

# Nematoídes na Cultura do Algodoeiro Parte 1

*M. incognita*



## Importância de *Meloidogyne incognita* na Cultura do Algodoeiro no Brasil



Três espécies de  
*Meloidogyne* registradas  
em algodoeiro

Somente *M. incognita* em  
algodoeiro no Brasil

Quatro raças *M. incognita*

Raças 3 e 4 em algodoeiro

*M. incognita* favorecido por temperaturas elevadas e solos  
arenosos

Nematoide que causa mais perdas na cultura do algodoeiro no  
Brasil

*M. incognita*  
Galhas em Algodoeiro



**Foto** Jean Bélot



**Foto** Coodetec



**Foto** Rosana Bessi

# Sintoma Reflexo

## Alteração Cor Folhagem / Reboleira





**Foto** Rosangela Aparecida da Silva / MT



<https://thomascountyag.files.wordpress.com/2014/10/cotton-peanutspidermites-004.jpg> / Geórgia (EUA)

Carijó

Clorose internerval →  
Necrose internerval

# Carijó / Reboleira



<https://thomascountyag.files.wordpress.com/2014/10/cotton-peanutspidermites-009.jpg> / Geórgia (EUA)



# Redução de Tamanho Enfezamento / Reboleira



# Morte de Plantas / Reboleira



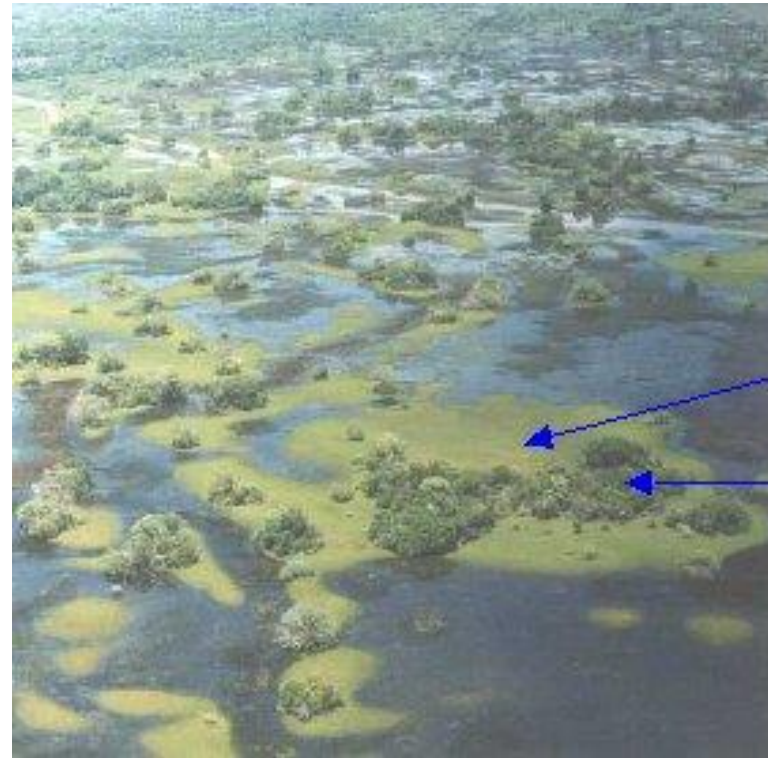
# Reboleira / Perda de Produção



# O QUE É REBOLEIRA?

Reboleira = parte mais densa de um campo semado; formação arbórea de pequena extensão; capão.

Capão = ilha de mato; formação arbórea de pequena extensão; mato redondo.



Campo

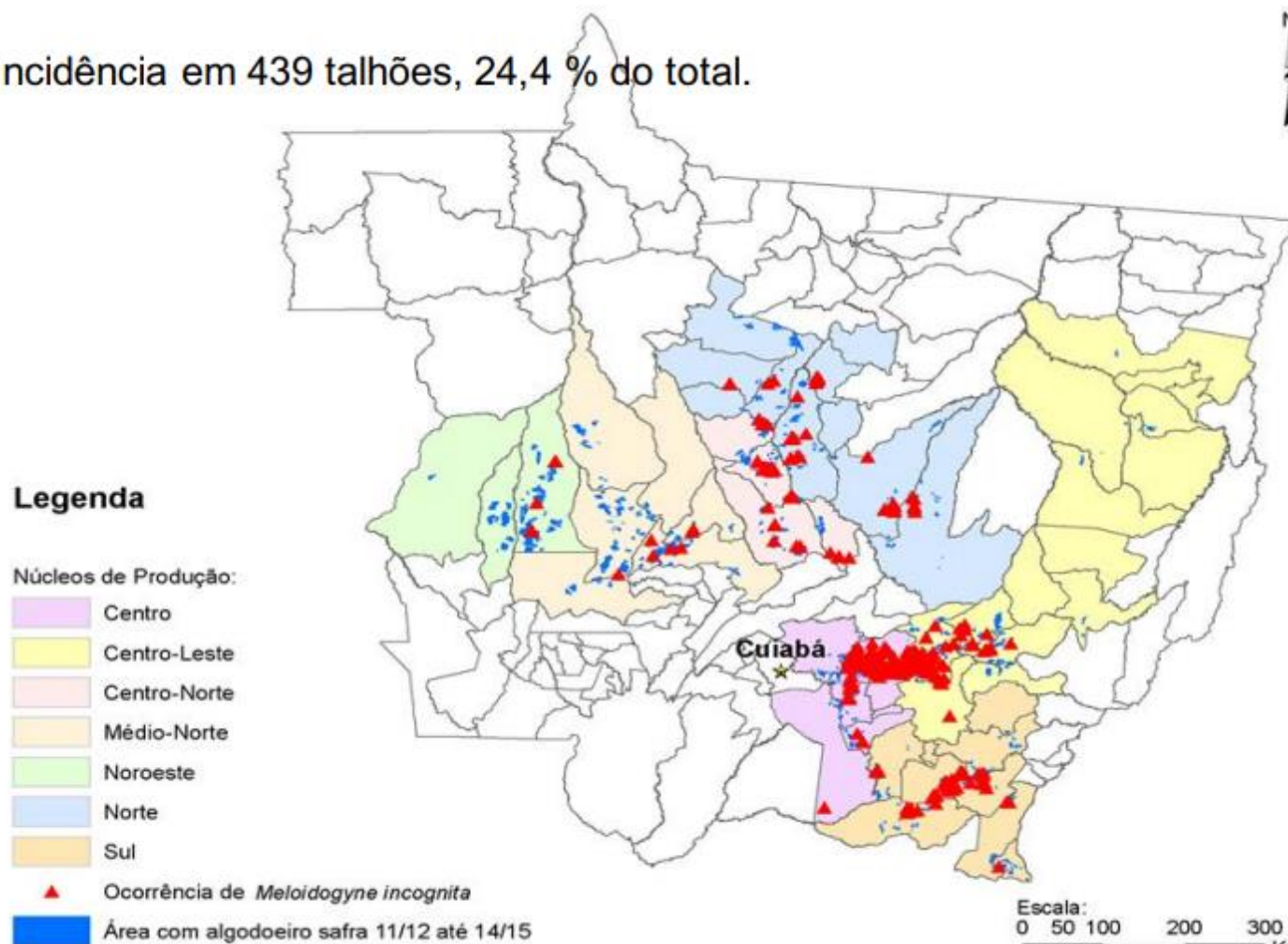
Capão

## Levantamento da ocorrência de fitonematoides e danos associados à cultura do algodoeiro no estado de Mato Grosso.

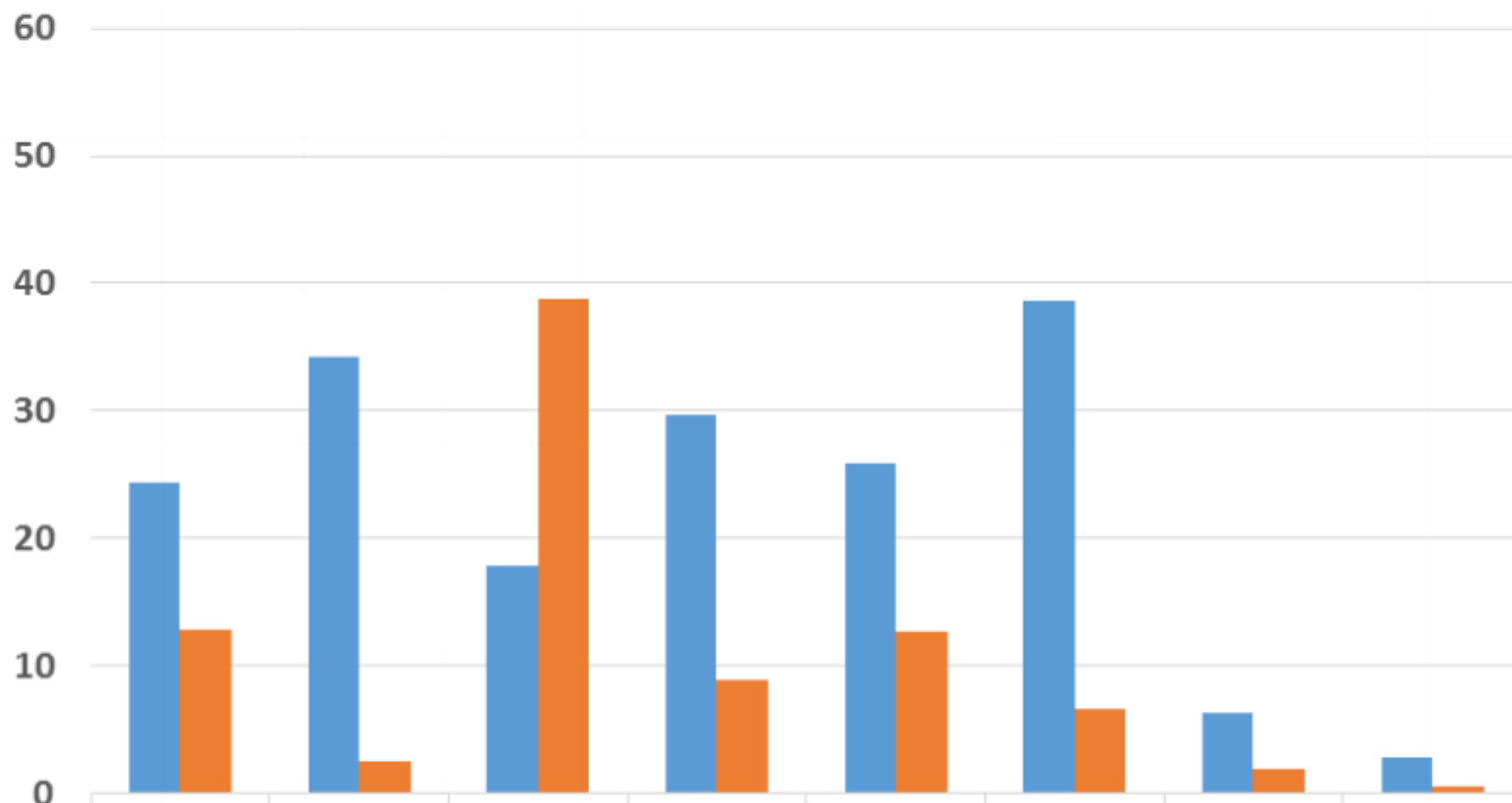
Rafael Galbieri<sup>1</sup>; João Flávio Veloso Silva<sup>2</sup>; Guilherme L. Amus<sup>3</sup>; Carlos M. P. Vaz<sup>4</sup>; Álvaro L. O. Salles<sup>1</sup>; Silvio Crestana<sup>4</sup>; Élic D. Torres<sup>1</sup>; Auster Farias<sup>2</sup>; Valeria O. Faleiro<sup>2</sup>; Fernando M. Lamas<sup>3</sup>; Luiz G. Chitarra<sup>5</sup>; Sandra M. Rodrigues<sup>5</sup>; Eduardo S. Matos<sup>2</sup>; Silvio T. Spera<sup>2</sup>; Ciro Magalhães<sup>2</sup>; Cornélio A. Zolin<sup>2</sup>; Ari B. Ribeiro<sup>2</sup>; Tânia F. S. Santos<sup>6</sup>; Neucimara R. Ribeiro<sup>6</sup>; Antônio A. E.L. Oliveira<sup>1</sup>.

A partir dezembro  
2011

Incidência em 439 talhões, 24,4 % do total.



Porcentagem de ocorrência (%) em 1.799 amostras (solo + raiz)



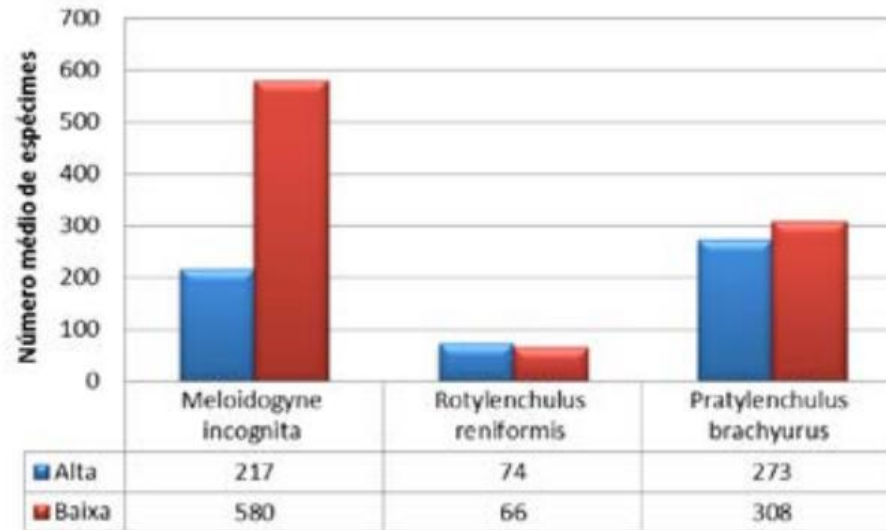
- Talhão A (Alta)



- Talhão B (Baixa)



**Figura 3.**  
Número médio da população de diferentes espécies de nematoides em 200 cm<sup>3</sup> de solo + 5 g de raiz em áreas com histórico de alta (558 amostras) e baixa produtividade (604 amostras).



Áreas com baixa produtividade →  
Densidades elevadas de *M. incognita*

Redução da densidade de *M. incognita* → Alta produtividade

# Sinergia com *Fusarium oxysporum*

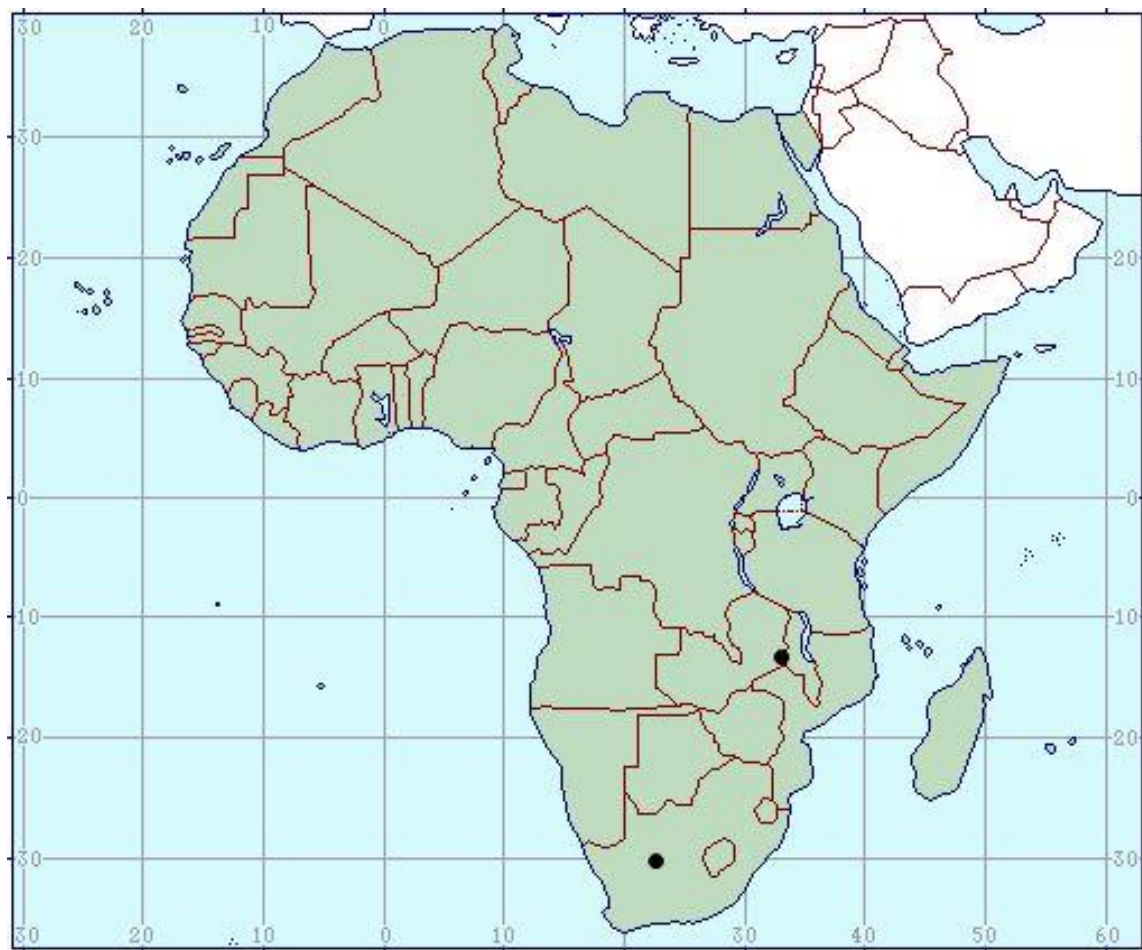


Primavera do Leste (MT) julho 2012



# *Meloidogyne acronea*

## “African Cotton-Root Nematode”



Coletado em raízes de sorgo na África do Sul 1956

Coletado em raízes de algodoeiro no Malawi 1976

É polífago. Por enquanto, não registrado no Brasil



Reboleiras em algodão no Malawi

<http://www.cabi.org/portfolio/compendia/normal/69399.img>

# *Meloidogyne enterolobii*

## plant disease

Editor-in-Chief: Alison E. Robertson  
Published by The American Phytopathological Society

[Home](#) > [Plant Disease](#) > [Table of Contents](#) > [Abstract](#)

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September 2013, Volume 97, Number 9  
Page 1262  
<https://doi.org/10.1094/PDIS-03-13-0228-PDN>

Disease Notes

### First Report of *Meloidogyne enterolobii* on Cotton and Soybean in North Carolina, United States

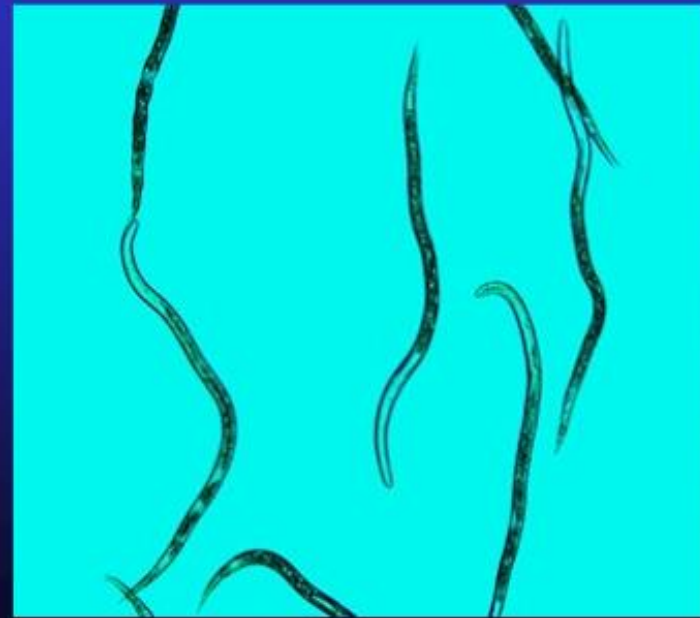
**W. M. Ye**<sup>†</sup>, Nematode Assay Section, Agronomic Division, North Carolina Department of Agriculture and Consumer Services, Raleigh 27607; **S. R. Koening**<sup>†</sup>, Department of Plant Pathology, North Carolina State University, Raleigh 27695; and **K. Zhuo**<sup>†</sup> and **J. L. Liao**,  
<sup>†</sup>Laboratory of Plant Nematology, South China Agricultural University, Guangzhou 510642, China



## Controle de *Meloidogyne incognita* em Algodoeiro

# Root-Knot Nematode Population Thresholds

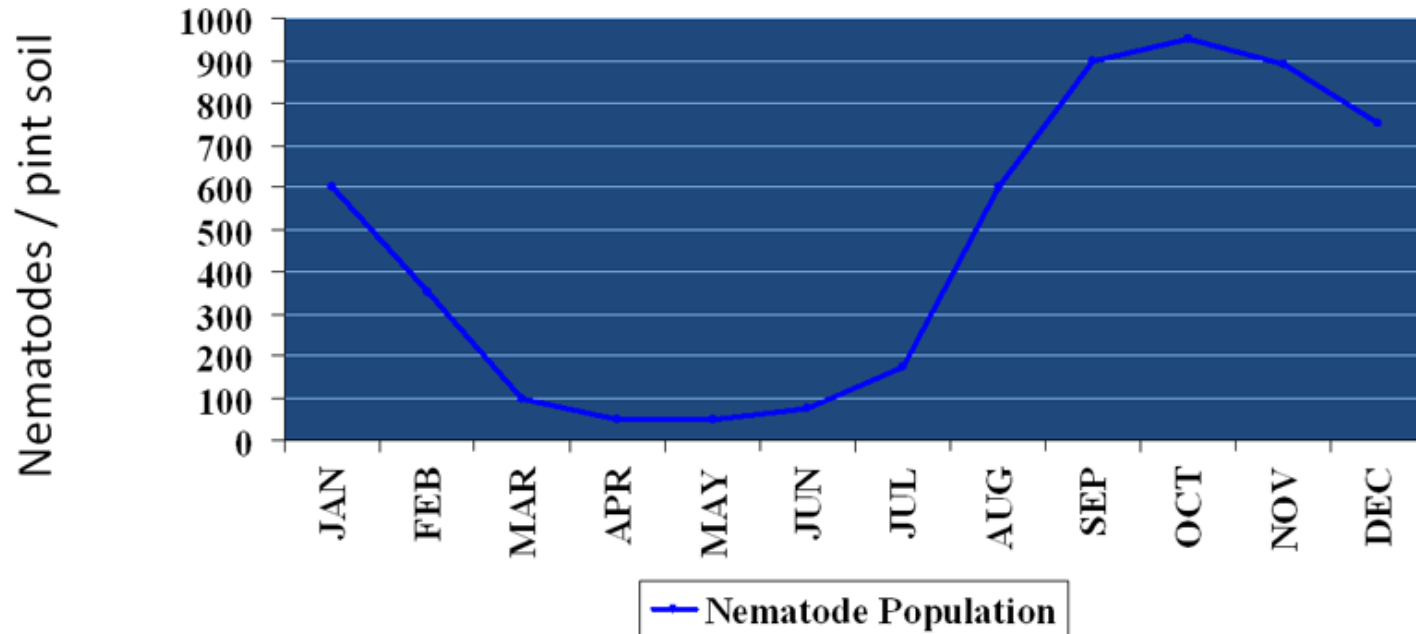
- Spring  
10 J2 / 100cc soil.
- Fall  
40 - 50 J2 / 100cc soil.



**Lawrence et al.**

<http://player.slideplayer.com/24/7525666/data/images/img3.jpg>

# Nematode Population Density Seasonal Fluctuations



<http://www.cotton.org/tech/pest/nematode/images/nematode-population-fluctuations.gif>

#### SCENARIO 1: LOW TO MODERATE NEMATODE PROBLEM IS VERIFIED OR SUSPECTED.

Use seed treated with one of the seed treatment packages listed above. There is evidence that these material. can suppress nematode infection for a couple of weeks . if the pressure is not high. If root-knot is the issue, the use of a seed treatment on the only moderately resistant cultivar currently available (Phytogen 367 WNR) may improve nematode control. There are no reniform nematode resistant cultivars.

## Problemas pequenos a moderados

- 1) Tratamento de sementes
- 2) + Cultivares resistentes

#### SCENARIO 2. MODERATE TO HIGH NEMATODE PRESSURE; HISTORICALLY HANDLED WITH 5 to 7 LB/A TEMIK.

Use a nematicide seed treatment and apply Vydate C-LV according to the label at or preferably shortly before pinhead square. Again, if root-knot is the problem, consider the resistant cultivar plus these treatments.

#### SCENARIO 3. SEVERE NEMATODE PRESSURE; FIELD WAS A "PROBLEM FIELD" LAST YEAR.

- Option 1: Rotate to something else.
- Option 2: Apply one of the soil fumigants.

Nematodes can be managed, but the good old days of applying Temik in-furrow at planting as the only nematode control strategy are over. Now, growers are going to have to use the same approach and concept that they are already using for their weed and insect control. They need to know where the problem exists, what nematode is involved, and how severe the problem is.

Growers (or their consultants) have been scouting fields for years to determine these three things for insects and weeds. We need to do the same for nematodes... the only catch is that nematodes are invisible so the scouting has to be done with a soil probe and bucket in the fall in preparation for next year's crop.

For more information about nematode management in cotton, look to these fact sheet publications prepared by the University of Arkansas Division of Agriculture.

<http://www.thecropsite.com/news/7900/managing-cotton-nematodes-without-temik/>

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Pressão moderada a alta

TS + Vydate + Cultivares resistentes

<http://www.thecropsite.com/news/7900/managing-cotton-nematodes-without-temik/>



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Pressão severa do nematoide

- 1) Rotação, ou
- 2) Nematicida fumigante

<http://www.thecropsite.com/news/7900/managing-cotton-nematodes-without-temik/>

# Tratamento de Sementes

Table 1 - Effect of the seed treatment with abamectin (150µg seed<sup>1</sup>) on the penetration (3, 9 and 15 days after germination, dag), colonization (27dag) and reproduction (50 and 100dag) of *Meloidogyne incognita*. Experiment 1.

	3dag	9dag	15dag	-----27dag-----		-----50dag-----		-----100 dag-----	
	Number of J2 <sup>1</sup>			galls	Egg masses	ng <sup>2</sup>	RF <sup>3</sup>	ng	RF
Treated	0.1a	11.1a	9.6a	41a	34a	1,353a	3.2a	2,702a	69.8a
Non-treated	18.1b	86.1b	88.2b	140b	136b	8,763b	43.0b	12,342b	344.0b

<sup>1</sup> J2: second stage juveniles;

<sup>2</sup> ng: Number of J2 and eggs per gram fresh root;

<sup>3</sup> RF: reproduction factor.

<http://www.scielo.br/pdf/cr/v40n6/a598cr3021.pdf>



# Nematicidas Sintéticos



## ► Consulta de Praga/Doença

### ► Dados da Praga

Dados Gerais	Sobre a Praga	Fotografias	Produtos Indicados
Produto	Ingrediente Ativo (Grupo Químico)	Titular de Registro	
<a href="#">Abamectin Nortox 400 WG</a>	<a href="#">Abamectina (avermectina)</a>	<a href="#">Nortox S.A. - Arapongas</a>	
<a href="#">Abamex</a>	<a href="#">Abamectina (avermectina)</a>	<a href="#">Sumitomo Química</a>	
<a href="#">Avicta 500 FS</a>	<a href="#">Abamectina (avermectina)</a>	<a href="#">Syngenta Proteção</a>	
<a href="#">Avicta 500 FS Pro</a>	<a href="#">Abamectina (avermectina)</a>	<a href="#">Syngenta Proteção</a>	
<a href="#">Blindado</a>	<a href="#">Fluensulfona (fluoroalkenyle (-thioether))</a>	<a href="#">Adama Brasil S.A. -</a>	
<a href="#">Cropstar</a>	<a href="#">imidacloprido (neonicotinóide) + tiodicarbe (metilcarbamato de oxima)</a>	<a href="#">Bayer S.A. - São Paulo</a>	
<a href="#">Ilevo</a>	<a href="#">Fluopyram (benzamida)</a>	<a href="#">BASF S.A. - São Paulo</a>	
<a href="#">Mantis 400 WG</a>	<a href="#">Abamectina (avermectina)</a>	<a href="#">Cropchem Ltda</a>	
<a href="#">Nemacur</a>	<a href="#">fenamifós (organofosforado)</a>	<a href="#">AMVAC do Brasil R</a>	
<a href="#">Nimitz EC</a>	<a href="#">Fluensulfona (fluoroalkenyle (-thioether))</a>	<a href="#">Adama Brasil S.A. -</a>	
<a href="#">Rugby 200 CS</a>	<a href="#">cadusafós (organofosforado)</a>	<a href="#">FMC Química do Br</a>	

Qtd. Produtos: 11

# Nematicidas Biológicos

Produto	Ingrediente Ativo(Grupo Químico)
<a href="#">Amys</a>	<a href="#">Bacillus amyloliquefaciens (Produto Microbiológico)</a>
<a href="#">Aveo EZ</a>	<a href="#">Bacillus amyloliquefaciens (Produto Microbiológico)</a>
<a href="#">Biobac</a>	<a href="#">Bacillus subtilis (Produto Microbiológico)</a>
<a href="#">Biobaci</a>	<a href="#">Bacillus subtilis (Produto Microbiológico)</a>
<a href="#">Biobaci III</a>	<a href="#">Bacillus subtilis (Produto Microbiológico)</a>
<a href="#">BN40.001/19</a>	<a href="#">Paecilomyces lilacinus (Produto Microbiológico)</a>
<a href="#">Boneville</a>	<a href="#">Bacillus amyloliquefaciens (Produto Microbiológico)</a>
<a href="#">Chevelle</a>	<a href="#">Bacillus amyloliquefaciens (Produto Microbiológico)</a>
<a href="#">Diamond</a>	<a href="#">Trichoderma koningiopsis (Produto Microbiológico)</a>
<a href="#">Lumialza</a>	<a href="#">Bacillus amyloliquefaciens (Produto Microbiológico)</a>
MNG-02/14	
<a href="#">Nema III</a>	<a href="#">Bacillus amyloliquefaciens (Produto Microbiológico)</a>
<a href="#">Nemakill</a>	<a href="#">Paecilomyces lilacinus (Produto Microbiológico)</a>
<a href="#">Nemat</a>	<a href="#">Paecilomyces lilacinus (Produto Microbiológico)</a>
<a href="#">Nettus</a>	<a href="#">Paecilomyces lilacinus, isolado UEL Pae 10* (Produto Microbiológico)</a>
<a href="#">No-Nema</a>	<a href="#">Bacillus amyloliquefaciens (Produto Microbiológico)</a>
<a href="#">Presence</a>	<a href="#">Bacillus licheniformis (Produto Microbiológico) + Bacillus subtilis (Produto Microbiológico)</a>
<a href="#">Profix</a>	<a href="#">Bacillus licheniformis (Produto Microbiológico) + Bacillus subtilis (Produto Microbiológico) + Paecilom</a>
<a href="#">Purpureonyd FR 25</a>	<a href="#">Paecilomyces lilacinus (Produto Microbiológico)</a>
<a href="#">Quartzo</a>	<a href="#">Bacillus licheniformis (Produto Microbiológico) + Bacillus subtilis (Produto Microbiológico)</a>
<a href="#">Subt</a>	<a href="#">Bacillus subtilis (Produto Microbiológico)</a>
<a href="#">Trunemco</a>	<a href="#">Bacillus amyloliquefaciens (Produto Microbiológico)</a>
<a href="#">Veraneio</a>	<a href="#">Bacillus amyloliquefaciens (Produto Microbiológico)</a>

Qtd. Produtos: 23



Aplicação de Temik



Aplicação de Rugby

05/11/2012 14h11 - Atualizado em 05/11/2012 14h19

## Agrotóxico usado irregularmente contra ratos é proibido pela Anvisa

Aldicarbe era indicado para plantações como batata, café, algodão e feijão. Raticida chamado de 'chumbinho' causava até 4.800 intoxicações por ano.

Do G1, em São Paulo



Chumbinho é usado para matar ratos, em abortos, homicídios e suicídios (Foto: Anvisa/Divulgação)

A Agência Nacional de Vigilância Sanitária (Anvisa) e o Ministério da Agricultura, Pecuária e Abastecimento decidiram retirar do mercado brasileiro o agrotóxico aldicarbe, usado irregularmente para o controle doméstico de ratos. A medida vale desde outubro.

Segundo o órgão, esse tipo de raticida responde por quase 60% (4.800) dos 8 mil casos anuais de intoxicação ligados a "chumbinho" no país. O chumbinho é um produto clandestino altamente tóxico, em geral um veneno agrícola, que não tem autorização do governo para combater pragas

de animais. É vendido sob a forma de grãos de cor cinza-escuro ou grafite, que lembra o

## Affaire Kulik : qu'est-ce que le Temik, le poison avalé par Willy Bardon ?

Deux jours après sa tentative de suicide à l'issue de son procès, le quadragénaire est toujours en réanimation, mais son état «continue de s'améliorer».

Par Le Figaro avec AFP

Publié le 8 décembre 2019 à 05:34, mis à jour le 8 décembre 2019 à 12:33

## Menino de 3 anos envenenado com bala com chumbinho recebe alta

Da Redação  
portal@hojeemdia.com.br

02/05/2017 - 17h27 - Atualizado 18h56



O menino de 3 anos que foi envenenado com uma bala com chumbinho recebeu alta no último sábado (29), após seis dias internado, conforme informações do Hospital de Clínicas da Universidade Federal de Uberlândia, em Monte Carmelo, no Alto Paranaíba.

Ele e o irmãos de 8 anos, moradores de bairro de classe baixa do município, brincavam em frente à casa em que vivem quando encontraram as balas próximo ao portão da residência, no dia 26 de abril.

**Estcourt**  
and Midlands News



NEWS ▾

CLASSIFIEDS ▾

PROPERTY ▾

TRAVEL ▾

COVID-19

CATALOGUE

Local news

## PET OWNERS BEWARE: Dogs poisoned with deadly temik

Local vet Dr Delon Alwar urges pet owners to keep an eye on their dogs

February 12, 2020



Home » Home Page Feature » Aldicarb Returns To Cotton Fields

## ALDICARB RETURNS TO COTTON FIELDS

May 2, 2016 in Home Page Feature, Special Report

By A. Denise Attaway  
Clemson University

Six years after production was discontinued in the United States, aldicarb is making a comeback. Production of the farm chemical aldicarb, formerly sold under the trade name Temik, was discontinued in 2010 and has gradually disappeared from the market. A new product, AgLogic 15G Aldicarb Pesticide, is making an initial run in Georgia this season. It is expected to be released in other cotton-producing states in 2017 and 2018.

## Cotton Pests: It's Back. Temik Has a New Name, Same Game.

April 26, 2019  
From a Press Release



*Thrips damaged cotton.*

# Cultivares Resistentes



PI-M135

Fibermax-966

PI-M135

TMG-81





Primavera do Leste (MT) julho 2012

**TABELA 1** - Reação de genótipos de algodoeiro a *Meloidogyne incognita* sob condições de campo em Campo Verde MT, no ano agrícola 2007/08

Genótipos	Notas <sup>(1)</sup>	Genótipos	Espécimes <sup>(2)</sup>	Genótipos	Produção <sup>(3)</sup>
IAC 25 RMD	1,15 a <sup>(4)</sup>	IAC 25 RMD	50,4 a <sup>(4)</sup>	IPR 140	3087 a <sup>(4)</sup>
IPR 140	1,26 a	IPR JATAÍ	135,5 b	IAC 25 RMD	2596 b
IPR JATAÍ	1,53 b	IPR 140	138,9 b	FMT 701	2504 b
FMT 701	1,63 b	BRS CEDRO	150,7 b	BRS CEDRO	2308 c
BRS CEDRO	1,77 b	COODETEC 409	168,8 b	IPR JATAÍ	2222 c
COODETEC 409	2,05 c	LDCV 2	190,7 b	COODETEC 02-1637	2158 c
IPR 02-307	2,12 c	COODETEC 408	196,1 b	COODETEC 409	2103 c
COODETEC 02-1637	2,12 c	NUOPAL	196,7 b	BRS BURITI	1788 d
DELTAOPAL	2,25 c	FMT 701	196,7 b	NUOPAL	1783 d
FIBERMAX 993	2,29 c	COODETEC 02-1637	212,0 c	BRS ARAÇÁ	1760 d
NUOPAL	2,39 c	BRS ARAÇÁ	214,7 c	IPR 02-307	1680 d
BRS ARAÇÁ	2,43 c	FIBERMAX 993	241,7 c	LDCV 9	1590 e
BRS 01-56818	2,47 c	IPR 02-307	248,0 c	LDCV 2	1589 e
LDCV 9	2,62 d	BRS 01-56818	273,6 c	FIBERMAX 993	1545 e
COODETEC 408	2,67 d	LDCV 5	278,5 c	BRS 01-56818	1530 e
LDCV 2	2,70 d	LDCV 9	280,9 c	DELTAOPAL	1450 e
COODETEC 406	2,77 d	DELTAOPAL	284,1 c	COODETEC 408	1332 e
BRS BURITI	2,88 d	LDC FREGO	323,4 c	COODETEC 406	1296 e
LDCV 5	3,41 e	COODETEC 406	334,3 c	FMT 703	1106 f
FMT 703	3,68 e	BRS BURITI	369,8 c	LDCV 5	856 f
FIBERMAX 966	4,44 f	FMT 703	380,0 c	FIBERMAX 966	660 g
LDC FREGO	4,47 f	FIBERMAX 966	460,0 c	LDC FREGO	482 g



NemX

FMT-701

## Limitações?

Algumas cultivares têm porte excessivo

Efeito do ambiente sobre resistência e tolerância



Primavera do Leste (MT) julho 2012

## PLANT PATHOLOGY AND NEMATATOLOGY

### A Comparison of the Damage Functions, Root Galling, and Reproduction of *Meloidogyne incognita* on Resistant and Susceptible Cotton Cultivars

E. Zhou and J. L. Starr\*

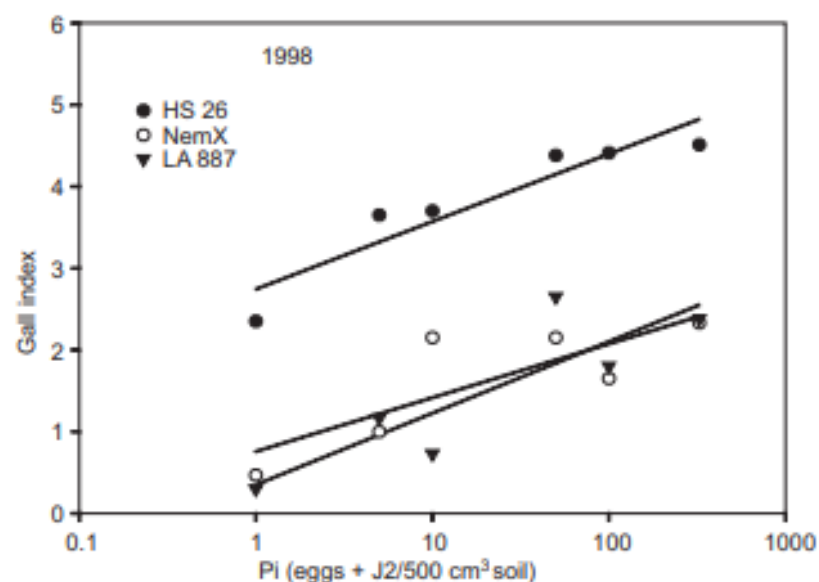
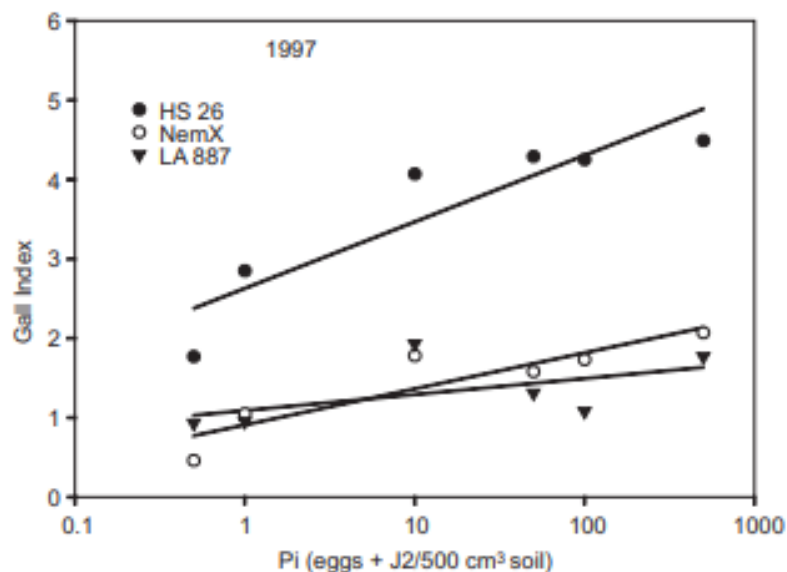
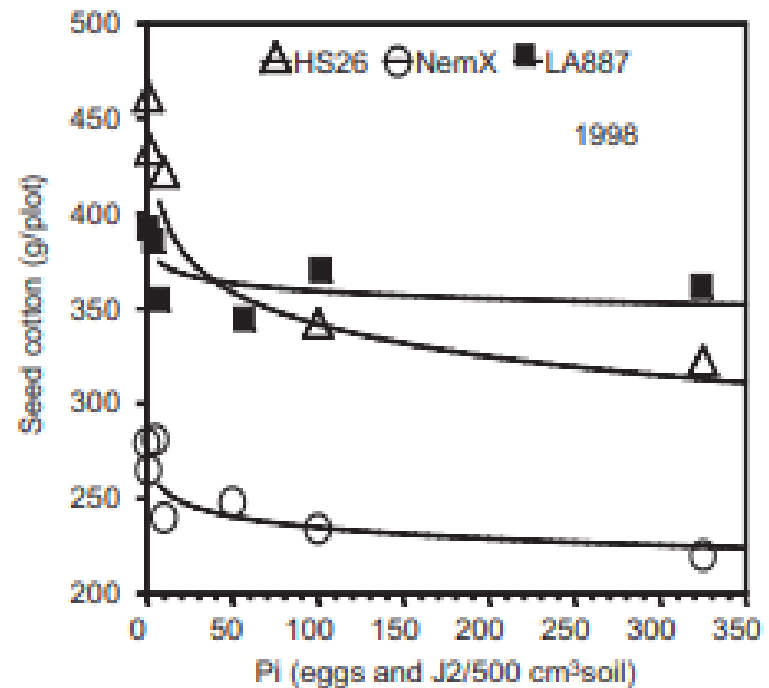
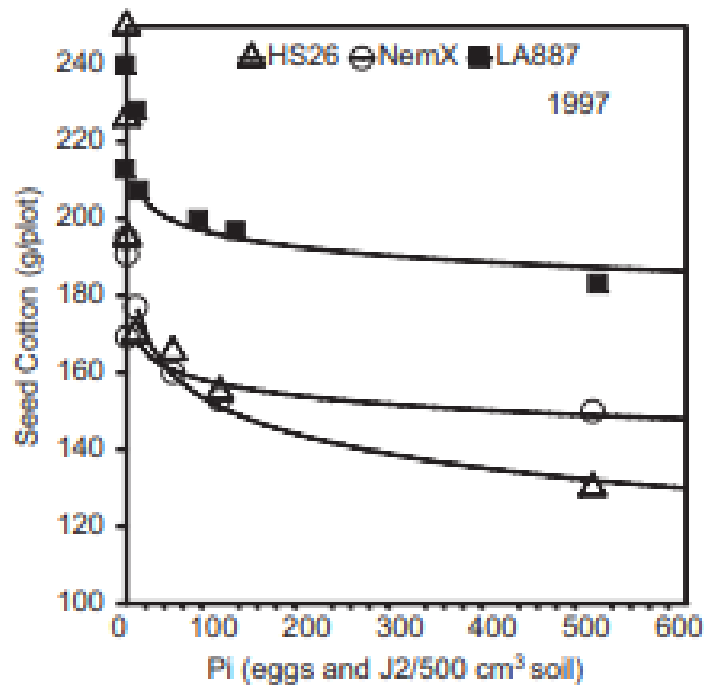


Figure 1. Effect of initial population densities (Pi) of *Meloidogyne incognita* on root-gall index (0 = no galls and 5 >75 % of the roots galled) of the susceptible cotton cultivar Paymaster HS 26 and the root-knot resistant cultivars Acala NemX and Stoneville LA 887.



NemX

Fibermax-966



**Figure 2.** Effect of initial population densities (Pi) of *Meloidogyne incognita* on seed cotton yield of the susceptible cultivar Paymaster HS 26 and the root-knot resistant cultivars Acala NemX and Stoneville LA 887.

**Material suscetivel**

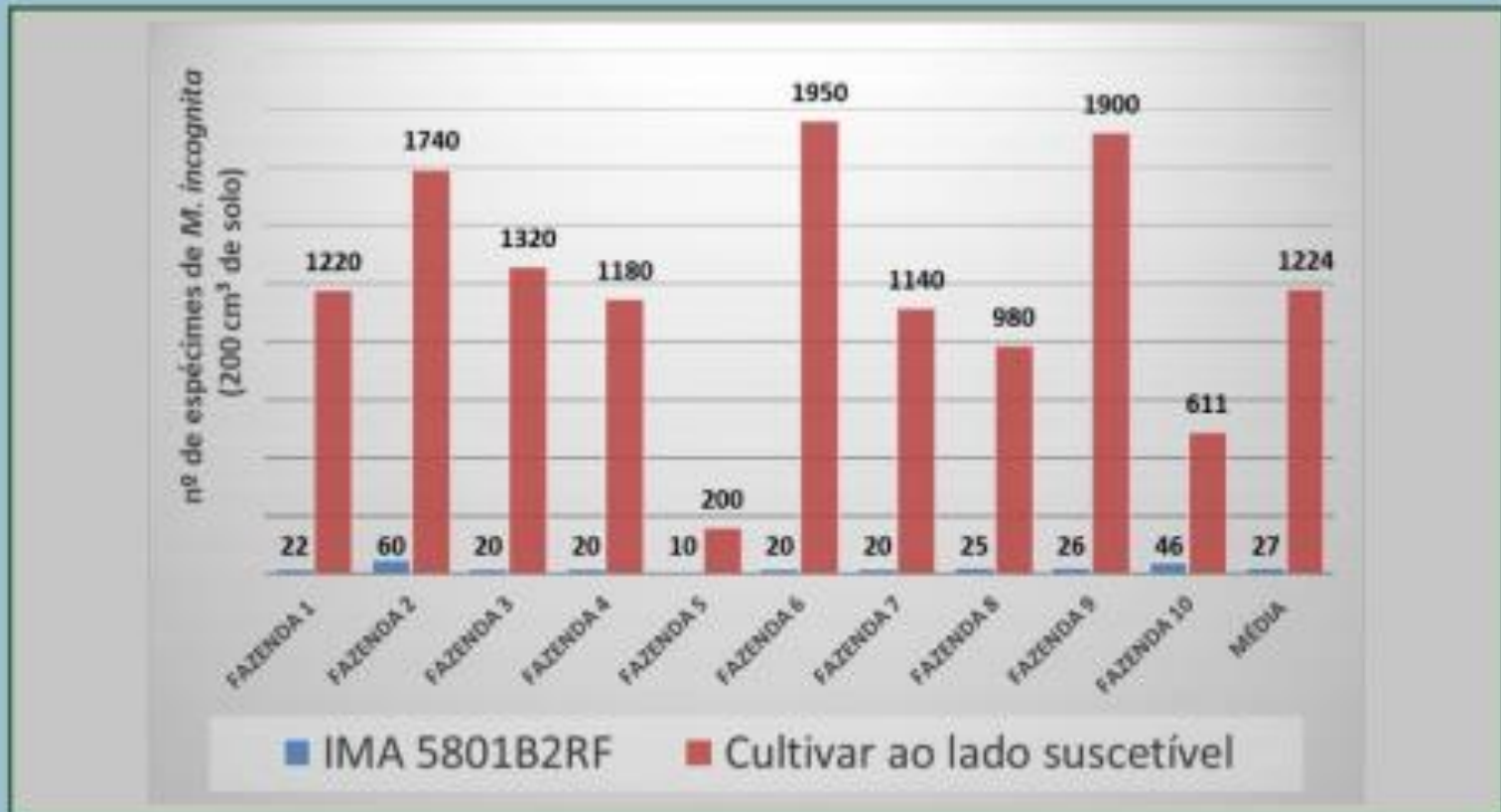
**IMA 5801B2RF**



[https://imamt.org.br/wp-content/uploads/2019/03/IMA\\_5801B2RF-folder.pdf](https://imamt.org.br/wp-content/uploads/2019/03/IMA_5801B2RF-folder.pdf)



## Avaliações em condições de campo



**FIGURA.** População de *Meloidogyne incognita* em algodoeiro aos 70-90 dias após o plantio. Cada fazenda teve pelo menos um talhão ou faixa com a IMA 5801B2RF comparado com o talhão ou faixa ao lado com cultivar suscetível ao nematoide. Cada dado corresponde a 30 pontos amostrados.

# Histórico sobre Controle de Nematoides em Algodão

Instituto Agronômico  
de Campinas  
1924-

IAC 8 (1958), IAC 11, IAC 12 ...  
IAC 17 (susc) ... IAC 26RDM (2013)

Rotação de cultura  
1950-1980

Amendoim Alta Sorocabana

Mucuna-preta Alta Mogiana

Preparo de solo  
1950-1980

Aração

Gradagem

1950-80

O controle era feito de forma inconsciente?

Bicudo-do-algodoeiro  
1983

Principal praga do algodoeiro

Abertura de mercado  
Governo Collor  
1990-92

Competição com outros países  
produtores de algodão e com  
fibras sintéticas

Redução da oferta  
de mão-de-obra

Colheita mecânica

1983-1990

Redução da área com algodão em SP e PR

Detecção de *Heterodera glycines*  
no Brasil no cerrado 1991/1992

Rotação com milho e algodão para  
controle de *H. glycines*

Expansão da cultura do  
algodão no cerrado

IAC 20 Resistente a *M. incognita*

CNPA Ita 90 Suscetível a *M. incognita*

Baixa prevalência de *M. incognita*  
nas novas áreas produtoras de  
algodão

Resistência a *M. incognita* não era  
atributo importante

Preferência por cultivares de algodão produtivas, resistentes às  
doenças foliares e com porte compatível com colheita mecânica

*M. incognita* torna-se relevante em algumas áreas (5% em MT – Silva et al. 2003)

FMT 701 foi muito utilizada no MT



Fibermax-966



NemX

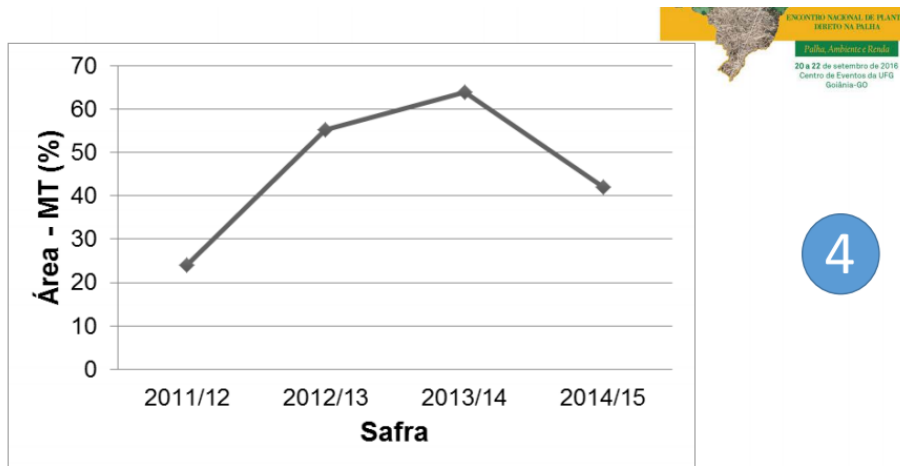
FMT-701

## Algodão Bt no Brasil 2005

## *Helicoverpa armigera* 2013

Aumento da procura por algodão transgênico

Resistência a *M. incognita* deixa de ser uma das prioridades



Distribuição de área plantada com a cultivar de algodoeiro FM 975 WS no Estado de Mato Grosso. Dados obtidos da safra 2011-2014, em 1799 talhões amostrados no Estado.

## RESISTÊNCIA/TOLERÂNCIA (NEMATOIDE DE GALHA)

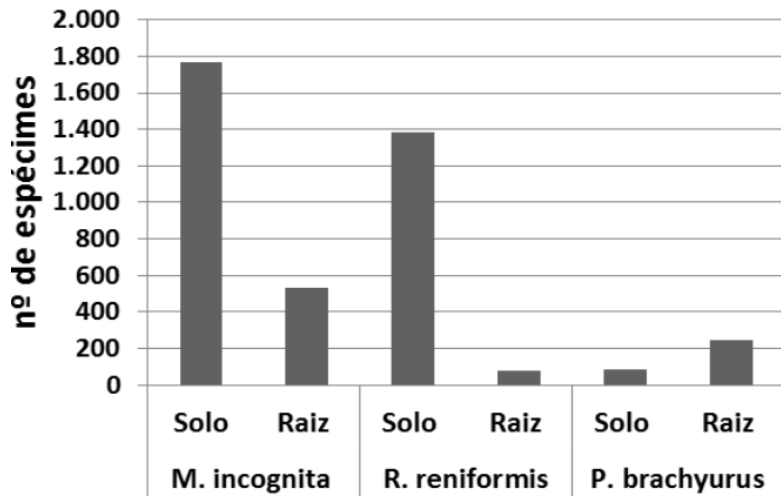
Reação de cultivares de algodoeiro à *M. incognita* sob condições de campo em Primavera do Leste MT, safra 2014-15.



Cultivares	Nota <sup>(1)</sup>	Espécimes <sup>(2)</sup>	Produção <sup>(3)</sup>	Cultivares	Nota <sup>(1)</sup>	Espécimes <sup>(2)</sup>	Produção <sup>(3)</sup>
BRS 368 RF	2,6b	6.448 b	1.336 b	FM 980 GLT	1,7 a	9.536 c	1.386 b
BRS 369 RF	2,6b	8.848 c	1.267 c	FM 982 GL	2,0a	7.960 c	1.432 b
BRS 371 RF	1,4a	7.536 c	1.594 b	IAC 26 RMD	1,0a	1.360 a	1.914 a
BRS 372	3,0b	9.168 c	885 c	IMA 2106 GL	1,8a	4.976 b	1.625 b
DP 1227 B2RF	2,1a	11.008 c	1.203 c	IMA 8405 GLT	2,0a	7.480 c	1.379 b
DP 1228 B2RF	2,7b	6.640 b	970 c	IMA 5675 B2RF	3,8c	4.008 b	956 c
DP 1240 B2RF	2,1a	5.664 b	1.077 c	TMG 11 WS	4,9c	8.320 c	688 c
FM 913 GLT	2,8b	5.280 b	1.117 c	TMG 41 WS	3,9c	7.504 c	1.150 c
FM 940 GLT	1,8a	4.656 b	1.132 c	TMG 42 WS	3,2b	8.552 c	1.153 c
FM 944 GL	2,9b	5.376 b	1.145 c	TMG 43 WS	3,7c	8.688 c	1.016 c
FM 966 LL	4,1c	8.912 c	758 c	TMG 81 WS	1,7 a	5.248 b	1.609 b
FM 975 WS	1,9a	10.128 c	1.580 b	TMG 82 WS	3,1b	8.240 c	1.267 c

<sup>(1)</sup> Notas de 1 a 5 crescentes com a intensidade dos sintomas; <sup>(2)</sup> Espécimes de *M. incognita* em 200 cc de solo;

<sup>(3)</sup> Kg/ha de fibra; Letras iguais não difere pelo Scott & Knott. 5 % significância.



3

lúmeros médios de espécimes de nematoides em amostras coletadas na cultura do algodoeiro. Populações médias calculadas a partir das amostras em que o nematoide ocorreu (200 cc de solo e 5 g de raiz) em 1799 mostras (Galbieri et al., 2016).



Aumento da prevalência, abundância e importância de *M. incognita*

Atualmente

Resistência a *M. incognita* volta a ser uma das prioridades  
Intensificação do uso de nematicidas, principalmente biológicos em TS



# Rotação de Cultura



Imigrantes japoneses colhendo algodão década de 1940. Bem antes de chegada do grande fluxo migratório de nordestinos para Mirante do Paranapanema, que ocorreu no final da década de 1940, que os imigrantes europeus e asiáticos já plantavam algodão

[http://camarapprudente.sp.gov.br/historia/hist\\_oeste/cidades/mparanapanema/fotos\\_historicas/foto12.jpg](http://camarapprudente.sp.gov.br/historia/hist_oeste/cidades/mparanapanema/fotos_historicas/foto12.jpg)



Produção de amendoim do senhor Nicolau Chocostiu, imigrante russo em foto realizada em 1964

[http://camarapprudente.sp.gov.br/historia/hist\\_oeste/cidades/mparanapanema/fotos\\_historicas/foto9.jpg](http://camarapprudente.sp.gov.br/historia/hist_oeste/cidades/mparanapanema/fotos_historicas/foto9.jpg)



[http://4.bp.blogspot.com/-yyn\\_g4WhO3A/UQrdqGdZH\\_I/AAAAAAAAEF4/UKRRY1r5LQ/s1600/INDUSTRIA-+3.JPG](http://4.bp.blogspot.com/-yyn_g4WhO3A/UQrdqGdZH_I/AAAAAAAAEF4/UKRRY1r5LQ/s1600/INDUSTRIA-+3.JPG)



[http://3.bp.blogspot.com/-tmtPU4djJOQ/UQrdY-k\\_5KI/AAAAAAAAEFc/1YWmMB2wGss/s1600/INDUSTRIA+4.JPG](http://3.bp.blogspot.com/-tmtPU4djJOQ/UQrdY-k_5KI/AAAAAAAAEFc/1YWmMB2wGss/s1600/INDUSTRIA+4.JPG)

# Peanut Crop Rotation Benefits Cotton and Alabama Economy

By **Cathy Lockman** - February 13, 2012

STATE HOME AG EDUCATION AG PRODUCTS AGRIBUSINESS AGRITOURISM FAMILY FARMS LOCAL MAGAZINE



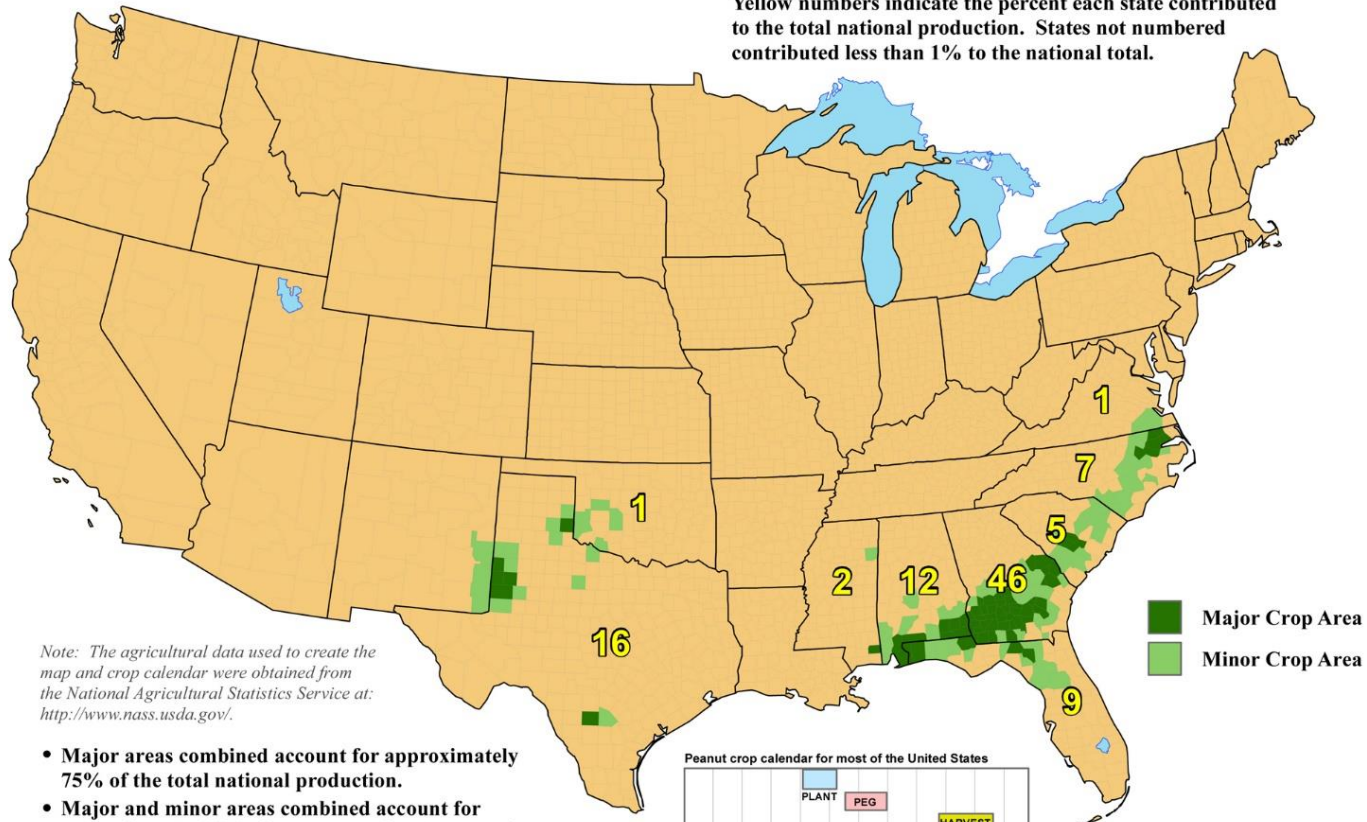
READ THE MAGAZINE



<http://www.farmflavor.com/alabama/alabama-ag-products/peanut-crop-rotation-benefits-cotton-and-alabama-economy/>

## United States: Peanuts 2006-2010

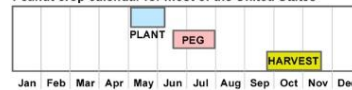
Yellow numbers indicate the percent each state contributed to the total national production. States not numbered contributed less than 1% to the national total.



Note: The agricultural data used to create the map and crop calendar were obtained from the National Agricultural Statistics Service at: <http://www.nass.usda.gov/>.

- Major areas combined account for approximately 75% of the total national production.
- Major and minor areas combined account for approximately 99% of the total national production.
- Major and minor areas and state production percentages are derived from NASS county- and state-level production data from 2006-2010.

Peanut crop calendar for most of the United States



Crop calendar dates are based upon NASS crop progress data from 2006-2010. The field activities and crop development stages illustrated in the crop calendar represent the average time period when national progress advanced from 10 to 90 percent.

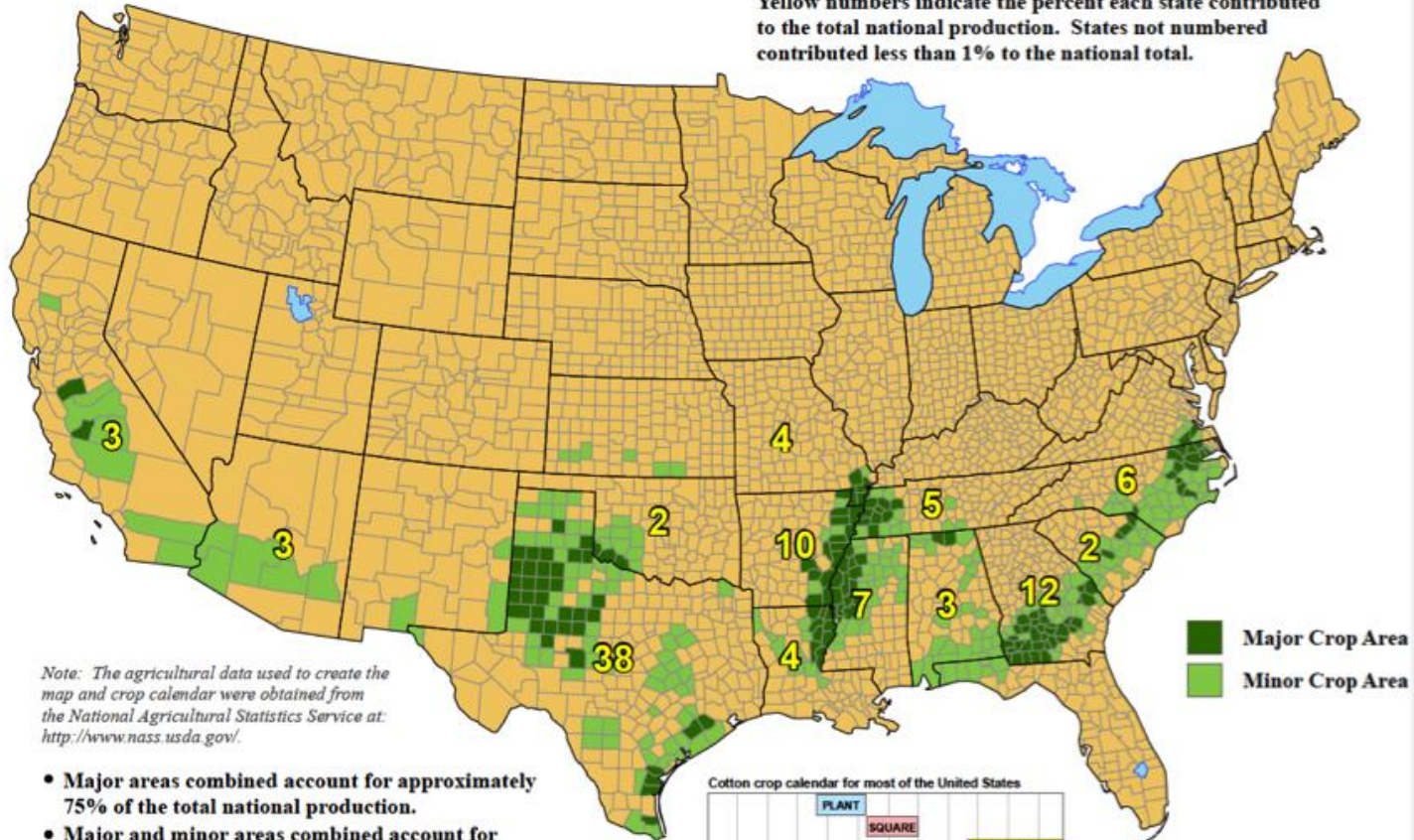
USDA Agricultural Weather Assessments  
World Agricultural Outlook Board

<http://ctgpublishing.com/wp-content/uploads/2013/12/united-states-top-peanuts-producing-areas-map.jpg>

# United States: Cotton (Upland)

2006-2010

Yellow numbers indicate the percent each state contributed to the total national production. States not numbered contributed less than 1% to the national total.



Note: The agricultural data used to create the map and crop calendar were obtained from the National Agricultural Statistics Service at: <http://www.nass.usda.gov/>.

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Cotton crop calendar for most of the United States

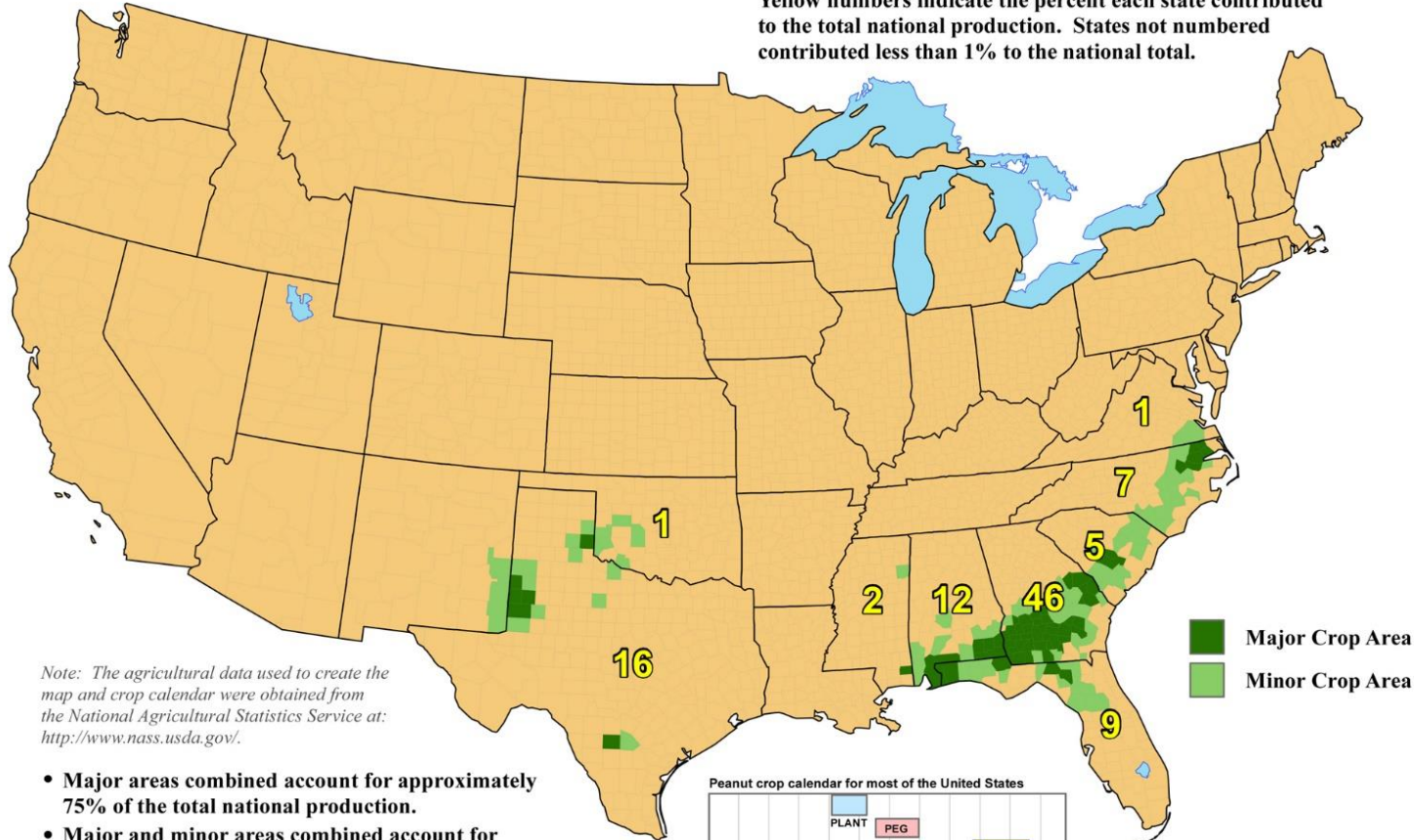


Crop calendar dates are based upon NASS crop progress data from 2006-2010. The field activities and crop development stages illustrated in the crop calendar represent the average time period when national progress advanced from 10 to 90 percent.

USDA Agricultural Weather Assessments  
World Agricultural Outlook Board

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Peanut crop calendar for most of the United States

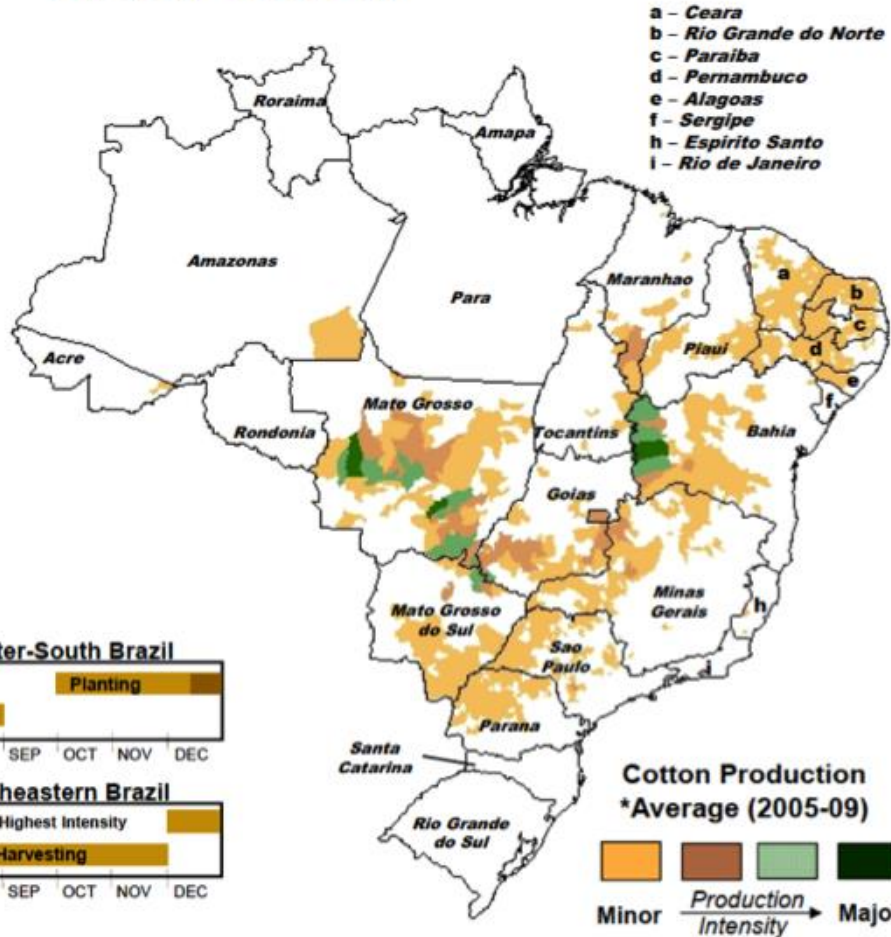


Crop calendar dates are based upon NASS crop progress data from 2006-2010. The field activities and crop development stages illustrated in the crop calendar represent the average time period when national progress advanced from 10 to 90 percent.

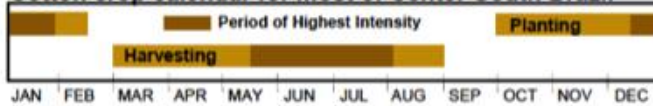
# Brazil Cotton 2005-2009

* State-Level Production (as % of total)	
Mato Grosso	50
Bahia	28
Goias	8
Mato Grosso do Sul	4
Sao Paulo	3
Minas Gerais	3
Maranhao	1
Parana	1
Piaui	1
Other States	~1

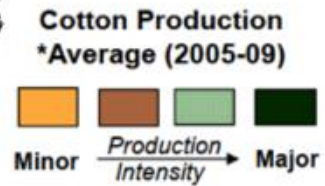
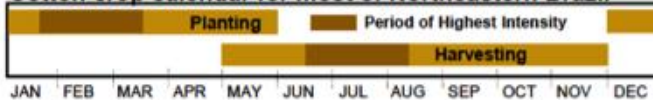
\* 2005 to 2009 Average  
Source: IBGE Brazil



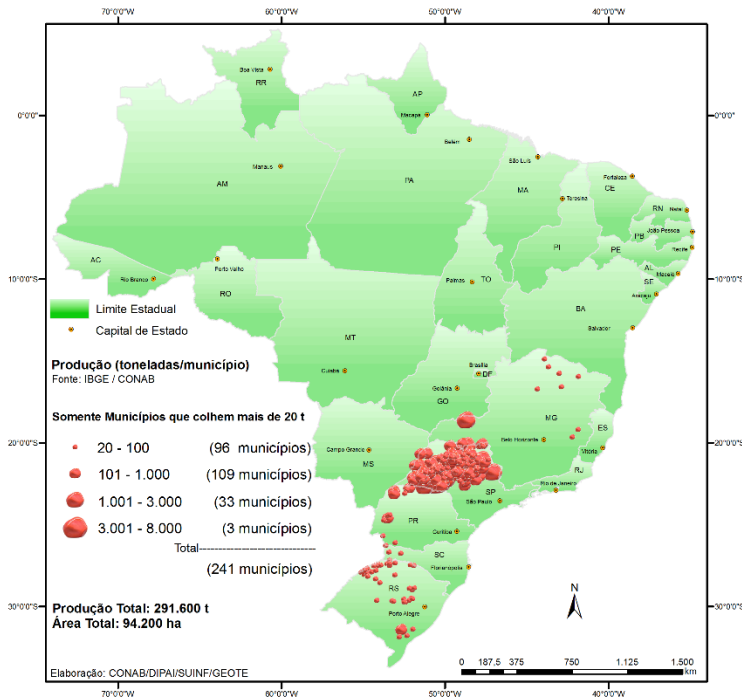
Cotton crop calendar for most of Center-South Brazil



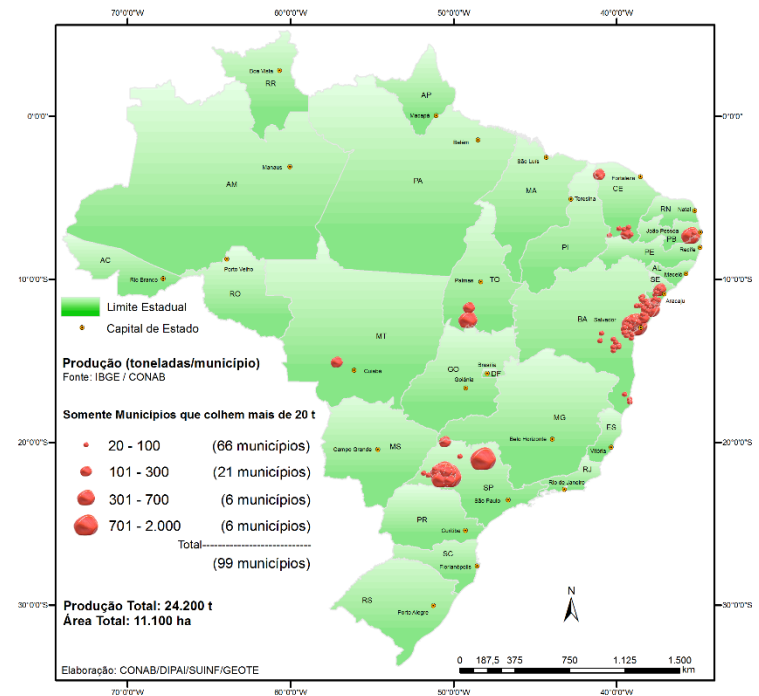
Cotton crop calendar for most of Northeastern Brazil



**Produção Brasileira de Amendoim 1º Safra 2013/2014**

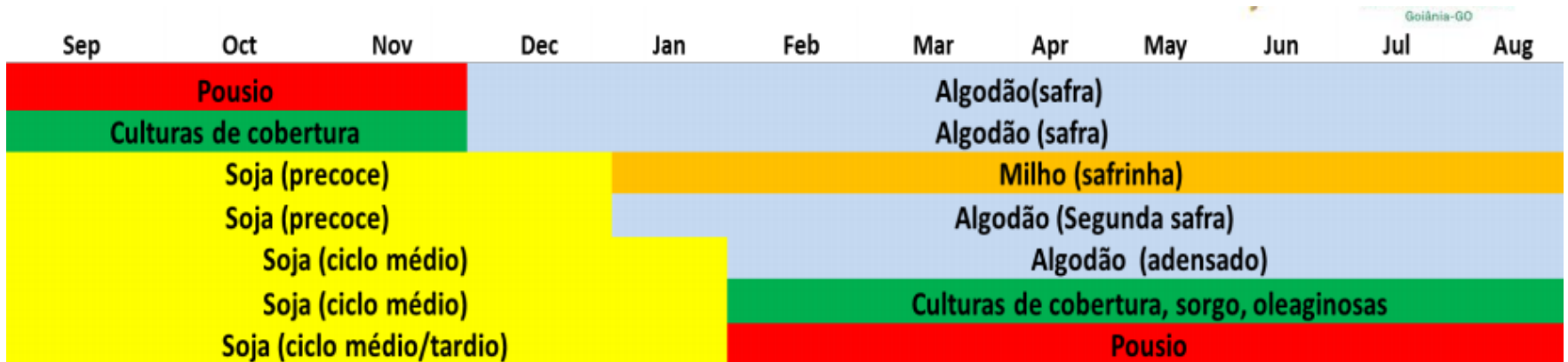


**Produção Brasileira de Amendoim 2º Safra 2013/2014**

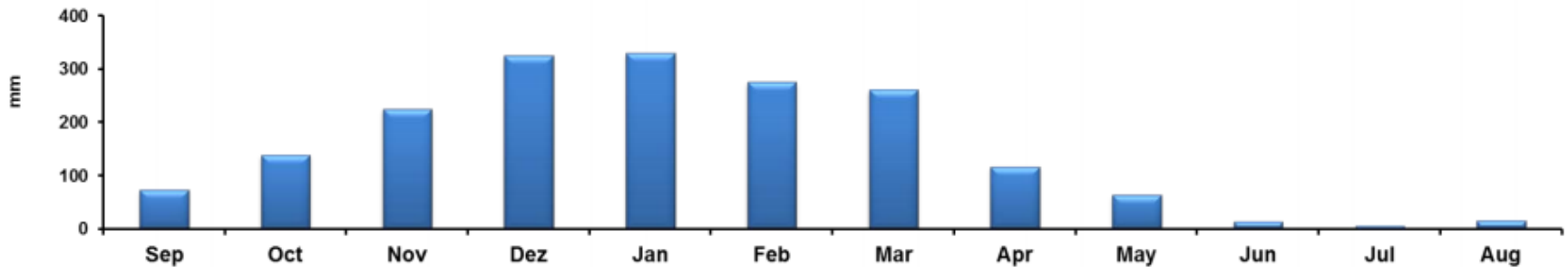




# Sucessão de Cultura



Distribuição de chuvas – Primavera do Leste



Jean L. Belot

(Fonte: Ampa, 2019)

### Proporção de 2nd Safra em Mato Grosso



Figura 5. Evolução da área de algodão de segunda safra em Mato Grosso

# Sucessão Soja – Algodão?



<https://www.plantmanagementnetwork.org/elements/view.aspx?ID=2422>



## Limitação

Presença de *Pratylenchus brachyurus* → perdas na soja



Sucessão com Amendoim para o  
Controle de *M. incognita* em  
Algodoeiro



São Félix do Coribe  
(BA)

Cultura irrigada  
2 safras por ano (milho  
e algodão)



*M. incognita* é o  
principal fator limitante





## Algodão 2003 – Amendoim/Milho 2004 - Algodão 2004

Talhão	J2/g raízes	Produção (@/ha)	Talhão	J2/g raízes	Produção (@/ha)
<b>29</b>	59	363	<b>18</b>	191	259
<b>20</b>	41	357	<b>25</b>	10	257
<b>21</b>	0	350	<b>19</b>	51	253
<b>5</b>	12	329	<b>11</b>	92	253
<b>22</b>	0	319	<b>27</b>	0	245
<b>28</b>	0	308	<b>13</b>	20	240
<b>17</b>	35	305	<b>14</b>	0	225
<b>24</b>	0	301	<b>9</b>	37	210
<b>8</b>	16	292	<b>7</b>	172	206
<b>23</b>	0	289	<b>12</b>	95	191
<b>6</b>	79	284	<b>10</b>	74	182
<b>15</b>	167	276	<b>16</b>	43	172



Espécies	T7 Norte 2004			T7 Sul 2004		
	200 cm <sup>3</sup>	grama		200 cm <sup>3</sup>	grama	
	Solo	Raiz	Casca	Solo	Raiz	Casca
<i>J2 M. incognita</i>	0	0	0	50	0	0
<i>Pratylenchus brachyurus</i>	0	124	101	80	282	125
Ovos	0	38	96	0	6	191
<i>Mesocriconema</i> spp.	370	0	0	360	0	0

Espécies	T12 Norte 2004			T12 Sul 2004		
	200 cm <sup>3</sup>	grama		200 cm <sup>3</sup>	grama	
	Solo	Raiz	Casca	Solo	Raiz	Casca
<i>J2 M. incognita</i>	0	0	0	0	0	0
<i>Pratylenchus brachyurus</i>	0	122	70	0	202	77
Ovos	0	8	69	0	86	164
<i>Mesocriconema</i> spp.	150	0	0	150	0	0

# Algodão 2004

Talhão	J2/g raízes	Produção (@/ha)	Talhão	J2/g raízes	Produção (@/ha)
<b>29</b>	2	323	<b>6</b>	27	245
<b>24</b>	0	317	<b>25</b>	33	232
<b>22</b>	0	281	<b>27</b>	0	231
<b>21</b>	1	280	<b>5</b>	6	224
<b>20</b>	11	270	<b>10</b>	18	217
<b>13</b>	51	265	<b>7</b>	12	216
<b>19</b>	7	260	<b>11</b>	4	206
<b>23</b>	11	257	<b>18</b>	22	200
<b>28</b>	0	254	<b>17</b>	1	185
<b>15</b>	71	250	<b>9</b>	46	181
<b>12</b>	11	249	<b>16</b>	4	176
<b>8</b>	35	246	<b>14</b>	0	168

*BOM FINAL DE SEMANA*