

DEVELOPING A PROGRAM FOR THE CONTROL OF YELLOW NUTSEDGE

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Yellow Nutsedge and its Biology

Cyperus esculentus (yellow nutsedge) is one of the most troublesome weeds, infesting thousands of acres of irrigated annual and perennial crops in California. The reproduction and dissemination of this wide-spread perennial is primarily by means of underground vegetative propagules (tubers or nutlets). These underground tubers are produced from spring through early fall and are most commonly found in the upper six to eight inches of the soil profile. However, it is not uncommon to see tubers sprout and give rise to above-ground plants from as deep as 10 inches or more. It is prevention of new tubers that is essential for control. Therefore, knowing when and how yellow nutsedge tubers are formed will help one to determine when and what measures could be taken for the most effective control.

When conditions are favorable for mature tubers to sprout, they produce rhizomes and fleshy bulbs near the soil surface. These bulbs give rise to the above-ground foliage, roots and rhizomes terminating in single tubers, unlike purple nutsedge which has its tubers formed in continuous chains. As a rule-of-thumb, new tubers begin forming when plants have three or four leaves and will survive adverse conditions when mature. Mature tubers are impervious to most herbicides, but are susceptible to chemical and mechanical control once they break dormancy and begin to sprout.

Cultural and Physical Control Available

Cultural or physical practices are available that can reduce the population of yellow nutsedge. Properly timed diskings can be used to destroy young plants prior to new tuber development. Similarly, using sectioned rolling cultivators, knives, or sweeps can be used in cultivated crops like cotton, tomatoes, and peppers. Care should be exercised so as not to move plants on equipment into areas not previously infested with yellow nutsedge. Reducing the number of viable tubers can also be accomplished using a moldboard plow (like the Kverneland or Wilcox plow) for deep burial into the soil. Burying tubers to depths of 11 inches or more for a couple seasons will help decompose them. Once plowed, the field should not be plowed again for at least two or three years to allow sufficient time for the buried tubers to be killed, and so viable ones are not brought back to the soil surface. This method of control can also be effective on small seeded annual weeds. Whichever type of cultural or physical control is used, the most effective management strategy is to prevent the formation of new tubers, so time of control in relation to nutsedge stage of growth should be monitored closely.

Chemical Control Available

There are several herbicides available to control yellow nutsedge in several crops. Glyphosate (Roundup®), a nonselective postemergence translocated herbicide, applied to young nutsedge plants (three-four leaf stage) on fallow ground, or at least seven days prior to crop emergence, will control plants and prevent new tubers from forming. Repeat applications will be needed during the summer fallow period as new plants emerge. Timely applications of glyphosate during the year can also be used effectively in orchards and vineyards. Care should be taken to avoid spray drift onto foliage or new wood to prevent injury. Although paraquat can be used, control is limited to the above-ground foliage and will not kill the bulb, rhizome, or developing tubers. Organic arsonates (like MSMA) are also used for postemergence control in many nonbearing orchards and vineyards or as directed applications in cotton.

Soil applied residual herbicides, such as norflurazon (Solicam®), and to a lesser extent, napropamide (Devrinol®), can provide yellow nutsedge control in established vineyards and most varieties of orchards. A preplant incorporated application of pebulate (Tillam®) can control yellow nutsedge in tomatoes. To be effective, it should be disked in at least four inches, followed by a bed-top incorporation for shallow germinating weed seeds. Ro-Neet® in sugar beets, alachlor (Lasso®), metolachlor (Dual®), EPTC (Eptam®), and Sutan® in corn can provide effective control. Timely cultivations may be required along bed shoulders or furrows where control may be reduced.

Metham (Vapam®, Soil Prep®, etc.), a widely used soil biocide, applied through injector blades or knives 4 to 12" deep, 14 to 21 days before planting, can provide several weeks of suppression, helping in stand establishment. Nutsedge emerging from outside the treated zone can then be controlled with cultivation or a postemergence directed herbicide when appropriate.

EPTC applied on fallow ground during the summer, can provide effective nutsedge control in cotton. This combination of tillage, irrigation, herbicide application, and hot temperatures during the summer months, may provide effective control.

Herbicide effectiveness will depend on several factors, including method and time of application. To be effective, follow all label recommendations carefully. The herbicides listed herein are registered trade names and those not mentioned are also effective when properly used.

Although nutsedge continues to be a serious weed problem throughout the state, several cultural, physical, and chemical options are available to enable growers to develop economical strategies that work for them. Regardless of the crop grown or method(s) of control selected, it must be stressed that preventing the formation of new tubers is central in any nutsedge control program.

References

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