07 a 10 de Agosto de 2023 | Brasília - DF

ANAIS 2023

53º CONGRESSO BRASILEIRO DE FITOPATOLOGIA

www.cbfito2023.com.br

ISBN E DADOS DE PUBLICAÇÃO

53º CONGRESSO BRASILEIRO DE FITOPATOLOGIA
07 a 10 de Agosto de 2023 | Brasília - DF

Edição Técnica

Danilo Batista Pinho; Thaís Ribeiro Santiago; Alice Kazuko Inoue Nagata; Juvenil Enrique Cares; Tatsuya Nagata; Maurício Rossato

Todos os resumos neste livro foram reproduzidos de cópias fornecidas pelos autores e o conteúdo dos textos é de exclusiva responsabilidade dos mesmos. A organização do referente evento não se responsabiliza por consequências decorrentes do uso de quaisquer dados, afirmações e/ou opiniões inexatas ou que conduzam a erros publicados neste livro de trabalhos. É de inteira responsabilidade dos autores o registro dos trabalhos nos conselhos de ética, de pesquisa ou SisGen.

DESENVOLVIMENTO DE PLANTAS DE ALGODÃO COM SUSCETIBILIDADE REDUZIDA A *Meloidogyne incognita* VIA RNA INTERFERENTE. DEVELOPMENT OF COTTON PLANTS WITH REDUCED SUSCEPTIBILITY TO *MELOIDOGYNE INCOGNITA* THROUGH RNA INTERFERENCE APPROACH.

Sara Vitorino da Rocha Lemes [1,2]; Raíre dos Santos Cavalcante [2]; Maria Eugênia Lisei de Sá [4]; Carolina Vianna Morgante [3]; Maria Fatima Grossi de Sá [2]

[1]Dicente. UnB - Brasília, DF. Universidade de Brasília; [2]. Parque Estação Biológica, PqEB, Av. W5 Norte, Brasília, DF. Embrapa Recursos Genéticos e Biotecnologia; [3]Pesquisadora. BR-428, Km 152, s/n - Zona Rural, Petrolina - PE. Embrapa Semiárido; [4]Pesquisadora. Rua Afonso Rato, 1.301, Uberaba, MG, Brazil. Empresa de Pesquisa Agropecuária de Minas Gerais

Resumo:

Plant parasite such as the root-knot nematodes (RKN) of the genus *Meloidogyne* spp. cause significant damage to important crop plants in most parts of the world. During a compatible interaction, RKNs induce a hyper activation of root cell cycle to form feeding sites, causing root swellings, named galls, which impairs water and nutrient uptake and reduces yield. The restricted availability of chemical nematicides due to its toxicity and the reduced number of tolerant cultivars have limited RKN control and management. In this work, we used a biotechnological approach based on RNA interference (RNAi) to silence an essential gene of *Meloidogyne incognita* to develop a RKN-tolerant cotton plant. It was previously demonstrated that the knockdown of the pre-mRNA splicing factor (*SF*) gene was lethal to the nematode *Caenorhabditis elegans*. In addition, the expression of dsRNA (double strand RNA) targeting the *SF* gene in plant hosts reduced susceptibility to *Heterodera glycines* or *M. incognita* in tobacco and soybean plants. Herein, we obtained genetically modified (GM) cotton plants expressing a dsRNA hairpin targeting the *SF* gene of *M. incognita*. Three independent transformation events were selected for generation advancement and challenged against *M. incognita*. Fifteen-day-old T2 generation plants grown in 20x25 nursery bags were inoculated with 2,000 second stage juveniles (J2). The experiment was arranged in a completely randomized design with 15 replications under greenhouse conditions. Ninety days after inoculation, plants were evaluated for the number of eggs per gram of roots (NE), nematode reproduction factor (RF) and galls incidence through rating scale. We observed a decrease of 40% in the NE and a reduction of 60% in the RF in GM-genotypes compared to non-transformed plants. Our results reinforce that the production of dsRNA in hosts is an effective strategy to control endoparasitic nematodes. In addition, this method has the potential as a powerful tool to characterize the functions of parasite genes.

Palavras-chave: *Gossypium hirsutum*; Root-knot nematodes; RNAi; Transgenic plants