Evaluation of a Novel Winter Teat Dip Compared to Commercially Available Winter Dips to Enhance Teat Integrity during Winter

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Jessica Schnitzler and Dawn Stendel, undergraduate students; Leo Timms, associate professor of animal science

Summary and Implications

Winter conditions can lead to rapid dehydration and cracking of teat tissue, thus increasing mastitis risks. The objectives of these three winter trials were to compare application of a new novel commercial winter teat dip (1% iodine, 50% glycerine) to three existing commercially available winter teat dips and best management winter milking practices. Overall results for the 3 trials showed similar teat skin and end conditions (except teat skin in trial 5) for the 1% iodine, 50% glycerine dip as compared to 3 commercial winter teat dips. There were significant improvements in teat skin and end conditions over time for all dips, primarily related to weather and increasing temperatures. There were also significant differences in teat skin and end across days within barn with the same dip. Although dips can affect teat health, these figures substantiate that animal stage of lactation, barn or facilities, and environmental exposure (temperature / time exposure) have tremendous bearing on dip effects. None of the treatments were effective in completely alleviating teat end changes due to weather.

Introduction

The teat end or orifice is an important first line of defense in protecting a cow from intramammary infection (IMI). Teat end condition is dynamic; changing based upon exposure to milking machines, chemical damage, environmental or climatological exposure, infectious agents or other trauma. Rapid teat end changes can occur during winter), and to counter such effects, the use of salves and teat dips with extra skin conditioners have been commercialized and promoted as a means of maintaining soft and pliable skin and healthy teat ends. The purpose of this study was to evaluate the effectiveness of a new novel winter teat dip compared to 3 different commercially available winter dips in maintaining teat end integrity during winter months.

Materials and Methods

Three separate postmilking winter teat dip trials (trials 5-7) were conducted simultaneously in different barns at the Iowa State Dairy Farm during January- March 2003. Trained observers evaluated all teats of all lactating cows at the ISU Dairy 3 times/ week, scoring both teat end and teat skin condition (Tables 1 and 2).

All trials used a split udder design where right side teats received the new novel winter dip (1% iodine, 50% glycerin; Triumph, West Agro, Inc.). Left side teats received a commercial winter dip. In trial 5, left teats of 64 cows (east wing (EW) tie stall barn) were dipped with a .5% iodine, 74% conditioner dip (Derma- Kote, Westfalia-Surge). In trial 6, left teats of 48 cows (west wing (WW) tie stall barn) were dipped with a 1.5% heptanoic acid, 78% skin conditioner dip (Artec, Ecolab, Inc.). In trial 7, left teats of 60 cows (free stall (FS) barn) were dipped with a fatty acid germicide, 70% skin conditioner dip (Dermasept, Westfalia Surge). Subclinical and clinical mastitis were also monitored. Cows were milked twice/ day in a single 8 herringbone parlor. Cows were forestripped (3 strips/teat), pre dipped with a .5% iodine dip, and dried with terry cloth prior to milker unit attachment. Automatic milking detachers were set at 2 lb. flow rate and 2 second delay. Although barn types differed, all animals were exposed to direct winter temperatures as a result of up to 1 hour/ milking in an outside holding pen (roof and walls but open), direct parlor exit to an outside lot (south side of parlor so limited wind), and a 4 hour feeding / exercise outdoor time block (tie stall cows).

Results and Discussion

Results for trial 5 are shown in Figures 1 and 2. There was a significant difference in teat skin scores with the new dip (1% iodine, 50% glycerin) showing better teat skin condition. There were no significant differences in teat end scores. There were significant improvements in teat skin and teat end scores over time, likely attributed to weather, but these changes were seen with both dips.

Results for trial 6 are shown in Figures 3 and 4. There were no significant differences between dips in teat skin and teat end scores for all days. There were significant improvements in teat skin and teat end scores over time likely attributed to weather, but these changes were seen with both dips.

Results for trial 7 are shown in Figures 5 and 6. There were no significant differences between dips in teat skin and teat end scores for all days. There were significant improvements in teat skin and teat end scores over time likely attributed to weather, but these changes were seen with both dips.

Figures 7 and 8 show teat skin and teat end scores over time for the 1% iodine, 50% glycerin new product used in trials 5-7 (same farm but different barns – EW, WW, and

FS). There were significant differences in teat skin and teat end condition across barns even though similar dips, milking practices, etc. were used. There were also significant differences in teat skin and end across days within barn. Although dips can effect teat health, these figures substantiate that animal stage of lactation, barn or facilities, and environmental exposure (temperature / time exposure) have tremendous bearing on dip effects.

Overall results for the 3 trials showed similar teat skin and end conditions (except teat skin in trial 5) for the 1% iodine, 50% glycerine dip as compared to 3 commercial winter teat dips. There were significant improvements in teat skin and end conditions over time for all dips, primarily related to weather and increasing temperatures. There were also significant differences in teat skin and end across days within barn with the same dip. Although dips can affect teat health, these figures substantiate that animal stage of lactation, barn or facilities, and environmental exposure (temperature / time exposure) have tremendous bearing on dip effects. None of the treatments were effective in completely alleviating teat end changes due to weather.

Table 1. Teat end scoring system based on degree of hyperkeratosis and whether teat end tissue was cracked or not.

Teat End Scoring system			**Degree of hyperkeratosis or callousing**				
Cracking	none	minor	mild	moderate	severe
No cracking	1	1.5	2	2.5	3
Cracked	---	3.5	4	4.5	5

Table 2. Teat skin scoring system.

		Teat skin scoring system		
1	**2**	**3**	**4**	**5**
Smooth, soft	Evidence of scaling	Evidence of chapping	Chapped, red, cracked	Severe damage/ ulcerative

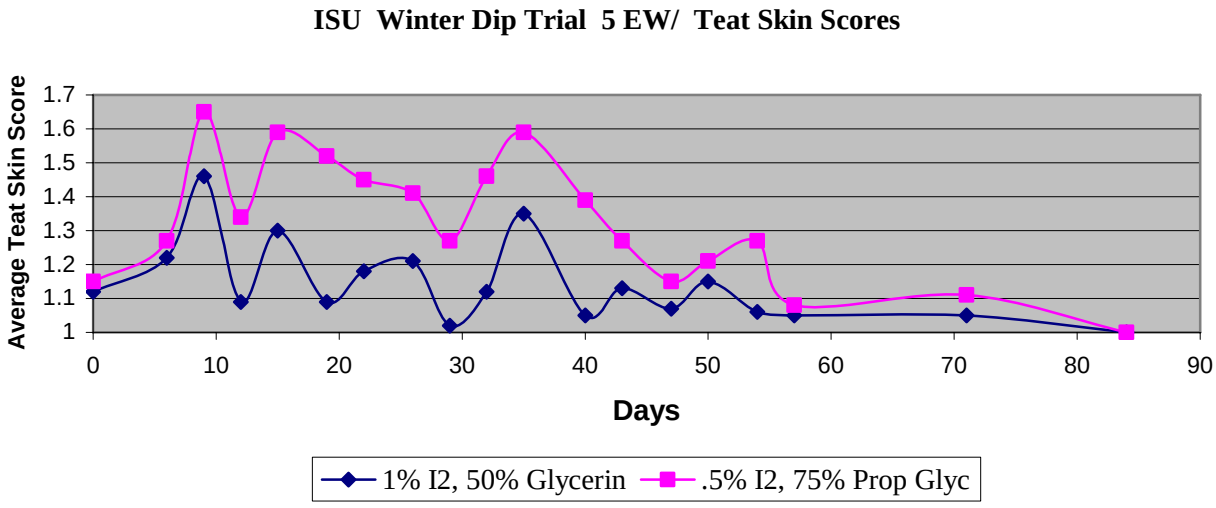

Figure 1. Average daily teat skin scores for teats dipped with novel and commercial winter teat dips (Trial 5).

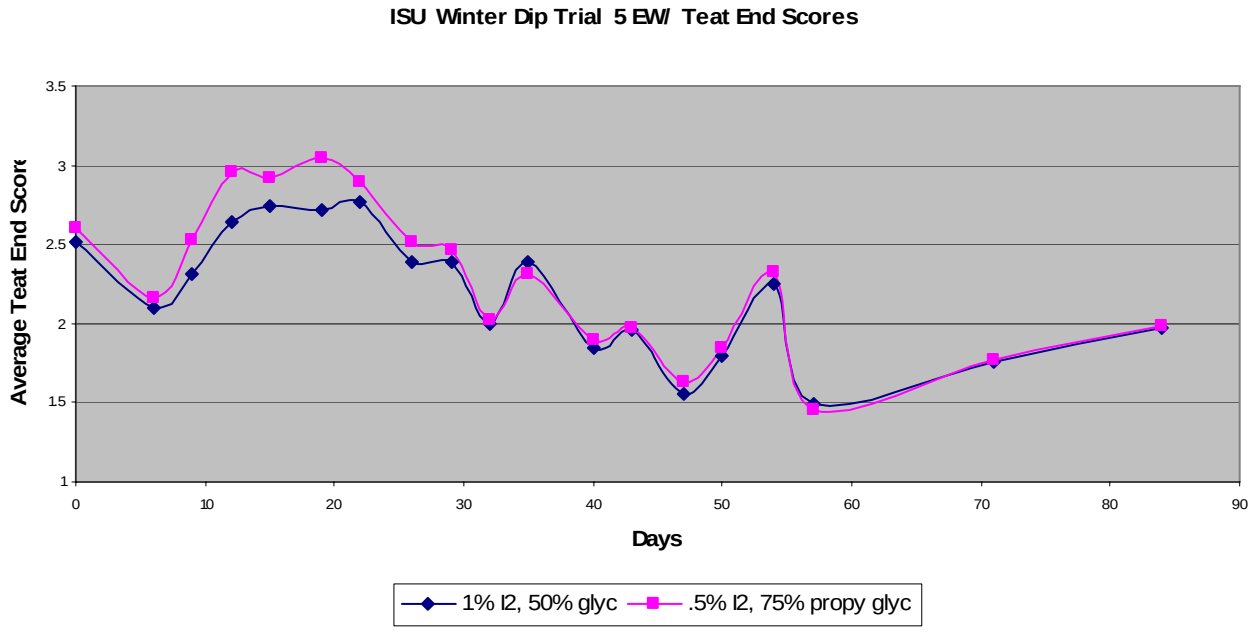

Figure 2. Average daily teat end scores for teats dipped with novel and commercial winter teat dips (Trial 5).

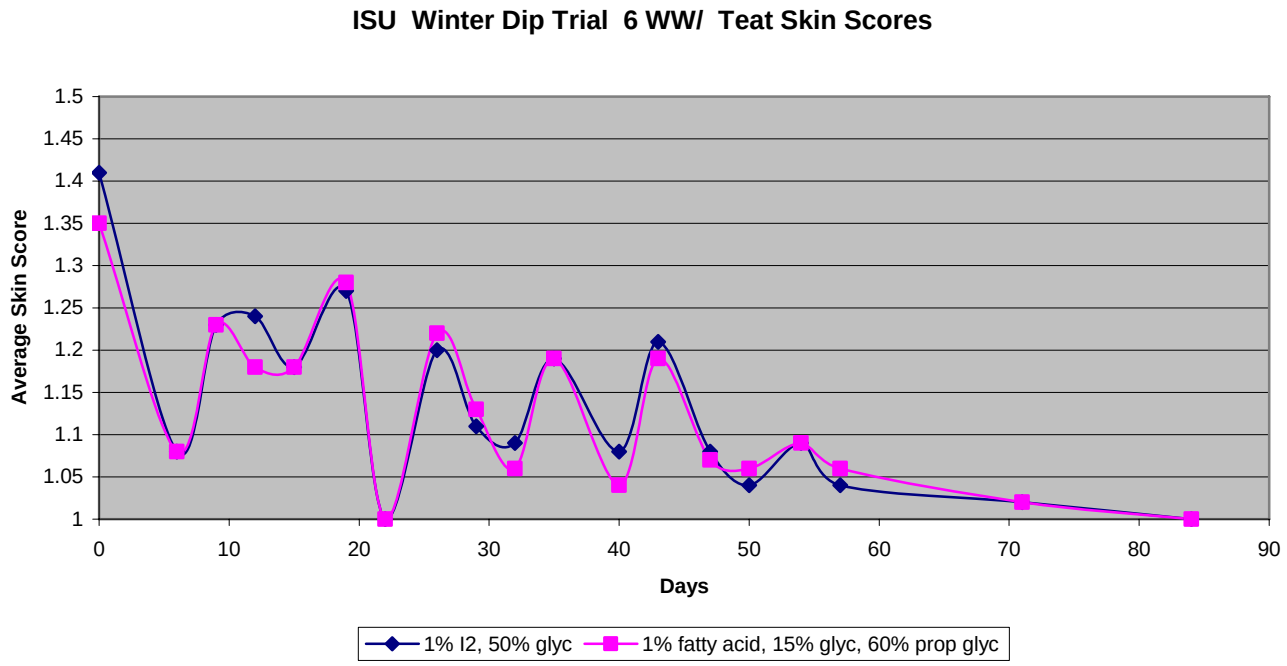

Figure 3. Average daily teat skin scores for teats dipped with novel and commercial winter teat dips (Trial 6).

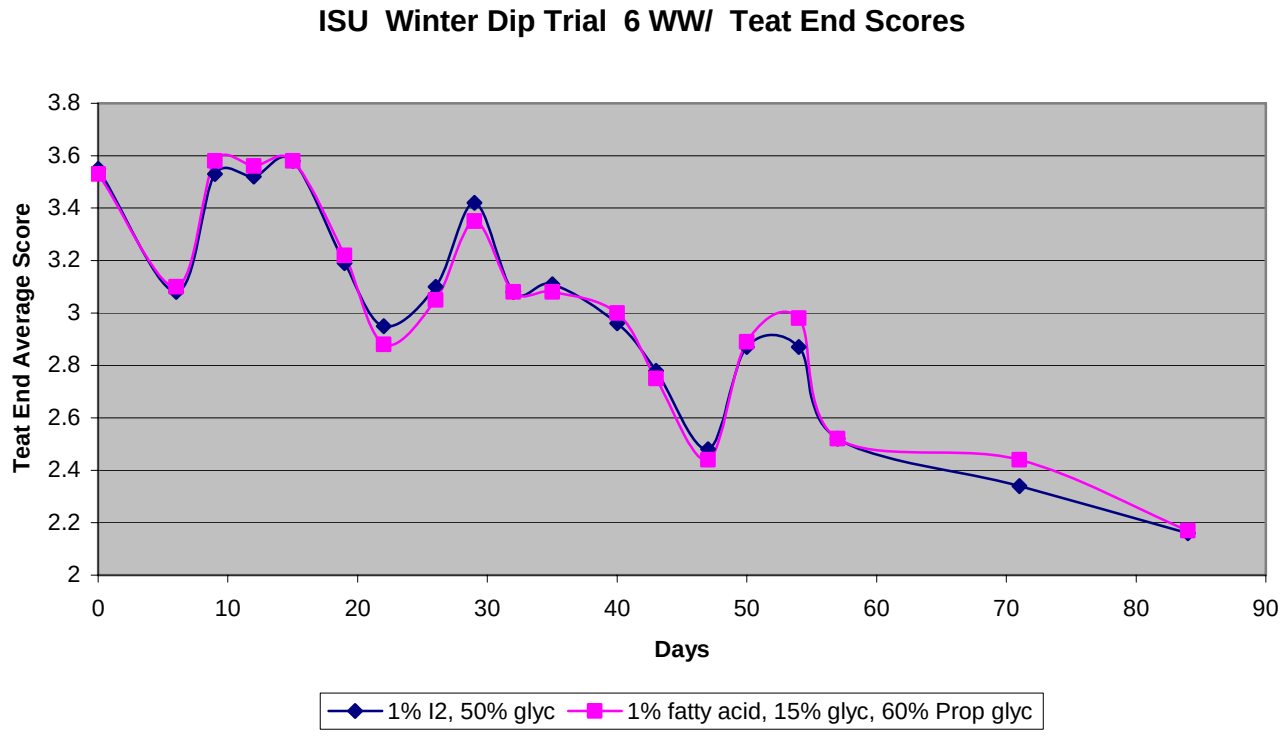

Figure 4. Average daily teat end scores for teats dipped with novel and commercial winter teat dips (Trial 6).

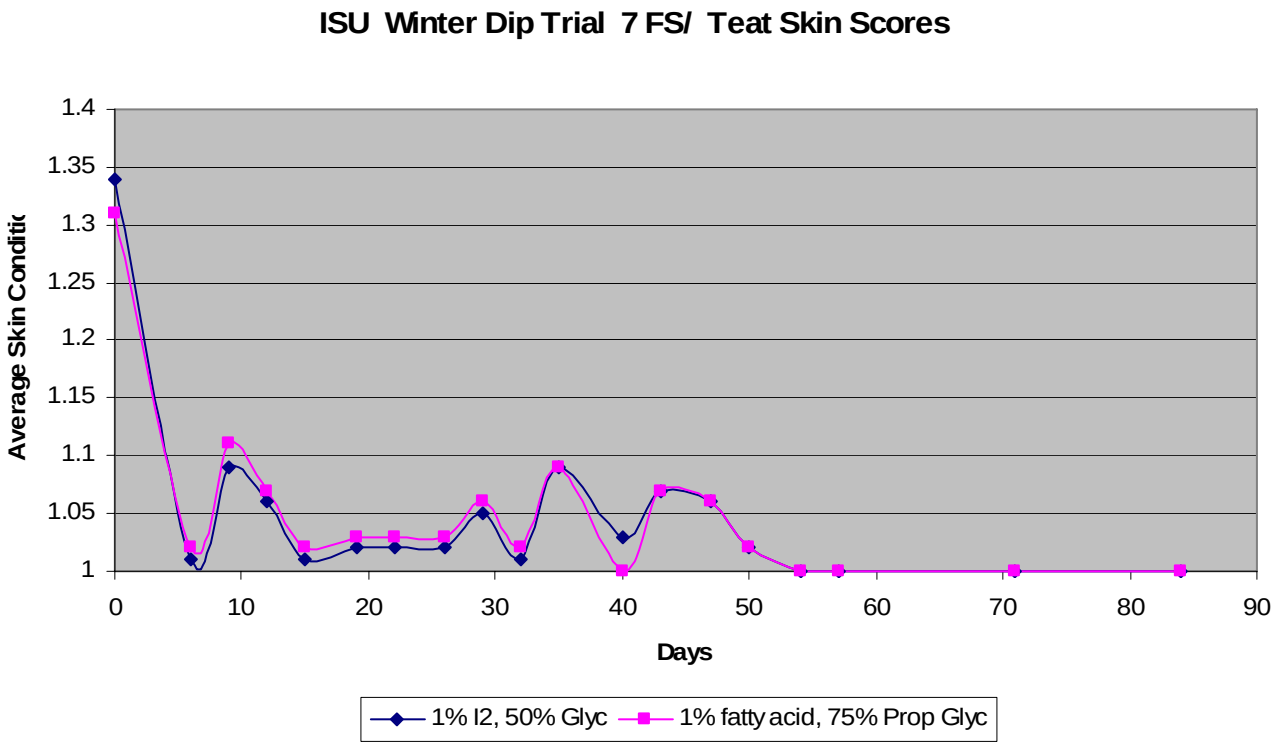

Figure 5. Average daily teat skin scores for teats dipped with novel and commercial winter teat dips (Trial 7).

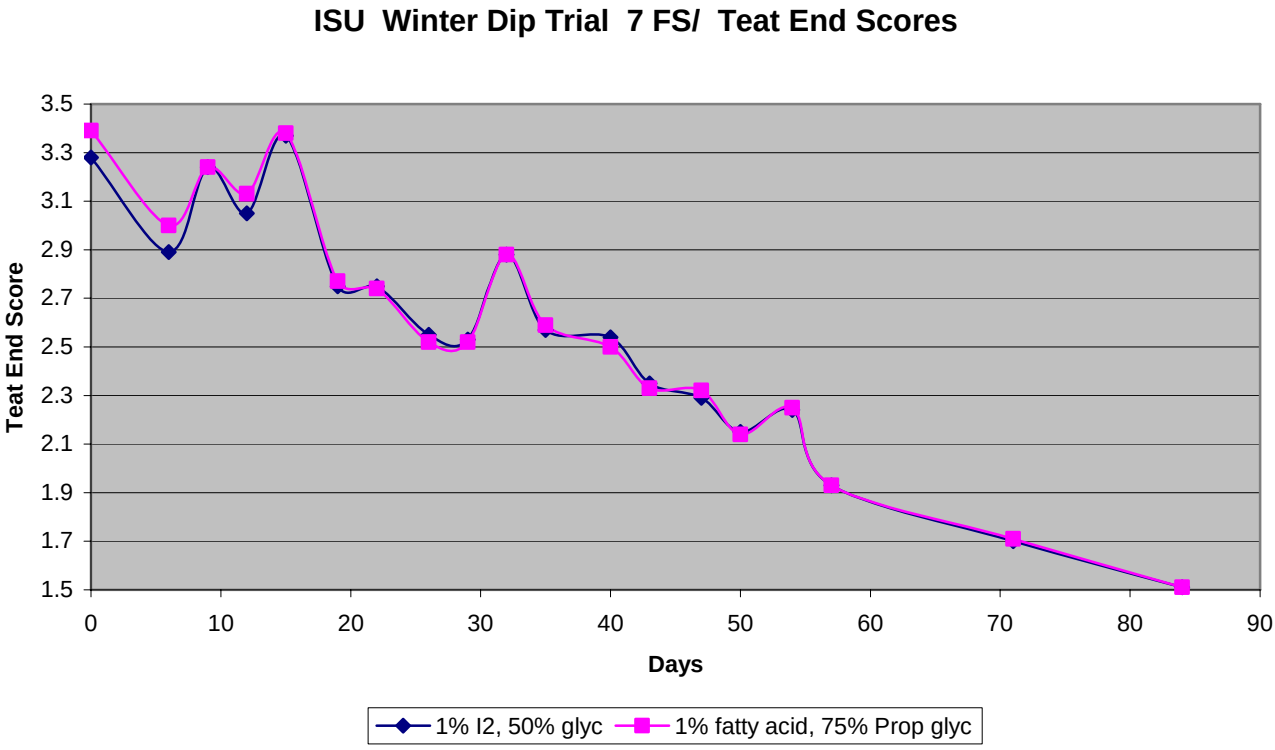

Figure 6. Average daily teat end scores for teats dipped with novel and commercial winter teat dips (Trial 7).

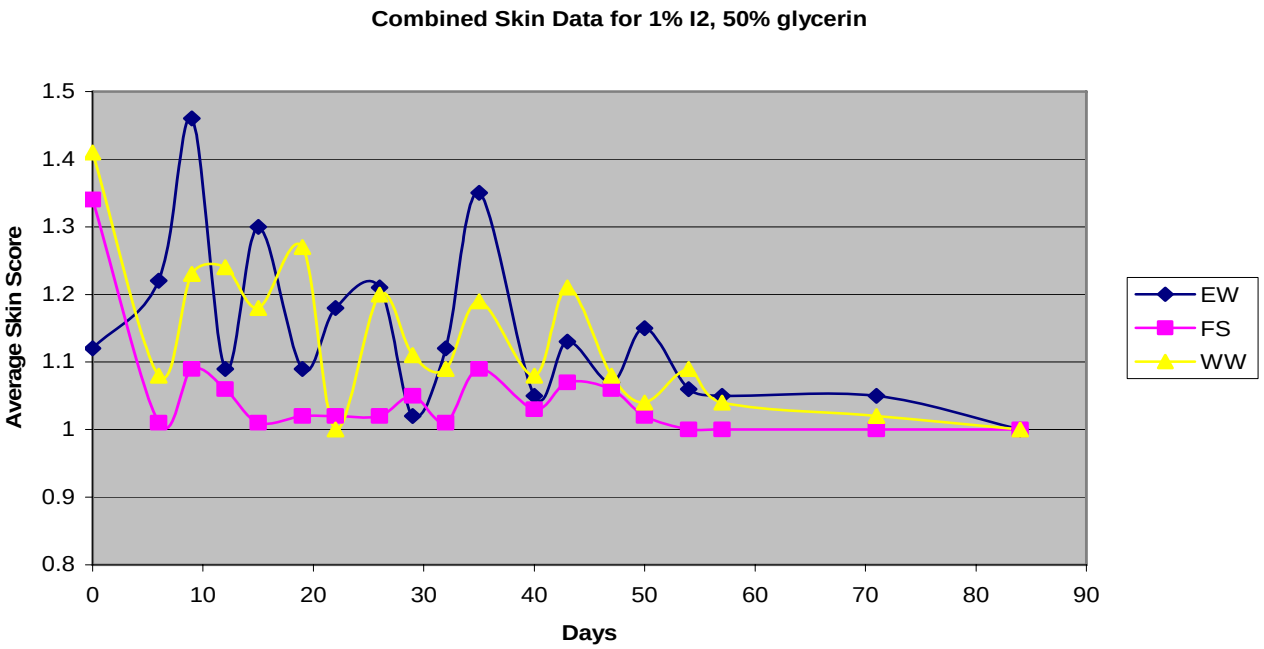

Figure 7. Average teat skin scores across barns (Jan-Apr 2003) : 1% iodine, 50% glycerin dip.

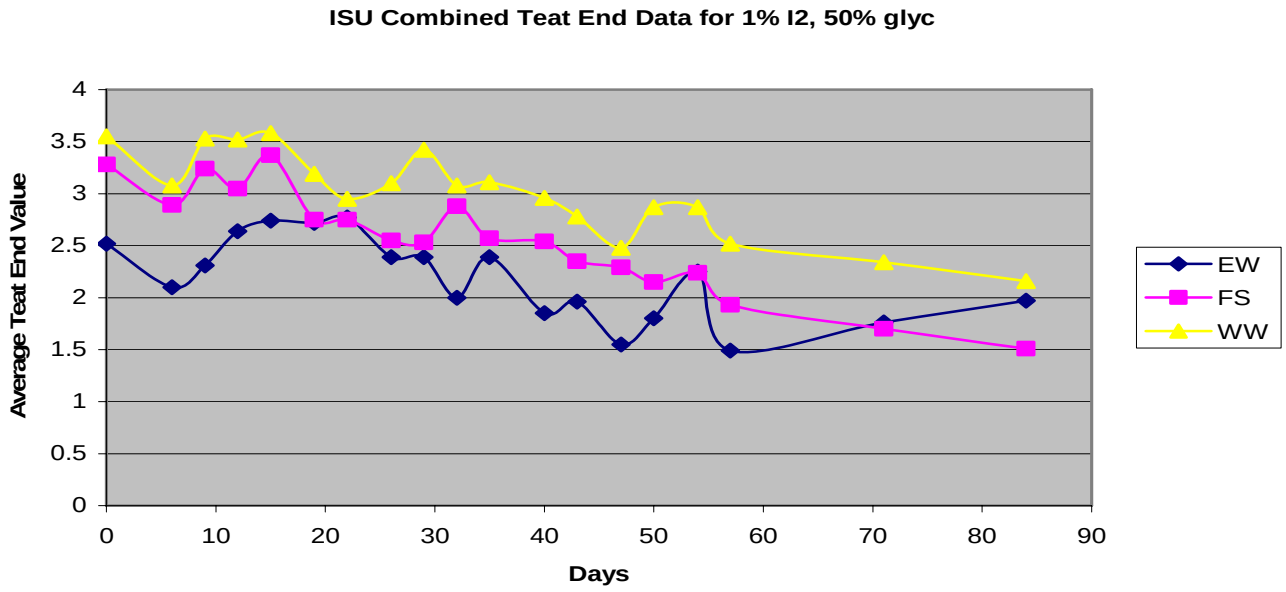

Figure 8. Average teat end scores across barns (Jan-Apr 2003) : 1% iodine, 50% glycerin dip.