

MANA

Emerging Technologies

Tim Ford
Consultant Liaison
Southern Region



MANA

Southern Resistance Portfolio

MANA Products

- Galigan®
- Defy®
- Parazone® 3SL
- Arrow®
- Parallel® PCS
- Impose®

RR Plus™

- Cotoran® 4L
- Cotton Pro®
- Direx® 4L and MANA Private Label Brands
- Pyrimax® 3.2SL
- Triflurex® HFP
- Glory™

Glyphosate Resistance

Glyphosate-resistant weed control plus cash back.

MANA's residual cotton herbicides provide alternate modes of action for Palmer amaranth (pigweed) and other glyphosate-resistant weeds. Now MANA's proven arsenal is joining forces with the Roundup Ready PLUS™ program for season-long control plus cash incentives of up to \$12 per gallon on select MANA products. Make the most of your weed control and your yields with MANA.



QUALITY PRODUCTS. COMPETITIVE PRICES.

MANA's proven insecticides, fungicides, herbicides, PGRs and harvest aids are manufactured to the highest standards and value priced to optimize the farm's profitability. MANA provides best-in-class formulations, regulatory capabilities, extensive field testing and research, and a science-based approach to defend and maintain vital active ingredients. Our area business management teams throughout the U.S. support the distributors, retailers, crop consultants and agronomists who are part of the supply chain today's producers and farm managers rely on for localized expertise.

Visit us online at manainc.com or call 866-406-MANA (6262)

Always read and follow label directions. Paraquat® is a Restricted Use Pesticide.
©2011 Alcon®, Cotton Xt®, Cotton Zyr®, Glyphosate®, Paraquat®, Pyrimox®, Trifluralin® of MANA (Makhtesham Agri of North America Inc.,
Roundup Ready PLUS™ of Monsanto Technology LLC, 00110) 02/10/11

Glyphosate Resistance Management

Solutions for Cotton from MANA Crop Protection.



Glyphosate Resistance

MANA Responds to the Threat

Glyphosate resistance threatens thousands of acres and millions of dollars in lost yields. But MANA Crop Protection has the solutions cotton producers need. Growers, consultants and the agrochemical industry recognize that MANA's comprehensive portfolio of weed control products offers proven formulations to protect against the expansion and destructive impact of Palmer amaranth (pigweed) and other aggressive weed pests.

Extension weed scientists in the Cotton Belt states have developed extensive recommendations for control and management of weeds resistant to glyphosate and other herbicides. There are several common threads among the recommendations, including:

1. Use residual herbicides when possible.
2. Rotate herbicides using different modes of action.
3. Tankmix with different modes of action at effective rates.
4. Use weed control on fallow ground or set aside land to prevent the spread of pollen and seed from non-cropland.
5. Avoid sequential and repeated applications of the same herbicide.
6. Rotate crops.
7. Use tillage, cultivation and other cultural practices in rotation when possible.



MANA is a Roundup Ready PLUS™ Partner

MANA is a key partner in Monsanto's Roundup Ready PLUS™ weed management platform. Now growers can save money and also earn incentives on their purchase of select MANA products.



Roundup Ready® Cotton Program:

Growers in the Southeast and Delta who use select MANA products will benefit from the Roundup Ready PLUS™ program. MANA products, with or without the added use of glyphosate, offer multiple modes of action to combat resistant weeds. Used together, multiple modes of action can reduce the risk of developing weed resistance and manage existing issues.

Three MANA products qualify for incentives as part of the Roundup Ready PLUS™ program, at \$12 per gallon (\$3 per acre, per application). Ask your agrochemical dealer for program details and options.

Cotoran® 4L • Cotton Pro® • MANA Diuron 4L

earn up to
\$1200
per gallon

ROUNDUP READY PLUS™
WEED MANAGEMENT SOLUTIONS

For program details, contact your dealer or visit roundupreadyplus.com.

Additional MANA products, such as Pyrimax® 3.2SL and Triflurex® HFP, are also important components of the Roundup Ready PLUS™ program. MANA's extensive product portfolio offers even more ways to tailor a herbicide plan for any cotton grower's weed challenge and management plan.

The MANA Cotton Herbicide Portfolio



Cotoran® 4L (fluometuron) Qualifies for Roundup Ready PLUS™ incentive

- Delivers economical control of both annual grasses and broadleaf weeds, especially weeds showing resistance to glyphosate
- Effective against pigweed, barnyardgrass, cocklebur, ryegrass, goosegrass, ragweed, and marehail (horseweed)
- Excellent soil residual and can be tankmixed with other herbicides to broaden activity



Cotton Pro® (prometryn) Qualifies for Roundup Ready PLUS™ incentive

- Can be used pre- and post-emergence for broad-spectrum control of broadleaf weeds, including pigweed, cocklebur and morningglory
- Post-direct application at 8-leaf cotton or earlier is a preferred choice if scouting shows pigweed germination has occurred



MANA Diuron 4L (diuron) Qualifies for Roundup Ready PLUS™ incentive

- Controls pigweed, barnyardgrass, ragweed, marehail (horseweed), Johnsongrass, and adds partial control of cocklebur
- Can be used pre- and post-emergence, at lay-by or with hoods for unmatched versatility and value in residual weed control programs



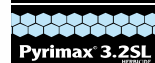
Parallel® PCS (metolachlor)

- Use alone or in one of several available tankmixes to control pigweed, tall and common waterhemp, cocklebur, and goosegrass
- Can be applied in the fall, early preplant, preplant incorporated, pre-emergence and post-emergence
- Also available with safener in Parallel® formulation



Parazone® 3SL (paraquat)

- The grower-preferred 3-pound/gallon formulation of paraquat for burndown or harvest aid use
- Offers an excellent alternative for controlling weeds resistant to glyphosate



Pyrimax® 3.2SL (pyrithiobac-sodium)

- The preferred tankmix partner with Cotoran® 4L to maximize control of glyphosate-resistant weeds such as Palmer amaranth, barnyardgrass, goosegrass and Johnsongrass
- Advanced mode of action offers application flexibility pre-emergence, post-emergence, or over-the-top



Triflurex® HFP (trifluralin)

- Controls Palmer amaranth, Italian ryegrass, barnyardgrass, and Johnsongrass
- Recommended by weed scientists as part of a balanced resistance management program for grasses and broadleaf weeds

The Threat to Soybeans

Glyphosate-resistant weeds can create major losses in cotton production and profitability, but the same threat faces soybean fields where there also is potential to lose the conservation benefits of reduced tillage. Pigweed and closely-related Tall Waterhemp are sharply reducing yields as they spread alarmingly across cotton and soybean fields throughout the United States. Other glyphosate-resistant weeds include marehail (horseweed), giant and common ragweed, Johnsongrass and goosegrass.

Fortunately many of the same MANA products that can help save cotton fields from resistant weeds are also labeled for soybeans. These include:

Parazone® 3SL • Parallel® PCS • Glyphogan® Plus

In addition, MANA offers soybean growers other highly effective, value-priced choices to fit their specific weed spectrum:

Arrow® 2EC (clethodim) is a perfect fit for resistant Italian ryegrass, Johnsongrass, barnyardgrass and goosegrass.

Triflurex® HFP (trifluralin) protects against Palmer amaranth, Italian ryegrass, barnyardgrass, and Johnsongrass.

Metribuzin 75DF (metribuzin) controls pigweed, waterhemp, common and giant ragweed, cocklebur, marehail, goosegrass and Johnsongrass.

Parallel® (metolachlor plus a safener) controls pigweed, tall and common waterhemp and goosegrass.



Effective control of grass and broadleaf weeds in cotton

A photograph of a brown, rectangular label with a stitched border, featuring the COTORAN 4L herbicide logo, placed on a piece of blue denim fabric. The label is slightly wrinkled and has a small tear at the top edge.

TOUGH ENOUGH.

Tough enough to handle grass and broadleaf weeds. Strong enough to control resistant pigweed and marestail. Flexible enough to be applied pre or post emergence. Reliable enough to work for up to two and a half weeks. Ask for Cotoran and get tough on tough weeds.

MANA
Crop Protection

©2011 Monsanto Agri. of North America, Inc., 4515 Falls of House Road, Suite 300, Raleigh, NC 27603. Always read and follow label instructions. Cotoran® of Multi-Resistant Agri. Includes, Roundup Ready PLUS™ of Monsanto Company. Visit us at MANA.NC.COM

ROUNDUP READY PLUS
www.monsanto.com

EARN UP TO **\$12 PER GALLON**
See your retailer at RoundupReadyPLUS.com

- Broad spectrum control including glyphosate resistant weeds
- Pre or Post emergence application
- Residual control up to 2.5 weeks
- Tankmixes with most other herbicides for additional control
- Highly selective to cotton except over the top salvage applications
- Economical protection providing maximum Return on Investment
- \$12/gallon (\$3/acre) rebate via Roundup Ready PLUS program





Economical grass and broadleaf weed control in cotton

- Annual grass and tough broadleaf control including those resistant to glyphosate
- Residual activity with up to 3 weeks control
- Application flexibility including Preplant, PPI, Pre-emerge or Post-directed 3 inch cotton to layby
- Enhanced activity when mixed with glyphosate (morningglory) or with MSMA post direct
- \$12/gallon (\$3/acre) rebate via Roundup Ready PLUS program





Key defense of cotton against glyphosate resistant weed species of Palmer pigweed and Marestalk

An advertisement for DIREX 4L herbicide. The background is a green and brown camouflage pattern. A large, dark green silhouette of a pigweed plant is on the right side. On the left, the text 'DON'T GIVE PIGWEED A PLACE TO HIDE.' is written in large, bold, white, sans-serif capital letters. Below this, smaller white text reads: 'Pigweed is a big, ugly problem. But with Direx® 4L in your arsenal, you'll control tough weeds, including resistant pigweed, for up to three and a half weeks. Plus, Direx gives you the application convenience of preplant, pre-emergent or post direct. Set your sites on pigweed. Ask for Direx.' At the bottom left, there are two military-style dog tags on a chain. The top tag is silver with a green clover logo and the text 'MANA Crop Protection'. The bottom tag is silver with the DIREX 4L logo and 'herbicide'. At the bottom right, there is a red and white logo for 'ROUNDUP READY PLUS' and a black box with white text that says 'EARN UP TO \$12 PER GALLON' and 'See your dealer or RoundupReadyPLUS.com'. At the very bottom left, there is small text: '©2011 Monsanto Agres of North America, Inc., 4515 Falls of Hudson Road, Suite 330, Raleigh, NC 27609. Always read and follow label instructions. Direx® of Monsanto Agres Industries. Roundup Ready PLUS® of Monsanto Company. Mail us online at MANA.MO.COM.'

- Premium formulation diuron that mixes and handles easily
- Versatile application – preplant, pre-emerge or post from 6 inch to layby
- Highly effective in controlling glyphosate resistant pigweed
- Up to 3.5 weeks residual activity
- Very good safety to crop when used as burndown, pre-emerge or layby
- \$12/gallon (\$3/acre) rebate via Roundup Ready PLUS program

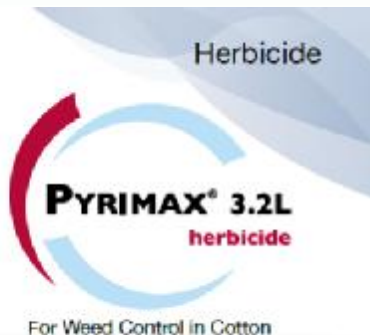




Over-the-top weed control for cotton



Pyrimax® 3.2L herbicide provides over-the-top application control in conventional and Roundup Ready® cotton varieties of tough weeds including glyphosate-resistant weeds such as Palmer pigweed, barnyardgrass, goosegrass and johnsongrass.



KEY PERFORMANCE BENEFITS

- **Weed control:** Pyrimax® 3.2L herbicide provides broad spectrum control of tough weeds in cotton – including many weeds resistant to glyphosate.
- **Flexible:** Pyrimax can be used over the top on a full range of cotton varieties including conventional and Roundup Ready, and can be applied pre or postemergence to control weeds.
- **Tank Mix:** Pyrimax can be tankmixed with most herbicides and is the preferred tank mix partner with Cotoran® 4L to broaden activity. Pyrimax may also be tankmixed with most liquid nitrogen fertilizers.
- **Economical:** Pyrimax protects your cotton investment with proven performance at the right price.
- **Confidence:** Pyrimax is a recommended product within the Roundup Ready PLUS® program for management of weeds resistant to glyphosate.

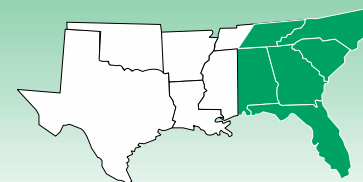
ACTIVE INGREDIENT pyriminobac-sodium
FORMULATION Soluble liquid
EPA REGISTRATION # 88222-175
MODE OF ACTION ALS inhibitor
TIMING Pre and Postemergence
IRAC Alternative Group 15
GROUP NUMBER B. 2
RESTRICTED USE No
SIGNAL WORD Warning
PACKAGING INFORMATION 4 x 0.6 gal



Call Toll Free 866-406-MANA(6262) or visit us online at www.manainc.com

- Broad spectrum control of tough weeds including those resistant to glyphosate – pigweed, barnyardgrass, goosegrass, Johnsongrass
- Over-the-top application in both RUR or conventional cotton varieties
- Tankmixes with most herbicides and the preferred partner with Cotoran to broaden activity
- Protects your cotton investment at the right price
- Recommended within the RUR PLUS program for resistance management





Burndown & Preplant

(1 or 2 applications)

- Parazone®
- Direx® 4L†
- Valor®
- Direx® 4L† + 2, 4D Amine
or Dicamba
- Triflurex® (PPI)

SOUTHEAST WEED MANAGEMENT
Application Windows for MANA Herbicides



See other side for recommended tank mixes

Early Post

- Glyphogan® + Pyrimax® (1st visible leaf to 6" tall)
- Parallel® PCS (3-6" cotton)
- Pyrimax®

Post Directed

- Direx® 4L† + MSMA*
- Direx® + Valor® + MSMA*
- Glyphosate + Direx® (Salvage - Hooded
Sprayer w/ Direx® + Parazone®)

Layby

- Direx® 4L†
- Glyphogan®

Preemerge

- Parazone®
- Fomesafen + Direx® 4L
(with or without Pyrimax®)

Overlap soil residual herbicides to obtain best control at the following timings:

1. Preplant/Preemergence
2. 1st POST application 14 days after PRE
3. 2nd POST application 14 - 16 days after POST #1
4. Layby 15 -17 days after POST #2

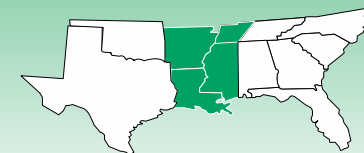
† These products qualify for a rebate through Monsanto's Roundup Ready PLUS™ Program. Contact your dealer or visit roundupreadyplus.com for program details.

* Do not apply MSMA after first bloom.



For additional product information call **866-406-MANA(6262)** or visit www.manainc.com
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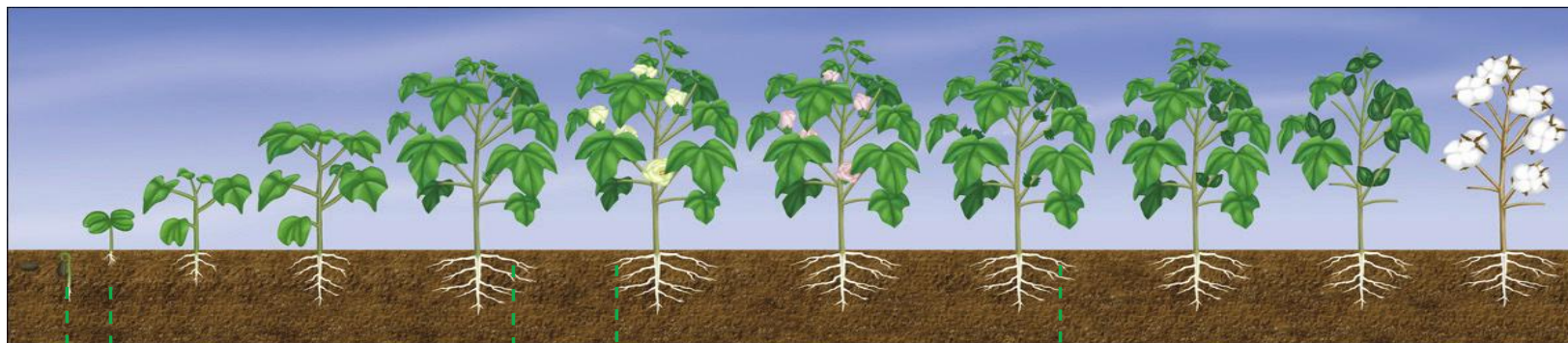


Burndown & Preplant

Glyphogan®
Cotton Pro®†
Parazone®
Cotoran®†

MID SOUTH WEED MANAGEMENT

Application Windows for MANA Herbicides



See other side for recommended tank mixes

Early Post

Parallel® PCS (3-12" cotton)
Pyrimax®

Post Directed

Direx 4L®†
MSMA*

Layby

Cotoran®†
Cotton Pro®†
Direx 4L®†

Preemergence

Parazone®
Cotoran®†
Cotton Pro®†

Overlap soil residual herbicides to obtain best control at the following timings:

1. Preplant/Preemergence
2. 1st POST application at 1-2 leaf stage
3. 2nd POST application about 14 days later at 6 leaf stage
4. a) Scout and determine if a post-directed application is needed at the 10 leaf stage
b) If clean at 10 leaf stage, wait until 12 leaf stage and apply layby application

† These products qualify for a rebate through Monsanto's Roundup Ready PLUS™ Program. Contact your dealer or visit roundupreadyplus.com for program details.

* Do not apply MSMA after first bloom.

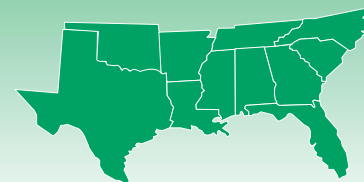


For additional product information call 866-406-MANA(6262) or visit www.manainc.com

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Burndown & Preplant

(1 or 2 applications)

- Parazone®
- Direx 4L®
- Glyphogan®
- Direx 4L® + 2, 4D Amine or Dicamba

LIBERTYLINK COTTON WEED MANAGEMENT

Application Windows for MANA Recommended Herbicides



See other side for recommended tank mixes

Early Post

- Ignite®
- Parallel® PCS (3-12" cotton)

- Direx 4L®
- MSMA*

Layby

- Direx 4L®

Preemerg

- Pyrimax®
- Cotoran®
- Fomesafen
- Direx 4L®

For best control make 2 residual applications – one PRE and one POST – prior to Layby

* Do not apply MSMA after first bloom.

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MANA Portfolio

- MANA products fit in every phase of University recommendations
 - Pre: Parazone, Direx, Pyrimax, Triflurex
 - Post 1: Parallel PCS, Pyrimax
 - Post 2: Parallel PCS
 - Layby: Direx

GLYPHOSATE RESISTANT WEEDS

- Horseweed – marestail
- Palmer pigweed
- Common & Giant ragweed
- Italian ryegrass
- Johnsongrass
- Goosegrass
- Annual bluegrass
- Tall waterhemp
- Lambsquarter

Palmer Amaranth

- Growth rate = 4 inches in 52 hours, ½ inch overnight, 2” per day
- Large growth stature
- Competitive ability
- Harvest efficiency
- Seed production = 450,000 seeds/plant
- Female produces seed
- Male produces pollen

Glyphosate Resistant Italian Ryegrass and Henbit

- Fall application as pre-emerge and burndown
 - Parallel[®] PCS
 - Galigan[®]
 - Cotton Pro[®]
- Spring Burndown Products
 - Arrow[®]
 - Direx[®]
 - Parazone[®]
 - Atrazine

Parallel[®]PCS

- § 24c in Mississippi & Louisiana
- § Fall –applied for the control of glyphosate-resistant Italian Ryegrass
- § Applied prior to Italian Ryegrass emergence
- § Rate range 1.69 to 2.1 pints per acre

Galigan[®]2E + Parallel[®] PCS Fall November-9DAT



Galigan[®]2E + Parallel[®] PCS January 17- 60DAT



Galigan[®] 2E

January 17th – 14 DAT



Non-Treated

January 17th – 14 DAT



Galigan Treated

Jan 26th – 23 DAT



Untreated

Jan 26 – 23 DAT



Galigan Treated

Feb 6 – 34 DAT



Non-Treated

Feb 6 – 34 DAT



Galigan Treated

Feb 6 – 34 DAT



Non-Treated Feb 6 - 34 DAT



New Products for 2012



New Formulations

Insecticides and Fungicides

- Abba Ultra™
- Paradigm™
- Fanfare®LFC
- Vulcan™
- Bumper®
- MasterCop®

Herbicides

- Parallel®Plus
- Defy™
- Glory™

MANA's Advanced Formulation Technologies

- Equal to or Less Odor
- Equal to or Improved Signal Word - Caution
- Easier Handling - Equal to or Less Skin Sensitivity
- Equal to or Less PPE (Personal Protective Equipment) Requirement
- Equal to or Better Performance
- Equal to or Better Fertilizer Compatibility
- Typical VOC reductions from 50-300 lbs of VOC reduction/100 A field



Simply making it better...

Market Introduction:

For the 2012 season MANA will introduce a new formulation of abamectin

Features

- Same crop safety and performance growers expect from ABBA 0.15EC
- Long residual control due to rapid translaminar movement into leaf
- IPM compatible and does not cause secondary pest flare-ups
- Improved handler, applicator PPE
- Double the concentration improves storage, handling and disposal
- Easy to calculate rate ½ of ABBA 0.15EC
- Advanced formulation technology provides exceptional efficacy while reducing impact on air quality

Packaging: 4x1's

Production: Formulated and packaged at Bold Corporation, Ocilla, GA.

Pricing: Parity to cost per acre as .15EC's

Availability: Currently

ABBA Ultra is a trademark of Makhteshim Agan of North America, Inc.



The logo for ABBA Ultra is centered at the top. It features the word "ABBA" in large, white, sans-serif capital letters on a dark purple, curved banner. Below "ABBA" is a light green horizontal bar containing the word "ULTRA" in dark purple, sans-serif capital letters, followed by a small trademark symbol (TM). Underneath the green bar, the words "MITICIDE/INSECTICIDE" are written in a smaller, dark purple, sans-serif font. The entire logo is set against a background of two light green rectangular blocks on either side.

ABBA
ULTRA™
MITICIDE/INSECTICIDE

ABBA Ultra is a new miticide/insecticide which provides consistent insect and mite control with 1/2 the use volume of current products. This novel formulation proactively addresses potential California clean air standards for low VOC formulation without compromising pest performance or crop safety



Note: This product qualifies under low Volatile Organic Compounds legislation in California



- **Advanced formulation technology provides improved efficacy while reducing impact on air quality.**
- **Broad Spectrum: Provides control against a wide variety of insects including Colorado potato beetles, Spider mites, Liriomyza leafminers and Potato psyllid.**
- **Resistance Stewardship: An excellent foundational tool in an insecticide spray program with rotation partners.**
- **Economical: Protects your investment with proven performance at the right price.**

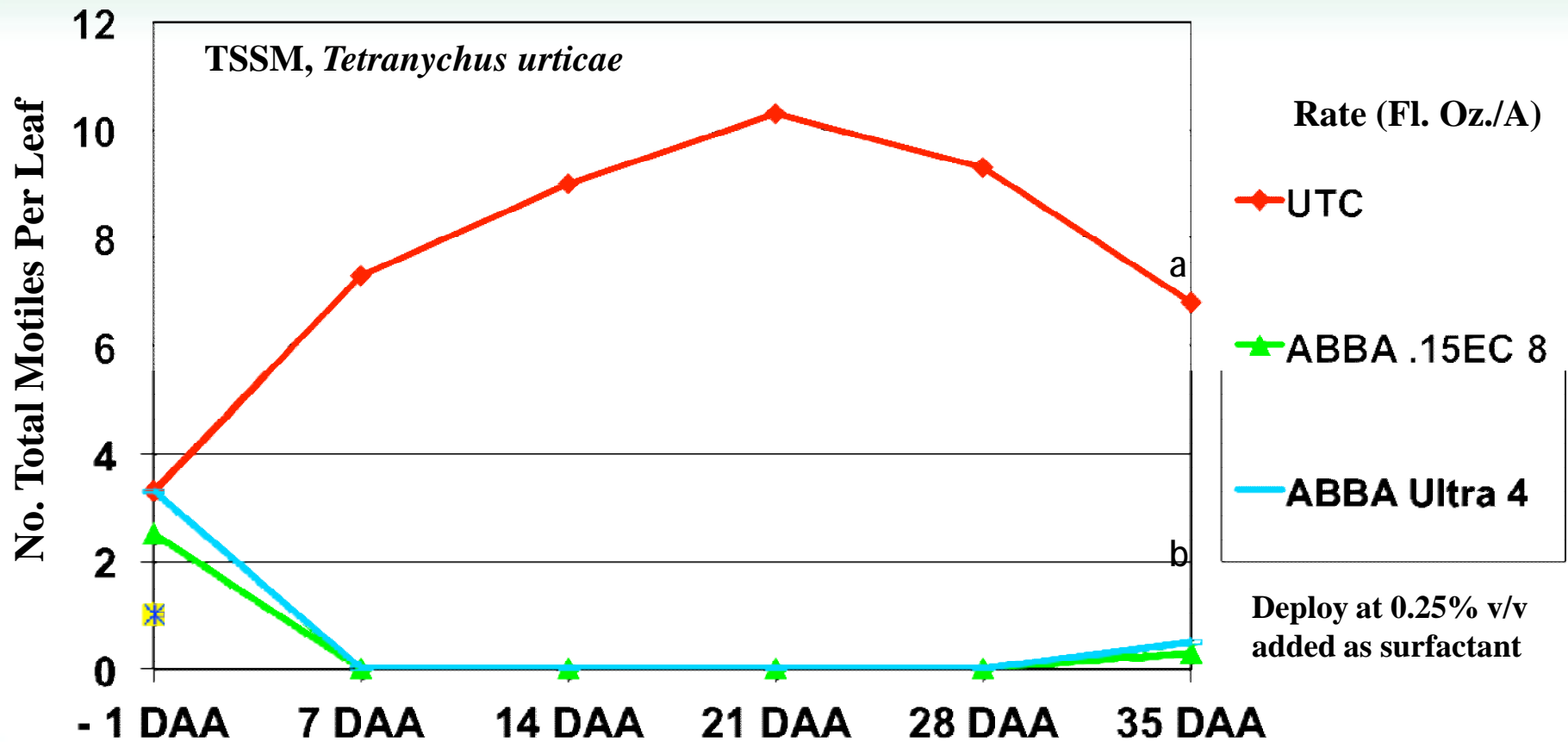


Note: This product qualifies under low Volatile Organic Compounds legislation in California



ABBA Ultra vs ABBA .15EC Spider Mite Control in Cotton

Ron Kukas, TRACS, Visalia, CA - 2009



Cotton (var. 'Phytogen 725RF'); Sprayed on 7/2/09 at 42 GPA; spray boom set up to spray both top and bottom of cotton leaves; no phytotoxicity observed.





Exceptional Speed of Performance, Unequaled Ease of Use...

Market Introduction:

For the 2012 season MANA will introduce a new formulation of lambda-cyhalothrin, Paradigm™

Features

- Quick knock down providing residual control
- Advanced formulation technology provides exceptional efficacy while reducing impact on air quality
- Low use Rates
- Low Odor
- Great value to utilize in targeting a variety of pests and crops with a quick return on investment
- Easy handling/mixing alone or in combination with other crop protection products
- Paradigm has a dermal classification of non-irritating

Key NEW Features:

CAUTION Signal Word
Oral LD50 of 582 mg/kg
Dermal irritation class -Non Irritating

Benefits:

More favorable for mix/spray personnel
Safer toxicology profile
Less skin irritation for handlers
1st Ag labeled lambda w CAUTION

Packaging: 4x1's, 36 cases (180 gallons)/pallet

Production: Formulated and packaged at MANA
Bold Corporation, Ocilla, GA.

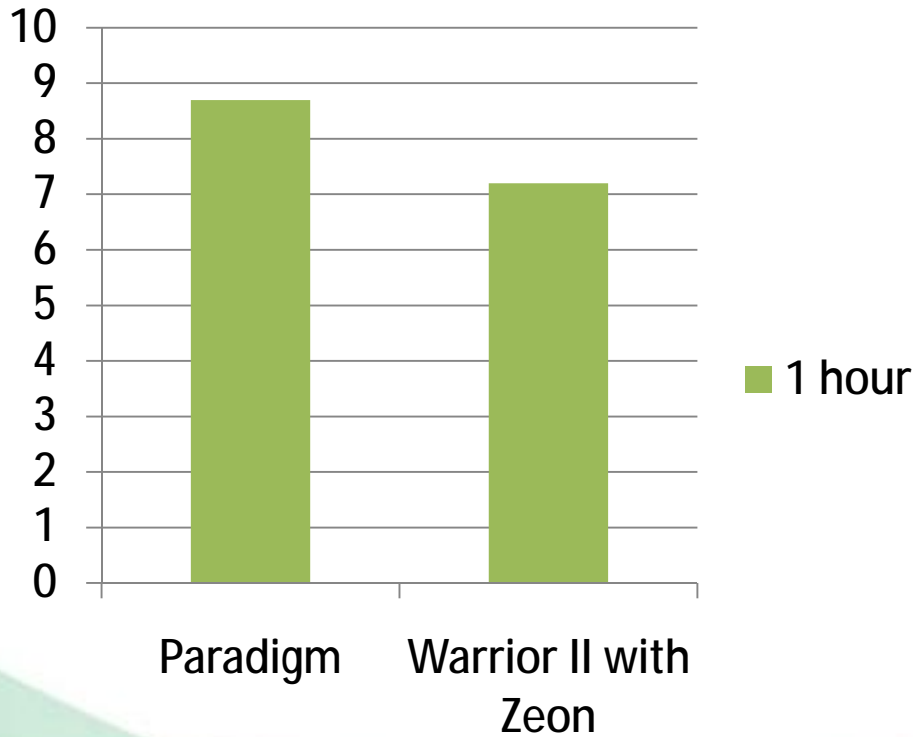
Availability: April 2012





Exceptional Speed of Performance, Unequaled Ease of Use...

PARADIGM™ exhibits very rapid knockdown, which tended to be more rapid than Warrior with Zeon



Corn rootworm adult- 1 hour after treatment

You be the judge

Lambda-cyhalothrin chemistry has a rapid mode of activity

At the one hour after treatment mark, new PARADIGM™ insecticide tended to have more rapid Knockdown versus Warrior® with Zeon.

Both products eventually controlled both rootworm adults

Lower than labeled use rates were used to compare the relative speed of knockdown in a controlled greenhouse study

All comparisons were done at equivalent rates of active ingredient

10 insects were evaluated six different times to determine the average level of control.

Studies conducted by Independent 3rd party laboratory

Control is expressed as moribund (dying) and dead insects.





Comparative Handling characteristics

Exceptional Speed of Performance, Unequaled Ease of Use...

Key NEW Features	Benefits	Comparison
CAUTION Signal Word	Less restrictive PPE for mix/spray personnel	1st Ag labeled lambda cyhalothrin with CAUTION signal word
Oral LD50 of 582 mg/kg	Safer toxicology profile	3-5 times improvement over other lambda-cyhalothrin insecticides
Dermal irritation class Non Irritating	Reduced risk of skin sensitization for handlers	Many lambda cyhalothrin product are mild to moderately irritating to the skin
Very low odor- Low volatile compounds	Less annoyance to mixers/handlers/public	Many EC based formulations have a stronger odor
Beats tough VOC legislation standards	Felicity to use it where you want to without compromising performance	EC based products do not qualify under proposed California minimum VOC standards



Note: This product qualifies under low Volatile Organic Compounds legislation in California

The logo for VULCAN features the word "VULCAN" in a bold, white, sans-serif font. The text is set against a teal background that is framed by a thick black border. The background behind the text is a stylized, jagged shape resembling a volcano or a shield, with a central vertical element that tapers to a point at the top and bottom. A small "TM" trademark symbol is located at the top right of the teal area.

VULCANTM

The logo for MANA Crop Protection consists of a green shamrock symbol inside a square frame, followed by the word "MANA" in a large, bold, black sans-serif font. Below "MANA" is the phrase "Crop Protection" in a smaller, black sans-serif font.

 **MANA**
Crop Protection



Uncompromised Insect Performance, Unequaled Ease of Use...



Product Description:

Vulcan insecticide is a novel innovative formulation which provides excellent speed of insect knockdown with high levels of control found in EC based chlorpyrifos formulations, while qualifying under low VOC California legislation

Vulcan has exceptionally low odor and favorable PPE requirements with a “Warning” signal word not found on many EC based products

Note: This product qualifies under low Volatile Organic Compounds legislation in California





Uncompromised Insect Performance, Unequaled Ease of Use...

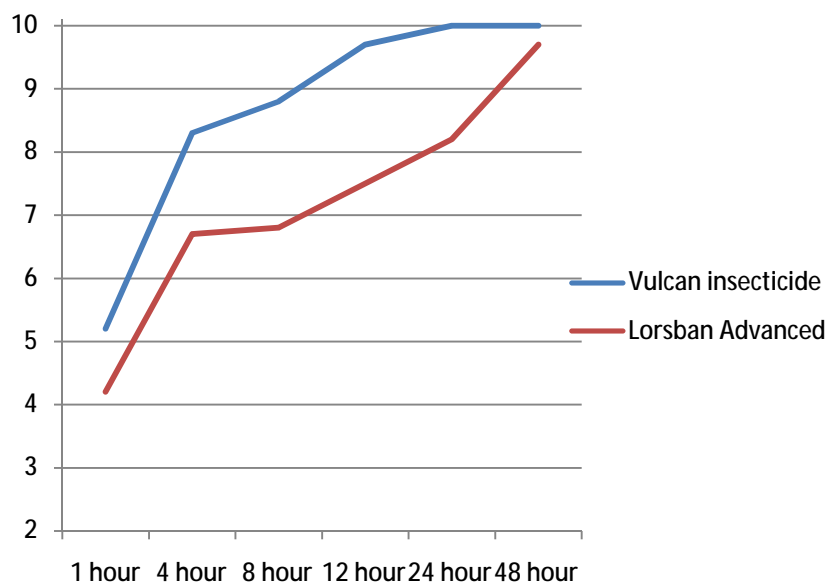


Novel Formulations Features:

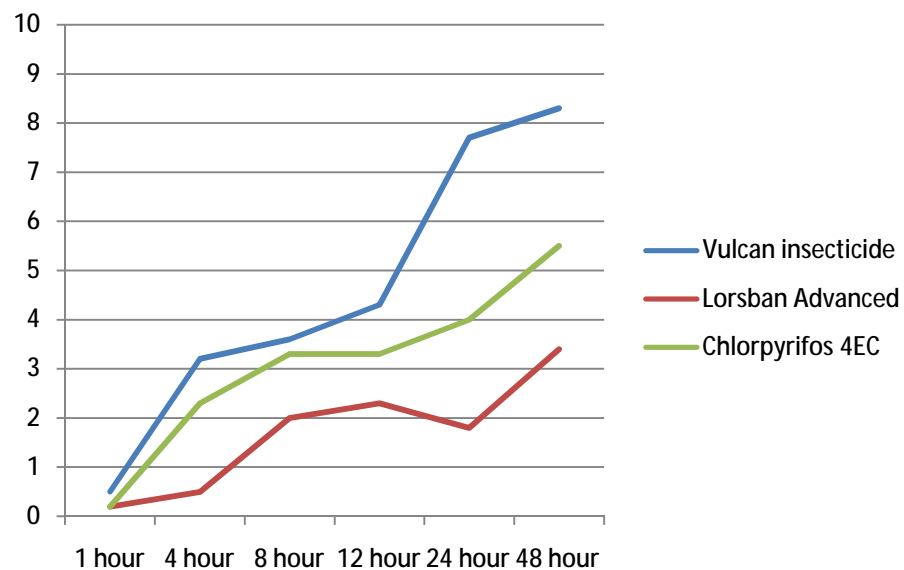
- **Advanced formulation provides equal to superior insect control of EC based chlorpyrifos while reducing impact on air quality and qualifying under low VOC California legislation**
- **Low odor for improved handler and sprayer convenience**
- **High speed knockdown to stop yield robbing insect damage quickly**
- **Flexibility to control insects in soybeans, corn, wheat, pome fruit, tree nuts, grapes, citrus, vegetables and other crops**



New Vulcan insecticide provided very quick and highly effective knockdown when compared to Lorsban Advanced for both CRW adults and black cutworm



Corn rootworm adults



Black cutworm larvae

Fanfare[®] LFC

Simply making it better...

Market Introduction:

In 2012, MANA will introduce a new formulation of bifenthrin, **Fanfare LFC**

Features

- Handling - Increased compatibility with pop-up fertilizer formulations
- Odor improvement - from Aromatic Hydrocarbon down to faint
- Advanced formulation technology provides improved efficacy while reducing impact on air quality
- Great value to utilize in targeting a variety of common crop pests with a quick return on investment.

Packaging:

250 gallon totes and 2x2.5's in 2013

Production:

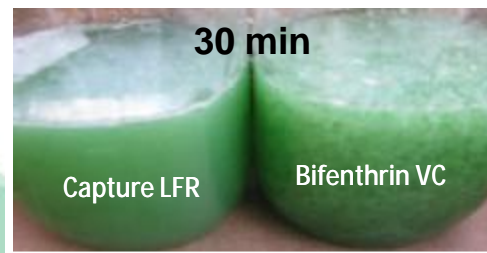
Formulated and packaged at Bold Corporation, Ocilla, GA.

Registration:

Federal label expected July 2012

Availability:

2013



Parallel[®] Plus

Simply making it better...

Formulation Breakthrough:

Full introduction in 2012 following successful test market entry in 2011

Features:

- State of the Art formulation eclipses all competitive metolachlor/atrazine products
- Suspension integrity maintained even during cold temperatures
- Long term stability seen from season to season storage
- Handling and mixing significantly improved with minimum recirculation required
- Includes superior safener technology permitting use on corn and sorghum
- Compatible in water and liquid nitrogen solutions

Benefits:

- Improved time management by eliminating handling or mixing hassles
- Worries about storage and product integrity eliminated
- Dollars saved by reduced labor and equipment

Packaging: 2x2.5's, 270 totes, Bulk

Production: Formulated and packaged in St. Joseph, MO



Parallel Plus



Bicep II Magnum





Parallel[®] Plus

herbicide





Simply making it better...

Market Introduction:

For the 2012 season MANA will introduce a new formulation of propiconazole, Bumper VC

Features

- Advanced formulation technology provides improved efficacy while reducing impact on air quality
- Caution signal word for less restrictive PPE requirement
- Resistance management tool for IPM in tank mix or rotation with other fungicides
- Both preventative and curative properties with the same use rate as the original Bumper
- Great value to utilize in targeting a variety of common crop disease with a quick return on investment

Key NEW Features:

CAUTION Signal Word
Dermal sensitization – Non
Oral LD50 of >1750 mg/kg

Benefits:

More favorable for mix/spray personnel
No chronic skin sensitization for handler
Safer toxicology profile
1st Ag labeled propi w CAUTION

Packaging: 4x1's, 2x2.5's, 260's

Production: Formulated and packaged at MANA Bold Corporation, Ocilla, GA.

Availability: June 2012



MASTERCOP[®]
FUNGICIDE / BACTERICIDE

The logo for MasterCop features the word "MASTERCOP" in a bold, green, sans-serif font. The letter "O" is replaced by a stylized orange shield shape. Below the main name, the words "FUNGICIDE / BACTERICIDE" are written in a smaller, orange, sans-serif font.

MASTERCOP
FUNGICIDE / BACTERICIDE

MasterCop is an advanced formulation of copper, complexed as Copper sulfate penthydrate. The product form a highly desirable true solution in water with unmatched handling and spraying characteristics.

The product contains a unique formulation agent called BioRetain™ which results in cuticular penetration for improved retention and residual, all with excellent crop safety

Superior Formulation....



MasterCop forms a solution in water, its like mixing sugar into coffee... Once its in solution, it stays there.....

Traditional products form suspensions in water, settle without continued mixing

Superior spray characteristics without the spray nozzle clogging seen with some copper products

MasterCop is an easy to handle liquid, with stability in the jug season to season which has been a problem for many liquid copper formulations

Low Handling Volume, 1-2 pt per acre

General Recommendations:

1pt/a- annual crops

2 pt/a permanent crops

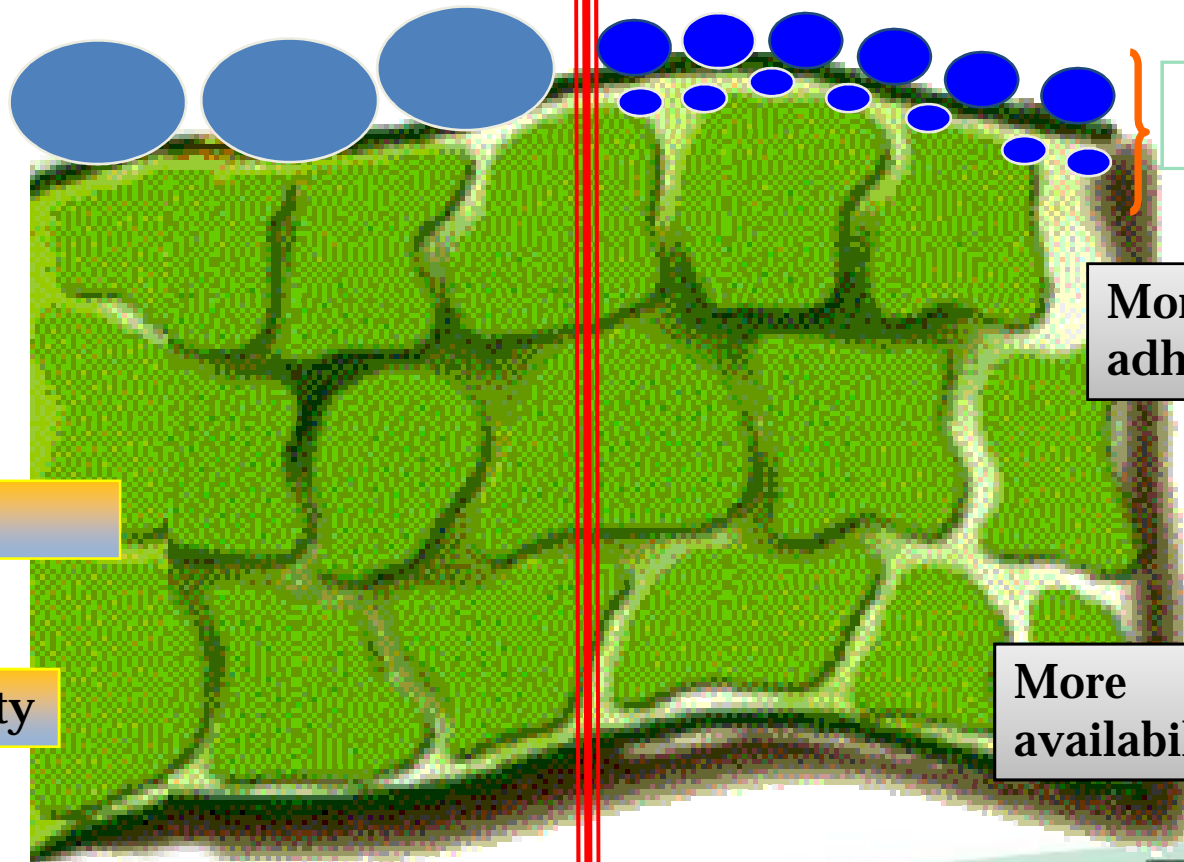
The label allows for higher use rates when needed

Proprietary formulation and uptake system enhances leaf adhesion and retention within the cuticle of the leaf while providing superior safety to the crop.

The particle size of products has great importance to obtain better efficacy.

Less contact area

More contact area



Less adherence

More adherence

More a.i. cost

Low a.i. cost

Less availability

More availability

Traditional copper formulation

MASTERCOP
FUNGICIDE / BACTERICIDE

 **MANA**
Crop Protection



Herbicide

Impose[®]

HERBICIDE

For Weed Control in Peanuts

Impose[®] herbicide gives peanut growers an additional and more cost-effective product, providing systemic and residual control of nearly 40 grass and broadleaf weeds and sedges.



ACTIVE INGREDIENT

Imazapic 23.3%

FORMULATION

Aqueous Solution

EPA REGISTRATION #

66222-141

MODE OF ACTION

ALS Inhibitor

TIMING

Early postemergence

BRAND ALTERNATIVE

Cadre[®]

GROUP NUMBER

Group 2

RESTRICTED USE

No

SIGNAL WORD

Caution

PACKING INFORMATION

2 x 1 gal

KEY PERFORMANCE BENEFITS

- **Proven Performance:** Delivers excellent performance on tough grasses and weeds along with a great formulation and a great value.
- **Economical:** Protects your investment with proven performance at the right price.
- **Broad Spectrum Control:** Controls more than 40 tough grasses, sedges and broadleaf weeds, including morningglory, pigweed, johnsongrass and nutsedge.
- **Long Residual:** Impose provides longer-lasting residual control and a wide window of application for optimum performance.
- **Crop Safety:** Impose is tough on peanut weed pests, but easy on peanuts.
- **Confidence:** Consistent profitable results from a trusted company.

Call Toll Free 866-406-MANA(6262) or visit us online at www.manainc.com



THANK YOU!

Tim Ford

