

## Süs Bitkisi Hastalıkları Üzerine Bir Araştırma

Gülden YILMAZ CON\*

Trakya Üniversitesi, Fen Fakültesi, Biyoloji Bölümü, Edirne; ORCID: 0000-0002-9610-5311  
Gönderilme Tarihi: 31 Ağustos 2024 Kabul Tarihi: 26 Aralık 2024

### ÖZ

Bitki hastalıkları genetik veya çevresel faktörlerden kaynaklanabildiği gibi çoğu zaman patojenlere bağlı olarak da ortaya çıkabilmektedir. Bu hastalıklarla mücadele etmek oldukça güçtür. Bu çalışmada; krizantemde Japon beyaz pas hastalığı, gülde pas ve külleme hastalıkları, karanfilde pas ve begonyada külleme hastalıkları incelenmiştir. Bu bitkisel hastalıkların belirtileri fotoğraflar ile gözlenmiştir. Çalışmada bu hastalıkları önlemek için yapılacak kültürel önlemler ile bu hastalıklarda uygulanması gereken kimyasal mücadele ilaçları verilmiştir. Bu çalışmada ayrıca bitkisel hastalıkların nedenleri ve bu hastalıklarda ne yapılması gerektiği ile ilgili genel bilgi verilerek iç mekân süs bitkilerinin daha sağlıklı yetişebilmesi için halkın bilinçlendirilmesi amaçlanmıştır.

**Anahtar Kelimeler:** Hastalık, iç mekân süs bitkisi, tedavi

### A Research on The Diseases of Ornamental Plants

#### ABSTRACT

Plant diseases can be caused by genetic or environmental factors, but can also be caused by pathogens. It is very difficult to struggle with these diseases. In this study; Japanese white rust disease in chrysanthemum, rust and powdery mildew diseases in rose, rust in carnation and powdery mildew diseases in begonia were investigated. The symptoms of these plant diseases were observed with photographs. In the study, cultural measures to be taken to prevent these diseases and chemical control drugs to be applied in these diseases are given. In this study, it is also aimed to raise public awareness in order to grow indoor ornamental plants healthier by giving general information about the causes of plant diseases and what to do in these diseases.

**Keywords:** Disease, indoor ornamental plant, treatment

### INTRODUCTION

Ornamental plants in parks and gardens grow in an intense stress environment under the influence of human-induced environmental pressures of urban ecosystems, often under unfavorable or inadequate climate, air, water and soil conditions. Soil compaction, limited rooting volume, air pollution, mechanical damages caused by humans and vehicles, nutrient deficiencies and faulty cultural practices are only some of the abiotic stress sources of ornamental plants in parks and gardens. On the other hand, disease agents and pests are biotic stress factors that significantly affect these plants. Many ornamental plants weakened by abiotic stress factors become susceptible to diseases and pests. Fungi, bacteria, viruses and oomycetes are the main pathogens causing diseases in park and ornamental plants [1-6].

Diseases caused by these pathogens are considered important in terms of causing yield and economic losses in ornamental plant production. However, the effects of diseases on ornamental plants

used in parks and gardens are not limited to economic losses. Diseases can reduce the visual value of ornamental plants in parks and gardens or cause their death, beyond that, they negatively affect the ecosystem services they provide and reduce landscape aesthetics and visual quality.

The aim of this study is to draw attention to the diseases of indoor ornamental plants that we often grow in our homes and to raise public awareness about the treatment of common diseases in these plants.

### MATERIAL AND METHODS

In this study, the diseases observed in some ornamental plants especially in Edirne were investigated. As a result of the observations made, the symptoms of the diseases observed in plants, especially in ornamental plants such as Rose sp., Chrysanthemum sp., Dianthus sp., Begonia sp., and the cultural and chemical control methods against

\*Sorumlu yazar / Corresponding author: guldenyilmaz2009@yahoo.com

these diseases were analyzed according to the literature.

## RESULTS AND DISCUSSION

In this study, five herbal diseases especially occur in ornamental plants in Edirne are investigated.

### *Japanese White Rust Disease*

In 2023 according to a survey and disease surveillance, 86% of the surveyed ornamental plant producers reported white rust disease as the most important problem in chrysanthemum production [5].



Figure 1. Leaf view of *Chrysanthemum* sp. infected by *Puccinia horiana* (white rust of chrysanthemum) [7]

### *Symptoms of “Japanese White Rust Disease” in Chrysanthemum sp.*

White rust forms small whitish ridges on the lower surface of the leaves. When viewed from above, yellowish spots can be seen on the leaf. (Figure 1). When the blisters open, numerous shiny brown spores are released. The time between infection and the appearance of symptoms varies between 8 days and 8 weeks. Normally this period is 2-4 weeks. Various races of the fungus have different effects on different varieties. Varieties do not have the same resistance to the fungus [8, 9].

### *For Disease Control [3, 6]*

•*Cultural Precautions:* The plant must be kept dry. Infection may occur if the spores remain in the water for at least 5 hours.

•*Chemical Control*

Active ingredient	Formulation	Dose (in 100-liter water)
Oxycarboxin 75	WP	75 g
Mancozeb	WP	200 g
Triforine 90	EM	100 cc

## ROSE RUST DISEASE

Rose rust appears as an orange or rust-colored pustular development on the lower surfaces of the

leaves. The leaves cannot function, the physiological balance is disrupted. Old leaves show such symptoms earlier than young leaves. In favorable conditions, rust disease can envelop the whole leaf and stem. Heavy infections can also cause the leaves to fall off [10].



Figure 2. Leaf view of *Rose* sp. infected by *Phragmidium* spp. [11]

### *Symptoms of Rose Rust Disease*

The disease first appears as yellowish spots on leaves, branches and bud stems. Later these spots turn red. The spots are in the form of slightly raised pustules. The plant cannot feed well due to spots (Figure 2). Flower quantity decreases. Quality decreases. It causes flower buds not to open in spring [10].

### *For Disease Control [3, 6, 10]*

•*Cultural Precautions:* When red swellings are seen on branches, leaves, bud stalks and sepals in spring, diseased branches should be pruned. Pruning residues should be burned. Leaves falling to the soil should be collected and destroyed or buried deeply.

•*Chemical Control:* Spraying should be started as soon as the first pustules are seen and should be continued during vegetation according to the course of the disease.

Active ingredient	Formulation	Dose (in 100-liter water)
CuSO <sub>4</sub> + CaO mixture		1 kg + 0.5 kg
Cyproconazole	50 g/l EC	25 ml (Atemi 50 EC)
Propineb 70%	WP	200 g (Aprocol 70 WP, Enercol)

## ROSE POWDERY MILDEW DISEASE

Rose powdery mildew is a disease of roses caused by the fungus *Podosphaera pannosa*. The conspicuous white growth can affect all aerial parts of the plant, producing microscopic spores that spread the disease. High humidity is favorable for infection, and plants growing in areas where air movement is poor or the soil is dry can be severely affected [3, 6, 10].



Figure 3. General view of Rose sp. infected by *Sphaerotheca pannosa* var. *rosae*, a-Buds, b-Leaves [12]

#### Symptoms of Rose Powdery Mildew Disease

A white powdery fungal growth on the surface of leaves, buds, petals and shoots of roses and many other plants. The foliage may become discolored, heavily infected young leaves may be curled and distorted, and the plant's vigor may be reduced. Diseased leaves become curled, furrowed and hardened. They are covered with white mycelia and conidia (Figure 3). Mycelia and conidia are also seen on the sepals and stems of the bud. Powdery mildew sometimes prevents buds from opening. The disease is especially important in humid and overhead irrigation areas [3, 6, 10].

#### For Disease Control [3, 6, 10]

•**Cultural Precautions:** Excessive irrigation, especially fogging irrigation for garden roses, should be avoided. Fertilization, tillage and irrigation should be carried out in such a way as to ensure the normal development of the rose

#### •Chemical Control

Active ingredient	Formulation	Dose (in 100-liter water)
Dinocap 475 g/l	EC	30-40 ml
Sulfur 80%	WP	400 g
Quinomethionate 25%	WP	30 g
Bupirimate 250 g/l	EC	160 ml
Penconazole 100 g/l	EC	25 ml
Hexaconazole 50 g/l	SC	50 ml

### CARNATION RUST DISEASE

This disease is easily recognized by the brown rust pustules on the leaves. It first appears as yellow spots on the leaves and then rust pustules are arranged around these spots. This causes the formation of rings on the leaves. Rust pustules are formed on the upper and lower surfaces of diseased leaves. The disease passes from the leaves to the stem and surrounds the stem in the form of a ring, causing the epidermis to disintegrate. In the advanced stage of the disease, flower eyes are also destroyed. In this way, symptoms such as a general stagnation, stunting and shrinking

of the leaves are noticeable in the diseased plant [3, 6, 13, 14].



Figure 4. Leaf view of carnation infected by *Uromyces dianthi* [15]

#### Symptoms of Carnation Rust Disease

This disease initially appears as yellowish spots on the stems, twigs, leaves and sepals of plants and silvery-grey protrusions on the epidermis. In advanced stages, the epidermis tissue cracks and spores appear as brown powder. Stalk breakage and growth retardation occur [3, 6, 13, 14].

#### For Disease Control [3, 6, 16]

•**Cultural Precautions:** Ventilation should be good in the greenhouse. Irrigation should be done not from the top, but from the bottom so that it does not touch the leaves. Excess nitrogen fertilizer should not be used. Plants should not be planted densely in the greenhouse.

#### •Chemical Control

Active ingredient	Formulation	Dose (in 100-liter water)
Captan 50% WP	WP	250 g
Cyproconazole 50 g/l	EC	60 ml
Maneb 80%	WP	200 g
Oxycarboxin 75%	WP	75 g

### BEGONIA POWDERY MILDEW DISEASE

Begonia sp. has decorative leaves and colorful flowers. This plant is preferred in gardens, parks and houses because of its beautiful and colorful flowers. Begonia is a plant type that prefers sunny weather and continues its development healthier in this environment and does not like water much.

#### Symptoms of Begonia Powdery Mildew Disease

The disease appears on the stem, leaves, petioles and flowers. The leaves are first covered with a slightly off-white coating consisting of mycelia and conidia of the fungus. Then the leaf turns brown and dries



Figure 5. General view of *Begonia* sp. infected by *Oidium begoniae* [17]

#### For Disease Control [3, 6]

•**Cultural Precautions:** Cuttings should be taken from clean plants. Excessive watering should be avoided. Especially overhead irrigation should be avoided

#### •Chemical Control

Active ingredient	Formulation	Dose (in 100-liter water)
Dinocap 475 g/l	EC	30-40 ml
Sulfur	WP	300-350 g
Quinomethionate %25	WP	30 g

Compared to other cultivated plants in our country, the cultivation area of ornamental plants is quite limited. In addition, since ornamental plants are generally used for aesthetic purposes and are not included in human and animal nutrition, they have not been included in the research area of private and public organizations until today. However, Turkey has an advantageous position in ornamental plants and especially in cut flower sector due to its ecological conditions and geographical features, proximity to market countries and cheap labour force. Making good use of this advantageous position will be profitable for our country's economy. For this reason, it is thought that comprehensive studies should be carried out to combat disease factors that cause economic loss by limiting production in ornamental plants.

#### REFERENCES

1. Celik, H. 2010. Süs bitkileri ve peyzaj. Ondokuz Mayıs Üniversitesi Ziraat Fakültesi, Ders Kitabı No:54, Samsun.
2. Korkut, A.B., Inan, I.H. 2002. Saksılı süs bitkileri. Hasat Yayıncılık Ltd. Şti., İstanbul.
3. Nane, E.E. 2014. Süs bitkilerinde zararlı kontrolü-çimalan, ağaç ve çalılarda rastlanan hastalık ve böcek problemleri ve kontrolü. Nobel Akademik Yayıncılık, Ankara.
4. Cer, C., Benlioglu, S. 2021. Türkiye’de süs bitkilerinde görülen fungal hastalıklar konusunda yapılan çalışmalar. Bahçe 50(1):43-58.
5. Cer, C., Benlioglu, S. 2023. İzmir ilinde süs bitkisi üreticilerinin üretim profili ve üretim alanlarında görülen fungal hastalıklar açısından değerlendirilmesi. ADÜ Ziraat Dergisi 20(1):1-12.
6. Ozbulut, A. 2008. Süs bitkileri hastalık ve zararlıları. Samsun İl Tarım Müdürlüğü, Çiftçi Eğitimi ve Yayım Şubesi, Samsun, 24-45s.
7. (<https://www.cabidigitallibrary.org/doi/10.1079/abicompendium.45806>).
8. Göre, M.E. 2008. White rust outbreaks on *Chrysanthemum* caused by *Puccinia horiana* in Turkey. Plant Pathology 57:786.
9. Trolinger, J.C., McGovern, R.J., Elmer, W.H., Rechcigl, N.A., Shoemaker, C.M. 2017. Diseases of *Chrysanthemum*. In: R. McGovern, W. Elmer (Eds) Handbook of Florists’ Crops Diseases. Handbook of Plant Disease Management, pp:1-61.
10. Pscheidt, J.W., Rodriguez, T.G. 2016. Diseases of rose. In: R. McGovern, W. Elmer (Eds.) Handbook of Florists’ Crops Diseases. Handbook of Plant Disease Management, pp:1-61.
11. (<https://www.intfarming.com/blog/gulde-pas-ve-ilaclari>).
12. (<https://www.rhs.org.uk/disease/rose-powdery-mildew>).
13. Sevik, M.A., Saruhan, I. 2010. Karanfil (*Dianthus caryophyllus* L.)’de görülen bitki koruma problemleri. Türk Bilimsel Derlemeler Dergisi 3(2):33-41.
14. Atakan, A., Ozgonen, H. 2017. Antalya ili karanfil seralarında toprak kökenli fungal hastalık etmenlerinin yaygınlığının belirlenmesi. Süleyman Demirel Üniversitesi Fen Bilimleri Enstitüsü Dergisi 22(1):216-220.
15. ([https://commons.m.wikimedia.org/wiki/File:Uromyces\\_dianthi\\_%2803%29.jpeg](https://commons.m.wikimedia.org/wiki/File:Uromyces_dianthi_%2803%29.jpeg)).
16. Wolcan, S.M., Malbrán, I., Mourellos, C.A., Sisterna, M.N., González, M.P., Alippi, A.M., Nico, A., Lori, G.A. 2016. Diseases of carnation. In: R. McGovern, W. Elmer (Eds) Handbook of Florists’ Crops Diseases. Handbook of Plant Disease Management, pp:1-61.
17. (<https://www.intfarming.com/blog/begonyada-kulleme/>).