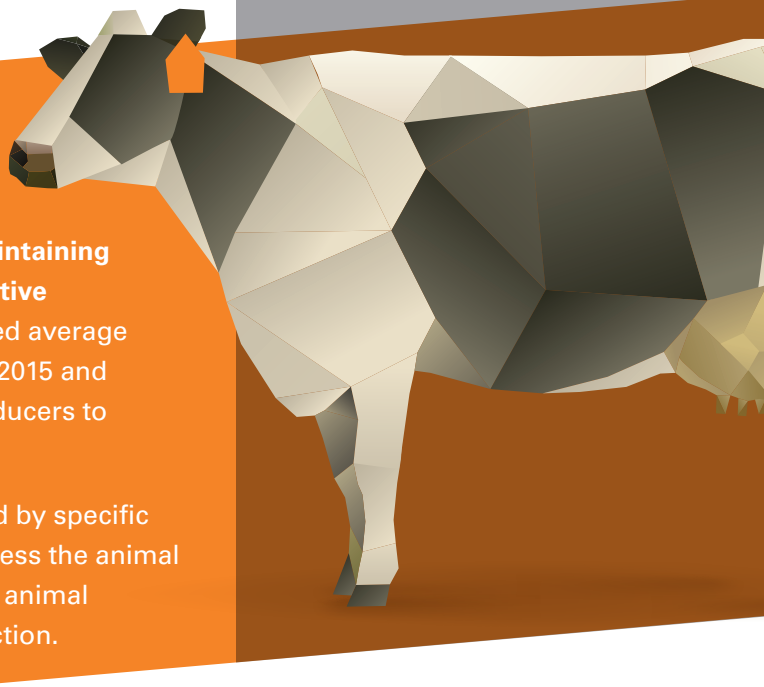
MILK RESPONSE

KemTRACE® CHROMIUM

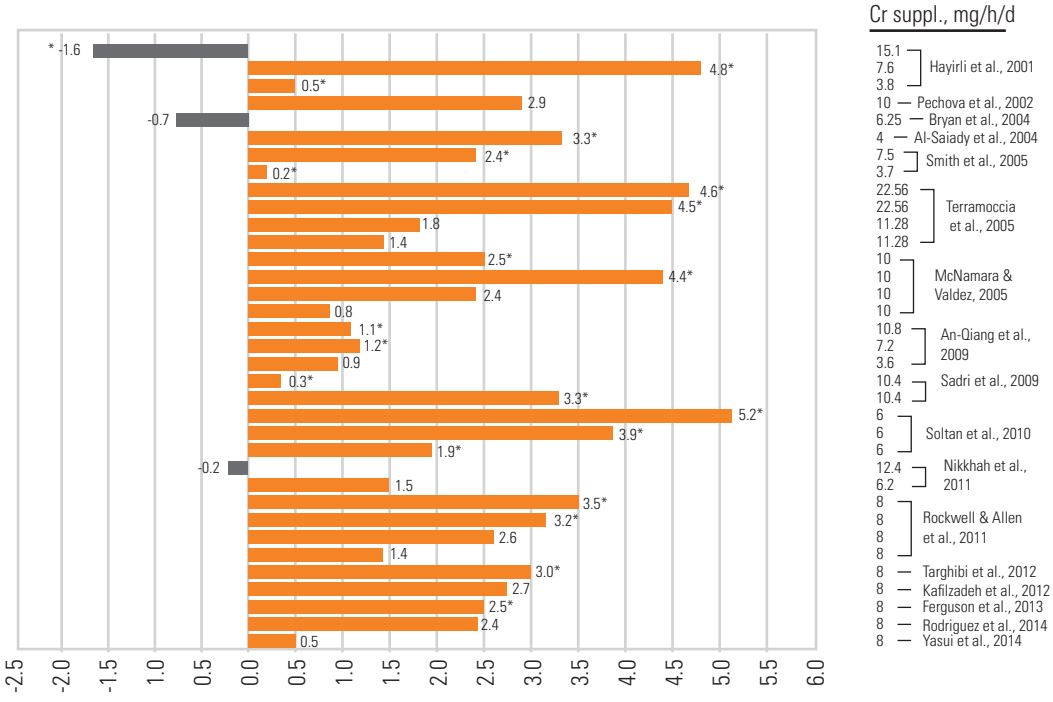


The research with chromium (Cr) in dairy cattle since the turn of the century has shown Cr supplementation is beneficial for improving milk yield in transition cows, maintaining milk yield in heat-stressed cows and enhancing reproductive performance in dairy cows. The calculation of the weighted average milk response from all the Cr research between 2000 and 2015 and the sensitivity analysis at differing milk prices, allows producers to understand the impact Cr can have on herd profitability.

The utilization of glucose by the animal's body is governed by specific hierarchical processes and is dependent on the type of stress the animal is facing. Optimized glucose utilization can result in better animal maintenance, production, immunity, growth and reproduction.

REVIEW OF THE MILK YIELD RESPONSE TO CHROMIUM SUPPLEMENTATION IN LACTATING COWS

Figure 1 demonstrates the effects of supplementing Cr on milk production. Seventeen published articles between 2000 and 2015 from refereed journals focusing on dairy cows were used to generate the figure. The graph depicts the milk yield response to Cr supplementation within a university controlled study in comparison to the control (i.e. non-Cr supplemented cows). This summary includes different chromium sources fed at different levels and is not limited to KemTRACE® Chromium.



* Denotes significance or trend for difference from control within study.

Figure 1. Effect of chromium supplementation in lactating dairy cow diets on response to daily milk yield, kg/h/d.[1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17]

CHROMIUM SENSITIVITY ANALYSIS

A statistical weighted average of the refereed journal publications shown in Figure 1 was calculated. The weighted average response in daily milk yield calculated out at 1.56 ltr/head/day. Table 1 shows a sensitivity analysis based on differing milk prices ranging from $64.10/hectoliter (hl) to $71.30/hl assuming cows achieve anywhere from 20% to 100% of the weighted average milk response.

Table 1. KemTRACE Chromium Price Sensitivity Analysis

Milk Price/ltr.	Weighted Average Milk Response (1.56 ltr)	90% of Weighted Average	80% of Weighted Average	70% of Weighted Average	60% of Weighted Average	50% of Weighted Average	40% of Weighted Average	30% of Weighted Average	20% of Weighted Average
$0.641	$0.862	$0.761	$0.661	$0.561	$0.461	$0.361	$0.261	$0.160	$0.060
$0.651	$0.877	$0.775	$0.674	$0.572	$0.470	$0.379	$0.267	$0.165	$0.063
$0.662	$0.894	$0.791	$0.688	$0.584	$0.481	$0.377	$0.274	$0.170	$0.067
$0.672	$0.910	$0.805	$0.700	$0.595	$0.490	$0.385	$0.280	$0.175	$0.070
$0.682	$0.926	$0.819	$0.713	$0.606	$0.499	$0.393	$0.286	$0.180	$0.073
$0.692	$0.941	$0.833	$0.725	$0.617	$0.509	$0.401	$0.293	$0.184	$0.076
$0.703	$0.958	$0.849	$0.739	$0.629	$0.519	$0.409	$0.299	$0.190	$0.080
$0.713	$0.974	$0.863	$0.751	$0.640	$0.529	$0.417	$0.306	$0.194	$0.083

* Average cost of KemTRACE Chromium supplementation = $0.14/head/day

KEMIN®

KemTRACE® CHROMIUM
Essential to you and your operation.

1. Yasui et al., 2014.
2. Vargas-Rodriguez et al., 2014.
3. J. Ferguson et al., 2013.
4. Kafilzadeh et al., 2012.
5. Targhibi et al., 2012.
6. Rockwell & Allen, et al., 2011.
7. Nikkhah et al., 2011.
8. Soltan et al., 2010.
9. Sadri et al., 2009.
10. An-Qiang et al., 2009.
11. McNamara & Valdez et al., 2005.
12. Terramoccia et al., 2005.
13. Smith et al., 2005.
14. Al-Saidy et al., 2004.
15. Bryan et al., 2004.
16. Pechova et al., 2002.
17. Hayirli et al., 2001.