





and dead trees, as well as on stumps. These fruit bodies may be buried in the soil and duff layer. Fruit bodies are most commonly observed in the fall, but can be found any time of the year.

Young fruit bodies look like popcorn and, under favorable environmental conditions, become bracket-shaped or



Young HRD fruit bodies resemble popcorn.



Older, conk stage HRD fruit body.

shelf-like. Fruit bodies vary in color but are usually light to dark brown above and white to tan below.

## Prevention

Once HRD exists in a stand, it is very difficult to control. Prevention is the best approach.

If you are planning a thinning, consider treating freshly cut stumps with fungicide. Stumps should be treated as soon as possible after cutting and no later than one day after cutting.

Many factors influence the risk of infection and impact by HRD. A risk-based fungicide treatment guide is



A pine stump treated with fungicide. Blue dye is added to ensure coverage.

available for landowners and property managers to determine whether fungicide treatment is warranted in a stand.

Currently there are two pesticides to prevent HRD registered with the Wisconsin Department of Agriculture, Trade and Consumer Protection. “Cellu-Treat®” (disodium octaborate tetrahydrate) is a borate-based chemical; “Rotstop®C” is a biological fungicide that contains spores of the naturally occurring wood decay fungus, *Phlebiopsis gigantea*. Both products can be mixed in water and applied using a backpack sprayer or an attachment to a harvester.

## Purchasing Fungicides

**Cellu-Treat®** can be purchased online in a 25-pound bucket. As of May 2023, the cost for a 25-lb. bucket is \$138.94 plus shipping. The product also might be available from area suppliers.

The company states on its website that one pound of **Cellu-Treat®** makes two gallons of solution, enough to cover 2,000 6-inch stumps or 500 12-inch stumps.

### **Cellu-Treat® national distributor:**

Nisus Corporation, 100 Nisus Drive, Rockford, Tennessee; 1-800-264-0870. **Website:** <https://nisuscorp.com>

### **Cellu-Treat® in-state distributors:**

- Crop Production Services, Plainfield, WI; 715-335-4900
- Insight FS, Antigo, WI; 715-627-4844

**Rotstop®C** is available in two package sizes – 0.13 oz. package (which makes one gallon) and 0.67 oz. package (which makes five gallons).

As of May 2023, the cost for a 0.13-ounce package is \$1.89 and a 0.67-ounce package costs \$9.45. One gallon can cover 210 6-inch stumps or 50 12-inch stumps.

**Rotstop®C distributor:** Lallemand Plant Care, Sault Ste. Marie, Ontario, Canada; 1-888-236-7378; [NAOrders@lallemandplantcare.com](mailto:NAOrders@lallemandplantcare.com). **Website:** <https://bioforest.ca/en/unitedstates>

**Note:** References to pesticide products and distributors in this publication are for your convenience and are not

an endorsement or criticism of one product over similar products or one distributor over other distributors. DNR makes no endorsement or guarantee regarding any product or distributor.



Pockets in a red pine stand after management practices were implemented.

## Management

Recommended best management practices for harvesting a stand with HRD:

1. Start harvesting in healthy areas of the stand, moving to infected areas last.
2. Utilize dead trees and the bottom eight feet of dying trees with HRD fruit bodies as soon as possible to reduce fruiting body production and subsequent spore production.
3. Healthy trees within 35-65 feet of infected trees may be harvested to capture value before the next harvest.
4. Clear-cut areas where pockets are coalescing or the entire stand if pockets exist throughout.
5. Clean logging equipment between sites.



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