

# An Unknown Plant Virus Causing a Ringspot Disease in Azaleas

Rodrigo A. Valverde

In Louisiana, azaleas are popular ornamental plants in residential and commercial landscapes. Indica azaleas, also called Southern Indian azalea, are the most common cultivars grown throughout the state (Fig. 1). There are several insect pests and diseases that affect azaleas. Petal blight, caused by a fungus, is a major problem not only in Louisiana but throughout the United States. Diseases caused by viruses have been minor in comparison. During the late fall and early spring of 2011/2012, a disease consisting of foliar ringspots was observed on azaleas in several locations throughout Louisiana. The symptoms were prominent on the second-year leaves, especially during the flowering period. The ringspots varied in color and size depending on the azalea cultivar and time of the year (Fig. 2). They began as faint discolorations and chlorotic spots which later developed into necrotic ringspots. In general, new leaves (current year growth) did not show symptoms. The disease was very common in azaleas in old plantings, particularly those in plantation homes, but less common on new plantings. Ringspot symptoms in plants are often an indication of viral infection. There are many species of plant viruses that can cause foliar ringspots on plants. To determine the identity of the virus causing the foliar ringspots, procedures commonly used for plant virus identification were followed. Surveys for ringspot-affected azaleas were conducted in various locations, including the



Fig. 1 Healthy 'George Lindley Taber' at LSU.



Fig. 2 Necrotic ringspots on azalea leaves.

United States National Arboretum. Identifying the virus causing the ringspot on azalea has been challenging. The main problem is the nature of the host plant, azalea. Azalea contains many organic compounds that interfere with virus isolation and detection. Several methods for virus purification using infected azalea tissues failed to yield virus particles. However, we were able to transmit the ringspot-causing virus by grafting infected scions onto healthy plants. Furthermore, we were able to detect viral RNA in leaves with ringspots but not in leaves from healthy plants. In spite of these efforts, the exact identity of the virus causing the ringspots on azalea is still not known. The virus symptoms and viral RNA are similar to those caused by a newly described blueberry virus called blueberry necrotic ring blotch virus; therefore, it is possible that the azalea virus may be related to the blue-

berry virus. This hypothesis is supported by the fact that most plant viruses tend to infect related plant species, and both azaleas and blueberries belong to the Ericaceae plant family. During 2011, visual surveys of plants at several local retail nursery operations were conducted. Ringspots were found in azaleas in only one nursery. Plants in one-gallon pots of the cultivar 'George Lindley Taber' showed disease symptoms (Fig. 3). The fact that all the plants of this cultivar at the nursery were infected suggests that they were propagated from an infected mother plant. Surveys were also conducted



Fig. 3 Nursery plant with ringspots.



Fig. 4 'Mrs. G. G. Gerbing.'

Photos: Rodrigo A. Valverde



Fig. 5 'Pride of Mobile' ringspots.

know the long-term effect that this virus may have. Infections of old cultivars in plantation homes suggest that plants “can live” with the virus. Nevertheless, it is recommended that when propagating azaleas, particularly indica azaleas, only virus-free mother plants are selected. Moreover, when purchasing azaleas, examination of the foliage for ringspots is recom-



Fig. 7 Azaleas at the National Arboretum.

in gardens of plantation houses, and most of the plants showing symptoms were indica azaleas between 50 and 75 years old. In 2012, about 50 azalea cultivars from the Margie Y. Jenkins Azalea Garden located in the Louisiana State University Agricultural Center Hammond Research Station, were examined for the azalea ringspot virus disease. Only Southern Indian azaleas, 'Mrs. G. G. Gerbing' (Fig. 4), 'Pride of Mobile' (Fig. 5), 'Formosa', and 'George Lindley Taber' (Fig. 6) showed the disease; all other examined azaleas at the research station appeared disease-free. During the spring of 2012, a survey for the azalea ringspot virus was conducted on the azaleas of the United States National Arboretum in Washington, D.C. Many plants were carefully inspected for ringspots, but the disease was not observed in any of the examined plants (Fig. 7). The azalea ringspot virus appears to be restricted to a few but popular Indica cultivars. Preliminary research suggests that the

virus is not mechanically-transmitted from infected to healthy azaleas. This is supported by the presence of healthy plants near infected ones. Most likely, the virus is transmitted and disseminated by using virus-infected plant materials during azalea propagation. Plants with many foliar ringspots suffer significant defoliation. Although affected plants recovered from the disease, we do not

mended, and only ringspot-free plants should be purchased. Once the exact identity of the azalea ringspot virus is known, methods for detection will be developed which will lead to the development of efficient control strategies.

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Fig. 6a 'George Lindley Taber' ringspots.

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