

**Aphids and disease in lemongrass (*Panicumdactylon* L.).**

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**Abstract**

Aphids limit the development of crops due to direct damage to plants and for their efficacy in disease transmission. This work was done in Chilpancingo, Guerrero to detect aphids and disease transmitted in lemongrass. The plot had an area of 10x10 m with 80 plants three months of development. Plants were sampled with a design completely random. Collections of specimens were performed using the method of sweeping net. The insects were identified Triplehorn keys and Nault. The disease was detected was produced by *Spiroplasmakunkelii* Whitcomb persistent-propagative transmission by leafhoppers (leafhoppers) of Deltoccephaline *Dalbulusmaidis* (DeLong & Wolcott) family. 25 plants were counted with the presence of whiteflies which made up 31% incidence, 20 of them showed symptoms of chlorosis, red foliage and involvement in its development, in May there were no symptoms. This indicated that their effectiveness in field Spiroplasma transmission was 80%. The severity of damage that occurred in them was 30%. 5% thereafter showed masking of symptoms.

**Aphids, lemon grass, *Panicumdactylon* L., *Spiroplasmakunkelii*.**


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## Introduction

Lemongrass is an herb fresh and citric aroma, its leaves are long, as strips, light green, form clusters, belongs to the Kingdom Plantae, Phylum Magnoliophyta, Class Liliopsida, Order Cyperales, Family Poaceae. This plant is native to India and grows in warm and temperate climates semiwarm or sea level in tropical forests, spiny forests and cloud mountain or forest of oak and pine. Lemongrass is disinfectant, stimulant and antioxidant. Its frequent use stimulates good digestion preventing the formation of gases and sudorífico.

*Dalbulus maidis* corn planthopper (DeLong & Wolcott) is the main vector of the *Spiroplasma kunkelii* Whitcomb bacteria. This bacterium causes corn stunt (*Zeamays* L.) belongs to the class Mollicutes and cause major crop losses in Latin America (Nault, 1983), for lack of cell wall are pleomorphic organisms present in the phloem of plants affected. The corn stunt is an endemic disease with damage reaching 70 to 100% in the most severe cases, with the biggest losses where plantings were delayed by irregular rainfall and where Johnson grass (*Sorghum halepense*) is which is a natural reservoir for the pathogen and the insect vector (Henriquez and Jeffers, 1997). In El Salvador it was determined that the biological cycle lasts 20-25 days *Dalbulus maidis*. In Central America leafhopper need five or six weeks to complete a generation with the ability to meet six to eight generations per year in the Pacific by high temperatures and dry climate that favor the development of insect pathogens (Córdoba and al. 1989).

These pathogens can not be transmitted mechanically or by seeds. They are transmitted in the vector in a persistent manner and multiply in it.

Leafhopper sucks the sap, causing damage when transmitted disease stunting and thin stripe which can inhibit the formation of ears. When the early attack occurs in plants symptoms are poorly developed roots, short stem, tillering, yellow and red leaves, low production of pollen and seed formation (Córdoba et al. 1989).

The problem aphid has become a limiting factor for optimal crop development due to direct damage to plants and their effectiveness in disease transmission. Work is required detection of aphids and symptoms produced by pathogens that spread in lemongrass as it affects the production for damage occurring in the coloration of foliage and its development.

## Materials and methods.

This experimental work was performed in a culture of lemongrass located in Chilpancingo, Guerrero, with the coordinates 17°11 'and 17°37' north latitude and 99°24 'and 100°09' west longitude, at 1370 meters. The climate is humid-temperate, the temperature ranges from 15 ° C to 24 ° C. The soil type is of sedimentary origin, forming textured gravel conglomerates, secondary vegetation is composed by scrub. The plot of the crop had an area of 10x10 m with a development of four months, 80 spaced 1.0 m plants. The plants were sampled with a completely randomized design throughout the plot to monitor insect populations present and enfermas. La plant specimen collection was performed by the method of sweeping net, with the capture of insects is set bag network in the wide mouth jar containing a alcohol, brought to the laboratory where they were identified as keys and Nault Triplehorn (1985). In the sampling of the field plants and whiteflies they were presenting symptoms of disease to determine its incidence were recorded.

The severity was established considering the degree of damage that had diseased plants.

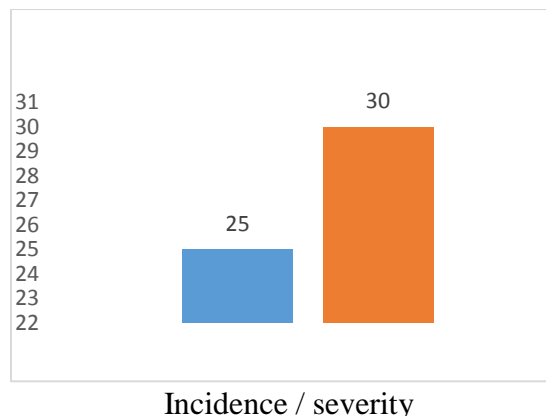
### Results and discussion

Symptoms of the disease in lemongrass demonstrated in the leaves that turned purple effect of the pathogen inoculated by the insect. The insects collected were identified as *Dalbulusmaidis* (DeLong & Wolcott) of the order Homoptera Cicadellidae family, their morphological characteristics. Adults are yellow with two black round spots on the top of the head, the hind wings are translucent and long, the nymphs are yellow translucent and lack spots. The eggs are yellow, elliptical. Nymphs go through five stages lasting 10 to 14 days at temperatures of 26 ° C before becoming adults. Vectors feeding on a plant pathogen acquire sick and spread the infection until they die. The spiroplasma is transmitted in a persistent-propagative manner by leafhoppers (leafhoppers) of Deltocephaline (Ortega, 1987) family.

In reviews of the plot they were counted 25 plants presence of whiteflies what a 31% incidence.

The symptoms were detected in 20 plants which accounted for 25% incidence, without manifesting symptoms in the other five who had the plague, which represented 20% of uninfected plants, this indicated that field effectiveness of transmission *Spiroplasm* it was 80%.

The severity of damage that occurred in them was 30%, chlorosis appeared first in the leaves, then took to dry prematurely reddish colors. 5% of plants showed symptoms lemongrass with masking (disappearance of symptoms) after three weeks of the presence of the disease.



**Figure 1** Percentage of incidence and severity of disease in lemongrass (*Panicum dactylon* L.).

### Conclusions.

*Dalbulusmaidis* (DeLong & Wolcott) is the pest was detected enzocate lemon with a 31% incidence.

Lemongrass presented a disease caused by bacteria *Spiroplasmakunkelii* Whitcomb, symptoms were detected in 25% of plants. *Dalbulusmaidis* field had an effective transmission *Spiroplasma* 80%. The severity of damage that occurred in the plants caused by *Spiroplasm* was 30%.

### References

- Córdoba M. P., Ballesteros F., Quiroz I., Obando R., Turley F. (1989). Ecología y dinámica poblacional de *Dalbulusmaidis* y la incidencia del achaparramiento del maíz. Rev. Centro Nacional de Protección Vegetal Rev Resumen, 1(1):9-11.
- Henríquez, P. and Jeffers, D. 1997. El achaparramiento del maíz. Patógenos, síntomas y diagnósticos. Síntesis de resultados experimentales del PRM, 1993-1995. CIMMYT-PRM. Guatemala. Vol. 5:283-290.

Nault L. R. 1983. Origins in Mesoamerica of maize viruses and mycoplasmas and their leafhopper vectors, pp 259-266. In: R.T. Plumb and J.M. Thresh (eds.), *Plant Virus Epidemiology: The Spread and Control of Insect-Borne Viruses*. Blackwell, Oxford, England.

Ortega A. 1987. Insectos nocivos del maíz: una guía para su identificación en el campo. CIMMYT, México, 106pp.

Triplehorn B. W. and Nault L. R. 1985. Phylogenetic classification of the genus *Dalbulus* (Homoptera: Cicadellidae), and notes on the phylogeny of the Macrostelini. *Annals of Entomological Society of America*. **78**: 291-315.