Watermelon Research Update

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NFREC Quincy

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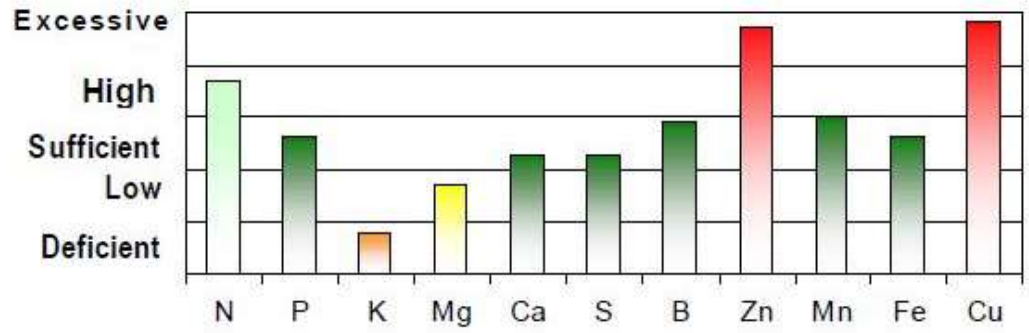
Plant Lab Results

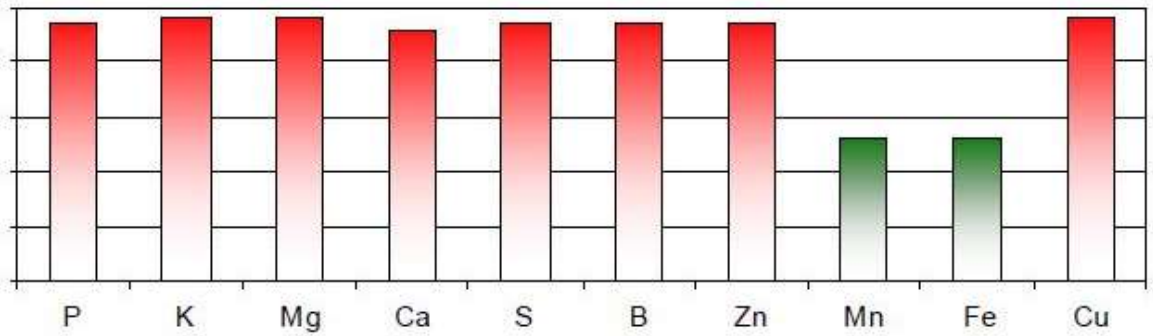
N	P	K	Mg	Ca	S	B	Zn	Mn	Fe	Cu
5.36 %	0.46 %	2.44 %	0.38 %	1.81 %	0.71 %	50.3 ppm	84.3 ppm	205 ppm	138 ppm	523.9 ppm

NO_3-N:	Na:	Al:	Mo:	Ni:	Cl:
ppm	%	ppm	ppm	ppm	%

Plant Rating



Soil Rating



13244SP

Soil Lab Results (lbs./a)

P	K	Mg	Ca	pHw	pHb	S	B	Zn	Mn	Fe	Cu
205	415	238	2132	6.2	7.80	126	2.1	12.2	28	17	11.4

Na	Al	OM%	Soluble Salts mmhos/cm	NitrateN	Cl	Mo ppm	Ni ppm

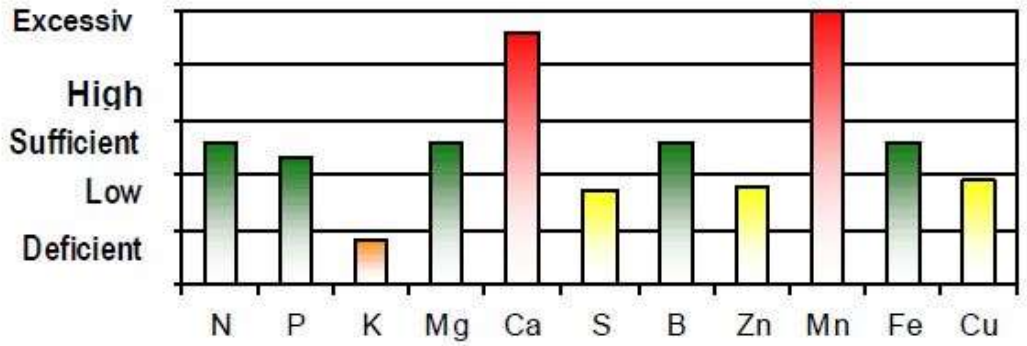
CEC: 8.5 meq/100g	%K: 6.3	%Mg: 11.7	%Ca: 63.0	%H: 18.9	%Na:	

Plant Lab Results

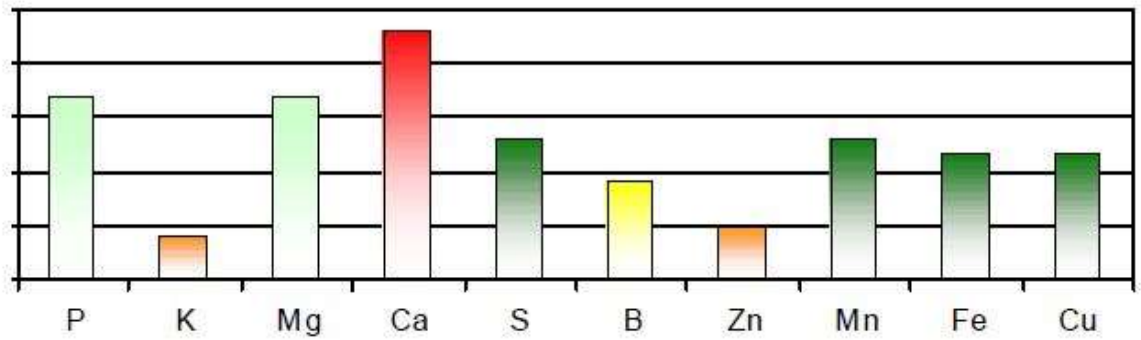
N	P	K	Mg	Ca	S	B	Zn	Mn	Fe	Cu
3.95 %	0.36 %	1.76 %	0.63 %	7.31 %	0.56 %	40.8 ppm	24.4 ppm	498 ppm	158 ppm	7.4 ppm

NO_3-N: ppm	Na: %	Al: ppm	Mo: ppm	Ni: ppm	Cl: %

Plant Rating



Soil Rating



13646SP

Soil Lab Results (lbs./a)

P	K	Mg	Ca	pHw	pHb	S	B	Zn	Mn	Fe	Cu
128	69	178	1397	6.4	7.85	51	0.5	2.2	26	10	0.6

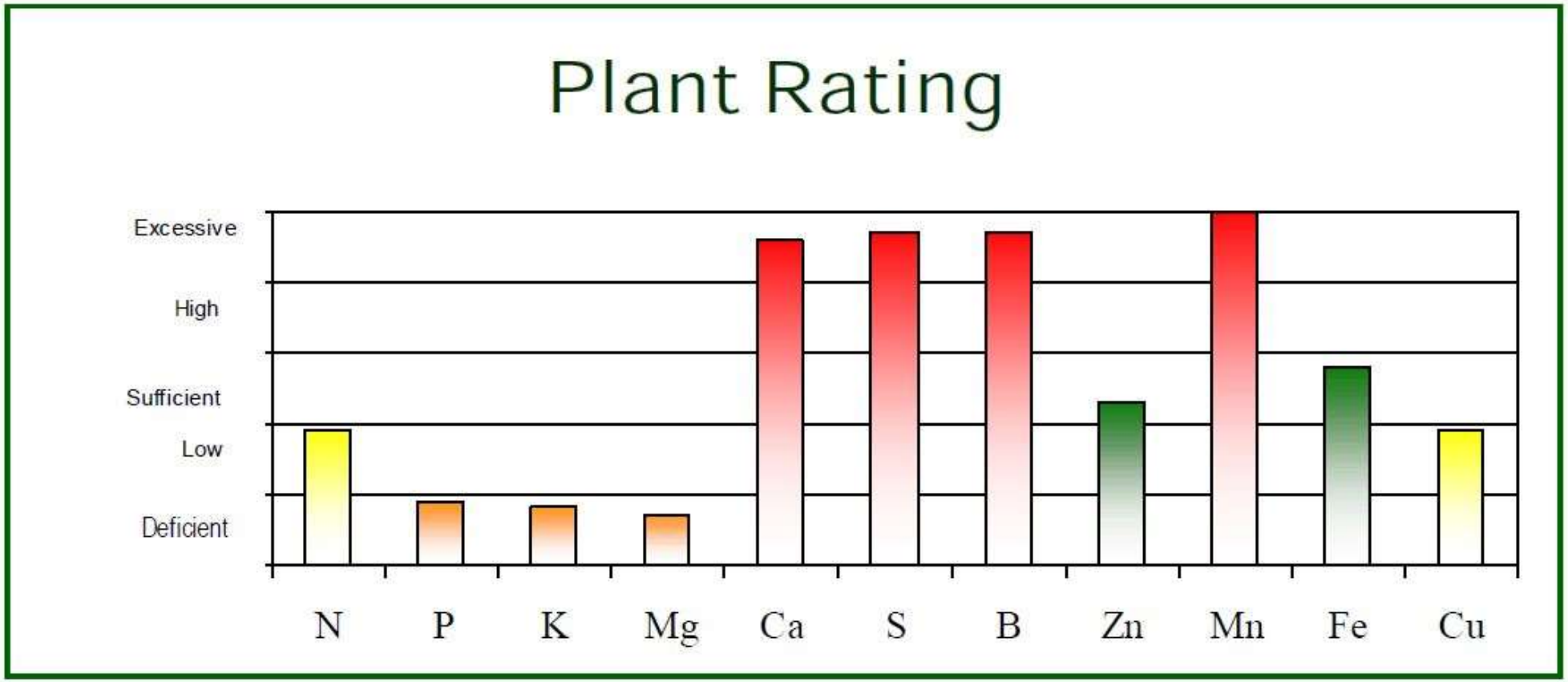
Na	Al	OM%	Soluble Salts mmhos/cm	NitrateN	Cl	BiCarbs meq/l	Mo ppm	Ni ppm

CEC: 5.5 meq/100g	%K: 1.6	%Mg: 13.4	%Ca: 63.2	%H: 21.7	%Na:

Plant Lab Results

N	P	K	Mg	Ca	S	B	Zn	Mn	Fe	Cu
3.92 %	0.33 %	2.38 %	0.26 %	5.96 %	1.29 %	219.0 ppm	28.1 ppm	339 ppm	191 ppm	7.8 ppm

NO_3-N:	ppm	Na:	%	Al:	ppm	Mo:	ppm	Ni:	ppm	Cl:	%



Calcium

- Research suggests that applying calcium to soils testing over 600 lb/a will not have an effect on plant growth and development
- Adequate pH for tomato is 5.8 – 6.5
  - pH should be adjusted with lime
- If pH is in the correct range and soil calcium is low, calcium should be added through gypsum
- Addition of gypsum every year, despite soil calcium concentration DOES NOT help
- Excess calcium in the soil may cause problems with other nutrients
- If you have 1500+ lb/acre calcium in the soil, dripping more won't help

Nutsedge Competition

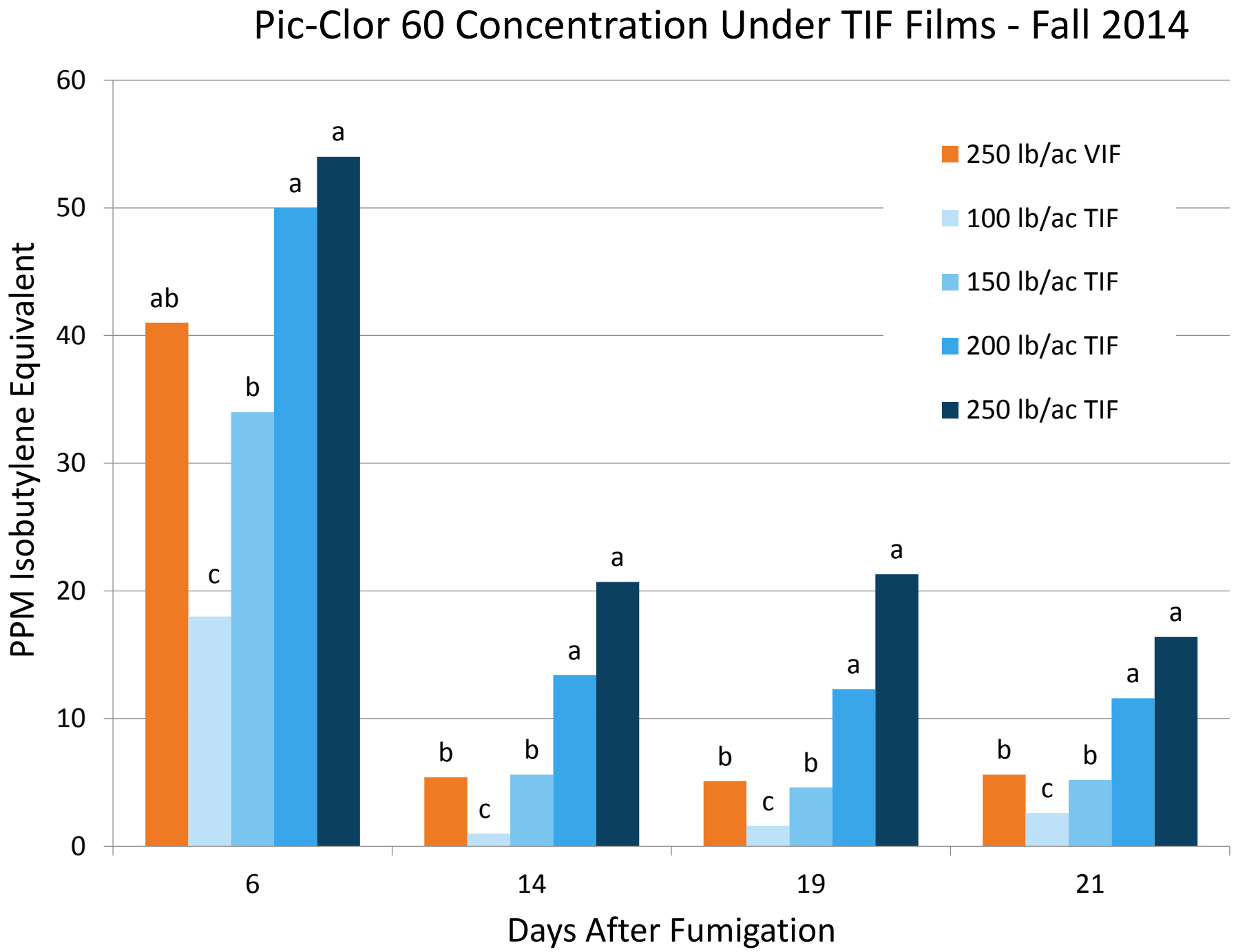
- Strong midrib and sharp tip allows nutsedge to puncture plastic
- Fumigants have marginal activity against nutsedge species
- Significant yield loss

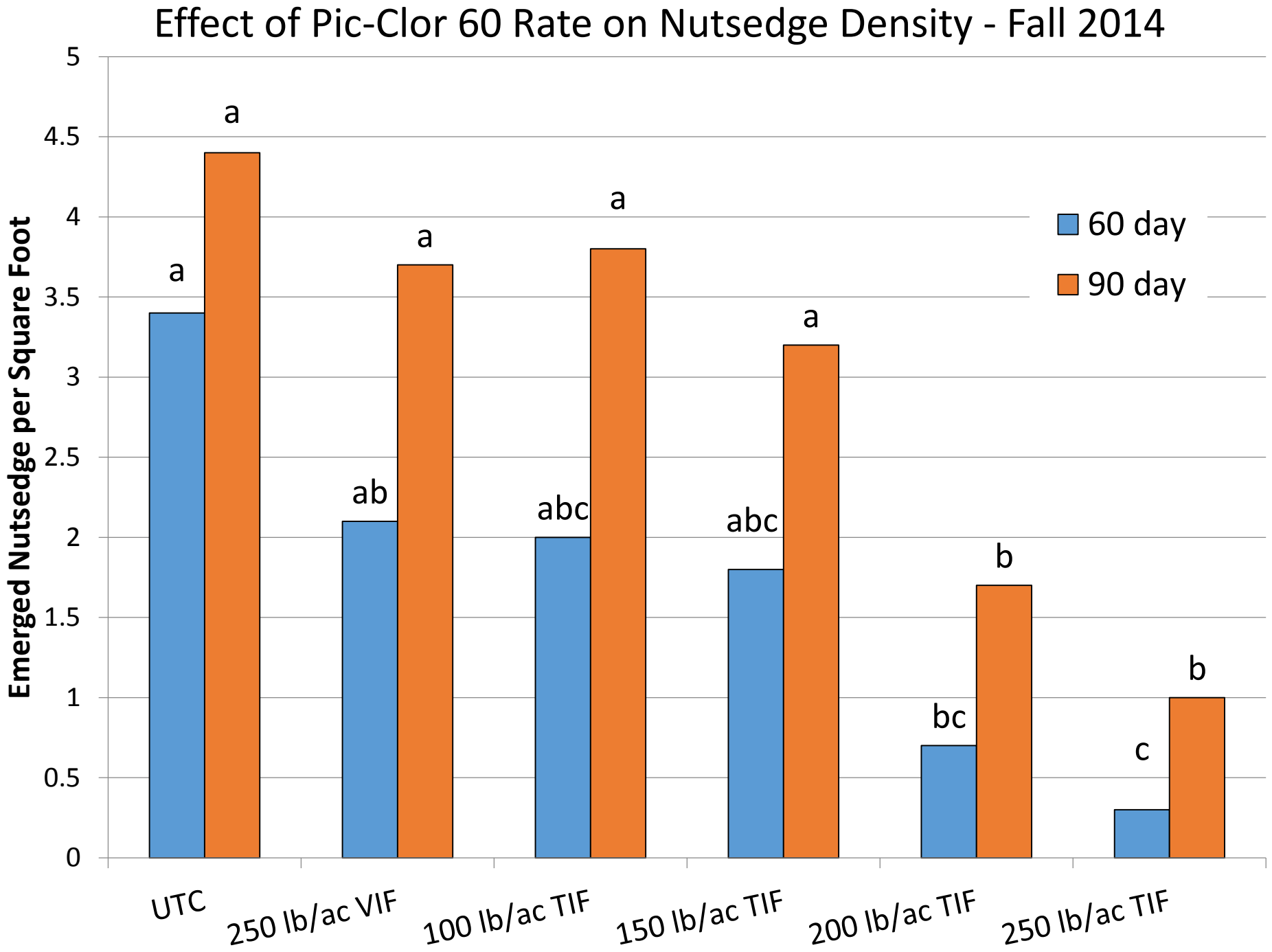
New Technology

- Virtually Impermeable Film (VIF)
  - Contains a nylon polymer layer that reduces fumigant permeation through the film
  - Widely used beginning with methyl bromide phase out
- Totally impermeable film (TIF)
  - Contains ethyl vinyl alcohol
  - Much less permeable than VIF

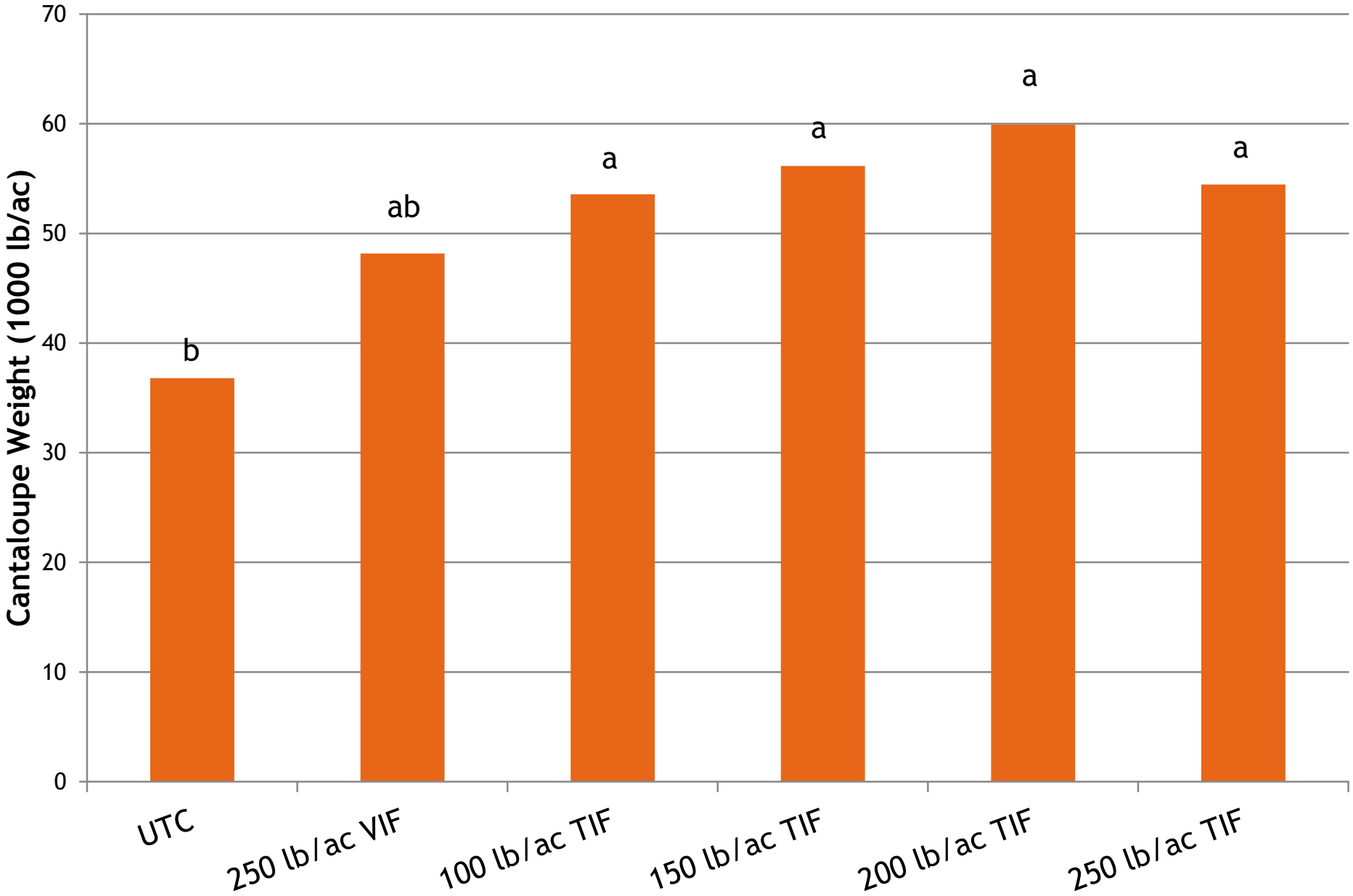
Totally Impermeable Film Mulch

- Greater retention leads to greater exposure
- Extended exposure could maintain efficacy with lower application rates
- A greater extension of VIF films
- Five to seven layer mulch

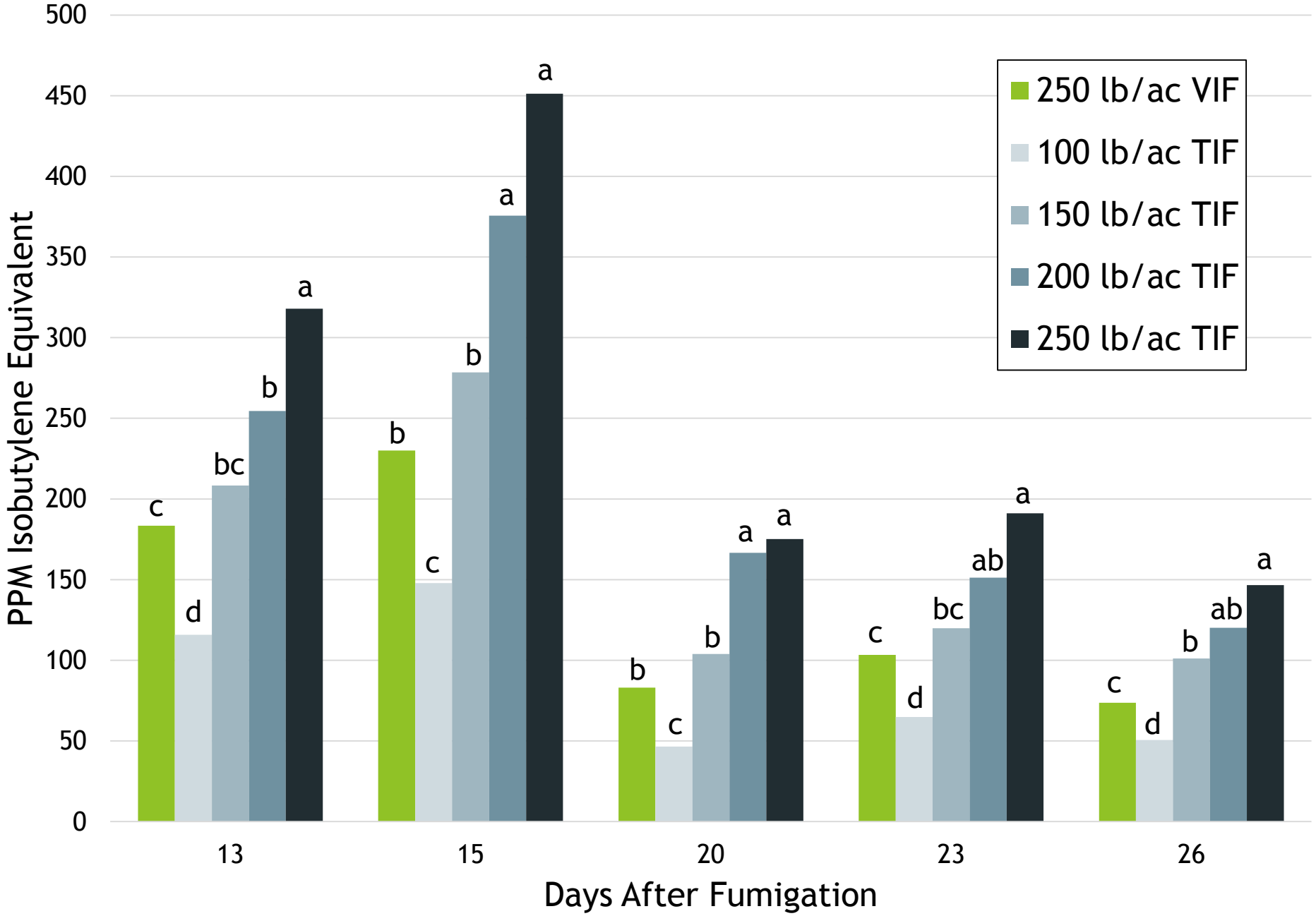

Pic-Clor 60 Concentration Under TIF Films - Fall 2014
PPM Isobutylene Equivalent
60
50
40
30
20
10
0
ab
c
b
a
a
b
c
b
a
a
b
c
b
a
a
b
c
b
a
a
250 lb/ac VIF
100 lb/ac TIF
150 lb/ac TIF
200 lb/ac TIF
250 lb/ac TIF
6
14
19
21
Days After Fumigation

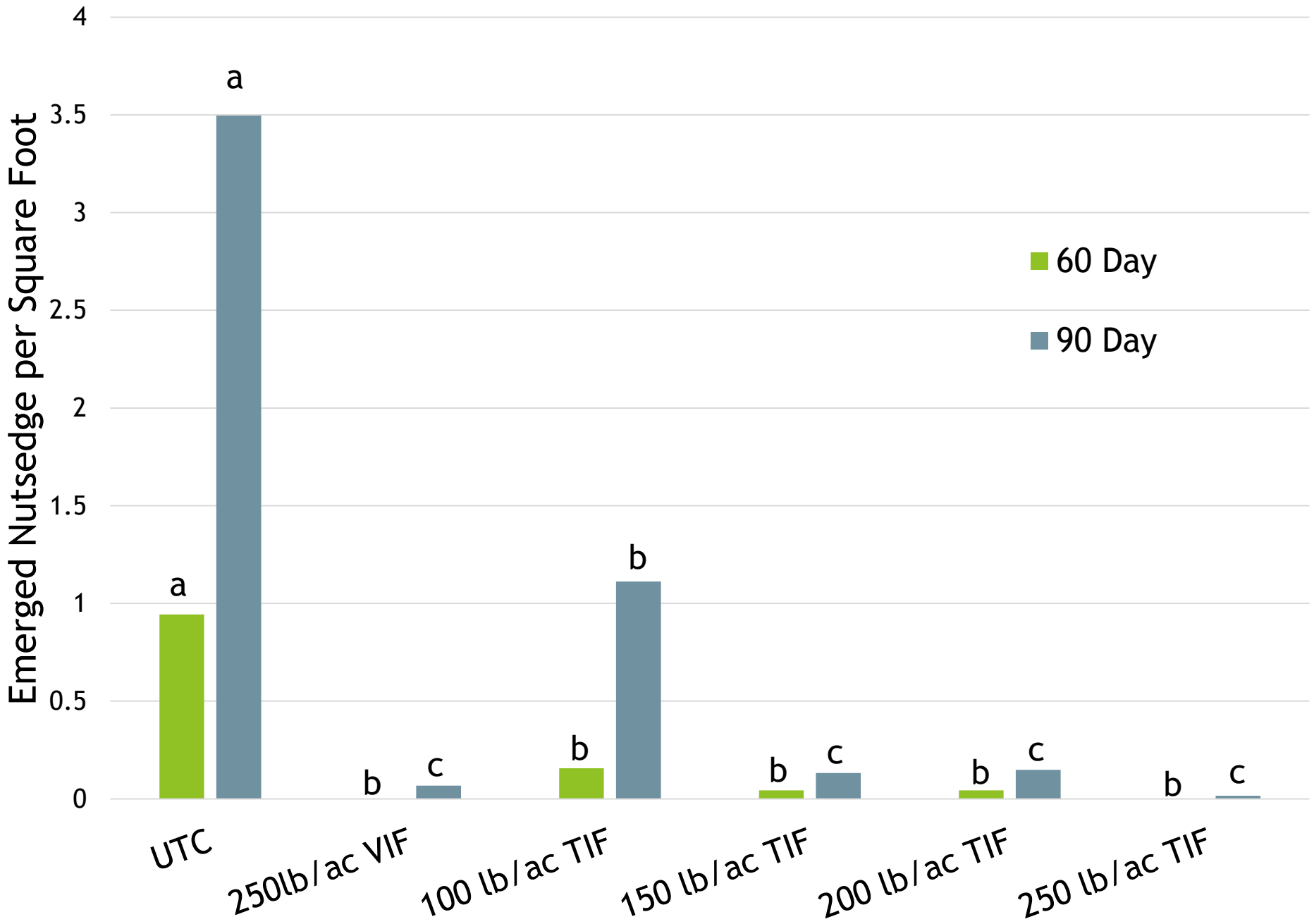

Effect of Pic-Clor 60 Rate on Nutsedge Density - Fall 2014
Emerged Nutsedge per Square Foot
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
60 day
90 day
a
a
a
a
ab
a
abc
a
abc
a
bc
b
c
b
UTC
250 lb/ac VIF
100 lb/ac TIF
150 lb/ac TIF
200 lb/ac TIF
250 lb/ac TIF

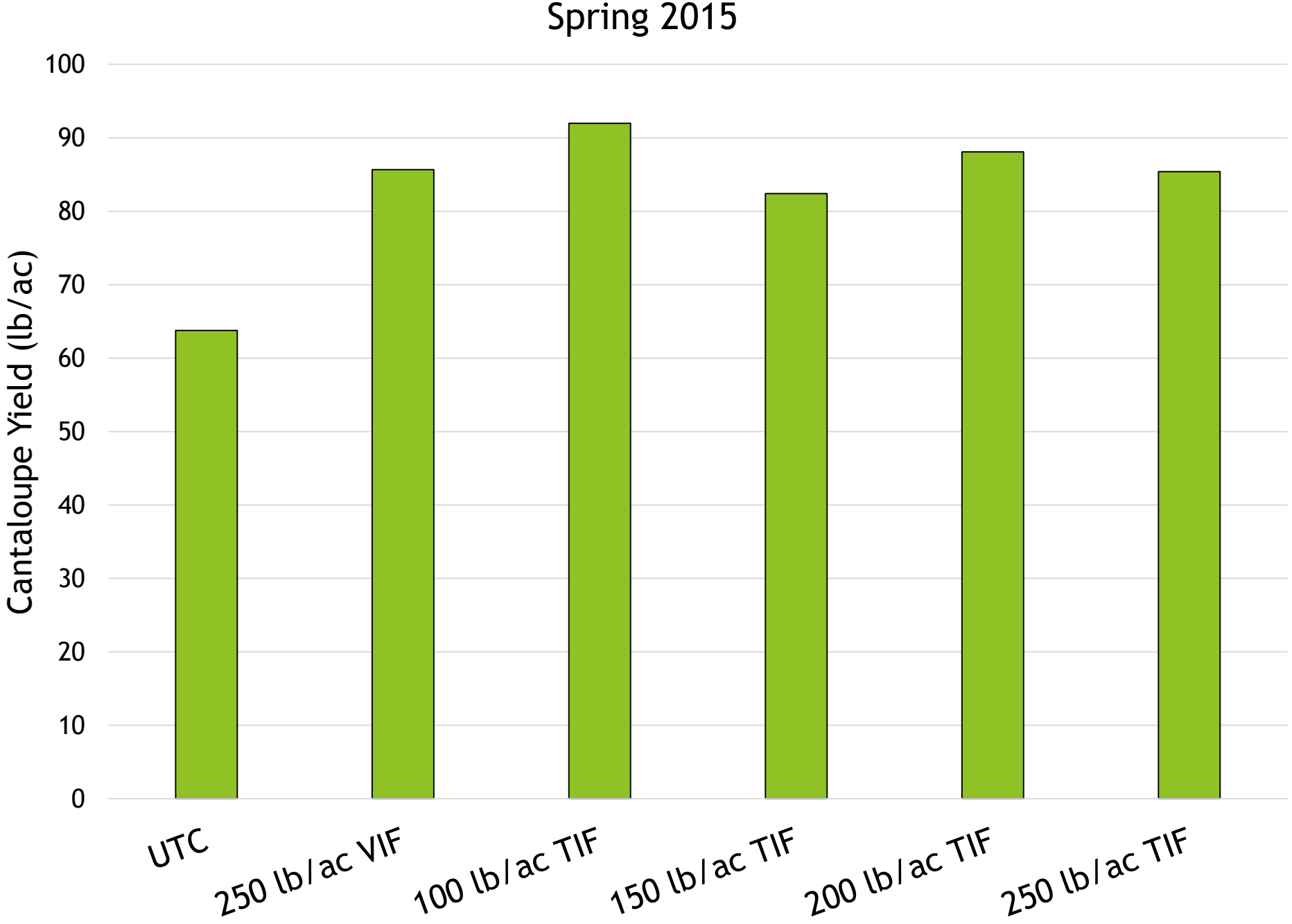
Impact of Pic-Clor 60 used with TIF on Cantaloupe Yield – Fall 2014

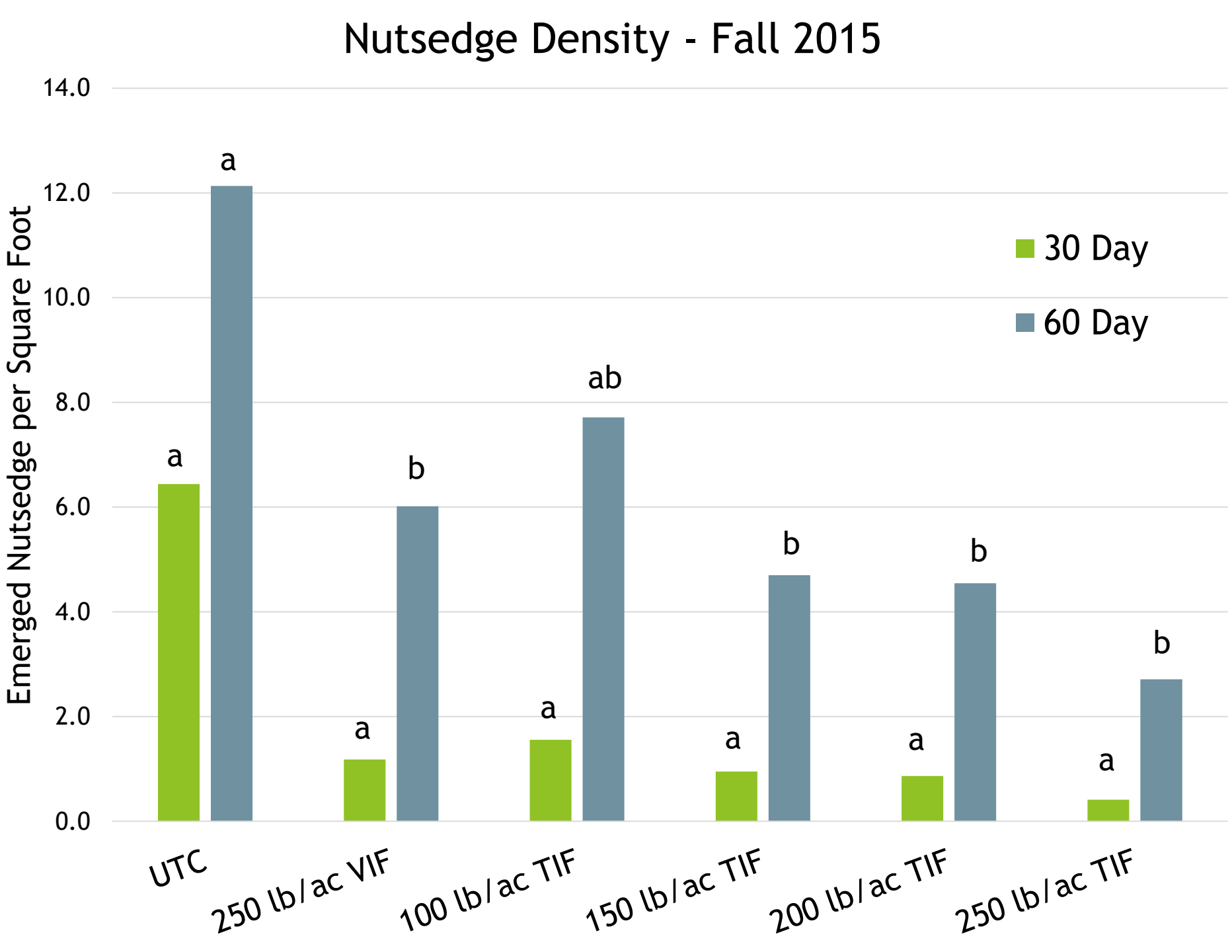


Pic 60 Concentration Under TIF - Spring 2015




Nutsedge Density - Spring 2015
Emerged Nutsedge per Square Foot
4
3.5
3
2.5
2
1.5
1
0.5
0
60 Day
90 Day
a
a
b
c
b
b
b
c
b
c
b
c
UTC
250lb/ac VIF
100 lb/ac TIF
150 lb/ac TIF
200 lb/ac TIF
250 lb/ac TIF


Impact of Pic Clor-60 used with TIF on Cantaloupe Yield - Spring 2015
Cantaloupe Yield (lb/ac)
100
90
80
70
60
50
40
30
20
10
0
UTC
250 lb/ac VIF
100 lb/ac TIF
150 lb/ac TIF
200 lb/ac TIF
250 lb/ac TIF


Nutsedge Density - Fall 2015
Emerged Nutsedge per Square Foot
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
30 Day
60 Day
a
a
a
b
a
ab
a
b
a
b
a
b
UTC
250 lb/ac VIF
100 lb/ac TIF
150 lb/ac TIF
200 lb/ac TIF
250 lb/ac TIF


200
TIF
150
TIF
100
TIF
250
YIF
250
TIF
UTC

Financial Implications

- Pic-Clor 60 250 lb/ac VIF ($3.80/lb)
  - $296* (fumigant) + $229 (film) = $525
- Pic-Clor 60 200 lb/ac TIF
  - $237* (fumigant) + $267 (film) = $504
- $21 per acre cheaper for equivalent or improved nutsedge control with TIF

Treatment	Phyto	Vigor	Phyto	Vigor	Phyto	Vigor	60 Day RGI	90 Day RGI	RKN/g root
Non-treated control	1 ns	4.7 ns	1 ns	6.2 ns	2 ns	6.2 ns	6.1 a	7.5 a	9.5 ab
Nimitz	1.0	5.0	1.2	7.0	1.2	7.0	3.3 b	6.8 ab	5.0 bc
Velum	1.0	5.0	1.5	6.0	2.0	6.5	3.1 b	5.8 b	10.5 a
Velum fb Vydate	1.0	5.7	1.0	6.7	1.5	6.2	2.1 c	3.8 c	4.0 c
Vydate	1.0	4.7	1.0	7.2	1.3	7.0	1.6 c	4.4 c	2.1 c
EXP	1.0	5.5	1.0	6.2	1.5	6.7	1.6 c	3.4 c	3.2 c

Non-treated control

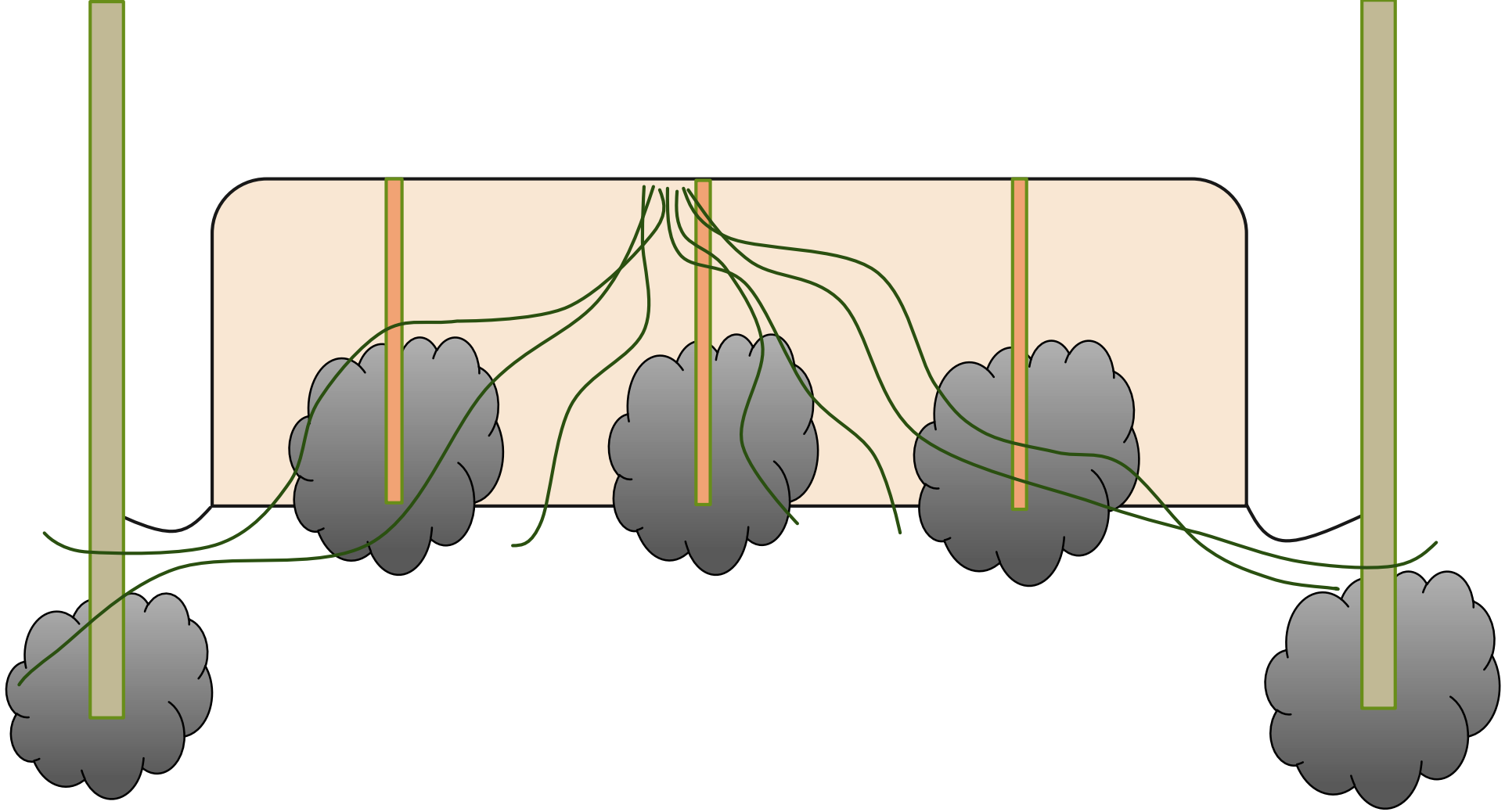
Nimitz

Velum

Velum followed by Vydate

Vydate 4x

Experimental



Variety Update

Watermelon Variety Trial – Spring 2015 Cumulative Harvest – NFREC Quincy

Variety	Source	Yield (lb/acre)[z]	Avg Weight (lb)		% Total Yield by Count				Hollow Heart [y]		Hard Seed [x]	°Brix	
					30	36	45	60					
Maxima	Origene	118124 a	18.5	ab	23	26	37	14	0.4	bcd	0.5 ns	12.0	a
Talca	Origene	115881 ab	17.8	a-e	13	30	39	19	0.2	bcd	0.6	11.2	a-e
Wolverine	High Mark	111706 abc	16.5	b-f	6	26	43	25	0.7	a-d	0.3	11.5	a-d
SV 7112	Seminis	108524 abc	17.9	a-d	17	31	38	14	0.4	bcd	0.1	11.2	a-e
Premont	Clifton	107272 abc	18.1	a-d	11	33	41	15	0.2	bcd	0.5	11.3	a-e
SV 7018	Seminis	104824 a-d	17.4	a-f	6	29	46	19	0.1	cd	0.4	11.4	a-d
Razorback	High Mark	104305 a-d	17.0	b-f	9	28	41	22	0.2	bcd	0.3	11.1	a-e
Grafted Fascination	Tri-Hishtil	103951 a-d	18.3	abc	19	29	39	13	1.1	abc	1.5	11.1	a-e
WDL 0409	Syngenta	103844 a-d	18.0	a-d	13	21	45	21	0.3	bcd	0.1	10.4	e
AC 7197	Nunhems	101657 a-d	16.4	b-f	8	25	43	24	0.1	cd	0.6	11.2	a-e
AC 7187	Nunhems	100751 a-d	17.3	a-f	4	32	46	18	1.6	a	0.4	11.6	a-d
Crunchy Red	Harris Moran	99538 a-d	17.2	a-f	14	28	38	21	0.2	bcd	0.2	10.6	de
7015	High Mark	99291 a-d	16.7	b-f	11	24	35	30	0.3	bcd	1.6	12.0	a
Traveler	Harris Moran	97140 a-e	16.3	c-f	4	19	44	34	0.1	cd	0.2	11.5	a-d
Fascination	Syngenta	95964 a-e	17.1	a-f	13	21	39	27	0.3	bcd	1.3	10.8	de
SV 8298	Seminis	95852 a-e	17.6	a-f	13	33	36	18	0.0	d	0.2	12.0	a
Exclamation	Syngenta	95343 a-e	16.7	b-f	9	19	51	21	0.2	bcd	0.3	11.2	a-e
SV 2757	Seminis	94098 a-e	16.4	b-f	5	26	40	29	0.3	bcd	0.2	11.8	abc
Lucille	Origene	93732 b-e	16.4	b-f	7	17	52	24	0.2	bcd	0.1	10.9	cde
Warrior	Nunhems	92535 b-e	19.2	a	19	34	35	12	1.6	a	0.3	11.1	a-e
SV 0241	Seminis	92123 b-e	16.0	ef	4	16	39	40	0.7	a-d	0.5	11.3	a-e
AC 6177	Nunhems	92027 b-e	15.7	ef	2	21	41	36	0.2	bcd	0.7	11.1	a-e
Captivation	Syngenta	90213 cde	15.5	f	3	12	43	42	0.0	d	0.3	10.9	cde
Sweet Polly	Siegers	89897 cde	16.1	def	3	19	41	38	0.0	d	0.1	10.7	de
AC 7167	Nunhems	89771 cde	16.7	b-f	4	21	45	30	1.2	ab	0.5	11.0	b-e
TRI-X 313	Syngenta	87660 cde	16.0	def	7	20	44	29	1.5	a	0.1	11.9	ab
Embasy	Nunhems	82555 ed	16.1	def	6	18	45	30	0.4	bcd	0.4	10.8	ed
Troubadour	Harris Moran	81676 ed	16.0	def	4	14	43	39	0.1	cd	0.5	11.6	a-d
Sweet Dawn	Syngenta	74314 e	17.7	a-e	9	34	46	12	0.0	d	1.0	10.8	de

Watermelon Variety Trial – Spring 2014 – NFREC Quincy

Variety	Source	Yield (lb/acre)[z]	Avg wt (lb)	% Total yield by count				Hollow heart[y]	Hard seed[x]	°Brix
				30	36	45	60			
SV 0241	Seminis	86885 a[w]	17.1 a-e	18	26	32	24	1.47 a-e	1.8 bc	12.7 c-g
HSR 4648	Hollar	84817 ab	17.6 a-e	22	28	33	16	0.57 efg	3.9 bc	11.9 d-g
9838	High Mark	82488 ab	18.6 a	31	33	18	19	1.65 abc	0.77 c	12.7 a-d
ACX 6177	Nunhems	82051 abc	17.8 a-e	22	33	24	21	0.20 g	3.3 bc	12.0 d-f
Tri-X 313	Syngenta	79899a-d	17.9 a-d	24	27	32	17	1.57 a-d	0.6 c	12.6 a-e
SV 8317	Seminis	79258a-e	17.6 a-e	24	20	35	20	0.15 g	0.6 c	11.8 d-g
Razorback	High Mark	79231a-e	17.2 a-e	15	25	35	25	0.25 g	2.9 bc	12.2 b-g
Troubadour	Harris Moran	79188a-e	17.5 a-e	8	26	36	30	0.00 g	2.1 bc	12.4 a-f
Crunchy Red	Harris Moran	73677a-f	17.3 a-e	14	40	28	18	0.07 g	1.9 bc	12.5 a-f
Traveler	Harris Moran	71252a-f	15.4 de	5	28	35	31	0.32 fg	1.2 bc	11.5 fg
Exclamation	Syngenta	69649a-f	17.4 a-e	14	32	42	12	0.00 g	8.0 abc	12.3 a-g
HSR 4671	Hollar	69330 a-f	16.0 b-e	8	26	39	26	0.65 efg	2.2 bc	12.1 b-g
7167	Nunhems	69087a-f	17.1 a-e	13	33	33	22	1.32 b-f	8.5 ab	12.55 a-f
La Joya	Origene	67814 a-f	13.2 f	0	10	35	55	0.00 g	3.1 bc	13.0 abc
Yuval	Origene	67812 a-f	18.1 abc	21	34	35	10	1.32 b-f	0.7 c	13.4 a
HSR 4639	Hollar	67092 a-f	16.7 a-e	19	21	38	23	0.76 c-g	1.2 bc	11.3 g
HSR 4640	Hollar	67048 a-f	16.4 a-e	15	21	40	24	0.27 g	2.2 bc	11.9 d-g
Fascination	Syngenta	66812 a-f	16.8 a-e	14	32	34	20	0.45 fg	8.1 abc	11.7 d-g
Wolverine	High Mark	66250 a-f	17.2 a-e	14	37	30	19	0.85 c-g	2.7 bc	12.7 a-e
Captivation	Syngenta	64419 a-f	17.2 a-e	16	33	29	21	0.00 g	1.2 bc	12.4 a-f
Melody	Syngenta	63999 a-f	15.8 cde	9	21	41	29	0.52 efg	2.5 bc	11.9 c-g
Sweet Polly	Siegers	58988 b-f	17.0 a-e	10	9	42	9	0.32 fg	1.2 bc	12.3 a-g
Affirmed	Sakata	56868 c-f	16.7 a-e	12	26	43	19	2.25 abc	0.5 c	12.7 a-e
Bold Ruler	Sakata	56294 c-f	15.4 e	8	24	48	21	0.90 c-g	0.5 c	11.6 efg
NUN 1009	Nunhems	55293 def	18.5 ab	21	37	32	11	2.32 a	1.4 bc	12.4 a-f
Maxima	Origene	53101 ef	18.6 a	27	33	27	13	0.50 efg	0.9 bc	13.1 ab
Citation	Sakata	51842 f	12.9 f	1	8	29	61	0.57 efg	13.5 a	11.8 d-g

Z Yield extrapolations based on a population of 1815 plants per acre.
Y Hollow heart rating based on a 1-5 scale with 3-5 being considered unmarketable.
X Hard seed were counted on four faces of cut fruit
W Numbers not followed by the same letter are statistically different at the 5% level.
Hollow heart, hard seed, and brix were measured on a subsample of five fruit per plot and a total of 20 fruit per variety.
Fruit count is based on the following weights –
60 count = ≥ 9 and ≤ 13.5 45 count = > 13.5 and ≤ 17.5 36 count = > 17.5 and ≤ 21.5 30 count = > 21.5

Variety	Source	Yield (lbs/A)	t-group (p=0.1781)
Sugar Fresh	Syngenta	97,854	A
Talca	Origene	97,729	A
Crunchy Red	Harris Moran	96,117	AB
SV 7112	Seminis	95,285	AB
AC 6177	Nunhems	94,426	AB
Traveler	Harris Moran	93,186	ABC
Roadtrip	Seminis	91,937	ABC
Summer Breeze	Seminis	91,929	ABC
AC 7197	Nunhems	91,475	ABC
Joyride	Seminis	91,030	ABC
Lucille	Origene	90,645	ABC
AC 7167	Nunhems	89,573	ABC
Captivation	Syngenta	89,359	ABC
Fascination	Syngenta	89,197	ABC
Exclamation	Syngenta	87,251	ABCD
Embasy	Nunhems	87,237	ABCD
Maxima	Origene	86,890	ABCD
TRI-X 313	Syngenta	86,494	ABCD
Warrior	Nunhems	86,334	ABCD
Troubadour	Harris Moran	84,020	ABCD
SV 0241	Seminis	80,054	BCD
Sweet Polly	Siegers	74,900	BCD
Sweet Dawn	Syngenta	74,206	BCD
Grafted Fascination	Tri-Hishtil	71,628	D

Joyride (SV 8298)

Maxima

Premont

Sugar Fresh

Talca

Tri-X 313

SV 7112

Traveler

Razorback


Questions?