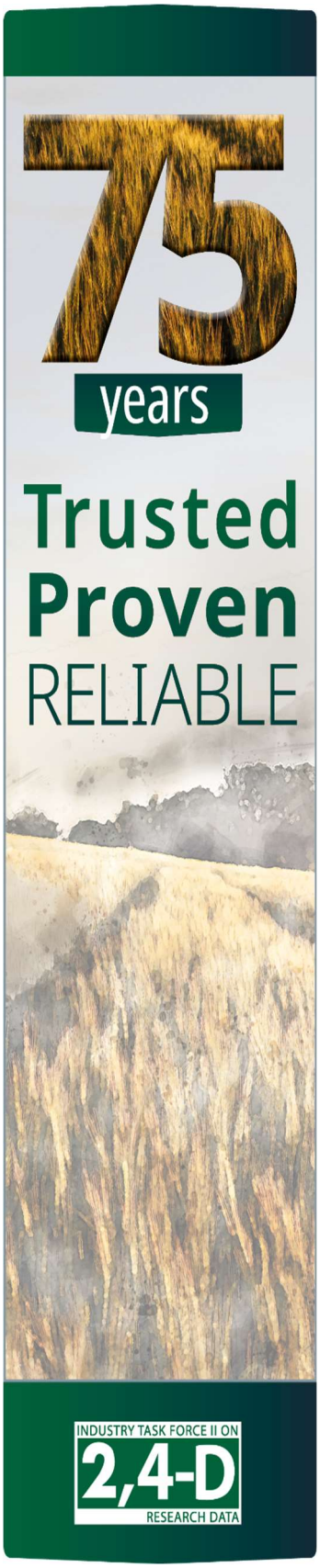


2,4-D and the Environment

2,4-D has a relatively short half-life and is rather immobile in the soil. In 35 recent field dissipation studies across the United States, less than 5 per cent of applied 2,4-D moved downward more than 15 cm (6 inches). The average lowest depth recorded ranged from 6 to 12 inches in soils of the southern U.S. and 16 to 24 inches in low organic soils where more movement is expected. Soils were sampled to a depth of 48 inches and analyzed for 2,4-D plus its soil metabolites until two analyses provided a result of "non-detectable" at each sampled depth.

Even though laboratory solubility studies indicated 2,4-D is potentially mobile, rapid degradation in the soil and removal from soil by plant uptake minimizes leaching under typical application conditions.

Biodegradability of 2,4-D

Field dissipation studies found that 2,4-D had an apparent soil half-life of five days with a range of 1.7 to 13.1 days. The moisture content of the soil appears to have a major effect on the half-life, since the main route of degradation is by microorganisms.

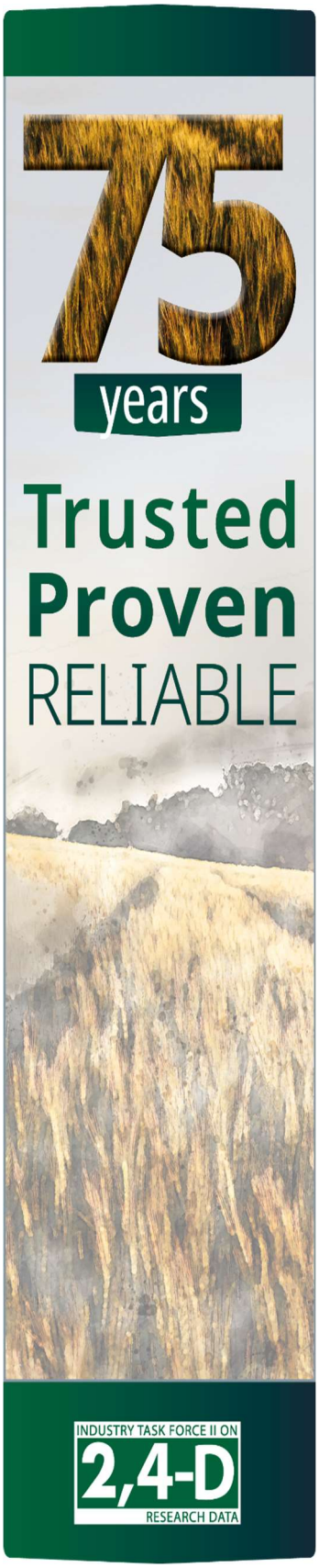
The commonly used 2,4-D amine salts and 2,4-D esters are not persistent under most environmental conditions. Dissociation of 2,4-D amine salt is expected to be instantaneous (<3 minutes) under most environmental conditions. Ester forms of

2,4-D biotransform and hydrolyze rapidly to the acid in natural soil (1 to10 days) and natural water conditions (<1 day). Under these conditions, the environmental exposure from 2,4-D esters and 2,4-D amines is expected to be minimal in both terrestrial and aquatic environments.

The average half-lives of 2,4-D in grass and thatch were < 7 days. The half-life in natural water was one to two weeks, although in areas such as a treated rice paddy, the half-life was as short as one day.

The acid form of 2,4-D, as well as the amine and ester chemical groups, metabolize to transitory compounds of non-toxicological significance. Thus, 2,4-D is considered a biodegradable compound. Under normal conditions, 2,4-D residues are not persistent in soil, water, or vegetation.

Copies can be made available through this task force of a published study which reviews the 35 environmental fate studies funded by the 2,4-D Research Task Force, in addition to other 2,4-D environmental fate studies in scientific literature see Wilson, R.D et al, Dissipation in Field Soils after Application of 2,4-D Dimethylamine Salt and 2,4-D 2-Ethylhexyl Ester, Environmental Toxicology and Chemistry, Vol. 16(6), pp. 1239-1246, 1997).



Aquatic Uses of 2,4-D

2,4-D is one of only six herbicides registered in the U.S. for use in aquatic environments. It is considered an ideal compound when dealing with the problems caused by invasive, non-native freshwater plants. Invasive and noxious weeds can destroy fish spawning grounds and wetlands habitat for wildlife; screens at hydro-electric facilities can be clogged; navigation lanes are restricted; water quality can be significantly reduced; and, property values can fall sharply because of too much aquatic vegetation. The use of 2,4-D provides a time-proven solution to these problems without posing a threat to desirable aquatic vegetation or wildlife.

Both the liquid amine forms and the granular butoxyethyl ester form are labeled for aquatic use and are effective for control of Eurasian watermilfoil and water hyacinth.

About the Task Force

The Industry Task Force II on 2,4-D Research Data is organized to provide funding for the on-going Good Laboratory Practice (GLP) research studies required to respond to the US EPA registration review and PMRA pesticide re-evaluation programs. The Industry Task Force II on 2,4-D Research Data is made up of companies holding technical registrations on the active ingredient in 2,4-D herbicides. They are Corteva Agriscience (U.S.), Nufarm, Ltd. (Australia) and Agro-Gor Corp (U.S.).

August 14, 2020