



## Hollyhock Rust: *Puccinia malvaceraum*

### Introduction

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This rust disease can result in serious injury to hollyhocks (*Althaea* spp.) and is found nearly everywhere they are grown. The rust also occurs on mallow (*Malva rotundifolia*), a common weed, which can serve as a disease reservoir for the fungus and contribute to infection of hollyhocks.

Hollyhock rust is caused by the fungus *Puccinia malvaceraum*. It is classified as an autoecious rust because it has only one known infective stage (III, teliospore), and it is not known to have an alternate host.



Figure 1: Small yellow spots on the upper leaf surface. (provided by Dawn Dailey O'Brien, Cornell University)

### Symptoms and Signs

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The surface of the leaves may develop numerous yellow spots (Fig. 1), however the most obvious symptoms are orange-brown pustules that may be noted on the undersides of the leaves (Fig. 2), which

are characteristic signs of a rust infection. These pustules may also form on the upper side of the leaves, on stems, and on green flower parts. Hollyhock rust tends to become more severe as the summer progresses, killing most of the leaves on infected plants by early fall.



Figure 2: Orange-brown pustules on the under surface of the leaf. (provided by Dawn Dailey O'Brien, Cornell University)

### Disease Cycle

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Large numbers of tiny rust-colored teliospores develop in the rust pustules. These spores are carried by splashing rain and air currents to nearby healthy plant parts and cause new infections. The fungus overwinters in infected plant debris. In the spring new infectious spores are formed on infected plant debris that cause infection on the newly emerging leaves.

## Management Strategies

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To try to break the disease cycle, it is important to cut all hollyhock stalks back to ground level in the fall, and carefully collect all leaves and other aboveground plant parts and destroy them. This autumn cleanup is vital to remove as much inoculum as possible before spring, and it must be done thoroughly.

During the growing season, water early in the day so the above ground plant parts will dry quickly. If found in the vicinity, the weed mallow should be removed and destroyed. Avoid crowded plantings as that may increase humidity around the foliage. Good air spacing may help keep foliage drier. When plants are dry, pick off and destroy any leaves or other plant parts as soon as signs of rust infection are noticed during the growing season.

For maximum protection begin fungicide treatments in early spring when the first leaves are expanding. Homeowners in New York State may apply some fungicides containing chlorothalonil, sulfur, or neem oil if needed. Be certain any pesticide you purchase is registered for the intended use, and follow label directions carefully. Sulfur may damage leaves if the air temperature exceeds 30°C (85°F) within 24 hours of spray application.

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**READ THE LABEL BEFORE APPLYING ANY PESTICIDE!** Changes in pesticide regulations occur constantly. All pesticides distributed, sold, and/or applied in New York State must be registered with the New York State Department of Environmental Conservation (DEC). Questions concerning the legality and/or registration status for pesticide use in New York State should be directed to the appropriate Cornell Cooperative Extension Specialist or your regional DEC office.

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