



## Implant Strategy Considerations


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## Overview

1. Implant action and value considerations
2. The implant market place
3. Matching product to your client
4. Trouble shooting problems
5. Implanting technique evaluation
6. Synovex One Technology


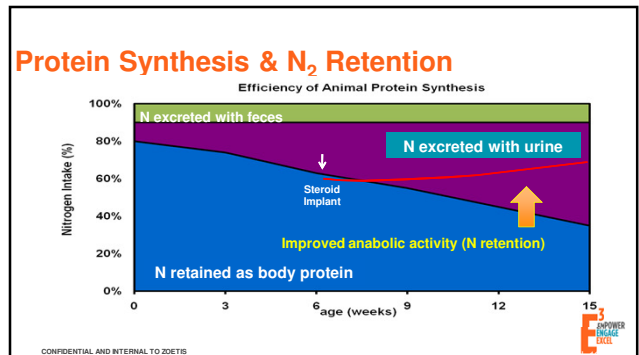
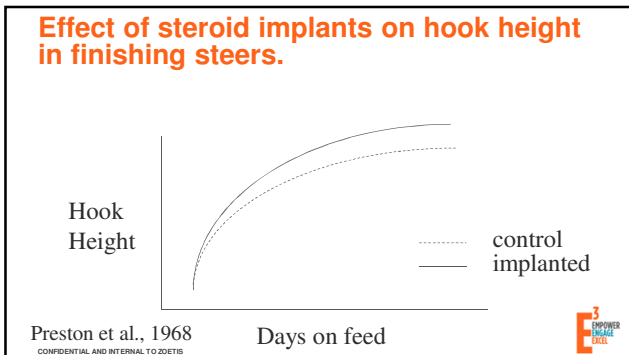
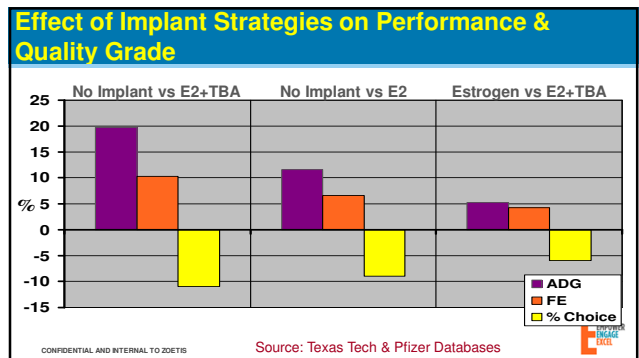
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### Estrogens in our Food and Body:

Source	Total Estrogenic Activity
Soy Flour	775,000 ng/500 gm
Infant formula (soy)	125,000 ng/500 gm
Tofu	113,000 ng/500 gm
White bread	300 ng/500 gm
Peanuts	100 ng/500 gm
Milk	80 ng/500 gm
Bulls (H. Free)	110 ng/500 gm
Steer (H. Treated)	11 ng/500 gm
Steer (H. Free)	8 ng/500 gm
Heifer (H. Free)	9 ng/500 gm
Children	40,000 ng/day
Males	180,000 ng/day
Females	5,000,000 ng/day
Preg. Females	90,000,000 ng/day
One B.C. Pill	35,000 ng/day (21d = 735,000)

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Weight (lb) at 28.6% fat Non-implanted									
	Frame Score								
	1	2	3	4	5	6	7	8	9
Steer	882	954	1029	1102	1175	1250	1322	1395	1470
Heifer	705	763	824	882	939	1001	1058	1115	1177

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**Guiroy et al., 2001, JAS 79:1983**

Table 8. Relationship of carcass and empty body fat to USDA quality grade (total of 1,355 animals)<sup>a</sup>

Number of animals	USDA quality grade <sup>b</sup>	Mean carcass fat, %	Mean empty body fat (EBF), % <sup>c</sup>	EBF SEM	Increment in EBF <sup>d</sup>
45	3.5	23.55	21.13 <sup>a</sup>	0.63	—
470	4.5	28.98	26.15 <sup>a</sup>	0.19	5.02
461	5.5	31.64	28.61 <sup>a*</sup>	0.20	2.46
206	6.5	33.02	29.88 <sup>a*</sup>	0.29	1.27
90	7.5	34.23	31.00 <sup>a*</sup>	0.44	1.12
51	8.5	35.24	31.94 <sup>a*</sup>	0.59	0.94
32	9.5	35.80	32.45 <sup>a*</sup>	0.74	0.51

<sup>a</sup>Data from nine studies (Crickenberger, 1977; Danner, 1978; Harpster, 1978; Woody, 1978; Lomas, 1979; Nour, 1992; Perry et al., 1991; Perry and Fox, 1997; and Guiroy, 2001). Values within a row are means for that grade.

<sup>b</sup>Standard = 3 to 4, Select = 4 to 5, low-Choice = 5 to 6, mid-Choice = 6 to 7, high-Choice = 7 to 8, low-Prime = 8 to 9, and mid-Prime = 9 to 10.

<sup>c</sup>Within column, means without a common superscript letter (u, v, w, x, and y) differ ( $P < 0.05$ ).

<sup>d</sup>Percentage units increase in EBF from previous quality grade.

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**Empty Body Fat (EBF)**

Take the weight of the live animal  
 Subtract “gut fill” (contents of digestive tract) =  
 adjusted total live weight  
 Weigh total fat content of live animal and divide  
 by adjusted total live weight = % EBF; or....

$(AVG\ YG + 1.7) / .152 = \%EBF$   
 Target: 28.5  
 EBF of NFL lineman?

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**slaughter; ADG, F/E, estrus suppression**

**Contemporary trials (TX, Canada)**  
**MGA vs. non-MGA (all implanted)**

- +19 lbs increased HCW
- +29 lbs increased live weight
- +12% points increased Choice & Prime
- 2.5% fewer dark cutters
- + 3% improved feed efficiency
- slight increase in YG 3 carcasses

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**Synovex implants**

Synovex C; 7 mg E; suckling calves initial feedlot. S & H  
 Synovex H: 14 mg E; pasture/feedlot heifers  
 Synovex S: 14 mg E; pasture/feedlot steers  
 Synovex Choice: 10 mg E, 100 mg TBA. Feedlot S & H  
 Synovex Plus: 20 mg E, 200 mg TBA. Feedlot S & H  
 Two new implants.....

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## Description of Synovex® ONE Implants

### Synovex Plus® Steer & Heifer

- 8 pellets @ 200 mg TBA / 28 mg EB

### Synovex® ONE Feedlot Steer & Heifer

- 8 pellets @ 200 mg TBA / 28 mg EB

### Synovex® ONE Grass Steer & Heifer

- 6 pellets @ 150 mg TBA / 21 mg EB

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## October 9, 2014 ... CVM approval

### SYNOVEX® ONE Feedlot

For increased rate of weight gain and improved feed efficiency for up to 200 days in steers and heifers fed in confinement for slaughter

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## Synovex® One Pellets

Patented coating technology

- Solution of Aqua coat ECD, PEG and water is sprayed over Synovex Plus tablets in a coating machine. Pellets cured in a tray dryer @ 50°C, placed in bulk packaging.
- Provides 200 day release for each pellet vs 100-120 days for non-coated

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## Synovex One Feedlot

### REGISTRATION STUDIES



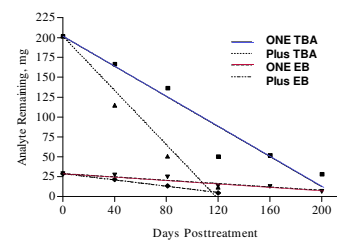
## Synovex® ONE Feedlot – Explant Study

- CVM required a study to show that TBA/EB ratio in Synovex® One Feedlot remains essentially the same over 200 days as Synovex Plus® over 120 days
- Design: 30 steers implanted on Day 0 with Synovex Plus in one ear and Synovex One Feedlot in contralateral ear
- Implants and tissue surrounding implant site recovered from 6 steers on Days 40, 81, 120, 160, and 200
- Assayed for TBA and EB using validated methods

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## Synovex® ONE Feedlot Implants – Explant study



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## Synovex® One Feedlot Implants – Explant Study

Relationship of Slopes			
Analyte	Synovex® One Feedlot	Synovex Plus®	Ratio
TBA	-0.9466	-1.7073	0.55
EB	-0.1049	-0.1980	0.53
TBA/EB	9.02	8.62	

TBA and EB from Synovex® One Feedlot depletes ~ half the rate compared to Synovex Plus® (0.55 vs 0.53, respectively)

Based on depletion slopes, ratios of the two components over the release period of the two implants are essentially the same (9.0 for 200 days for Synovex One Feedlot and 8.6 for 120 days for Synovex Plus)

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## JOURNAL OF ANIMAL SCIENCE

Synovex Plus implants coated with a polymeric, porous film improve performance of beef steers and heifers fed in confinement for up to 200 days  
R. M. Caste, D. T. Bechtol, J. S. Drouillard, J. D. Edmonds, M. Edmonds, B. D. Hunsaker, L. A. Kraft, T. E. Lawrence, S. Breebaker and A. R. Waite

J. ANIM. SCI. 2012, 90:5056-5066.  
doi: 10.2527/jas.2012-5091 originally published online October 16, 2012

The online version of this article, along with updated information and services, is located on the World Wide Web at:  
<http://www.journalofanimalscience.org/content/90/13/5056>

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## CVM required multi-site Dose Confirmation feedlot trials

- Evaluate feedlot performance up to 200d
- Pivotal parameters
  - Overall ADG and Feed Efficiency
- Steers (4 sites) and heifers (4 sites)
- Cattle housed small pens (8 – 10 hd/pen)
- 2 treatments
  - Sham-implanted negative control
  - 8 pellet Synovex® One Feedlot (28 mg EB/200 mg TBA)

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## Dose Confirmation - Steer and Heifer Trial Sites

Study Number	Site – Investigator	Duration of Study	
		Steer	Heifer
0738-B-US-04-07 0738-B-US-08-07	Parma, Idaho Dr. Jenifer Edmonds	201	200
0738-B-US-05-07 0738-B-US-09-07	Canyon, Texas Dr. David Bechtol	190	191
0738-B-US-06-07 0738-B-US-10-07	Manhattan, Kansas Dr. James Drouillard	202	201
0738-B-US-07-07 0738-B-US-11-07	Wellington, Colorado Dr. Breck Hunsaker	199	199

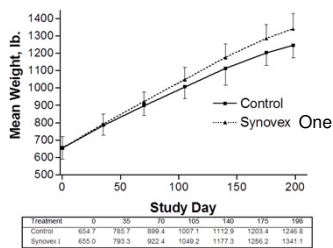
Mean = 198 days

ID, TX, CO trials began in 3 wk. period mid-December 2007  
KS trials began mid-April 2008

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## Dose Confirmation in Feedlot Cattle – Steers



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## Dose Confirmation in Feedlot Cattle – Steers

Parameter	Synovex® One Feedlot	Sham Implant	SEM	P value	% <sup>1</sup>
No. of pens	36	36			
Average daily gain, lb/day	3.45	3.00	0.064	0.002	15
Dry matter intake, lb/day	19.34	18.48	0.412	< 0.001	4.7
Feed efficiency (ADG/DMI)	0.179	0.163	0.004	0.003	9.8
Hot carcass weight, lb	822.3	764.5	21.3	0.005	7.6
Kidney, pelvic, heart fat, %	1.90	1.93	0.022	0.194	
Ribeye area, in <sup>2</sup>	13.48	12.57	0.153	< 0.001	
Backfat thickness, in	0.55	0.54	0.021	0.310	

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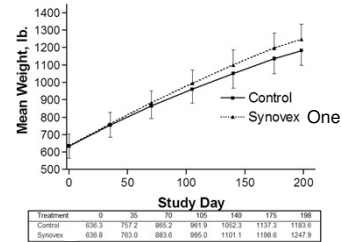
## Dose Confirmation in Feedlot Cattle – Steers

Parameter	Synovex® One Feedlot	Sham Implant	SEM	P value
No. of pens	36	36		
Marbling score	433.5	458.7	4.8	< 0.001
Yield grade	3.08	3.11	0.111	0.647
Dressing percent	61.32	61.27	0.284	0.716
USDA quality grade (n)				
≥ Choice	201	243	N/A	< 0.001
< Choice	129	87		
Liver scores (n)				
Normal liver	178	188	N/A	0.228
Abscessed liver	143	124		

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## Dose Confirmation in Feedlot Cattle – Heifers



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## Dose Confirmation in Feedlot Cattle – Heifers

Parameter	Synovex® One Feedlot	Sham Implant	SEM	P value	% ↑
No. of pens	36	36			
Average daily gain, lb/day	3.09	2.76	0.046	0.003	12
Dry matter intake, lb/day	18.40	17.60	0.411	< 0.001	4.5
Feed efficiency (ADG/DMI)	0.168	0.157	0.002	< 0.001	7
Hot carcass weight, lb	770.5	725.1	23.3	0.0041	6.3
Kidney, pelvic, heart fat, %	1.91	1.86	0.035	0.176	
Ribeye area, in <sup>2</sup>	14.00	13.11	0.198	< 0.001	
Backfat thickness, in	0.60	0.58	0.033	0.417	

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## Dose Confirmation in Feedlot Cattle – Heifers

Parameter	Synovex® One Feedlot	Sham Implant	SEM	P value
No. of pens	36	36		
Marbling score	450.8	483.9	13.1	0.031
Yield grade	2.82	2.89	0.108	0.261
Dressing percent	61.63	61.21	0.182	0.004
USDA quality grade (n)				
≥ Choice	228	262	N/A	0.006
< Choice	102	71		
Liver scores (n)				
Normal liver	192	166	N/A	0.036
Abscessed liver	122	149		

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## Synovex® ONE Feedlot significantly improved ADG and FG

4 trial sites, 8-10 hd/pen, steers and heifers, ~200 d

Steer - Parameter	Synovex® ONE	Sham Implant	P value	% ↑
No. Pens	36	36		
Average daily gain, lb/day	3.45	3.00	0.002	15
Feed efficiency (ADG/DMI)	0.179	0.163	0.003	9.8
Hot carcass weight (lb)	822.3	764.5	0.005	7.6

Heifer - Parameter	Synovex® ONE	Sham Implant	P value	% ↑
No. Pens	36	36		
Average daily gain, lb/day	3.09	2.76	0.003	12
Feed efficiency (ADG/DMI)	0.168	0.157	< 0.001	7
Hot carcass weight (lb)	770.5	725.1	0.0041	6.3

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**Synovex One Feedlot**  
PHASE 4 – POST APPROVAL STUDIES





## Comparison of the effects of long-acting Synovex One with Revalor-XS and Synovex Plus on growth performance and carcass quality in steers<sup>1</sup>

C. L. McLaughlin,<sup>1</sup> D. T. Bechtol,<sup>1</sup> T. E. Lawrence,<sup>2</sup> K. Lechtenberg,<sup>3</sup> W. M. Mosley,<sup>3</sup>  
 F. L. Proud,<sup>3</sup> P. P. KAS, B. H. Vainimattila,<sup>3</sup> and A. R. Walter<sup>3</sup>  
<sup>1</sup>Clinical Development, Pfizer Animal Health, Kalamazoo, MI 49007; <sup>2</sup>Agri Research Center Inc., Canyon, TX 79010; <sup>3</sup>Beef Carcass Research Center, West Texas A&M University, Canyon 79016; <sup>3</sup>Milovet-Veterinary Services, Oakland, NE 68045; and <sup>3</sup>Pfizer Animal Health, Louisburg, KS 66053

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## Synovex® ONE Feedlot Phase 4 – Post Approval Studies

- Two sites & two durations
  - Oakland, NE @ 160/161 days
  - Canyon, TX @ 200/201 days
- Steers only, two cattle types
  - 90% black-hided English and Continental
  - English and Continental beef-type (less Angus)

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## Nebraska Objectives and Design

- Objective: To compare the effects of long acting implants vs. Synovex Plus® during a 160 d feeding period
- 3 treatment groups
  - Revalor-XS: 200 mg TBA and 40 mg estradiol
  - Synovex Plus: 200 mg TBA and 20 mg estradiol (28 mg estradiol benzoate)
  - Synovex® ONE: 200 mg TBA and 20 mg estradiol (28 mg estradiol benzoate)

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## Nebraska Measurements

- Body weights incremental performance measured:
  - d 0 – 49
  - d 49 – 98
  - d 98 – 160/161
  - d 0 – 160/161
- Carcass measurements (Dr. Lawrence, WTAMU)
  - Standard carcass characteristics
  - Warner-Bratzler shear force (3 animals/pen)

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## Nebraska Results – Performance

Item	Treatment Group			SEM	P value
	Rev-XS	Syn-Plus	Syn-One		
<b>ADG, lb/d</b>					
d0 to final	2.87	2.87	2.93	0.08	
d0 to final, adj. <sup>1</sup>	2.89	2.86	2.93	0.08	
<b>DMI, lb/d</b>					
d0 to final	23.9	24.0	23.9	0.27	0.94
<b>G:F</b>					
d0 to final	0.120	0.120	0.123	0.002	0.49
d0 to final, adj. <sup>1</sup>	0.121	0.119	0.123	0.003	0.47
<b>F:G<sup>2</sup></b>					
d0 to final	8.33	8.33	8.13		
d0 to final, adj. <sup>1</sup>	8.26	8.40	8.13		

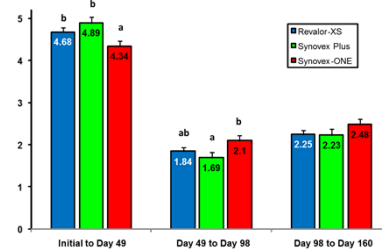
<sup>1</sup> Adjusted for hot carcass weight

<sup>2</sup> Presented as the reciprocal of the ADG / DMI least squares means, data not analyzed statistically

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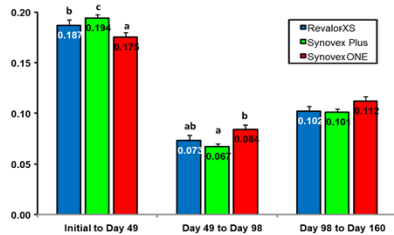
## Nebraska Results – Interval ADG



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## Nebraska Results – Gain Efficiency



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## Nebraska Results – Carcass Characteristics

Item	Treatment Group			SEM	P value
	Rev-XS	Syn-Plus	Syn-ONE		
HCW, lb.....	832	828	836	8.3	0.7493
DP, %	63.5	63.2	63.4	0.30	0.7024
REA, sq in	13.92	13.77	13.79	0.22	0.5889
YG	2.87	2.89	2.94	0.09	0.8575
14-d WBSF <sup>1</sup> , kg	2.76	2.77	2.74	0.10	0.9603
KPH fat, %	1.85	1.84	1.90	0.04	0.5318
Fat thickness, in	0.52	0.52	0.52	0.02	0.9947
Marb. <sup>2</sup>	521	507	551	15.8	0.1519
QG / % $\geq$ Choice	89.6	92.5	96.1	----	----

<sup>1</sup> 14-d WBSF = Warner-Bratzler shear force after 14-days of aging

<sup>2</sup> Marbling scores of 300 to 399 = slight marbling, 400 to 499 = small marbling, 500 to 599 = modest marbling

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## Nebraska Summary and Conclusion

- No difference in growth over 160 d
- Long acting implants need longer duration to elicit differences
- No differences between Rev XS and ONE
  - Live performance
  - Carcass characteristics

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## Texas Objectives and Design

- *Objective: To compare the effects of long acting implants vs. Synovex Plus<sup>®</sup> during a 200 d feeding period*
- 3 treatment groups
  - Revalor-XS: 200 mg TBA and 40 mg estradiol
  - Synovex Plus: 200 mg TBA and 20 mg estradiol (28 mg estradiol benzoate)
  - Synovex<sup>®</sup> ONE: 200 mg TBA and 20 mg estradiol (28 mg estradiol benzoate)

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## Texas Measurements

- Body weights incremental performance measured:
  - d 0 – 75
  - d 75 – 140
  - d 140 – 200
  - d 0 – 200
- Carcass measurements (Dr. Lawrence, WTAMU)
  - Standard carcass characteristics
  - Warner-Bratzler shear force (3 animals/pen)

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## Texas Results – Overall Performance

Item	Treatment Group			SEM	P value
	Rev-XS	Syn-Plus	Syn-ONE		
ADG, lb/d					
d0 to final	2.95	2.85	2.95	0.05	
d0 to final, adj. <sup>1,2</sup>	2.94	2.86	2.97	0.05	
DMI <sup>4</sup> , lb/d					
d0 to final	18.4	18.0	18.3	0.33	0.6814
ADG / DMI					
d0 to final	0.161	0.159	0.161	0.002	0.5448
d0 to final, adj. <sup>1</sup>	0.160	0.159	0.162	0.002	0.5212
DMI / ADG <sup>3</sup>					
d0 to final	6.21	6.29	6.21		
d0 to final, adj. <sup>1</sup>	6.25	6.29	6.17		

<sup>1</sup> Adjusted for hot carcass weight

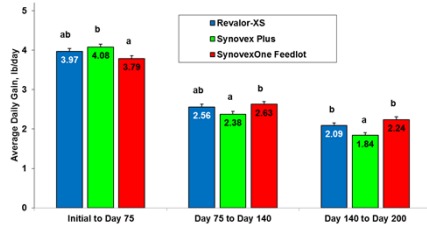
<sup>2</sup> Treatment by day of study P = 0.0035

<sup>3</sup> Presented as the reciprocal of the ADG / DMI least squares means, data not analyzed statistically

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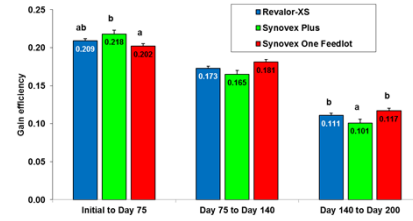
## Texas Results – Interval ADG



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## Texas Results – Interval Gain Efficiency



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## Texas Results – Carcass Characteristics

Item	Treatment Group			SEM	P - value
	Rev-XS	Syn-Plus	Syn-ONE		
HCW, lb	747	736	750	6.6	0.3108
DP, %	64.0	64.1	64.2	0.23	0.9097
REA, sq in	12.86	12.49	12.70	0.13	0.1734
Yield grade	2.94	2.98	3.02	0.12	0.8310
14-d WBSF, kg <sup>1</sup>	3.22	3.24	3.45	0.17	0.5940
KPH fat, %	1.78	1.84	1.84	0.03	0.2664
Fat thickness, in	0.54	0.52	0.55	0.03	0.8021
Marb. score <sup>2</sup>	418	413	426	11.3	0.4503
QG / % ≥Choice	63.2	58.6	59.1	---	---

<sup>1</sup> 14-d WBSF = Warner-Bratzler shear force after 14-days of aging

<sup>2</sup> Marbling scores of 300 to 399 = slight marbling, 400 to 499 = small marbling, 500 to 599 = modest marbling.

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## Phase 4 - Summary

Nebraska ~160 days	Rev-XS	Synovex Plus	Synovex ONE	P value	% ↑ ONE v XS
Average daily gain, lb/day	2.87	2.87	2.93	---	2.1
Feed efficiency (ADG/DMI)	0.120	0.120	0.123	0.49	2.5
Hot carcass weight (lb)	832	828	836	0.75	0.5
QG, % Prime/Choice	89.6	92.6	96.5	>0.28	6.9
Texas ~200 days	Rev-XS	Synovex Plus	Synovex ONE	P value	% ↑ ONE v XS
Average daily gain, lb/day	2.95	2.85	2.95	---	0
Feed efficiency (ADG/DMI)	0.161	0.159	0.161	0.54	0
Hot carcass weight (lb)	747	736	750	0.31	0.7
QG, % Prime/Choice	63.2	58.6	59.1	>0.64	-4.1

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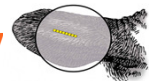
## Texas Summary and Conclusion

- Growth performance of Synovex One Feedlot did not differ from Revalor-XS or Synovex Plus
  - Pattern of response differs
- No differences in Carcass characteristics of Synovex ONE vs. Revalor-XS or Synovex Plus

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## Synovex® ONE Feedlot Summary



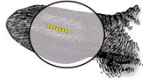
- Both long acting implants improved performance out to 200 DOF
- Carcass characteristics of Synovex ONE and Revalor-XS were similar at 160 and 200 DOF

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## Synovex® ONE Feedlot Summary

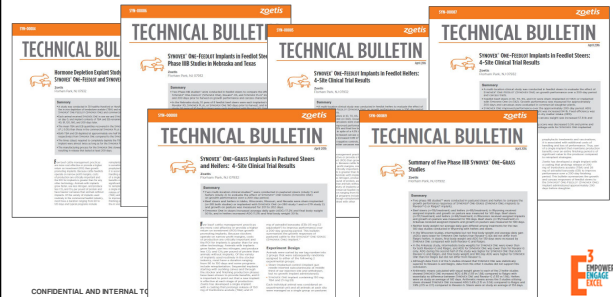


- Synovex Plus – very effective implant ... especially  $\leq 140$  DOF
- Synovex ONE performed as good or better than Revalor-XS

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## SYNOVEX ONE TECHNICAL BULLETINS



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## SYNOVEX ONE Online

- [GrowWithSYNOVEX.com](http://GrowWithSYNOVEX.com) introduces SYNOVEX ONE with the latest resources, technical bulletins, implant finder tool and fully updated messaging



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## SYNOVEX Portfolio Collateral

### Available Collateral

- Portfolio Detailer
- Choice (Heifer) Detailer
- Suckling Calf & Stocker Brochure
- Training Videos (5)
- Lincoln Plant Video



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## Dose Confirmation in Pasture Cattle

Study Number	Site – Investigator	Duration of Study	
		Steers	Heifers
0738-B-US-12-08	Parma, Idaho	202	202
0738-B-US-16-08	Dr. Jenifer Edmonds		
0738-B-US-13-08	Readstown, Wisconsin	202	202
0738-B-US-17-08	Dr. Larry Smith		
0738-B-US-14-08	Billings, Missouri		
0738-B-US-18-08	Fayetteville, Arkansas Dr. Thomas Yazwinski	201	202
0738-B-US-15-08	Wells, Nevada		
0738-B-US-19-08	Dr. Breck Hunsaker	202	202

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### Dose Confirmation in Pasture Cattle

- Bodyweights at Days 0, 42, 84, 126, 168, and at termination
- Grazed pastures with no supplemental protein or energy concentrates
- Supplemental hay forage was provided and quantified during periods of limited pasture forage
- Concurrent treatments
- Daily animal health observations

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### Dose Confirmation in Pasture Heifers

Item	Sham Control	Synovex® One Grass
No. finishing study	279	279
Initial weight, lb	506.3	504.9
Final weight, lb	791.9 <sup>b</sup>	821.6 <sup>a</sup>
203 day ADG lb/day	1.41 <sup>b</sup>	1.57 <sup>a</sup>
% ADG improvement	–	11.3%
Day 42 implants missing	NA	5
No. of site reactions – Day 42	4	3

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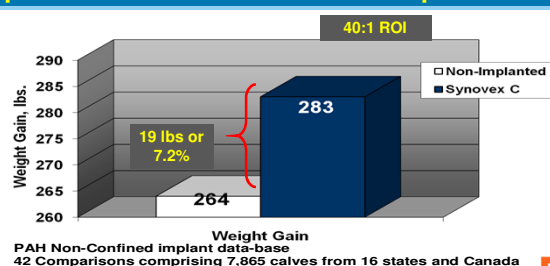
### Dose Confirmation in Pasture Steers

Item	Sham Control	Synovex® One Grass
No. of finishing study	278	277
Initial weight, lb	517.9	518.5
Final weight, lb	811.7 <sup>b</sup>	862.3 <sup>a</sup>
203 day ADG lb/day	1.45 <sup>b</sup>	1.70 <sup>a</sup>
% ADG improvement	–	17.2%
Day 42 implants missing	NA	8
No. reactions – Day 42	7	7

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### Suckling Phase Gain of SYNOVEX C Implanted Calves: < 20% of calf crop



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### Suckling Calf Implant Effects on Future Performance and Carcass Merit – Steers/Heifers

Implanted as suckling calves	Steers		Heifers	
	No	Yes	No	Yes
Post weaning ADG lb.	3.06	3.07	2.77	2.86
Final Weight, lbs.	1,163	1,183	1,069	1,116
Fat Thickness, in	.42	.46	.49	.49
Quality Grade <sup>a</sup>	18.6	18.6	18.9	18.6

<sup>a</sup>18 = Low Select, 19 = Low Choice  
Four trial summary from Mader, 1992

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### Subsequent performance, suckling calf implants (SDSU 2015)

Syn C vs. Controls: + 24 lbs @ wean  
 In mature cows: + 40 lbs  
 Subsequent performance:  
 End of backgrounding: + 20 lbs  
 End of finishing period: + 25 lbs  
 No difference in feed efficiency/QG

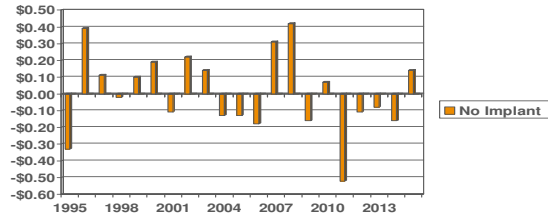
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### Subsequent Feedyard Performance after Pasture Implant - Yearlings

Reference	Pasture Implant	
	Control	Synovex-S
Brazle, 1996	3.86	3.86
Brazle, 1996	3.69	3.78
Brandt, 1995	3.27	3.22
Brandt, 1995	3.56	3.65
Grigsby, 1988	2.61	2.78
Mader, 1992	3.06	3.07
Rush, 1989	2.89/7.70	2.84/7.70
<b>Overall</b>	<b>3.28</b>	<b>3.31</b>

### Price Advantage for Not Implanting Superior Livestock, 1995-2015



Source: Modified from King, Seeger, et al JAVMA, 2006, 2011

### Implant Summary

- ▶ Results indicate that implanting has no effect on sale price.
  - ▶ Only 2/21 years (1995, 2011) was there a statistical difference ( $p \leq 0.05$ )
    - ▶ In both of these years implanting calves actually had a positive effect on sale price
- ▶ Percentage of lots implanted has declined over the years studied



Pfizer Animal Health

## Technical Bulletin

### Effect of SYNOVEX® C on Heifer Conception Rate

Effect of SYNOVEX® C Implants on Yearling Heifer Pregnancy Rate When Administered at 2-4 Months of Age

Location	Reference	Age at Implant	Length of Breeding Period (days)	Yearling Pregnancy Rate %		
				Controls	Implanted	Difference
IN	Lawrence et al. (1985)	2-4 mo	92	96	94	-2
CAN	Day (1990)	2 mo	70	93	95	+2
CAN	Rutler (1990)	2 mo	70	97	91	-6
MO	Whittier et al. (1991)	2-4 mo	45	81	77	-4
TX	Carpenter & Sigoff (1991)	2-3 mo	90	77	79	+2
KS	Larson et al. (1992)	2 mo	60	89	85	-4
CO	Rusk et al. (1992)	3 mo	95	99	90	-9
NE	Hancock et al. (1992)	2 mo	63	93	92	-1
	(Two Trial Summary)					
KS	Simms (1994)	2-4 mo	45	87	89	+2
WY	Hoon et al. (1994)	2-3 mo	35	72	76	+3
<b>AVERAGE</b>			<b>67</b>	<b>88.4</b>	<b>86.6</b>	<b>-1.8</b>

