

**PROCLAIM:
A NEW INSECTICIDE FOR USE ON COTTON**

**Denis M. Dunbar, Robert D. Brown,
Jack A. Norton, and Richard A Dybas
Merck Research Laboratories
Agriculture Research and Development
Three Bridges, NJ**

Abstract

PROCLAIM (Emamectin Benzoate) is a second generation avermectin insecticide for crop protection being developed by Merck & Co., Inc. It is a broad spectrum lepidoptericide with good activity against beet armyworm, loopers, cotton bollworm, tobacco budworm and others. Emamectin benzoate is active at very low rates in the range of 0.0075 - 0.015 lb ai/acre (3.4 - 6.8 gr ai/acre). Because of its low impact on beneficial arthropods, PROCLAIM is also an excellent insecticide for incorporation into integrated pest management programs.

PROCLAIM Lepidoptericide for Cotton

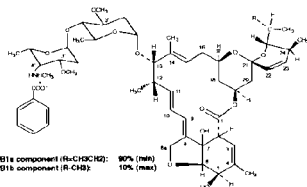
PROCLAIM® (Emamectin benzoate; 4" - Epi - Methylamino - 4" - Deoxyavermectin B₁)

- Second Generation Avermectin Insecticide for Crop Protection
- Novel Semi-Synthetic Avermectin Derived from Avermectin B₁
- Unique Chemical and Biological Properties
- The Most Potent Insecticide Ever Developed Against Foliar Feeding Lepidoptera
 - LC₉₀'s 0.003 ppm to 0.01 ppm
 - Active Against All Lepidoptera Tested

PROCLAIM Lepidoptericide for Cotton

Selected Product Chemistry Data For The Active Ingredient And Two End-Use Products

Structure:



B1a component (R=CH₂CH₂): 90% (min)

B1b component (R=CH₃): 10% (max)

CAS No: 137512-74-4

Nomenclature: **Emamectin benzoate**
MK-0244 (Merck)
4" - epi - 4" - 4" - methylamino - 4" - deoxyavermectin B₁ benzoate

Derivation: **Replacement of a sugar hydroxyl group in avermectin B₁ with methylamino (NHCH₃) and subsequent conversion to benzoate salt**

PROCLAIM Lepidoptericide for Cotton

FORMULATIONS:

- 1.92% Emulsifiable Concentrate (EC)
 - 0.16 lb ai/U.S. gal
 - 19.2 g ai/liter
- 5% Soluble Granule (SG)
 - 0.8 oz ai/lb
 - 50 g ai/kg

PROJECTED USE RATES:

- 0.0075 - 0.015 lb ai/acre
- 8.4 - 16.8 g ai/hectare

APPLICATION:

- Ground or Air

PROCLAIM Lepidoptericide for Cotton

Technical Grade Active Ingredient - (TGAI)

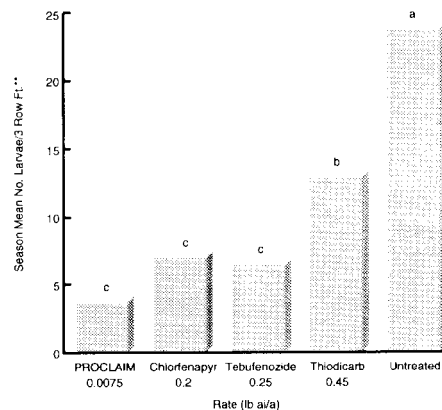
Appearance: White to off-white solid

Melting Point: 141° - 146°C

	pH	5	7	9
Solubility:	(mg/ml)	0.32	0.024	0.001
Partition Coeff:	(log Kow)	3.0	5.0	5.9

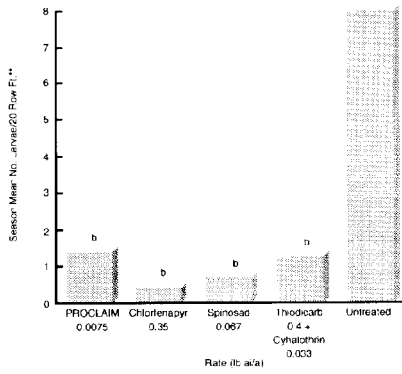
Vapor Pressure: 3 X 10⁻⁸ torr

Efficacy of PROCLAIM Against Beet Armyworm*



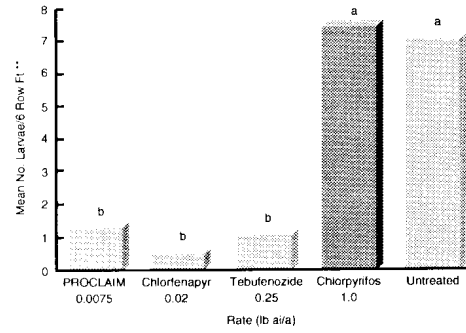
*Research conducted by Dr. R. Smith, Auburn University
Means with the same letter are not significantly different (DMRT, p<0.05)
**Applications 8/10, 8/15, 8/30/94 (10 GPA); Evaluations 8/14, 8/19, 9/2, 9/6/94

Efficacy of PROCLAIM Against Soybean Looper*



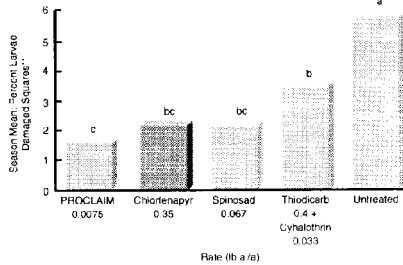
*Research conducted by Dr. R. Leonard, LSU Northeast Research Station
Means with the same letter are not significantly different (DMRT, p=0.05)
**Applications 8/18, 9/11/95, Evaluations 9/18, 9/15/95

Efficacy of PROCLAIM Against Cabbage Looper*



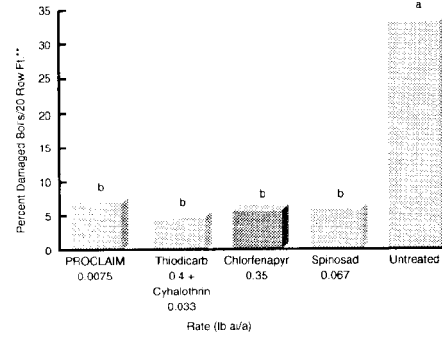
*Research conducted by Dr. A. Sparks, Jr. and Mr. J. Norman, Jr., Texas A&M University
Means with the same letter are not significantly different (DMRT, p=0.05)
**Application 6/3/95 (10 GPA), Evaluation 6/7/95

Efficacy of PROCLAIM Against Tobacco Budworm/ Cotton Bollworm*



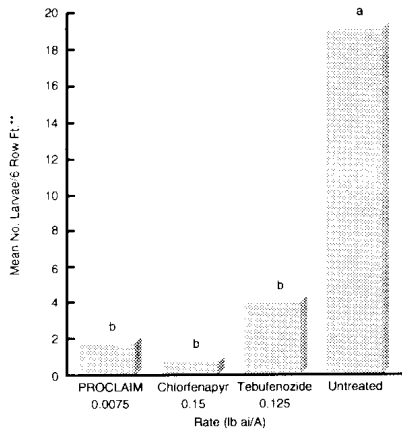
*Research conducted by Dr. R. Leonard, LSU Northeast Research Station
Means with the same letter are not significantly different (DMRT, p=0.05)
**Applications 8/15, 9/11/95, Evaluations 9/18, 9/15/95

Efficacy of PROCLAIM Against Tobacco Budworm/ Cotton Bollworm*



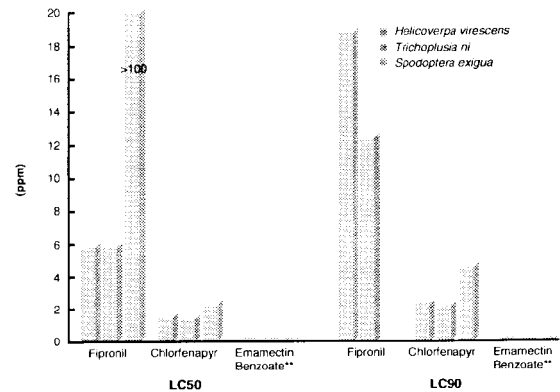
*Research conducted by Dr. R. Leonard, LSU Northeast Research Station
Means with the same letter are not significantly different (DMRT, p=0.05)
**Applications 8/17, 9/11/95, Evaluations 9/18, 9/15/95

Efficacy of PROCLAIM Against Beet Armyworm*



*Research conducted by Dr. D. Harlan, Mid-South Ag Research Inc.
Means with the same letter are not significantly different (DMRT, p=0.05)
**Application 9/9/95 (10 GPA), Evaluation 9/13/95

Dose Mortality Responses of Cotton Insect Pests to Emamectin Benzoate, Chlorfenapyr and Fipronil**



* Based on an agar diet assay, data provided by Jansson et al., unpublished
** Emamectin Benzoate LC50 values: 0.0034, 0.0072, 0.0026 ppm; Emamectin Benzoate LC90 values: 0.0086, 0.0125, 0.005 ppm.

PROCLAIM Lepidoptericide for Cotton

SUMMARY

- **Extremely Low Field Use Rates (0.0075 - 0.015 lb ai/acre)**
- **Broad Spectrum Lepidoptericide that Includes Beet Armyworm, Loopers, Cotton Bollworm and Tobacco Budworm**
- **Excellent Crop Safety to Cotton**
- **No Cross Resistance to Commercial Standards**
- **Will be an Effective Rotation Partner with Other Cotton Insecticides**
- **IPM Compatible**
- **Reduced Risk Compared to Existing Standards**
- **Reduced Environmental Burden**
- **Registration on Cotton Expected in 1998**