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Tumbleweeds on a vacant lot in the Antelope Valley.

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Introduction

The climate, geography, periodic high winds and other factors make the Antelope Valley area of Los Angeles County vulnerable to the growth and spread of tumbleweeds. Fortunately, the destructive and nuisance potential of tumbleweeds has diminished over the last 20 years as a result of a cooperative effort of many Antelope Valley property owners and the Los Angeles County Department of Agricultural Commissioner/Weights and Measures (ACWM).



Russian thistle is commonly referred to as tumbleweed.

History

How They Got Here

Tumbleweeds are not a native plant in the Antelope Valley, California or even the United States. They are native to southeastern Russia and western Siberia and are believed to have been first introduced into the United States by Russian immigrants as a contaminant in flax seed in South Dakota. In 1895, tumbleweeds hitched a ride to California in contaminated railroad cars that transported cattle to Lancaster in the Antelope Valley.

The State Legislature Takes Action!

By the early 1970's the destructive potential of tumbleweeds in California had reached a point where the State Legislature passed a resolution (HR 121 [1972]) directing the Department of Agriculture to study methods of controlling tumbleweeds. Throughout the ensuing decade, considerable effort was expended in pursuit of this goal which included a worldwide search for biological control agents (natural enemies) which continues to this day.

*"I'm just a lonesome
tumbleweed turning end
over end.
Once I pulled all my roots
free I became a slave to the
wind, a slave to the wind."*

Joan Baez -Tumbleweed



Although often associated with the American "Old West", tumbleweeds are actually a non-native plant from western Russia.

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History (continued)

The Tumbleweeds Seemed To Get Worse

In spite of the Statewide attempts to control, for various reasons the tumbleweed situation in the Antelope Valley appeared to worsen and by the late 1980's a growing number of Antelope Valley residents were finding the situation had become intolerable. As an example of the kind of problems they were experiencing, on October 25, 1990, the *Los Angeles Times* reported that some residents had been trapped inside their homes by massive piles of wind blown tumbleweeds-some as large as several feet in diameter.

Beginning of the Current Program

One of ACWM's missions has always been to attempt to control the spread of invasive weeds and in 1990, launched a major effort aimed at tumbleweeds. The initial plan to perform widespread tumbleweed burning proved highly controversial so ACWM reconsidered and discovered that carefully timed seasonal mowing not only destroyed existing tumbleweeds in place, but also the mulch left behind helped to prevent them from growing back the next year. Many areas of the Antelope Valley that were once almost a sea of tumbleweeds have experienced a type conversion or habitat change back to grassland with currently little or no tumbleweeds (see photos below). ACWM's fight with tumbleweeds is not over yet, but the invasive plant has never again reached the levels experienced at the beginning of the program.



ACWM employees attempting to eradicate puncturevine in the San Fernando Valley in about 1938.



A tractor with a mowing attachment. Carefully timed seasonal mowing has been an effective method in the battle against the spread of tumbleweeds.



The photo above taken in December of 2006 shows the wind borne result of an expanse of tumbleweeds being blown off of an adjacent property and across the boulevard near the intersection of Avenue K and 60th Street West in Lancaster. The tumbleweeds piled along and over the block wall of the neighboring residential development.



The photo above was taken in December of 2010 and shows the field which was the source of the tumbleweeds shown in the previous photo. Carefully timed tumbleweed mowing since 2006 created a vegetative mulch over the soil preventing the reestablishment of the once expansive tumbleweed growth.

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Biology

Tumbleweed Seeds



Tumbleweed seeds. A large plant can produce as many as 200,000 of these!



Tumbleweed seeds with the taproots uncoiled and ready to search for moisture. This process can take as little as 12 hours giving tumbleweeds a competitive advantage over many plants under low moisture conditions.

Conditions NOT Favorable to Tumbleweeds

Tumbleweeds are much less likely to grow in areas where the soil is firm and where competing vegetation is able to grow unsuppressed. Much more information on how to manage tumbleweeds is available [here](#).

Other "Tumbling" Plants

Every few years, an invasive plant called "tumble mustard" (*Sisymbrium altissimum*) can reach nuisance levels in the Antelope Valley although rarely, if ever, to the extent regularly attained by tumbleweeds. Like tumbleweeds, tumble mustard plants often break off at the soil level at maturity and scatter seeds as they tumble along in the wind. There is no program in the Antelope Valley designed specifically to address tumble mustard. However, tumble mustard plants may be included in the Weed Abatement program, along with other seasonal dry weeds, when they are close enough to a home or other structure to be a fire hazard.

What are Tumbleweeds?

The more common name for tumbleweeds is Russian thistle. The Latin or "scientific" name for most or all of the tumbleweeds occurring in the Antelope Valley is *Salsola tragus* or *Salsola kali*. Even though Russian thistle is the name used most often by weed experts, it is not really a thistle at all but a member of the goosefoot family (Chenopodiaceae) which includes well-known plants like spinach and beets.

Life Cycle

Tumbleweeds are a summer annual plant. They sprout with the warmer weather that typically occurs in late spring and grow throughout the summer months producing the characteristic round, dark green, weave of thin branches. With the onset of fall, the tumbleweed's life cycle switches to flowering and seed set. The killing frosts of winter end the plant's life. Once dead, the plant soon dries into its lightweight, thorny shell. At this stage, the plant readily breaks loose from the roots near the soil line. Now, it is primed for another cycle of mass migrations, rolling about in the wind, spreading seeds to repeat the cycle for years to come. A large tumbleweed plant may have as many as 200,000 seeds!

Conditions Favorable to Tumbleweeds

Very generally, tumbleweeds are not a plant of wildlands or wilderness areas in the Antelope Valley. They are almost always associated with areas that have been disturbed or altered by people's activities. A traveler driving across the desert will rarely see them in the vast, undisturbed tracts of desert land. However, that same traveler may see them in road cuts, old construction sites, abandoned farmland, areas disturbed by off-road vehicles, etc.

The following are three main factors favoring tumbleweed growth:

- 1. Loose disturbed soils.**
- 2. Where other plants that could compete with tumbleweeds are inhibited such as:**
 - ✓ **Where lack of moisture limits the growth of competing vegetation.**
 - ✓ **Where competing vegetation is suppressed by overgrazing or attempts at general weed control.**



Tumble mustard (*Sisymbrium altissimum*)
(Photos courtesy of Jean Pawek)

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Why tumbleweeds are such a problem

Non-Native and Invasive Weed

Tumbleweeds are a non-native and highly invasive plant in the United States. They are considered noxious in nature and detrimental in many ways. Tumbleweeds thrive with disturbed soil situations. If there has been soil movement in association with road grading, tumbleweeds will likely dominate the area afterwards in many cases to the exclusion of native plants and animals.

Fire Hazard

Tumbleweeds pose a fire hazard in areas where they grow, die and become dry or, where dead tumbleweeds have broken loose and accumulated along other flammable vegetation, wood fences, homes, etc. If tumbleweeds grow thickly across a field, the mass of vegetation itself could allow a wildfire to spread quickly. The stems of the plant are readily combustible which, combined with a loose and airy structure, causes them to burn quickly as well as intensely hot.

Massive piles of wind-blown tumbleweeds can sometimes trap people inside of their homes. Until they are able to dig themselves out, individuals in this predicament are in a perilous, if not terrifying, fire hazard situation.

Detrimental to Agriculture

As an agricultural pest, tumbleweeds deplete soil moisture needed by desirable plants and harbor destructive insects and plant diseases. Tumbleweeds near agricultural production must be abated for they greatly interfere with those cropping operations. The noxious vegetation takes considerable effort to remove by hand from fields and its presence in baled hay decreases the quality and lowers the price for this adulterated commodity. The tumbleweed's thorns in animal feed lower the palatability. In the Antelope Valley, tumbleweeds blown from vacant land have piled up against automated alfalfa irrigation systems and other facilities causing expensive damage.

Other Problems

Many individuals are allergic to the plant's pollen and sap causing dermatitis (skin rash) and rhinitis (runny nose). Their movement by the wind across roadways and busy intersections causes traffic hazards. Blown into waterways and canals they clog and disrupt what would otherwise be the free flow of water and a mass of tumbleweeds in a swimming pool are a minor disaster.



Tumbleweeds can blow into agricultural fields and take considerable effort to remove by hand.



Tumbleweeds can pile up on automated irrigation equipment, such as the one shown in this photo, causing damage to the irrigation equipment.



Tumbleweeds in an irrigation canal.

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Good Tumbleweeds?

It is reported that in arid lands both cattle and sheep have been successfully pastured on young tumbleweeds up to the time the spines begin to harden. They have also been considered for use as a heating fuel in the form of compressed fireplace "logs". An Internet search will reveal methods for making homemade "fireplace logs" using dried tumbleweeds as a primary ingredient. And of course, there are always tumbleweed "snowmen".

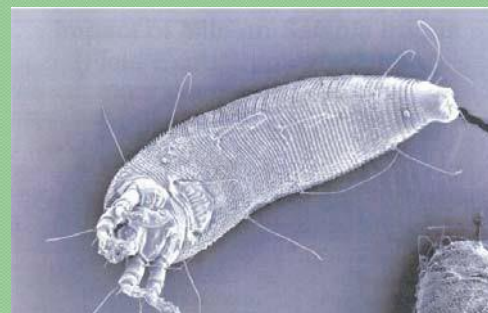
What has and is being done

Biological Control and Research

For well over 100 years, the U.S., California State and Los Angeles County departments of agriculture have successfully used biological control (bio-control) agents to help reduce the spread of harmful non-native plants and insects. The process is extremely involved starting with a search in the country/area of origin for potential bio-control agents (natural enemies) that are highly specific to the invasive plant or insect needing to be controlled.

For invasive plants, the bio-control agents are usually insects, mites, fungi or other disease. If any potential bio-control agents are found, there must be extensive testing to make sure they will not prove harmful to any native plants,

crops or other desirable plants. The effort to find something that will naturally control tumbleweeds has been extensive taking scientists to far-away places in Eurasia, the Middle East and the Mediterranean. Unfortunately, none of the bio-control agents released so far have proved effective at controlling tumbleweeds, but the search is still on. According to the USDA, Agricultural Research Service (ARS), final approval for release of a blister mite may be near and a seed-feeding and stem-boring moth is undergoing a third year of host-specificity evaluation. Also according to ARS, "[t]wo interesting weevils have been discovered during foreign exploration in Tunisia and Kazakhstan."



The next attempt at biological control of tumbleweeds will likely involve the release of this gruesome looking blister mite.

Local Abatement Programs

Many of the counties or cities adjacent to Los Angeles County have tumbleweed abatement programs similar to ACWM's and until scientists can discover an effective natural enemy, or some other control method, these programs offer the best line of defense against the destructive potential of uncontrolled tumbleweeds.

The ACWM Program

Tumbleweeds vs. Other Weeds

The tumbleweed abatement program is a subprogram within ACWM's overall Weed Abatement Program and is conducted pursuant to the same legal authority and basic procedures. However, the difference in the growth cycle of tumbleweeds compared to other weeds and the potential for dry tumbleweeds to blow off properties in immense numbers requires that they be managed differently than other weeds.

Property Owner Responsibility

Property owners included in the program are expected to maintain their properties free of hazardous or nuisance conditions posed by tumbleweeds or ACWM may perform the necessary work and assess the cost for the work on the annual property tax.

The following guidelines are specific to tumbleweeds.



ACWM archival photo of a young boy standing next to a very large tumbleweed at an unknown location.

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Specific Requirements and Clearance Timeline

■ **Green Tumbleweeds:**

- **CLEARANCE REQUIREMENTS:** ACWM does not consider green tumbleweeds to be a public nuisance requiring abatement, although they may be abated along with annual weeds if occurring amongst them.
- **CLEARANCE TIMING/METHOD:** ACWM clearance operations do not specifically target fields of green tumbleweeds in the Antelope Valley. Property owners included in the program may elect to try to control tumbleweeds while they are still small and green but in doing so may be surprised how tough and stringy they can be.

Scraping the lot is not recommended as tumbleweeds will be much more likely to re-invade the property and the property could become the source of unwelcome dust. If they have not grown too large, discing green tumbleweeds on vacant lots in residential areas will work if it is part of a regular maintenance program to control annual weeds. However, one-time or intermittent discing of land may encourage reinvasion of tumbleweeds the following season.

■ **Brown (Dead or Dying) Tumbleweeds Close (within 100 feet) to Structures:**

- **CLEARANCE REQUIREMENTS:** Dry tumbleweeds are an extreme fire hazard which can readily ignite and transmit fire to a house, outbuilding or other flammable vegetation. In the Antelope Valley, dry tumbleweeds, including wind-blown piles, must be removed, mowed, chopped or otherwise maintained at a height of about 3 inches within 100 feet of any structure.
- **CLEARANCE TIMING/METHODS:** Dry tumbleweeds, including wind-blown piles, are an extreme fire hazard if within 100 feet of a house or other structure and should be abated immediately. ACWM clearing operations may begin as early as **May 1**.

Dry tumbleweeds can be mowed, removed by hand or chopped down/shredded up with a heavy duty string trimmer. Discing as part of a routine program for general weed abatement or property maintenance will control tumbleweeds. However, one-time or intermittent discing can make the tumbleweed situation worse in the following seasons. Property owners should also be aware that the [Antelope Valley AQMD](http://www.avaqmd.ca.gov) (AV AQMD) recently passed severe restrictions on discing. Property owners are encouraged to check with them first. Scraping the property is not recommended.

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ACWM does not consider green tumbleweeds to be a public nuisance, but they may be abated along with annual weeds if occurring amongst them.



These dry and dead tumbleweeds are within 100 feet of adjacent structures. ACWM would require the removal of this extreme fire hazard.

Antelope Valley Air Quality Management District

**43301 Division Street, Suite 206
Lancaster, CA 93525**

(661) 723-8070

www.avaqmd.ca.gov



This photo is an example of the condition of a parcel that the owner should call ACWM in order to determine whether clearance is necessary.



ACWM would not require removal of the tumbleweeds scattered across the property above if it remained in this condition.

▪ **Brown (Dead or Dying) Tumbleweeds Not Close (beyond 100 feet) to Structures:**

- **CLEARANCE REQUIREMENTS:** Dry tumbleweeds on properties beyond 100 feet of a home or other structure must be maintained in a condition which prevents large amounts from blowing off and creating the nuisance conditions previously described. A few tumbleweeds scattered across the property may not need to be removed. Property owners who are not sure if tumbleweeds on their property are a problem should contact our office before the clearance deadline listed below under CLEARANCE TIMING/METHODS.

YES!! Upon request, someone from ACWM will check your property before the deadline for the condition of the tumbleweeds or the progress of owner clearance efforts.

- **CLEARANCE TIMING/METHODS:** ACWM clearance operations begin **October 1**. It is ACWM's opinion based on considerable experience that mowing down to about 6 to 8 inches is the best method for preventing tumbleweeds from blowing off the property. In addition, the remaining stubble and chaff may prevent tumbleweeds from returning the following year. Scraping or discing is not recommended and may be illegal according to AQMD rules.

Tumbleweed Abatement Requirement Summary

Growth Stage	Clearance Requirements	Timeline
Green Tumbleweeds	None	N/A
Dry tumbleweeds within 100 feet of a structure.	Removed, cut down, chopped up or mowed to a height about 3 inches.	Immediately. ACWM inspections begin May 1 .
Dry tumbleweeds beyond 100 feet of a structure.	Removed, cut down, chopped up or mowed to a height of about 6 to 8 inches.	ACWM inspections and abatements begin October 1 and end January 31.



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