

Spear® T Liquid Concentrate

Daniel Peck
Field Development Biologist
Vestaron Corporation

Background

- Approved Aug 2017
 - VST 006340 Sublabel A
 - Preceded by dry formulation (VST-006330 EP) in 2014
- Biological Insecticide/Miticide
- Peptide active ingredient
 - GS-omega/kappa-Hctx-Hv1a
- Greenhouse use only
 - Works through contact
 - Broad spectrum
 - Aphids, Mites, Thrips, Whiteflies
 - 2-3 gallons per 100 gallons



SPEAR T
LIQUID CONCENTRATE

For Greenhouse Use

Biological Insecticide/Miticide

Biological Insecticide for Greenhouse thrips/whiteflies/Two-spotted Spider mites/Broad mites/aphids/spotted wing drosophila

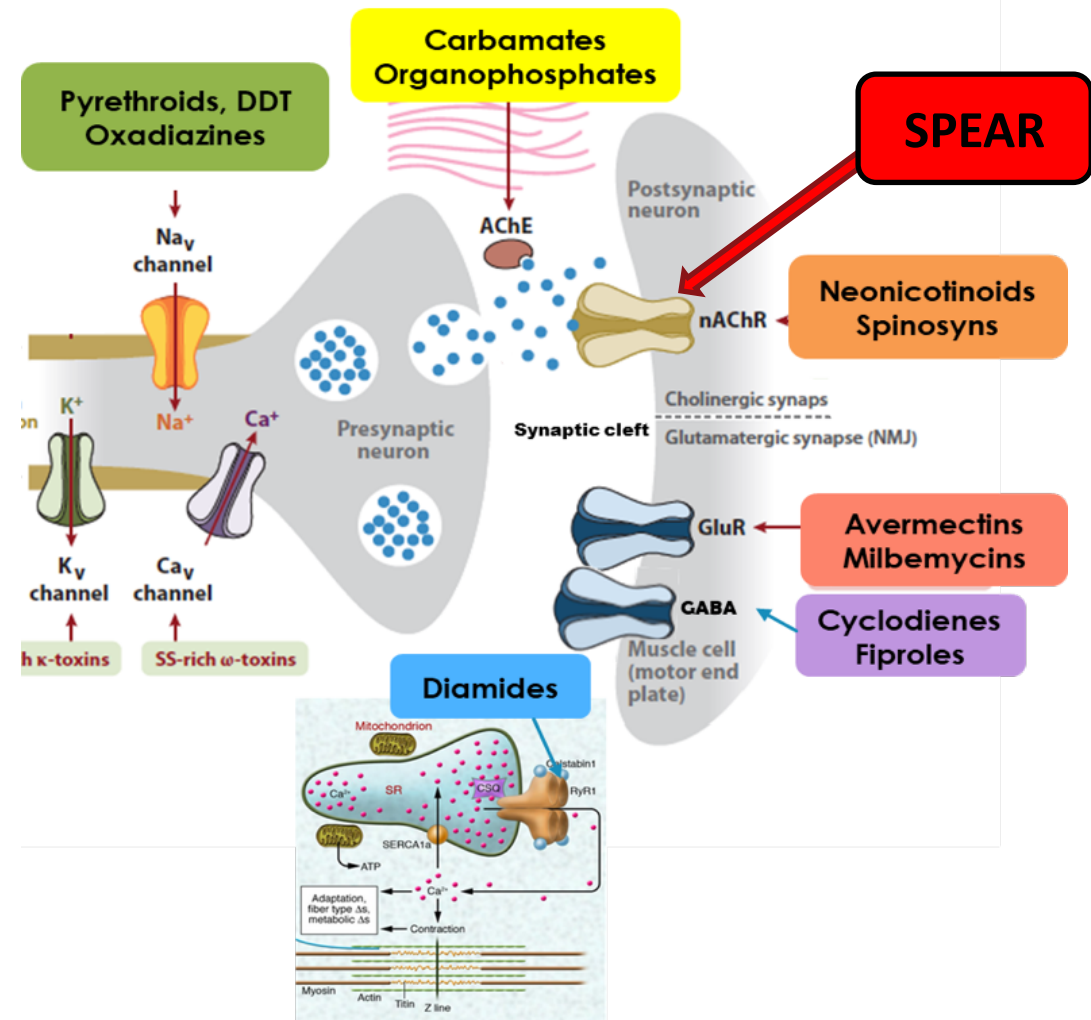
Active Ingredient: GS-omega/kappa-Hctx-Hv1a.....	2.0%
Other Ingredients:	98.0%
TOTAL:	100.0%

Requires dilution with water prior to application – see booklet instructions

KEEP OUT OF REACH OF CHILDREN
CAUTION

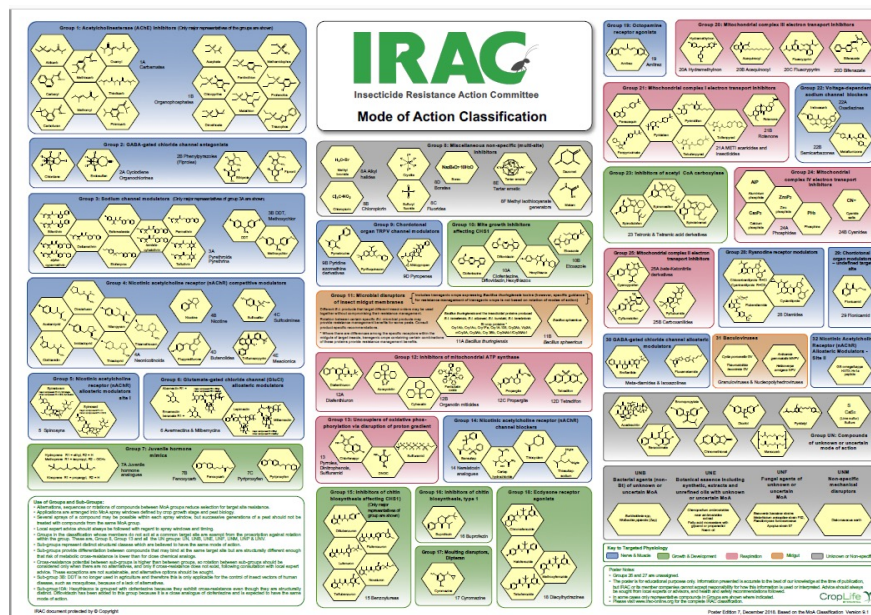
Background (cont)

- New IRAC Group 32
 - Awarded in Nov 2018
 - Nicotinic Acetylcholine Receptor (nAChR) Allosteric Modulators - Site II
 - Novel Mode of Action
 - Disrupts the nAChR of the nervous system
 - Binding site is distinct from neonicotinoids and spinosyn
 - Only the 14th “nerve and muscular” MoA



Fit in Food Use

- Tolerance exempt
- 0-day PHI, 4-hour REI
- 2-year shelf life; no refrigeration
- New tool for insecticide resistance management
 - No known resistance
 - No cross-resistance
- Versatile for incorporation into season-long programs
- Reduce reliance on conventional products with less favorable safety profiles



32 Nicotinic Acetylcholine Receptor (nAChR) Allosteric Modulators - Site II

GS-omega/kappa HTX-Hv1a peptide

Data Support Needed in Food Use

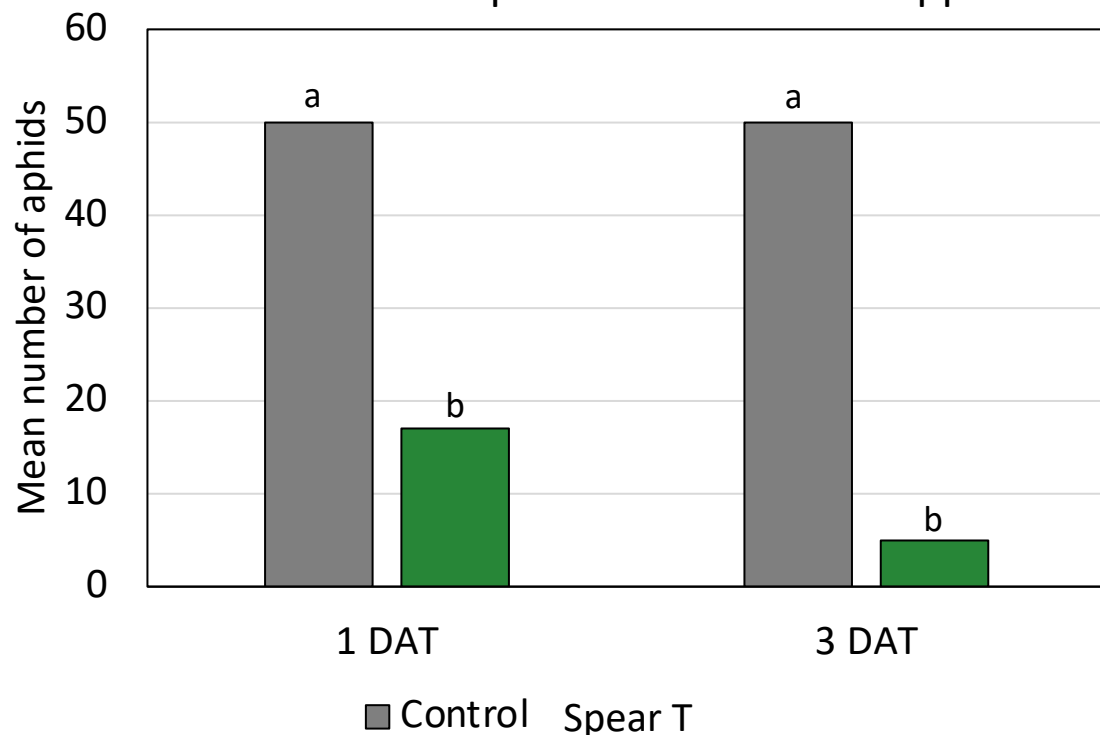
- Expansion into outdoor uses
 - Thrips, such as Onion, Tobacco
 - Mites, such as Broad, Citrus Rust, TSSM
 - Psyllids, such as Asian Citrus, Pear, Potato
 - Spotted-wing drosophila
- Rate studies
 - Role of surfactants/adjuvants
 - Feasibility of lower use rates
- Role as rotational product
 - Season-long programs
 - Resistance management programs



Broad Mite Damage on Green Pepper
(vegetablegrowersnews.com)

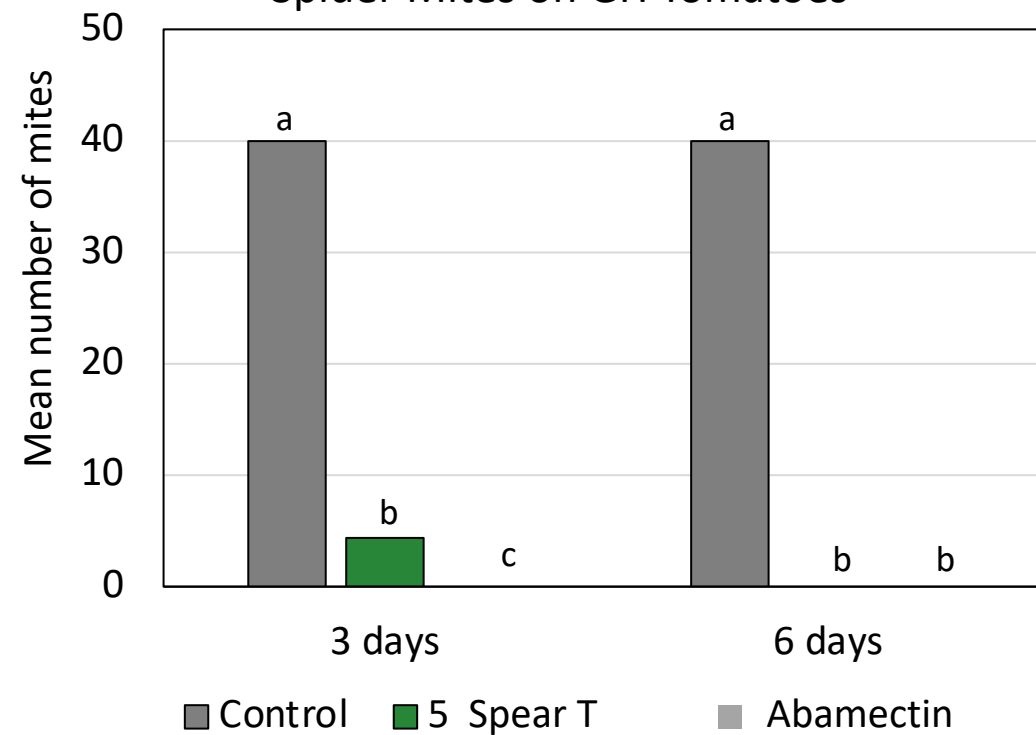
Performance Examples in Food Use

Green Peach Aphids on GH Green Pepper



UC Riverside, J. Trumble, 2018

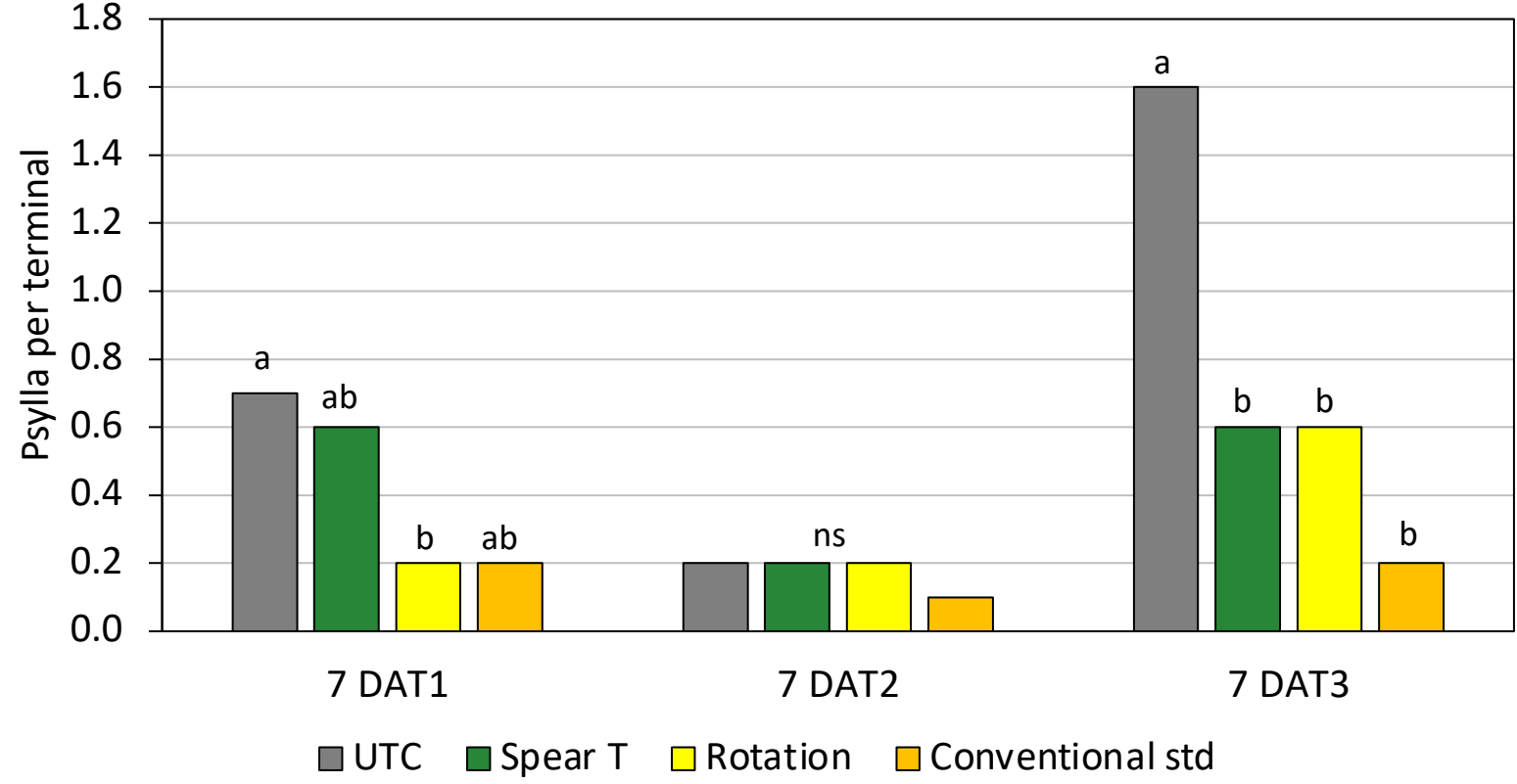
Spider Mites on GH Tomatoes



UC Riverside, J. Trumble, 2018

Performance Examples in Food Use

Pear Psylla in Pear (preliminary)



Spear®-Lep

Daniel Peck
Field Development Biologist
Vestaron Corporation

Background

- Approved Sept 2018 Sublabel B
 - VST 006340
 - Preceded by 006340 Sublabel A
- Biological Insecticide for caterpillars
- Co-applied with Bt *ssp. kurstaki*
 - Sublethal rates of both actives have synergistic interaction
 - Gut disruption from Bt allows peptide into hemocoel
 - Works through ingestion
 - 1-2 pints per acre with 1-2 pints Leprotec (Vestaron's branded Btk product)

SPEAR → **LEP**

For Control of Lepidopterans

Biological Insecticide
Control of Lepidopteran pests in fruits,
vegetables and other high-value field crops

Active Ingredient: GS-omega/kappa-Hctx-Hv1a.....	2.0%
Other Ingredients:	98.0%
TOTAL:	100.0%

KEEP OUT OF REACH OF CHILDREN
CAUTION

Fit in Food Use Program

- Same as Spear T
- In addition:
 - Non-toxic to bees
 - May be applied during bloom
 - Little to no impact on non-targets
 - Role in end-of-season protection (due to tolerance exemption)



Open Blooms on Apple
(lovebackyard.com)

Data Support Needed in Food Use

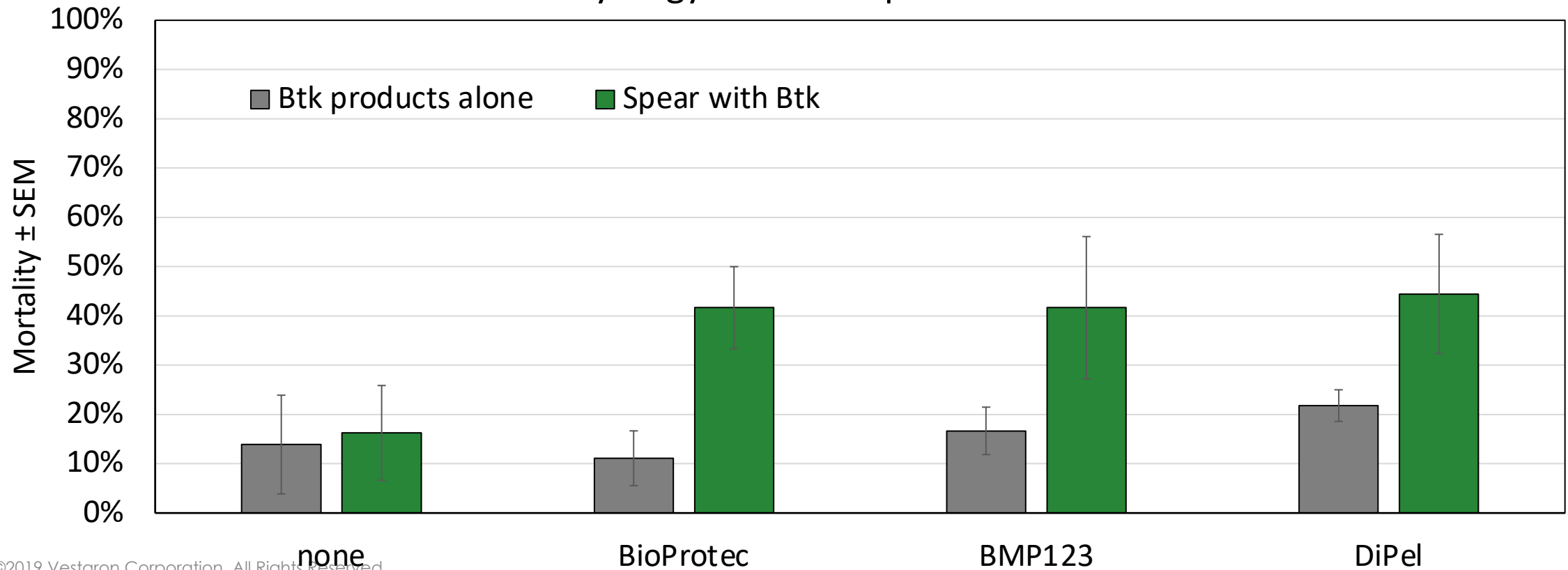
- Co-application with other synergists (gut disruptors)
 - Bt ssp. *tenebrionis* for Colorado potato beetle
 - Bt ssp. *aizawai* for other lep species
- Efficacy against Bt-resistant populations
- Role as rotational product
 - Season-long programs
 - Resistance management programs



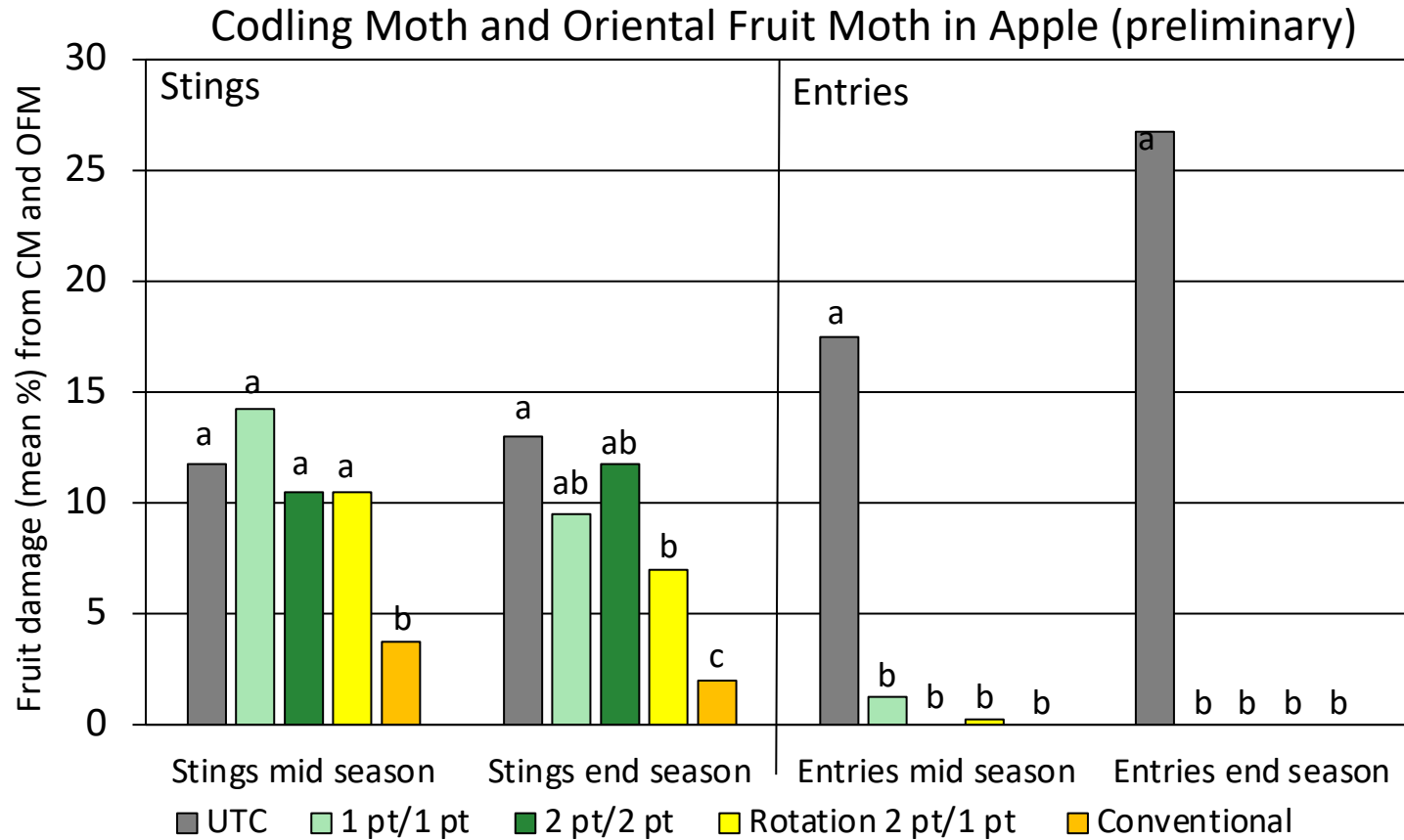
Colorado Potato Beetles
(knowmoregrowmore.com)

Performance Examples in Food Use

Synergy Between Spear and Btk Products



Performance Examples in Food Use



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Spear®-Lep

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