Farm Animal Dentition – What Teeth Can Tell You

Bulletin E351

Cooperative Extension

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You've always been told to not look a gift horse in the mouth. However when it comes to livestock, plenty can be learned through examination of the teeth. Approximate age is an important factor when buying and selling animals and can be determined through this kind of inspection.

This publication demonstrates how a careful examination of the size and condition of the teeth can be used to determine the approximate age of farm animals from all stages of life.

The Age of Farm Animals and Why It's Important

Farm animals are valued on their productivity. It goes without saying that the more useful an animal is, the more valuable it would be to prospective buyers and sellers alike. The tendency for the usefulness of livestock animals to diminish over time leads them to have relatively brief productive lives. Therefore, the age of any livestock animal is very important to a prospective breeder, buyer, or seller.

Physical changes to the body are the easiest way to determine the age of an immature animal. General appearance and disposition usually make it simple to distinguish a young animal from a mature one. Determining the age of an animal post-maturity becomes more difficult after growth and development is complete. The development of the teeth and changes that occur with age offer the best opportunity of determining the age of animals in this stage.

Age determination of farm animals through the appearance of their teeth is no new practice. The old adage of "Do not look a gift horse in the mouth" is attributed to Saint Jerome of the fifth century. Throughout history, the appearance and development of the teeth has been utilized as a means of judging the approximate age of an animal.

By knowing the ages in which teeth appear, the process for shedding of temporary, deciduous, or milk teeth and their replacement, and the usual effects of natural wear, the approximate age of farm animals can be determined. However, proficiency comes with practice. This bulletin briefly describes the process of evaluating dentition and changes over time, and demonstrates how to determine the ages of farm animals by examining their mouths.

Horses

Determining the age of a horse is relatively simple and can be readily learned by the ordinary observer until the animal's eighth year. After this time, the animal has a full set of permanent teeth making age determination more difficult. Fig. 1 is the skull of an immature horse.

The mature male horse has 40 permanent teeth. Twenty-four of these are molars or grinders, 12 are incisors or front teeth, and four are tushes or pointed teeth. The canines are located between the incisors and the molars and are not in opposition or contact as are the incisors, premolars, and molars. They are not usually present in the mare, and accordingly she may be considered to have a total of 36 teeth rather than 40, as in the male. A detailed view of the placement of each type of tooth relative to the horse skull can be seen in Fig. 2.

There are several stages of tooth development of horses that aid in age determination. The most important stages are highlighted below.

- Birth: At birth, foals are born with four milk teeth/ temporary central incisors, two on the top and two on the bottom. If these are not present at birth they will usually be visible within 8 days after the birth.



Figure 1. Skull of a three-year old horse[ii].



Figure 2 – Upper (left) and lower (right) jaws of an immature three year old horse depicting location of different types of teeth.[ii]

- Two Weeks: At two weeks of age, 12 premolars appear. There are three on each side of the top and bottom jaws.
- Two Months: At two months of age, another set of temporary incisors appear. These are the second pair of incisors.
- Six Months: At six months of age, the third set of temporary incisors appears (Fig. 3). Also, the first permanent premolar (known as the wolf tooth) appears, this is a vestigial tooth – usually removed and often absent, it is in front of the three temporary premolars.
- One Year: At one year of age, the first permanent molars appear, replacing the first temporary milk tooth molar.
- Two Years: At two years of age, the second permanent molars appear, replacing the second temporary milk tooth molars.
- Two and 1/2 Years: At two and a half years of age, (Fig. 4), the central pair of incisors (I1), are replaced with their permanent counterparts.
- Three Years: At three years of age the third permanent premolars appear, replacing the third temporary milk premolars.
- Three and 1/2 Years: At three and a half years of age, the intermediate pair of incisors (I2), is replaced with their permanent counterparts.
- Four and 1/2 years. The third deciduous incisor is replaced with its permanent counterpart (I3).
- Five Years: At five years of age, the horse has its full set of adult teeth.
- Seven Years: At seven years of age, each upper corner incisor (I3) has an indentation caused by wear from the corresponding lower tooth. This causes a triangular downward projection commonly termed the "dovetail" or "hook" (Fig. 5).
- Eight Years and above – No significant changes in tooth composition occurs past the eighth year. Instead, the condition and shape of the teeth are used to approximate the age. Significant yellowing and outcropping of teeth occurs as the animal matures (Fig. 6A and 6B).



Figure 3 – Temporary incisor teeth of a young, 6-month old, colt.[iii]

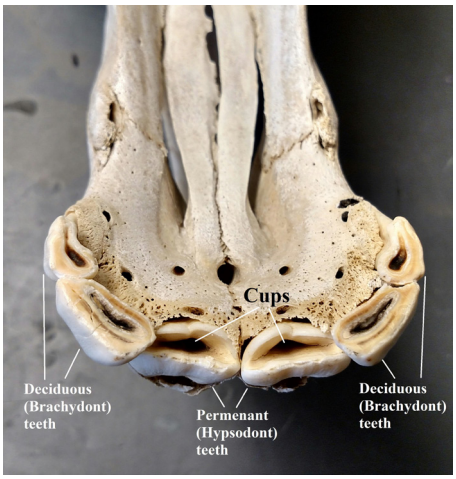


Figure 4 – Central pair of incisors are replaced with their permanent counterpart.[ii]

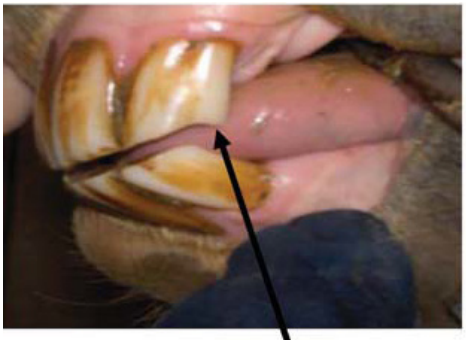


Figure 5 – Side view of the incisors of a 7-year old horse. Note the hook forming in the upper corner incisors which appears at this age.[iii]



Figure 6 – Comparison of incisors and canines of horses at different ages. A, at 3 years and B, at 30 years. Notice the outward projection of the teeth and angle of the incisors after years of wear and development.[ii]

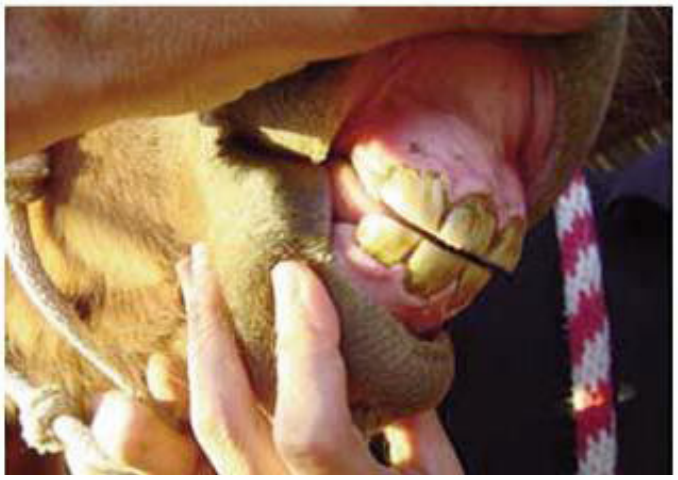






Figure 9A (top, left) – A weanling with I1 and I2 deciduous teeth; 9B (bottom, left): 2½-years old, I1 are permanent but not in wear, bottom I1 are still deciduous; 9C (right, top): 3½-years old. I1 are permanent; I2 are loose and ready to fall out.[iii]

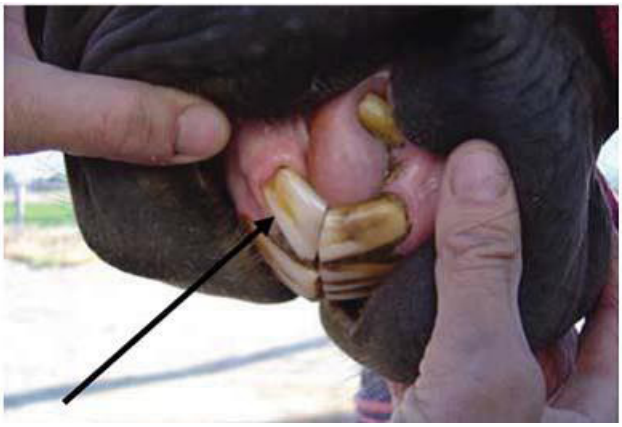


Figure 7 – The arrow is pointing to the Galvayne's groove in I3. Judging from the length that it travels down the tooth, this would be approximately 15 year old horse.[iii]

The Galvayne's Groove (Fig. 7) can help determine the age of a horse over 10 years old. This is a groove that appears near the gum line of I3. It begins at the center of the gum line on the outer surface of the tooth in a 10-year old. At 15 the groove extends halfway down the tooth, at 20 it extends the entire length of tooth, at 25 the upper half of the groove is gone so a groove appears only in the bottom half and at 30 the groove is completely gone (Fig. 6B).

Once all permanent teeth are present other indicators assist with determining age. On the grinding surface of the incisors, a cup is seen as an indented area with a dark center in the middle of each tooth (Fig. 8). The cups disappear from the bottom I1 at six years of age, I2 at seven, and I3 at eight The top incisors lose the cups from I1 - I3 at nine, 10, and 11 years of age, respectively. The term "smooth mouthed horse" applies to a horse 12 years of age or older when all cups are gone and the grinding surface is smooth.

The shape of the grinding surface, amount of tooth seen below the gum line, and angle of the teeth change with age. A horse under nine years of age will have a rectangular grinding surface, a horse from nine to mid-teens will have a more rounded grinding surface, while a horse in its later teens or older will have a triangular surface. The younger horse will show a shorter tooth visible below the gum line (Fig. 9), while a term used for the older horse is "long in the tooth" due to more visible tooth (Fig. 6B). When viewed from the side with lips parted, the young horse will exhibit a more vertical alignment to the incisors, while an older horse will have more of an angle with a more protruded appearance.

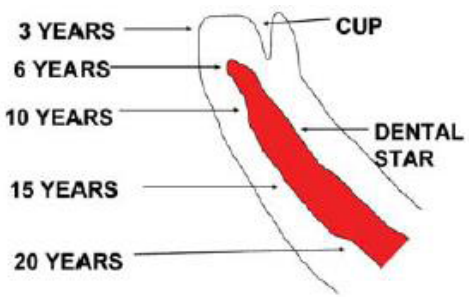


Figure 8 – Dental cup changes as horses age.[iii]

Cattle

At maturity, cattle have 32 teeth. Of these 32 teeth, 8 are incisors, all of which are located on the lower jaw (Fig. 9). The central pair of incisors are often called pinchers. The second pair of incisors is called first intermediates and the third pair of incisors is called second intermediates or laterals. The outer pair of teeth is called the corner teeth. In lieu of upper incisor teeth, the upper jaw has a dental pad, a thick layer of the hard palate (Fig. 10).

Cattle, just like the horse, go through several developmental stages that are used to approximate the animals age. The most important stages are highlighted below.

- **Birth:** At birth, the calf has two or more incisor teeth from the temporary first set. By the time the calf is one month old, all 8 incisors are present (Fig.11).
- **Two Years:** At two years of age, the central temporary incisors are replaced by permanent incisors (Fig. 12).
- **Two and 1/2 Years:** At two and 1/2 years of age, permanent first intermediates develop on each side of the incisors (Fig. 13).
- **Three and 1/2 Years:** At three and 1/2 years of age, the permanent second intermediates (also known as laterals) develop next to the first intermediates. These teeth begin to experience wear after four years of age (Fig. 14).
- **Four and 1/2 Years:** At four and 1/2 years of age the corner teeth are replaced by the remaining permanent incisors.
- **Five to Six Years:** At five years of age, the cow has a full permanent set of incisors and the new corner teeth are fully developed. At six years of age, the permanent incisors, both pairs of intermediates and the corner teeth begin to wear and level (Fig. 15).

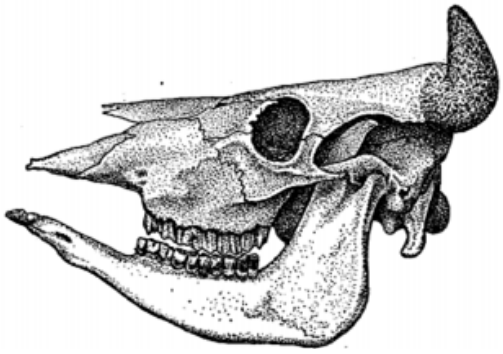


Figure 9 – Skull of an ox[i]

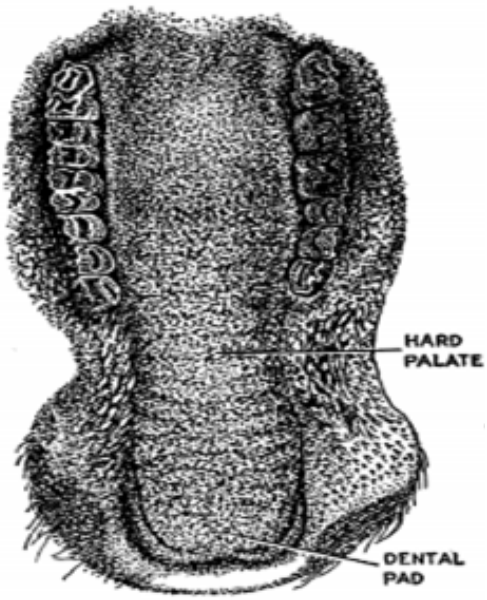


Figure 10 – Hard palate of a cow showing the dental pad.[i]



Figure 11 – Bovine teeth formation at one year old.[iv]

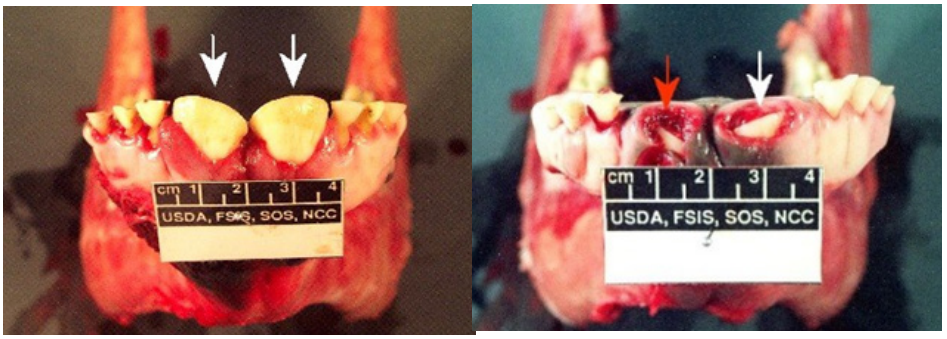


Figure 12 – Bovine dentition at two years of age. The arrows in the top picture are pointing to the central temporary incisors that are getting replaced by permanent ones.[iv]

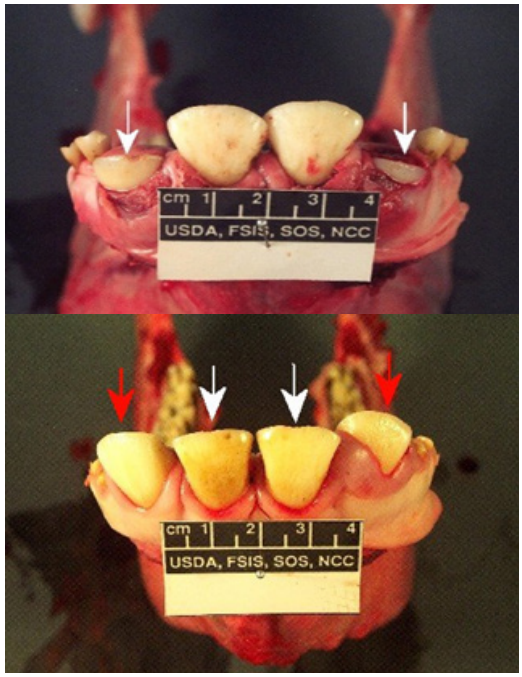


Figure 13 – Bovine dentition at three years of age. The arrows in the top picture are pointing to the teeth that get replaced, and the ones in the bottom picture are pointing to the permanent first intermediates.[iv]

- **Seven to Eight Years:** After six years of age, the teeth show noticeable wear. The teeth become triangular and distinctly separated. Age becomes progressively harder to determine after eight years of age (Fig. 16).



Figure 14 – Bovine dentition at four years of age.[iv]



Figure 15 – Bovine dentition at five years of age.[iv]



Figure 16 – Bovine dentition at older than six years of age.[iv]

Swine

At maturity, an adult hog will have 44 teeth (Fig. 17 &18). Of these 44 teeth, 12 are incisors, with 6 on the top jaw and 6 on the bottom jaw. After two years it is difficult to determine the age of mature swine, but it can be done by assessing the progressive wear of the teeth and associating it with the advance in age.

Of all the common livestock animals, swine develop their permanent teeth in the shortest time. It takes only two years for an adult swine to have all of their permanent teeth. Such a short time to develop means that each stage is for a relatively short amount of time – each one being a few months long.

- **Birth:** At birth, a piglet has eight teeth. These include four tusks and four corner incisors, two on each jaw (Fig. 19A). These teeth, commonly referred to as needle teeth, are sharp and pointed and are usually clipped to prevent injury to the nursing mother, the sow.
- **One Month:** At four to five weeks of age, four central temporary incisors form, two on the lower jaw and two on the upper jaw (Fig. 19B).
- **Two to Three Months:** At two months of age, two intermediate incisors break through the gums of the lower jaw between the corner teeth and central teeth. These will be fully formed at three months of age (Fig. 19C).
- **Six Months:** At six months of age, the temporary set of corner incisors are replaced by the permanent set.
- **Nine Months:** At nine months of age, the pair of temporary tusks are replaced by the permanent pair.
- **One Year:** At one year of age, the temporary central incisors are replaced by the permanent incisors. The lower teeth also become visible (Fig. 19D).
- **Fifteen Months:** At 15 months of age, all 12 temporary molars have been replaced by permanent teeth.
- **Eighteen Months:** At 18 months of age, all temporary intermediate incisors have been replaced by permanent teeth.
- **Two Years:** At two years of age, there is no further loss or gain of temporary or permanent teeth, respectively. It becomes increasingly difficult to judge the age of swine by the teeth after this point. However, it is important to note that aged swine show considerable wearing of the teeth, especially of the molars.

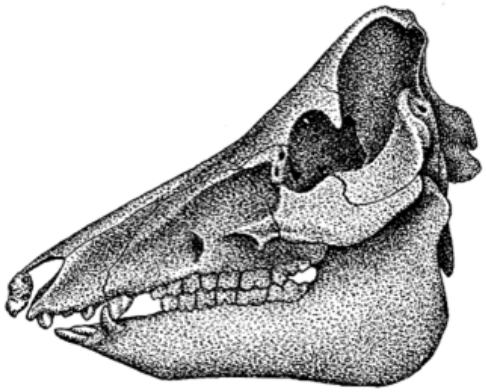


Fig. 17 - Skull of a pig[i]

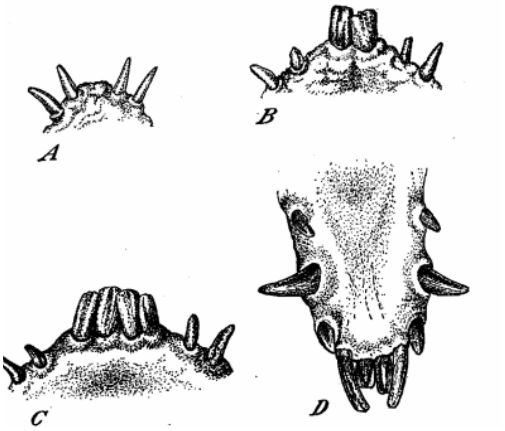
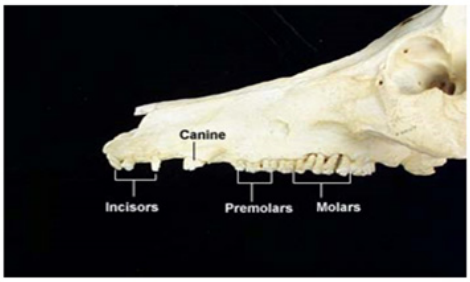
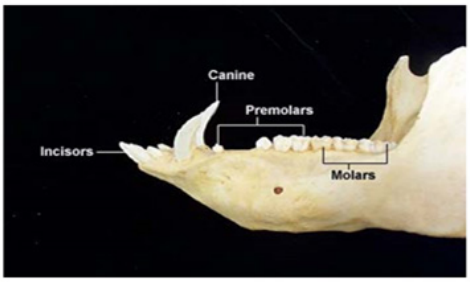
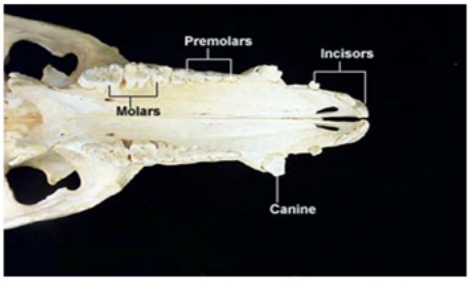


Figure 19 – Comparison of the teeth in the lower jaw of a hog as it matures. Picture A is at birth, B is at about five weeks; C is at three months; and D is at one year.[i]







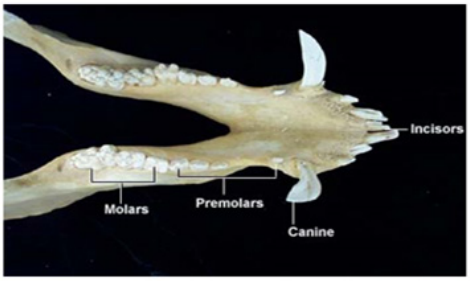


Figure 18 - Skull of a mature pig from several angles depicting location of different types of teeth. The two left pictures show the upper mandible, right pictures are of the lower mandible.[v]

Sheep

Mature sheep have 32 teeth, consisting of premolars, molars, and incisors (Fig. 20) as in cattle. Eight front teeth in the lower jaw (the incisors) bite against a hard, toothless pad in the upper jaw known as the dental pad. The two central incisor teeth are often called pinchers; the adjoining ones, first intermediates; the third pair, second intermediates; and the outer ones, corners. The temporary incisors are readily distinguished from the permanent ones by their smaller size and milky whiteness.

A sheep is the easiest livestock animal to approximate the age of through teeth examination. Sheep teeth development follows a simple one-by-one rule. For every year of age until age four a pair of milk teeth gets replaced, starting from the interior incisors and ending at the corners.

- **Birth:** At birth, lambs have eight milk teeth/temporary incisors arranged on their lower jaw. They have a dental pad in lieu of teeth on their top jaw.
- **One Year:** At one year of age, the central pair of baby teeth are replaced by a pair of permanent incisors (Fig. 21).
- **Two Years:** At two years of age, the first intermediates are replaced by permanent incisors (Fig. 22).
- **Three Years:** At three years of age, the second intermediates are replaced by permanent incisors. (Fig. 23).
- **Four Years:** At four years of age the last pair of milk teeth, the corners, is replaced by permanent incisors and the sheep now has a full set of permanent teeth (Fig. 24). As it ages past four, the incisor teeth will start to spread, wear, and eventually break.

As the adult sheep matures past this point, a distinct increase in the size of spaces between the teeth occurs. The condyle (resembling a knuckle) allows the lower jaw to move from side to side grinding the grass between the upper and lower molars and premolars. Over years this gradually wears down the teeth to stubs giving them an unnatural and uneven length and making it common for a ewe to lose some of her teeth (Fig. 25). When a ewe loses teeth, she is called a "broken mouth" ewe, and when she loses all of her teeth (Fig. 26), she is called a "gummer."

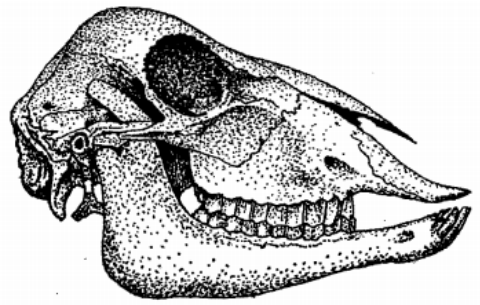


Figure 20 – Skull of a sheep[i]



Figure 21 – Teeth dentition of a sheep at 1 year of age.[vi]



Figure 22 – Teeth dentition of a two year old sheep. The arrows are pointing to the permanent incisor.[vi]



Figure 23 – Teeth dentition of a sheep at three years of age. The arrows are pointing to the permanent incisors.[vi]



Figure 24 – At four years of age a sheep has a full set of permanent teeth.[vi]



Figure 25 – Teeth dentition of a ten year old sheep.[vi]



Figure 26 – Sheep with no teeth, called a "gummer."[vi]

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