

## REDUCED HORSE WOOD CHEWING OF JUNIPER

Horses avoid chewing Western Juniper boards compared to Douglas Fir

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## ABSTRACT

The top board on 10 horse stalls was made by splicing equal parts of Douglas Fir and Western Juniper planks. The volume of each end of each board was determined by water displacement prior to placing it on the stall, and again after the stall had been occupied by horses for three months. The Douglas Fir end of the planks were chewed on more than the Western Juniper end. The Fir end of the boards lost an average of 1.16 cm<sup>3</sup> of volume due to chewing by the horses compared to 0.9 cm<sup>3</sup> for the Juniper ends. It is proposed that making the top board of horse stalls and fences out of Western Juniper would reduce the wood chewing by horses, therefore conserve walls and fences.

# **HORSES AVOID CHEWING WESTERN JUNIPER BOARDS COMPARED TO DOUGLAS FIR**

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Wood chewing is considered an oral vice of horses. The affected horse will grasp the top of a horizontal surface with their teeth, chew off and ingest pieces of wood (Haupt, 1986). It should be differentiated from cribbing in which the horse grasps a horizontal surface with its incisors, flexes its neck and swallows air. The cribbing horse swallows air, and the wood chewing horse swallows wood. The main damage of wood chewing is to the fences and stalls in the horse's environment. Horses that chew wood create added expense for their owners who need to replace damaged stalls and fences, and install preventative devices. We hypothesized that horses may prefer to chew on certain species of boards more than others. If this were true, using less attractive species of boards should reduce damage caused by wood chewing horses.

## **Materials and Methods**

Ten horses were used in the experiment. At night and during bad weather they were kept in stalls that were 3.6 x 3.6 M with doors open to an outside paddock that was 3.7 M wide and 10.5 M long. The horses were fed timothy grass hay ad lib. (sic). They did not get any forced exercise. The stalls the horses entered at night or during bad weather were random even though some horses preferred certain stalls.

The top board on the front of each stall was made by splicing a piece of 2 x 6 Douglas fir to a piece of 2 x 6 Western Juniper. Each board was 68 cm long and was half Juniper and half fir so the horses had access to an equal length (34 cm) of each species of board. The top board was mounted approximately 42cm above the floor which allowed the horses to grasp the boards with their teeth.

The volume of each end of each board was determined by water displacement prior to the experiment and three months later. Each end of the board was immersed in a cylinder of water 34 cm deep, and the amount of water displaced was measured.

The volume lost by each type of board was compared. Since there was not a normal distribution, the Mann-Whitney U test was used on a SPSS 7.5 computer program (SPSS inc. Chicago, IL).

## **Results**

The volume lost by each board is shown in Table 1. The mean volume loss for the Juniper was less than the fir ( $p < 0.05$ ), 9 cm<sup>3</sup> for the juniper and 116 cm<sup>3</sup> for the fir. Six of the ten juniper boards showed no loss in volume whereas nine of the ten fir boards did lose volume due to wood chewing by the horses.

Some horses would scrape the top of the Juniper board with their incisors, but not chew off any pieces once they had tasted it. Figure 1 shows the appearance of a typical spliced board with the fir end chewed, but the Juniper end still intact.

## **Discussion**

Wood can not be digested by horses, but there may be some role for indigestible roughage in the equine diet because some horses will chew wood and trees even when digestible grasses are available. Feces of Feral horses in Western Canada contained poplar, pine, spruce, and willow, but this wood made up less than 4% of their total diet (Salter and Hudson, 1979). There is some evidence that a lack of roughage in the diet will cause a horse to chew wood. High concentrate diets and pelleted diets increase the incidence of wood chewing. Horses fed a hay diet spent significantly less time chewing wood (2.13 vs. 10.67%) than horses fed a concentrate diet. The volume of wood they chewed per day was also greater for the horses fed concentrates instead of hay. (Willard, et al., 1977) Boredom may be involved since horses receiving more exercise spent less time chewing wood. (Krzak, et al., 1991) Some horses will spend more time wood chewing than others kept in the same environment, and most of the wood chewing is done between 2200 and 1200 the next day (Krzak, et al., 1991). Horses tend to chew more wood in cold wet weather (Jackson, et al., 1984).

Several methods have been used to prevent wood chewing. Top boards may be covered with metal or wire, but this is costly. Some people paint the surface with taste repellents, but these don't always work, and are sometimes toxic. Putting an electric fence wire on top of the boards has been tried. Reducing boredom, and providing more roughage are better procedures to reduce the time spent chewing, but once the vice has developed it may not stop completely.

Even though the horses in this experiment were on a roughage diet the top board in nine out of ten stalls showed evidence of being chewed by the horses within three months' time. It was apparent by observing the front of the stalls that the horses preferred to chew on the fir more than the juniper.

There were only 10 stalls in this experiment and the variance was large because a few horses did not chew very much and usually went into the same stall. The one fir board that was not chewed was in a stall where neither end of the board was chewed. The appearance of the boards (Figure 1) and the fact that six of the ten juniper boards were not chewed enough to decrease their volume would indicate that the juniper boards were not as attractive or palatable for the horses to chew as the fir.

## **Implications**

Juniper is overgrowing much of the rangeland in the Intermountain West and needs to be cleared to preserve the pasture for livestock use. It is proposed that some of this Juniper wood could be made into planks that can be used for horse stalls and fencing. This would have two economic advantages: 1) to provide a market for wood that needs to

be removed, and 2) to reduce the damage to stalls and fences by wood chewing horses. Wood chewing by horses may be controlled by using a combination of methods. Reducing boredom by providing exercise, and making sure the horse gets adequate roughage will help reduce chewing. Using a species of board such as Western Juniper that is not as palatable or attractive to the horse should reduce the chewing by horses that have already developed the oral vice.

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## LEGENDS



Figure 1. Top board in one of the ten stalls used in this experiment. The left end of the board is Douglas Fir while the right end is Western Juniper. Note the amount chewed from the Fir portion of the board compared to the Juniper.

## **KEY WORDS**

Horse, Chewing, Wood, Vice, Juniper



TABLE 1  
 VOLUME OF BOARD LOST BY CHEWING

Stall Number	Volume lost by Douglas Fir (cm <sup>2</sup> )	Volume lost by Western Juniper (cm <sup>2</sup> )
1	436.08	36.34
2	290.72	0
3	90.85	0
4	36.34	0
5	127.19	0
6	90.85	0
7	0	0
8	18.17	18.17
9	54.51	0
10	18.17	18.17
Mean loss	116.29 SD=133.08	9.05 SD=12.19