

No Vitamin A Lack In Calves Fed Corn Silage

Dairy calves grow normally without developing vitamin A deficiencies when fed corn silage along with high-concentrate rations. Recent Agricultural Research Service (ARS) tests show

Although corn silage costs less and is often more available than alfalfa hay, other studies indicated that steers developed vitamin A deficiencies when fed either all-concentrate rations or rations high in corn silage

To see if such vitamin A deficiencies also occur in dairy calves ARS animal nutritionist R W Miller fed corn silage in a typical high-concentrate calf ration to 12 Holstein calves. Miller also studied the role of nitrates in vitamin A depletion

RESULTS

Tests results showed that corn silage carotene (precursor of vitamin A) was converted to vitamin A as efficiently as alfalfa carotene. Added nitrates had no adverse effect on this conversion

The primary indicator of vitamin A status in calves was a change in the pressure of cerebrospinal fluid because increased pressure is one of the first signs of vitamin A deficiency. Carotene and vitamin A levels in blood plasma which carries both substances, and vitamin A level in the liver which stores the vitamin, were also used as indicators

As Miller fed more corn silage, carotene and vitamin A levels in blood plasma increased, cerebrospinal fluid pressures decreased, but the amount of vitamin A in the liver stayed the same. However, average daily gain was lower for the two groups fed the lesser amounts of corn silage

In the tests, the calves were fed whole milk, alfalfa hay and all they would eat of a grain mix containing yellow corn meal. This diet provided a normal amount of carotene

When the calves were 61 days old, the original grain ration was replaced with one low in carotene and reconstituted dry skim milk was substituted for the whole milk. The alfalfa hay was removed from the calves' ration when they were 91 days old, further lowering their carotene supply

FOUR GROUPS

When the calves ranged in age from 91 to 155 days, Miller divided them into four groups and began feeding each group a different quantity of corn silage. The lower two quantities of corn silage provided carotene in levels below normal requirements for vita-

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Beef accounts for well over half the record breaking 33.3 billion pounds of all meat—beef, pork, veal and lamb—being produced this year. Per capita consumption of all meat, at 172.6 pounds will be the second-highest on record. It is not expected to exceed the previous record set in 1964 (174.5 pounds) because not as much pork, veal and lamb are being produced as was the case in that year, although pork production will be higher than last year and will provide Americans with an average of about 61 pounds in 1967.

8 out of each 10 acres of cultivated land in the U.S. is used for food crops—the balance for tobacco, cotton, etc.

min A. If carotene in corn silage is converted to vitamin A as efficiently as carotene in alfalfa hay, the higher two quantities of corn silage provided enough carotene to prevent vitamin A deficiency.

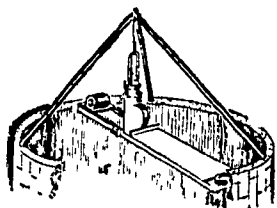
Miller also fed potassium nitrate at different levels to two dairy calves in each of the four groups. As a control, he did not feed additional nitrate to the third calf in each group.

Other tests with steers had

shown that the vitamin A reserve in the liver depleted more rapidly in steers fed high-nitrate silage than in steers fed low-nitrate silage. Nitrate levels in corn silage vary with weather conditions during plant growth, the amount of nitrogen fertilizer applied, and the age of the plants at harvest.

Calves receiving added nitrate made normal growth for their group. The added nitrate had no adverse effect on conversion of carotene to vitamin A.

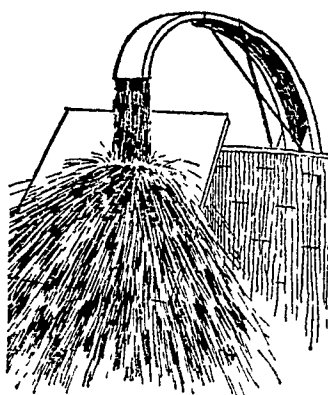
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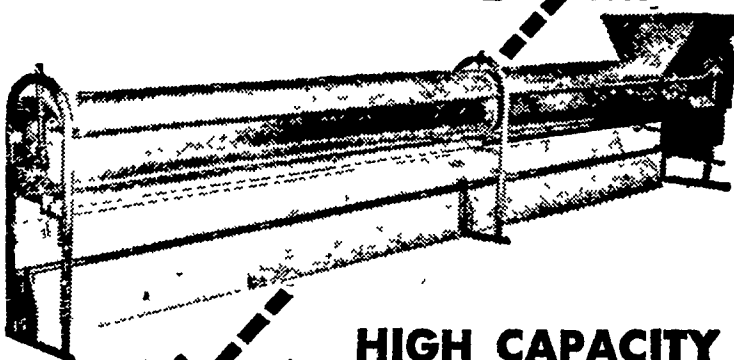


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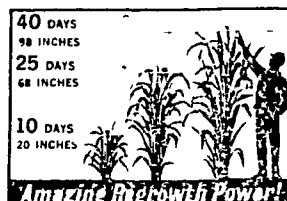
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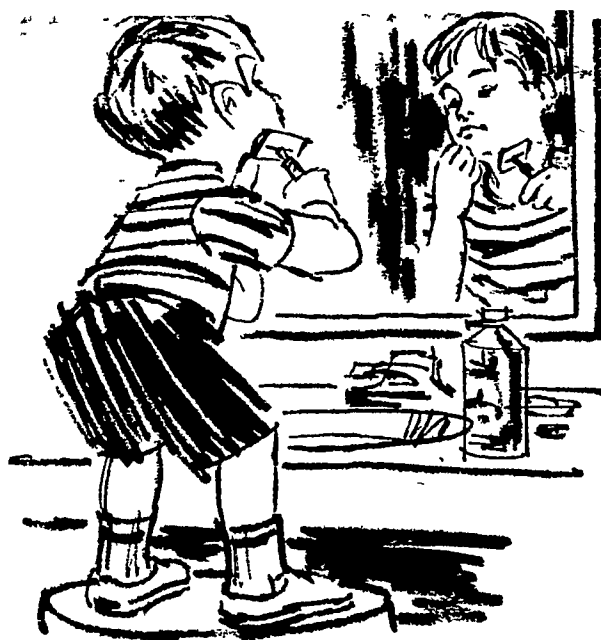
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