

## Benefits of 2,4-D

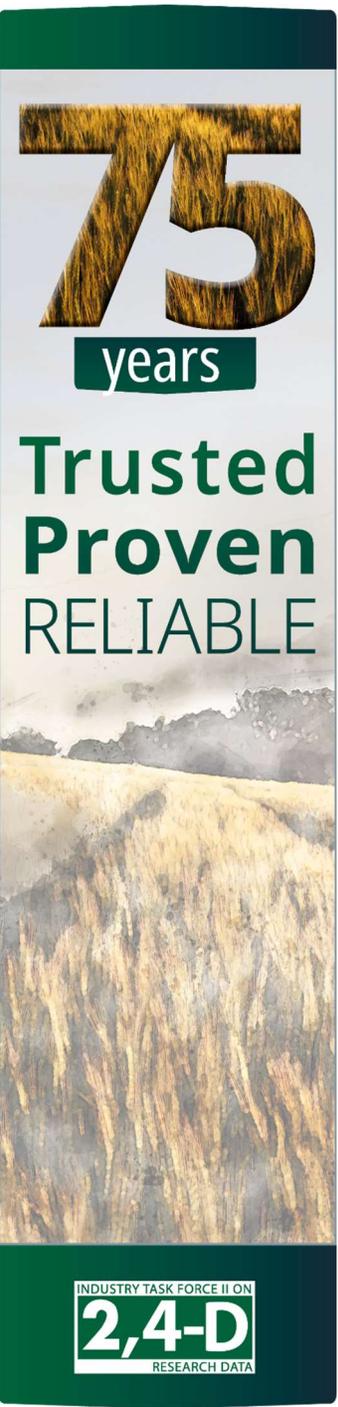
75 years have passed since the patent was issued to Dr. Franklin D. Jones for his discovery of the herbicide 2,4-D. This longevity of use was made possible by 2,4-D's robust health and environmental safety record and recognized benefits.

### Protecting Crops

- 2,4-D provides low-cost, effective weed control for farmers.
  - With 700+ products registered using this active ingredient, 2,4-D controls a broad spectrum of broadleaf weeds [while helping manage herbicide resistance](#).
- 2,4-D contributes to lower carbon emissions:
  - 2,4-D enables zero tillage, which means a farmer does not need to plow the land, and instead clears weeds with the help of herbicides such as 2,4-D.
  - The climate and environmental benefits of no-till farming have been widely recognized from [environmental NGOs](#) to the [USDA](#) to the [United Nation's Intergovernmental Panel on Climate Change \(IPCC\)](#)
  - By increasing food produced per acre, 2,4-D helps prevent new land from being cultivated.

### Protecting Lawn and Turfgrass

- 2,4-D based herbicides control many weeds, giving the [40 million acres of turf grass in the U.S.](#) a chance to grow into a healthy lawn, a vibrant landscape, or a cushioned playing field for a healthy active lifestyle and recreational activities.
- Millions of acres of lawn and landscapes around homes, businesses, roadsides, parks, athletic fields, and golf courses [improve our quality](#) of life by providing [open spaces, recreation, enhanced property values](#).
- Turf grass [filters groundwater, absorbs pollutants, and hinders the spread of fire, while also providing space for outdoor activities](#).



**75**  
years

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## Protecting Forests from Invasive and Poisonous Plants

- 2,4-D herbicide economically and effectively controls many invasive, noxious, and poisonous plants. [According to the U.S. Forest Service](#), “If left unchecked, invasive species can threaten native species, biodiversity, ecosystem services, recreation, water resources, agricultural and forest production.”
- Traditional mechanical methods using heavy equipment can also be far more harmful and disruptive to forest ecosystems. As the [D.C. Department of Energy and Environment advises](#), “Mechanical removal is highly labor intensive and creates a significant amount of site disturbance...[while] herbicides are among the most effective and resource-efficient tools to treat invasive species.”

## Range and pastureland weed protection

- 2,4-D eliminates broadleaf weeds from range and pastureland without damaging desirable grasses that livestock eat. The herbicide improves grass production by reducing weed competition, allowing for high quality grass and increased grazing options.
- 2,4-D also offers a far less disruptive method of weed removal than traditional mechanical methods that use heavy equipment.

## Protecting Infrastructure

- 2,4-D helps manage unwanted weeds and brush along roadways, rights-of-ways, and railroads.
- Safety is paramount along highways and railroads. According [to the U.S. Department of Transportation](#), vegetation management helps ensure safety by controlling encroaching weeds and brush that can conceal road signs and affect visibility.
- 2,4-D also supports worker safety. Traditional mechanical methods of weeding forests, for example, are dangerous to workers (in addition to being costly and labor-intensive). They require cutting tools, heavy mechanical equipment, and heavy fuel usage. 2,4-D herbicide offers an important solution reducing the need for mechanical weeding.
- Vegetation management using 2,4-D plays a major role in preventing woody plants from establishing under power lines so that branches do not contact power lines and prevent electricity from arcing or being disrupted.

## Appendix: Quantifying the Benefits of 2,4-D

In 1996 a document developed by the United States Department of Agriculture National Agricultural Pesticide Impact Assessment Program (NAPIAP) in cooperation with Weed Scientists from State Agricultural Experiment Stations found the potential cost to society if 2,4-D were taken off the market, concluding the cost to growers and users is estimated \$1.6 billion annually in the U.S. [This study was updated by the Task Force in 2015](#) as more than a dozen experts summarized the research on 2,4-D's benefits.

[M. Renz and B. Sleugh. Use of 2,4-D and Other Phenoxy Herbicides Pastureland, Rangeland, Alfalfa Forage, and Invasive Weeds in the United States.](#)

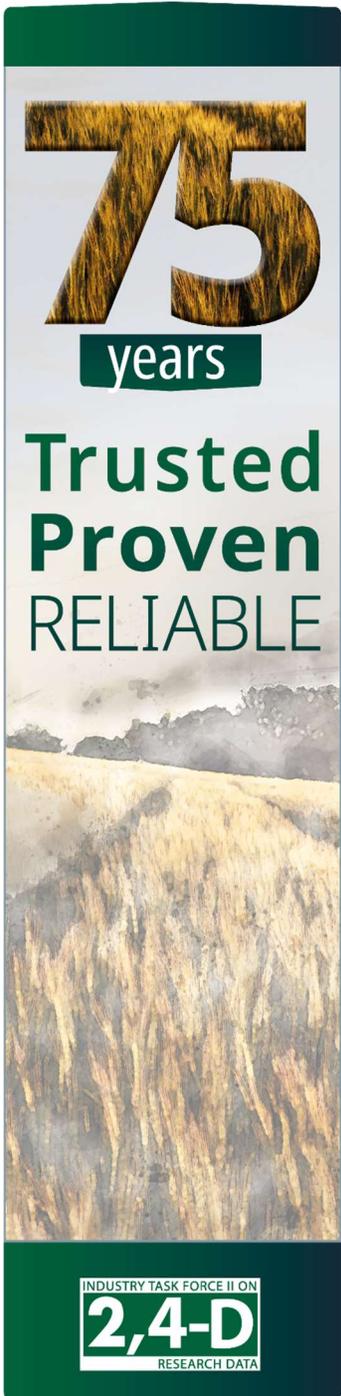
- Rangeland, pastureland, forests, conservation areas and other rural land make up roughly half the land area of the United States. All are ecologically important, and some have significant agricultural importance as well.
- Noxious and invasive weeds can infest these lands, at best reducing their effectiveness, at worst becoming unusable. 2,4-D is an important tool for managing many of the worst of these weeds.
- Loss of access to 2,4-D would hurt small producers and landowners, who do not have the budget or equipment for alternative herbicides.

[W. Everman. Use of 2,4-D and Other Phenoxy Herbicides in Field Corn, Soybean, Sorghum, and Peanut Production in the United States.](#)

- Weeds are much less likely to develop resistances to 2,4-D than other herbicides, meaning 2,4-D use will likely increase as weed resistance becomes problematic.
- 2,4-D is an inexpensive and effective option, particularly for producers of low-acreage crops. Such crops are often not worth the cost of developing new herbicides, so the loss of 2,4-D would significantly hinder production in those sectors

[K. Umeda. Use of 2,4-D and Other Phenoxy Herbicides in Turfgrass in the United States.](#)

- The use of 2,4-D on turfgrass was one of the first uses of the selective herbicide.
- 2,4-D is the most commonly used herbicide for turfgrass weed control in the combined industrial/commercial/governmental sector, with applications in 2007 totalling between 19 and 22 million pounds.
- Applications of 2,4-D in the home and garden sectors totalled between 8 and 11 million pounds.
- 2,4-D remains a critical tool for controlling broadleaf weeds in turfgrass.



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[I. Burke. Use of 2,4-D and Other Phenoxy Herbicides in Small Grains in the United States.](#)

- 2,4-D is an inexpensive and effective tool for weed control and herbicide resistance management in small grains.
- 13.4 million acres of winter wheat alone were treated with 4.04 million pounds of 2,4-D in 2012, demonstrating the utility of the herbicide.
- Alternative herbicides are either less effective or more expensive, while manual weed control is astronomically more costly and difficult due to planting practices in small grains.
- On a per acre basis, no herbicide controls as many weeds as inexpensively as 2,4-D.

[K. Howatt. Use of 2,4-D and Other Phenoxy Herbicides in Flax, Millet, Rice, Wildrice, Seed Crops, Sugarcane, Pea, and Fallow in the United States.](#)

- 2,4-D and MCPA provide effective and economical control of a very wide range of broadleaf weeds.
- 2,4-D serves an important role in control of resistant weeds and development of resistance management programs.
- Some crops have very few alternative herbicide options for postemergence broadleaf weed control.

[B. Hanson and T. Miller. Use of 2,4-D and Other Phenoxy Herbicides in Orchard, Vineyard, Hops, and Soft Fruit Production in the United States.](#)

- The loss of 2,4-D could cause significant economic and production challenges in some tree, vine, and fruit crops.
- 2,4-D has a unique fit in production systems that use grass cover crops between or within the rows of perennial fruit and nut plants. No other available post-emergence herbicide can provide the same level of broadleaf weed control without causing significant damage to grass cover crops.
- 2,4-D isopropyl ester can be used at very low rates as a growth regulator on some citrus crops.

[J. Byrd. Use of 2,4-D and Other Phenoxy Herbicides in Rights-of-Way in the United States](#)

- 2,4-D is the second most widely used herbicide for integrated vegetation management on rights-of-way across the United States, with 6.3 million lbs sold for such uses in 2013.
- It is estimated that there are 11.9 million acres of roadway right-of-way alone across the United States, with 77% of them being treated with herbicides.
- 2,4-D is effective and inexpensive; it controls problem broadleaf weeds while leaving desirable grasses unaffected.

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[S. Nissen. Aquatic Uses of 2,4-D and Other Phenoxy Herbicides in the United States](#)

- 2,4-D is an inexpensive and effective option for controlling problematic aquatic weeds such as Eurasian watermilfoil.
- Before serious management programs were implemented there were over 500,000 acres of water hyacinth in just two states, Florida and Louisiana.
- Were 2,4-D unavailable, states would have to either increase their budgets for aquatic weed control by a factor of 13, or drastically reduce the acreage they treat.

[S. Weller. Use of 2,4-D and Other Phenoxy Herbicides in Vegetable Crops in the United States](#)

- 2,4-D sees less use in vegetable production than other crops, but remains an important tool, largely for its ability to manage weeds that have become resistant to other herbicides.
- Loss of access to 2,4-D in asparagus crops would have a net loss of \$6-8 million per year.
- Alternative herbicides remain significantly more expensive than 2,4-D.

[M. Bagavathiannan, G. Morgan, and J. Norsworthy. An Analysis of the Benefits and Risks of 2,4-D Use in Cotton in the United States](#)

- Cotton is a significant industry in the United States, with revenues exceeding \$120 billion and product values over \$35 billion
- 2,4-D is set to become an effective tool for fighting herbicide resistant weeds in cotton crops.
- Glyphosate-resistant weeds have, in some cases, forced farmers to return to manual weeding practices, at great expense.

[D. Shaner. Importance of 2,4-D and Other Phenoxy Herbicides in Herbicide Resistance Management](#)

- There are 33 different weed species in the United States that are resistant to one or more herbicide mechanisms of action.
- Of these resistant species, 25 are effectively controlled by 2,4-D.
- After more than 70 years of use, only 7 species of weed have become resistant to 2,4-D, leaving it as an effective tool for managing weeds resistant to other herbicides.

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