

THE ADVANTAGE OF GOOD TILLAGE OF SOIL

Different farmers have very different notions as to what good tillage is. Some are in the careless habit of listing their corn in for two or three years without even ploughing once. Many plough, disc, or harrow once and call it done. And it may be, depending on the soil they work.

Tillage is for two distinct purposes, the killing of weeds and the preparation of the seed bed. If the latter is accomplished the former is quite sure to be.

The seed needs moisture and warmth, and air in order to germinate. Keep back any of these and the seed will not grow. Why are some crops drowned out after planting? Don't they need the water? Yes, but a complete covering of water excludes the air, so the seeds smother. If planted too close to the surface the dirt is soon dried out and not enough moisture given the seed to germinate it.

Good tillage means the fitting of the seed-bed so that the seeds have air, moisture and warmth. There can be no free circulation of air in a saturated soil, hence drainage is necessary. The same is true of hard lumps, hence pulverization is essential.

Cultivation after a hard rain is needed to break up the crust that forms so as to let air into the soil and to prevent undue evaporation. Why so rapid loss of water after a rain? Just because the rain has washed the soil particles closer together and they form a more perfect ladder for the water to climb out on.

A coarse lumpy seed-bed is full of air spaces so large that the water cannot readily ascend by capillary attraction. Gravity is too strong for it and it will not rise to the surface within reach of the roots. The dust mulch must be coarse enough so that when the water gets to the top two or three inches it stops because the ladder is broken.

Water rises by capillary attraction against the force of gravity if the particles of matter are close enough together so they form a complete ladder. Touch a corner of bread to the coffee and see the coffee go up. Touch a blotter corner to a drop of ink and see it absorb it. That's just the way water rises in the seed-bed when there is good tillage.

The lumpy seed-bed is the one that will suffer most in a drouth. Plants need the water to dissolve the mineral matter in the soil and carry it up to the leaves to be transformed into plant substance. No water, no growth.

Good tillage, for the same reason that it enables water to rise from the subsoil, enables the soil to hold more water. It takes more leather to cover two dozen baseballs than one football, though the one is about equal in bulk to the dozen. The finer the soil grains the more water they can hold.

A field under good tillage warms up sooner in the spring than one that is in poor physical condition. This is important in securing quick germination. A soil surface that is kept wet by escaping water is cooler than one that is covered by a dust mulch. A soil in good tillage will absorb a warm spring rain and let it go way down and draw out the deep frost. One that has not been disced or trenched is close and crusty and the warm rains run off and penetrate but little.

This all points to the necessity of getting the disc on to the fields as early as possible and loosening up the surface soil. This is especially urgent upon soils that are inclined to run together and bake. Less important upon sandy loams.

Poultry husbandry, fruit growing and bee keeping form a combination that cannot be commended too highly. Each branch in its fullest and most profitable development is dependent upon the other and together they form an ideal occupation for a person who enjoys country life, but who is not rugged enough to undertake the work of conducting a more extensive system of agriculture.

The poultry will destroy thousands of harmful insects, thus they greatly benefit the fruit trees and increase the prospects for fruit, while the poultry themselves will gain great comfort and benefit from the protecting shade of the trees during the warm summer weather. If we have been among the fruit trees there is no uncertainty about the pollenization of our fruits. The bees are certain to do their work. However well we may care for the trees and if every other condition is right we shall fail to get maximum crops of fruit if the bees do not perform this unobscured but necessary service, while the trees are furnishing them with honey-making material and food.

The fruit tree will feed our bees and brood our chickens during the hot summer weather and pay us for the privilege.

Plum trees and cherry trees are especially adapted to the poultry yard and are greatly benefited by the presence of fowls about their roots. Peach trees will grow more rapidly and sooner provide an abundant shade. With all our spraying and trapping, the insects do get past us. The fowls may not get all that remain, but they and the little chickens will get many of them. Poultry like the fruit, and fowls in an orchard will eat the immature fruits as they fall, and in doing so they kill off the worms that caused these fruits to fall prematurely. Have you ever watched a flock of little chicks in an orchard? They are all the time chasing and hunting insects, many of them so small we can hardly see them, but we know when a tiny chick catches one by its self-satisfied manner. The chicken has perhaps saved a number of apples, and the insects and exercise go to promote a healthy development of the chick. The fowls also destroy the root enemies of the trees and they do it without damaging the rootlets as is oftentimes done by a thorough cultivation. Many a fruit grower fails to properly cultivate his orchard for fear he will peel the trunks of the trees, and damage the rootlets by doing the work. Just cut the soil under the trees and scatter fine seed and the fowls will do the work just right. They will also enrich the soil while they are doing the work. We may take two trees of the same age and size and plant one in the poultry yard and one outside, and the difference in the vigor and growth can be readily noted at the end of the season.

The person who has a fancy egg trade will find that his regular customers are the very ones who most want choice fruit and fresh honey, and they are the people who have the ready money to pay for all they get. By practicing these three branches we eliminate the profits of all the middlemen and derive every cent there is in the business. The person who has learned that it pays to put up nice, clean fancy eggs is just the man to handle the fruit and honey in a manner so that people will buy it, whether they really need it or not. There are people who want the best regardless of price, and they are the ones it pays to deal with every time when we have a prime article.

Notwithstanding the great good that comes from the presence of humus in the soil, it may do harm under some conditions. Should there be a lack of moisture, the burial of coarse litter may make the soil so loosely that it will dry out too much, and as a result the crop growing on it will suffer. The same thing may happen if the green crop, as millet or rye, is buried. The large quantity. The ground is not only made to be too loose, but the ground moisture is arrested in its ascent when it reaches that layer of buried green food.

In the dry northwest, when a timothy soil is broken up, beneficial results follow as a rule. The soil in its decay furnishes food in a form that the roots of the next crop can readily get at. It holds moisture also, and thus the soil is better. The complaint, however, is somewhat general that when a crop of broomrape is broken and grain is sown on it, the yield is not good.

This is probably due to the fact that the abundant roots in the soil are not yet decayed. But it may be also owing to the fact that the broomrape still continues to grow more or less, and, therefore, it robs the crop of its rightful share of food. It has been noticed, however, that crops grown from seed sown on such sod are good, and also the third year. If corn is grown from the overturned broom it usually makes a good growth. The cultivation given to the corn hastens the decay of the broom. It would seem reasonable to suppose, however, that if the broom was ploughed just after harvest, and was then disced later, that it would be so far decayed that the first crop following would give good returns. Experience on this point would seem to be wanting.

DAIRYING

MAKING BUTTER ON THE FARM FOR A PROFIT

The First Requisite is to Have Herd of Good Cows.

CONSTITUTIONAL VIGOR WANTED

(By R. L. Shuford.)

To make butter profitable on the farm, as well as in the larger dairy, we must first have good cows. Every manufacturer of goods on the market knows that in order to make the most profit he has to have the very best machine possible for that business, and it must be kept in the best running condition. Constitutional vigor in a dairy cow, the machine that we have on the farm for doing this dairy work, is something that we cannot pour into an animal with a bottle; it has to be bred in her and fed into her. What are some of the first steps in breeding animals to secure this constitutional vigor we desire and must have to make the most out of our business?

First breeding from nothing but strictly healthy animals. We do not want anything but strictly healthy dairy cows to raise dairy stock from.

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GRAND CHAMPION CARLOAD OF LAMBS.

Sweepstakes over all classes and ages at the 1908 International Live Stock Exposition. Fed and shown by Dan W. Black, of Lyndon, Mo. Sold by Clay, Robinson & Co. at \$11 per 100 lbs. The load averaged 113 lbs. per head.

After we have healthy cows we should know their capacity. Everything should be measured by its capacity for work, or, in case of the cow, by her production. A man is paid, or ought to be paid, for his ability to work, either with his mind or muscle. The value of a race horse is measured by his record. The value of the dairy cow depends upon her capacity to produce butter and milk. So the first thing we ought to do is to use the scales and Babcock test and find out whether old Brindle is making butter for you or if we were dairymen for fun it might be all right not to know this, but if for business we must use business methods. It is the business of a dairyman to get a full pail of milk when she is fresh; we want to know what she produces in a year. To make butter profitable on the farm the farmer should know to know these things, because the small dairymen have to breed and raise his cows, and if he acts wisely there is no reason why he cannot get as much as even better than the larger breeder, as he can give the herd his personal supervision, while the large breeder has to depend upon the skill of others. In most cases, will not take the interest that the owner would. I have been asked often whether or not a mule sold could not be raised better, either as cheaply as a cow. My answer to this is, it probably can, but why not raise a cow that will bring as much as a mule? This I have tried, and believe I have succeeded in doing.

To get the most profit out of butter on the farm it is necessary to do it in a co-operative way. Get several of your neighbors interested. This is particularly necessary when the market is not convenient and the product has to be shipped, as it is rather expensive to ship a small amount of butter, which is very necessary to do in order to get the best price. By combining the shipments the cost can be very much reduced, as each can do this in turn.

We shall first have to get more people interested in keeping cows, but with the hand separator, which is a simple handling of the cream, there is no reason why we cannot make just as good butter, or even better, on the farm, as we can in a factory. Our people should be educated to make a better quality of butter, as this will be the only way the consumption. When there is a lot of inferior butter on the market people use but little of it. I was once told by my customers that the only reason they had to buy my butter was that it took too much of it, that he used double the amount he did of cheap butter. How, then, can we make the best butter he can get for family use and paying the difference in price.

Co-operation with your neighbors will also greatly help in breeding up better dairy cattle. By co-operating we can buy the best sires and change our breeding without so much expense. I think every dairymen, it matters not how small his business, should make an effort to breed registered stock, as it does not cost any more to raise them, and when he has a sireline there is so much more profit in what he sells.

One among the most noted Jersey breeders in America to-day is a man who only keeps 15 to 20 cows. He has bred and developed some among the largest producers. On the island of Jersey the breed has been developed by the dairyman, through the co-operation. If the average farmer could get rid of the prejudices and false notions about registered stock and be persuaded to give an opening to the "big boys" who are worth just about as much for business as registered stock, he could do himself good and his neighbors good.

The same high grade of judgment prevails upon the subject of feeding. Many people really think they cannot afford to feed their cows well. It is true that no man can afford to buy feed, or raise it either, for poor cows. But it is certainly true that no man can afford not to feed a good cow the right food and she will eat and digest.

GARDENING

THE BEST RESULTS WITH THE HOTBEDS --HOW OBTAINED

It is a Necessity and Should Pay a Handsome Profit.

SMALL ONE WILL SURPRISE.

By H. B. Gilbert.

No farm can afford to be without a hot-bed; it makes no difference whether it be one acre or 100 acres. The hot-bed is a necessity as well as a luxury, and at the same time pays the owner handsomely. A hot-bed with not more than three or four sashes will surprise the amateur by the number of plants he can raise in such small space.

For a small hot-bed, slope the south about 8 inches to the length of the sash (hot-bed sash 6 x 3 feet). The lower edge should be about ten inches from the surface of the soil. First, select One can allow four or five inches for setting. If the hot-bed is to be used in the spring only (say about March 1), the pit should be about 30 inches deep on the lower side. First, fresh manure should be drawn about

six to ten days before using, and put in a pile at one side to let it get well to work, then thoroughly mixed to get a uniform heat. Put about one foot of manure in the pit, then tamp thoroughly and even, adding a liberal application of phosphoric acid and potash. The fermentation, and the longer the heat will last. Fill and tamp again, until you have the desired depth, allowing onto another flat and level, and ready for the soil, thoroughly pulverize in the proportion of three-fourths soil and one-fourth horse manure, adding a liberal application of phosphoric acid and potash. The fermentation of the compost underneath will furnish all the nitrogen needed for the development of good, stocky plants.

For early tomatoes, seeds may be sown in flats in the kitchen windows early in February, say, by the 14th, reserving the flats to the seeds for two or three days. The seeds will germinate more quickly. The young plants will be ready to prick off about the first of March, into the hot-bed, and set in the flats, at the distance of two inches apart each way. The first week in April transplant into strawberry baskets, two plants to the basket, and set back in holes as you can in the hot-bed. Two weeks later pull out the weaker one in each basket. By the middle of May the remaining plants will be fine and large, ready for the market. Leave the plants on in planting out, and cut away the basket with a strong pair of shears to avoid disturbing the roots, which rather deep as far as the stem is covered.

The field where the plants are to stand should be very rich for best results, placing the flats close to the manure, especially if they be rich in phosphoric acid and potash. Those testing high in nitrogen are apt to produce a rank growth, and cause tomatoes to ripen late. I have picked three to seven ripe tomatoes (Acme) at a single picking from each plant from the first to the tenth of July, when each were worth \$2 a basket of fourteen quarts.

For a larger bed I prefer to run the bed north and south, with a drop of about three quarters of an inch to the south end, and a liberal application of manure, especially if they be rich in phosphoric acid and potash. Those testing high in nitrogen are apt to produce a rank growth, and cause tomatoes to ripen late. I have picked three to seven ripe tomatoes (Acme) at a single picking from each plant from the first to the tenth of July, when each were worth \$2 a basket of fourteen quarts.

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At the Ohio State University we feed a few years of a young cow, some of which are usually shown at the local and national live stock exhibitions. These steers are fed corn silage during the cooler months of the year as an important part of their ration. The silage is made from a mixture of above 20 pounds in a day's feed when using this with hay and grain. If the steers are fat enough to make a heavy carcass, they are usually shown at the local and national live stock exhibitions. The silage is made from a mixture of above 20 pounds in a day's feed when using this with hay and grain. If the steers are fat enough to make a heavy carcass, they are usually shown at the local and national live stock exhibitions.

CATTLE

ADAPTATION OF SILAGE FOR BEEF CATTLE

As a General Rule It Has Given Satisfactory Results.

IS A VALUABLE FEED.

(By C. S. Plumb.)

A frequent inquiry which comes to me is, how well is silage adapted to beef cattle feeding? Silage was first promoted in America as a food for dairy cattle and dairymen especially, among practical stockmen, have been the main factors in promoting the building of silos and feeding silage. Owners of beef cattle have been very slow to adopt the silo.

I have made use of the silo for 25 years and have fed silage to beef cattle for nearly 20 years. During this time I have had under me a number of expert herdsmen with beef cattle, most of whom were unacquainted with silage before coming under my charge. In every case, however, these men, as feeders, became strongly impressed with the value of silage for beef cattle and made considerable use of it in the rations. Afterward, in the employ of others, they still placed a high value on silage in feeding either breeding or fattening cattle.

Not much experimental work has been conducted to show the value of silage in the ration of beef cattle, but the Missouri, Illinois, Indiana and Ohio stations have conducted some feeding trials, with silage a feature of the ration. In general, the silage gave satisfactory returns.

At the Ohio station 42 steers, mostly grade Shorthorns, were fed from February to July. Half of the steers were fed silage, corn stover and hay, with grain, and the remaining half fed the same as the other lot, excepting silage. The silage was made from shelled corn and 2 1/2 pounds cottonseed meal per steer. During the experiment, the silage fed cattle gained per head a daily average of 2.33 pounds, and the dry-fed steers 2.31 pounds, essentially the same. The total cost of the feed, however, for the silage fed lots was \$59.93, and for the dry-fed lots \$64.58. The cost of 100 pounds of silage was \$1.94, and the cost of 100 pounds of dry feed was \$2.45. The silage fed cattle gained \$9.04 for the ensilage fed and \$10.21 for the dry feed.

Commenting on the feeding, Mr. Carls, of the Ohio station, says: "It was found under the conditions of this experiment, one ton of silage was equivalent to or replaced 4.4 bushels of corn, 0.4 ton corn stover and 0.25 ton mixed hay, so far as gains by the cattle are concerned." On the Pittsburg market, the silage fed cattle showed a shrinkage of 3.2 per cent, and the dry-fed cattle 4.91 per cent, a difference favoring the silage fed.

In the selling price, three steers from the silage fed lots and five from the silage fed brought \$5.60 per 100 pounds, and all the other steers of both lots brought \$6.60 per 100 pounds. However, it was not thought the silage feeding was responsible for the lower price of the five referred to. They were not regarded equally good steers with the others. At the Illinois station, where silage and shock corn were considered experimentally in wintering beef calves, the silage fed steers were the best three months after the end of the experiment. With the silage fed steers 97.69 per cent of the meat produced was beef and 2.3 per cent fat, the latter from bones following after while 84.22 per cent was beef.

These two horses are Ecart, 55,921, by Philadelphia, 40,250, and Conquer, 55,922, by Fernando, 52,505, the winners of the first prize, and the winners for aged Percheron stallions and stallions three years and under four at the last International. They were exhibited by J. Crouch & Son of Indiana.

By rubbing them against his feet and legs to accustom him to the touch, and hold him to the cart. No straps should be used in a breeding horse, for even the strongest tackle may pull away in case of an accident. To secure control of the horse on the first reins, two methods are used, namely by the curb and also by the snaffle. The snaffle is quite common, and is satisfactory on soft ground with untrained animals, but the curb is more desirable on hard ground, and is a more effective means of control. The snaffle is used on the right side of the bit, and the curb on the left side. As a precautionary measure, it is well to tie the curb to the snaffle, so that the horse will not pull on the curb when the snaffle is used. When he starts with more vigor than necessary, or if he will not stop, the curb may be used by pulling on the curb. The principle applied in the Rockwell bit is a very common snaffle and curb very satisfactorily in connection with this arrangement.

After this method has been with the man. Time, patience and energy, both of master and colt, will determine the

THE HORSE

METHOD IN THE TRAINING OF COLTS ON FARM

Only a Man With Inimitable Patience Can Expect Success.

TO SECURE COMPLETE CONTROL.

(By E. N. Wentworth.)

The training of colts has always held a charm for me. The successful horseman has been a leader in my eyes, and I have studied his ways of breaking young stuff in all parts of the country. From the colts they have followed I have evolved a method which, to my mind, seems suitable for both the small farmer and large establishment and fancy purchasers.

The beginnings of education are found in the master himself. Only a man of inimitable patience and perseverance can be a successful horse trainer. Other men may break horses and subdue them by various methods, but they can never produce a horse in this manner which will possess the willingness and spirit demanded by the high-priced market. More than ever before, the horse with education is desired by both practical and fancy purchasers.

In his first year the colt is haltered. Here a little precaution will save both trouble and epithet in time to come. The animal will often try to break a horse incessantly tugging and jerking back on the lead strap. He must be taught to walk up. Touch him once or twice on the quarters with a whip, if necessary, and make him move beside and not behind his master. When he is first tied in the stall another difficulty may be experienced. His desire for liberty may make him pull on the halter or weaver, or any of the many habits acquired in such surroundings. One thing will to be remembered is always to tie the colt with a rope, not a chain. The constant clank of the different links in time to movements of the body undoubtedly will become a cause of weaning as any.

The halter pulley is easily cured. Tie a noose around the chest which will loosen without difficulty when the animal is always to be tied. In several large establishments the following plan is practised. First the horse has to wear a biting harness, consisting of a side check, crupper, girth and back band, surmounted by upright wooden sticks, to give leverage to the check. This is not tightened the first day, as the animal will often rear and go over backward. A half hour's run in the lot daily for a week, meanwhile tightening the crupper and check will accustom the animal to harness. It is best here to use the open bridle; in fact, this latter should always be used on driving horses. Draft colts may wear bits later on.

The next step is hitching to a cart. Lead the youngster around from the side and teach him to step over the shafts by the cart. This is best here to be manifested here, if anywhere, for it is a very trying task, but the time and energy saved later in life more than compensate for the trouble. When the hitch is between the shafts, raise them gently.

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PRIZE-WINNING PERCHERON STALLIONS AT INTERNATIONAL.

By rubbing them against his feet and legs to accustom him to the touch, and hold him to the cart. No straps should be used in a breeding horse, for even the strongest tackle may pull away in case of an accident. To secure control of the horse on the first reins, two methods are used, namely by the curb and also by the snaffle. The snaffle is quite common, and is satisfactory on soft ground with untrained animals, but the curb is more desirable on hard ground, and is a more effective means of control. The snaffle is used on the right side of the bit, and the curb on the left side. As a precautionary measure, it is well to tie the curb to the snaffle, so that the horse will not pull on the curb when the snaffle is used. When he starts with more vigor than necessary, or if he will not stop, the curb may be used by pulling on the curb. The principle applied in the Rockwell bit is a very common snaffle and curb very satisfactorily in connection with this arrangement.

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ANSWERS TO CORRESPONDENTS

NOTE—Not more than one question from one correspondent can be considered at any time. Questions should be specific, clear and concise, and should be addressed to the Editor of the Agricultural Department of this paper. Any person requiring answers by mail must enclose stamped envelope.—Editor.

J.J.T., Orillia, Ont.—Have a cow that seems to be in good health. She was giving three qts milk at a milking, but now gives only a teacupful of thick, lumpy milk.

Ans.—Give her 1-2 lbs. epsom salts at a dose dissolved in water. After the physic operates, give 1 dram tincture of potassium at a dose twice a day in bran mash and continue for two weeks. Also rub the udder twice a day with camphorated liniment.

J.A.D., Mamora, Ont.—Have a horse that has a shoe ball. It is soft to the touch.

Ans.—Open the lump with a knife and press out the fluid it contains. Then insert a little tincture of iodine, into the opening every third day until the lump disappears.

C. W. S., Cowanville, Que.—Has a cow that is sterile.

Ans.—Medicines are of no use in such cases. Have her examined by a qualified veterinarian to find the cause and remedy it if possible.

L. B., Stewart, N.S.—Have a cow that has what is called barn itch.

Ans.—Mix 1 pt. creolin with 10 pts water and apply to all parts of the body with a small mop and repeat in a week if needed.

W. H. C., Morden, Man.—Have a horse that has had a cough for a long time. He is in good condition.

Ans.—Give one tablespoonful Fowler's solution of arsenic at a dose twice a day in bran mash and continue for a month or more if needed.

E. H. D., London, Ont.—Have a horse that makes a whistling sound when he is drawing a heavy load or when driven fast.

Ans.—This derangement is incurable, but can be helped by giving 1 oz. Fowler's solution of arsenic at a dose twice a day in bran mash for two weeks, then giving again, and so on.

G. A. W., Middleboro, N.S.—Have a cow with a hole in the side of one teat. She is now dry.

Ans.—Scarify the edges of the hole with a small knife, then press a small, sharp pin in one edge and through the other edge, and tie a small cord around the end of the pin in the form of a figure eight. This will bring the edges of the hole together. Let the pin remain in until the hole has closed and healed, then draw it out.

S. E. P., Saskatoon, Sask.—Have a four-year-old colt that was taken from the pasture and fed on new hay which caused scours and colic, finally death.

Ans.—The best treatment in such a case would have been powdered opium, 2 drams, calomel, 1 dram, and tincture of aconite 30 drops, given in 1 pt. of starch gruel and repeated every four hours, until the animal was relieved.

J. G. B., Waterloo, Ont.—Have a horse that has a tumor on its abdomen about the size of a hen's egg.

Tie a small hard cord tightly around the base of the tumor and if it does not slough off in one week tie on another cord. When it comes off apply a little chloride of antimony to the part every second day until it is a little larger than the surrounding skin. Then mix 1 oz. oxide of zinc with 2 ozs vaseline. Apply a little to the part once a day until it heals.

G.F.B., Hawkesbury, Ont.—Have a cow that rubs the hair off, and in some places the skin. Her milk has a reddish taste and after standing it has a reddish color.

Ans.—Give 1-2 lbs. of epsom salts at a dose dissolved in water. After the physic operates give two drams sulphate of iron at a dose twice a day in bran mash. Also mix one oz. each of acetate of lead and sulphate of zinc with 1 qt. of water and apply a little twice a day to all the affected parts with a small mop, and continue until cured. It will be best to let the cow go dry.

M.G., Hopewell, N.H.—I want a remedy and a preventive for gapes in chickens.

Ans.—Strip the vena trachea, a small quantity feather, except half an inch from the extremity; dip in turpentine, then open the chicken's mouth, and press the feather into the windpipe and give it two turps. This will kill the worms and bring on a fit of coughing and may cause a cough that have not been touched by the turpentine. To prevent this disease: Wash the chickens are six weeks old with some wheat in turpentine and give them one in the morning before being fed, and one in the evening after being cleaned and disinfected with carbolic acid, and see that they have clean water to drink.

GRADING UP THE DAIRY HERD.

The most profitable way to grade up a dairy cattle is to "grade up." The buying of a large number of pure-bred cows is a very expensive and will very often result disastrously and discourage a farmer entirely. If on the other hand the unproductive animals in a herd are continued, the herd will be gradually improved by the selection of the best cows and the culling of the poor ones. The best way to grade up a herd is to select a few of the best cows and breed from them. The best way to grade up a herd is to select a few of the best cows and breed from them. The best way to grade up a herd is to select a few of the best cows and breed from them.

Everybody Should Work For their favorite Free Trip Candidate