled*** as such.

Polarized lenses cut reflected glare when sunlight bounces off smooth surfaces, i.e. pavement or water. Polarization is not related to UV protection. ***You need to ensure UV absorption of the lenses.***

Mirror Coatings are thin metallic coatings that can reduce the amount of visible light entering the eyes. Wrap-around types can provide protection to the skin around the eye.

Gradient lenses are permanently shaded from top to bottom or from top and bottom toward the middle. They are useful for driving or specific sports.

Photochromic lenses automatically darken in bright light and become lighter in low light. They must specify UV-absorbency. It takes a few minutes to adjust to different light conditions.

Impact Resistant: no lens is truly shatterproof. But plastic lenses are less likely to shatter upon impact than glass lenses. Polycarbonate plastic is even more impact resistant than regular plastic but scratches easily.

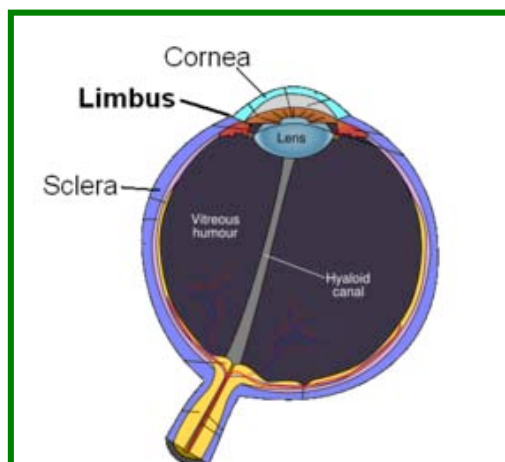


Figure 3: Sunlight passes sideways through the limbus <http://en.academic.ru/dic.nsf/enwiki/>

Rays Catch a Ride on Your Limbus!

The **corneal limbus** is the border of the cornea and the sclera, the white of the eye (Fig. 3). Some researchers believe that most pterygia develop on the side of the eye nearest to the nose because the sunrays are passing laterally, or sideways, through the cornea. Sunlight is, then, refracted, or redirected, toward the limbic area. Sunlight passes unobstructed from the lateral side of the eye to the medial side next to the nose after passing through the cornea. ⁽¹⁾

The likelihood of damaging sunrays causing that “winged growth,” pterygia, in farmers can be reduced by using everyday inexpensive devices, what CalAgrAbility calls, assistive technology (AT). Simple AT like UV-protective sunglasses, lenses and large-brimmed sun hats can shade farmers’ eyes (Fig. 4). Farms are industrial worksites, so use **safety** sunglasses. Some are designed to filter out 98-100% of UVA and UVB rays. In addition to sunglasses and protective coatings on contact lenses, use face shields, hats, and clothing made of materials that absorb harmful UV-rays and protects from impacts.



UV or not UV... That is the Question!

UV, or ultraviolet, light is electromagnetic radiation. It is found in sunlight and in indoor light sources, i.e. black and fluorescent lights. The earth’s ozone stops 99±% of the UVB & C radiation from penetrating the atmosphere. However, UVA rays get through, causing cancer as well as cataracts, macular degeneration, and pterygium. UVs are classified according to **wavelength**. UVC has the shortest wavelength and is the most harmful. UVA, with the longest, is most responsible for tanning, burning and cancer. Although UV rays are harmful, they also help produce Vitamin D, which promotes the growth of teeth and bone (World Health Organization, www.who.int/uv/).

Most CalAgrAbility farm folks understand the link between UV radiation and skin cancer but are less aware of potential eye damage. A 2005 farmworker health study showed less than 3% *ever* used sunscreen and less than 20% knew what it was. More than 90% did not use sunglasses or any protective equipment. Around 75% did not wear wide-brimmed hats, exposing ears, necks, and faces to UV rays (National Center for Farmworkers Health).



Figure 4: Wide-brimmed hats offer some eye protection, but farmers in California’s sun-drenched fields should also use UV-protective safety sunglasses.

Pterygium! *Continued*

Look Out For The Wide Open Spaces

Farm and ranch families be aware that UV levels are greatest in the wide-open spaces like farms and ranches. Wear hats, shades, and shields, especially between 10 a.m. and 4 p.m., when UV levels are at peak levels and it only takes about 1 hour to develop skin damage (Fig. 5) (www.allaboutvision.com).

When working around the farm, don't take off sunglasses in the shade. UV rays reflect off other surfaces. Eyes are still at risk even if not directly exposed to the sun.

Snow and water reflect 80% of UV rays; use protective eyewear in the winter and on lakes and ponds. Start eye safety with your kids now! Their eyes are more sensitive than adults'. Kids should always use protective eyewear on the farm or at play.

RESOURCES

According to the Glaucoma Research Foundation



Sunglasses should screen out 75-90% of visible light. If you can see your eyes in a mirror, the sunglasses are too light.



Look for uniform tint. To check for imperfections, hold the sunglasses at arm's length, and then look through them at a straight line (such as the edge of a door). Slowly move the lens across the line. If the straight edge distorts, sways, curves or moves, the lens is flawed.

The UV Index, developed by the National Weather Service (NWS) and EPA, shows the strength of solar UV radiation on a scale from 1 (low) to 11+ (extremely high). Everyday the NWS predicts the Index. EPA publishes it on www.epa.gov and UV Alerts on unusually high UV days (Fig. 5).

Cloudy Days! 80% of solar UV radiation can penetrate light cloud cover. Haze in the atmosphere can increase UV radiation exposure (*World Health Organization, 2002*).

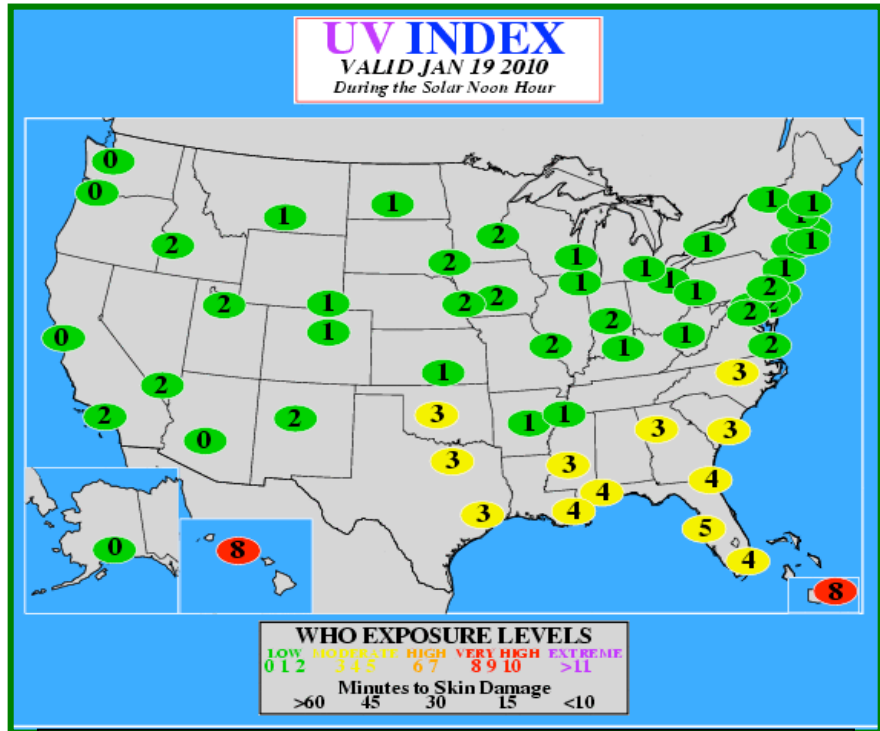


Figure 5: *UV Index Forecast Map Example* showing number of minutes it takes to develop skin damage in various parts of the US

About CalAgrAbility ...

The California AgrAbility Program's primary goal is to help farmers, agricultural workers, ranchers and their families to continue working in agriculture regardless of physical limitations, impairments and disabilities. Staff will help conduct on-site assessments and identify appropriate assistive technologies to make the job safer and easier. Supported by the NIFA under special project number 2010-415090-20751.

1-800-477-6129

