GROWING PROTEIN.

Dairymen Urged to Raise What Grain They Need.

In an interesting letter to The National Stockman F. A. Converse of New York expresses the belief that more than half the money put into grain for our dairy cows can be and should be saved by raising the grain on the farm. A farmer with a silo never needs to buy any cornmeal, as his feed already has enough starch. What is wanted, then, is some feeds to take the place of the bran, gluten, middlings, etc. What, then, can be raised to best take the place of these feeds and balance up the silage or the other coarse fodder we may happen to have, such as mixed hay, cornstalks and straw? The answer to the question, it seems to me, is to raise oats and peas.

I have tried several ways of raising this crop and will describe the one most successful. Our rotation of crops is (1) clover, (2) corn for the silo, (3) potatoes, (4) oats and peas.

After the potatoes are dug rye should be sown to keep the ground covered during the winter with a growing crop. As early as possible in the spring plow this rye under and fit the land thoroughly for the oats and peas.

Mix the seed, one bushel of White Canada peas to two bushels of oats, and put on 2½ to 3 bushels of the mixture per acre, drilling it in rather deeply. Three bushels of seed per acre should be used only where the land is very fertile and well cultivated. After the grain is sowed roll the field or go over it with a "clod crusher," followed with a weeder or smoothing harrow. Never leave a piece of grain just as the roller leaves it; always "roughen" it to hold the moisture. Go through the oats and peas once a week with the weeder until they get so high you must stop. This will hasten the ripening of the grain, keep down the weeds, especially wild mustard, besides increasing the fertility by cultivation.

Just as the top oat begins to turn cut the crop with a mowing machine and cure as you would hay. The advantages of the early cutting are: The straw is worth as much as timothy hay to feed, the peas will not shell in mowing and raking, and the grain cut thus early will fill out and be as plump and weigh more pounds to the bushel than it will if allowed to stand and mature before harvesting. The grain is cut so green it cannot be cured out if cut with a binder, but with a mower it can be treated exactly as you would treat hay When dry, it is ready to be thrashed, and we will get grain enough from one acre to feed a dairy cow one year. In other words, on good land we can raise 50 bushels per acre, which will weigh 2,200 pounds, about the amount ordinarily fed to a dairy cow in 12 months, or an average of six pounds per day The analysis shows that oats and peas have a nutritive ratio of about one to five. Of course this is more or less variable as the two crops mix.

On some land a person can sow more peas per acre. As a rule, I would say sow as may peas with the oats as will stand up and not lodge. Some years I have mixed them half and half with good results, but cannot depend on it.

As a basis of a grain ration for a dairy cow no grain is better or cheaper than oats and peas. To this cream gluten or cottonseed or linseed meal can be added in small quantities to suit the needs of the animal fed. As soon as this crop of oats and peas is taken off seed to clover The land will be in a mellow, loose condition and can be fitted with a spring tooth harrow without plowing. Sow on the clover seed eight quarts to the acre and harrow in lightly. I seeded this last year the first week in August and have good results. I heartily commend this plan of growing protein to the dairymen to stop that everlasting feed bill. When a farmer draws $6 worth of milk to the creamery and draws back $5 worth of grain, he has to do a lot of business to get much money from his dairy. Let our motto be to raise more and buy less.

Feminine Dairy Wisdom.

Dorothy Tucker writes to Farm Journal as follows

Don't make the mistake of thinking that a large cow necessarily makes the most butter. It is a great error.

In the first place it takes much more to maintain the large cow, and in the second place she will probably not give any more or even as much in return as the smaller animal.

If you have an extra good dairy cow, you must remember that she is necessarily very highly organized.

She may be compared to a machine running at high speed and doing great work. All parts must be closely watched, everything must be kept in perfect condition, or the breaking down of the whole thing will be the result.

So it is with our best cows. They are not like the old no purpose cow, with little or no nervous system or high development. Great care must be given them at calving time, which is a critical period.

Allow no shocks or nervous excitement.

Keep the bowls open to avoid a feverish condition.

Cut down on all heavy feeds for two or three weeks before calving.

Give plenty of wheat bran with a small quantity of oilmeal.

After calving come up to full feed very gradually, avoiding sudden changes of all kinds. In fact, give her every care and attention that you would one of your own family

Keep her warm. Warmth will double the yield of a cow on the same feed as compared with cold.

We have for a long time raised our calves on skimmilk and flaxseed jelly; have raised them so that they were everything that could be desired.

Never turn calves in pasture the first year and never put them in the hog pasture.

FARM AND GARDEN

SOIL MOISTURE.

Methods of Conserving It—Subsoiling, Plowing and Tillage.

Next to temperature moisture is probably the controlling factor in the growth of plants. The importance of a supply of moisture is most strikingly demonstrated in regions of deficient rainfall, where irrigation is necessary for the growth of crops (arid regions), but it is no less important in regions where the rainfall is usually considered sufficient for the needs of the crops (humid re-

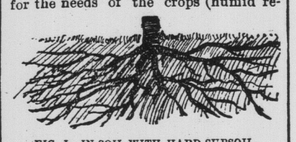


FIG. I—IN SOIL WITH HARD SUBSOIL.

gions). For this reason the following report of the department of agriculture on the conservation of moisture in the soil, as studied at various stations, is of general interest: Subsoiling is one of the important means. The Wisconsin station describes this influence substantially as follows:

Subsoiling increases the storage capacity of the soil for moisture and increases the rate at which water will sink into the soil, but decreases the rate at which it may be brought back to the surface. Subsoiling also increases the amount of moisture available to crops, since plants are capable of utilizing a larger proportion of the moisture present in loose, coarse grained soils than of that in fine grained and compact soils.

In humid regions, as a recent bulletin of the California station points out, the soil as a rule is underlaid at a comparatively short distance below the surface by a subsoil, which the roots of plants penetrate with difficulty and from which they can draw little nourishment. The roots, therefore, spread out near the surface, and the plants require frequent rains or irrigation to sustain life. A suspension of either rain or irrigation for ten days or two weeks under these conditions usually results in injury to the plant. Under such circumstances subsoiling encourages deep rooting and thus enlarges the stock of water as well as plant food at the command of the plant.

In many parts of the region of deficient rainfall, as in southern California, plants, especially fruit trees, are capable of withstanding months of drought. This is claimed to be due to the fact that "in the arid region, as a rule, subsoils in the eastern sense do not exist. The soil is readily penetrable to great depths." This difference in the root systems of plants in humid and arid regions is illustrated in the accompanying figures. A glance at the figures suffices to show that, while a root system like Fig. 1 will stand in need of frequent rains or irrigation to sustain its vitality, such a one as Fig. 2 may have prolonged drought with impunity, being independent of surface conditions and able to perform all its functions out of reach of stress from lack of moisture. It is equally clear that it is to the farmer's interest to favor to the utmost this deep penetration of the roots. This can be done in humid regions, to some extent at least, by thorough preparation and tillage of the soil and, in case of fruit trees, by guarding against excessive surface fertilization. In arid regions frequent irrigation, it is claimed, encourages shallow rooting.

To prevent loss of water from the soil by evaporation it is necessary to check the rise of water by capillarity to the surface of the soil. This is accomplished to some extent by subsoiling, but in order that the work partly accomplished by the subsoiling may be completed and continued the surface of the soil must be kept covered with a mulch of loose, well tilled soil by means of frequent tillage.

Whether the best results in preventing loss of moisture from the soil in humid regions will be obtained by subsoiling, shallow cultivation or deep cul-

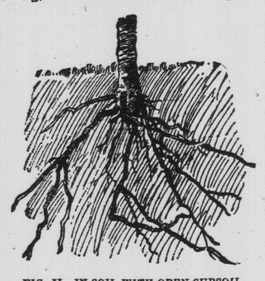


FIG. II—IN SOIL WITH OPEN SUBSOIL.

tivation will depend very largely upon the character of the soil and subsoil. The Kansas station found no essential difference in the moisture content at the different depths of soil that had been prepared in the spring by shallow plowing, by deep plowing and by subsoiling. In experiments at the North Dakota station on different methods of preparing soil and tillage for wheat the largest yield was obtained from land subsoiled eight inches below a six inch furrow.

The Niter Nuisance In Sugar Making.

An Ohio maple sugar maker writes to The New England Homestead that in taking care of the niter nuisance he knows nothing better than the use of muriatic acid diluted as occasion demands. Another method in vogue by him is a thorough cleansing of pans and evaporators in the fall with the sourest of whey. "The difficulties in making nice maple goods," he writes, "are as nothing compared to those of getting the product to the consumer for what it really is and is worth."

PEACH LEAF CURL.

An Increasing Wave of It In the North the Past Few Seasons.

Peach leaf curl has been long known to the orchardist, but the seasons of 1897 and 1898 have brought it into a prominence by no means pleasing in many peach growing sections. This year everybody will be on the alert for its first appearance, and it is important that all should be prepared to combat it. The disease can often be detected when the leaf buds have but slightly opened. The usual early indications are a roughening of the surface on the young leaves and heightened color. B. M. Duggar of the Cornell university station, has given, in bulletin 164, a brief and clear account of the fungus which causes leaf curl, and he has outlined a treatment which has proved most satisfactory. With the present knowledge of peach leaf curl he makes the following special recommendations:

First.—Spray thoroughly with strong bordeaux mixture just previous to the swelling of the buds, late in March, or very early in April seems desirable in this latitude.

Second.—Spray again with weaker bordeaux as soon as the petals of the flower have fallen or after the work of the bees is over.

Third.—Spray again with weak bordeaux when the first leaves are just full grown or at just about the time that the spores of the fungus are developing.

Professor Duggar next discusses his recommendations thus:

First.—Why not spray in midwinter? Midwinter spraying may be quite effective, but there is every reason to believe that the April spraying will be better, for if that is near the time that the buds are infected the spores will then be more readily killed. If a time when other work is not pressing is of first importance, spray earlier. Why not use copper sulphate solution? It may be quite as effective, but bordeaux adheres better and would be more likely to prevent infections throughout a period.

Second.—Why? Late infections by spores from the ground or from neighboring fields may be thus guarded against.

Third.—This spraying is to cover the leaves with bordeaux at about the time the fungus is fruiting, hoping not only to prevent summer infection, but to cover places where the spores may lodge in order to pass the winter.

Professor Duggar further says: In making the first spraying, the all important one, strong bordeaux mixture may be used, and every twig should be so well covered that the blue color appears as a distinct coating after the application has dried. However, under certain conditions the foliage of the peach seems to be easily injured by spraying with bordeaux mixture. With weak bordeaux mixture properly made I have not been able to produce any injury on the trees experimented upon.

The customary formula for bordeaux mixture is: Copper sulphate (blue vitriol), 6 pounds; unslaked lime (good quality), 4 pounds; water, 50 gallons.

In spraying the foliage of peach trees reduce the copper sulphate to four pounds. Even this may seem strong. It should not, however, be condemned until tried, and when tried the mixture should be made by the one method which has been most successful. To dissolve the copper sulphate suspend it in a coarse sack in a barrel containing 25 gallons of water. Slack the lime (use only the best) slowly and then dilute it to 25 gallons. Pour the two together in this dilute form, stirring for a few minutes. Stir before using. If large quantities of the mixture are desired, stock solutions may be made as usual. Dissolve, say, 50 pounds of the copper sulphate in a barrel containing as many gallons of water. The stock solution of lime may be made of the same strength. Then each gallon means a pound of the substance wanted. When the mixture is made, dilute each solution separately before pouring them together.

Taking Bees Out of the Cellar.

Taking bees out of the cellar was discussed at the Brantford convention, the prevailing opinion being that they should be put out early—in March or April; some preferring to take out all at once, others by instalments; no uniformity of opinion as to whether they should be put on the old stands.—Canadian Bee Journal.

News and Notes.

To all agriculturists the toad renders conspicuous service, but gardeners and greenhouse owners may make this animal of especial value. Every gardener should aim to keep a colony of toads among his growing crops, and the practice of collecting and transferring them to the gardens is a commendable one.

The twenty-fifth biennial session of the American Pomological society is to be held in Philadelphia Sept. 7 and 8 in the hall of the Pennsylvania Horticultural society. Already it promises to be largely participated in by the various state societies.

On account of the limited amount of arable land in Japan, as Dr. Knapp of the department of agriculture tells, the field crops are all managed upon garden methods. The seed for all the wheat, rice, rye and barley produced is first sown in highly fertilized beds, and when the plant is of sufficient size it is transplanted into the fields, much like cabbages.

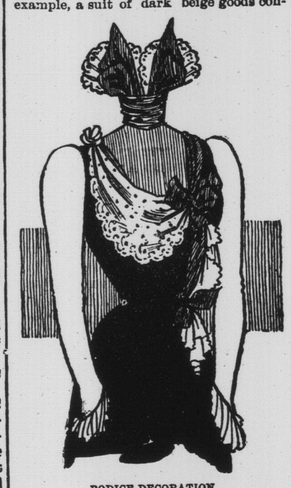
The latest wrinkle in sugar beet culture, according to the Denver Field and Farm, is a squeezing plant or substation located at a place far distant from the factory. The squeezer extracts the juices of the beet and leaves the pulp or pomace at the place for the use of feed farmers there. The juice is then transported in barrels or tierces to the factory, and in this form it can be kept indefinitely by proper temperature. With plenty of squeezers all over the country a factory could be kept running nearly all the year.

OUT OF DOOR GOWNS.

Street and Outing Costumes of Various Kinds.

The coat bodice and the tunic are more becoming to a tall than to a short figure. The tunic in particular, which suggests the classical idea, requires height and dignity in the wearer to appear to the best advantage. The bolero, however, is becoming to almost everybody in its present rather elongated form and may be safely chosen by any woman.

For bicycling and golf suits reversible woolens are used, in which the sides are different. No lining is employed. For example, a suit of dark beige goods con-



BODICE DECORATION.

sists of a short skirt finished around the edge by many lines of stitching and a double breasted bolero. The wrong side of the goods shows a brown and buff check. The suit is unlined, the seams being neatly bound with ribbon. Such a costume is exactly suited for out of door sports, with the addition of gaiters and an alpine or sailor hat, and in it a woman is comfortably equipped for mountain climbing or any athletic amusement. With a short skirt the petticoat is desirably replaced by bloomers of black material or of goods matching the color of the gown.

There are many odd and pretty ways of decorating the bodice, and one of the new methods of trimming is illustrated. There is a yoke, or rather applied plastron, of plaited white mousseline de soie, around which is a drapery of white lace, fastened at the right shoulder by a jeweled buckle and at the other side by bows of red satin. The lace is carried down the left side in coquilles and fastened again at the waist with red satin bows. The collar of red satin has coques of the same material and a lace frill. JUDIC CHOLLET.

TAILOR MADE GOWNS.

Materials, Styles and Trimmings For Such Costumes.

Tailor made gowns have lost no portion of their prestige and are seen in greater variety than usual because of the wide range of color and trimming allowed them this season. There are many blues besides navy blue—old blue, bluet and a sort of purplish blue both deep and medium—a series of faint tints just off white, grays and pole beiges, as well as the usual deep colors and red. Then for materials there are numerous sorts of thin cloth with a velvet, silk, kid or satin finish, thin serges and cheviots of a hairy surface and both coarse and fine venetian cloth. The simplest style of making shows a plain, straight skirt, touching the ground all around, very tight around the hips and with an invisible fastening, and a short

CLOTH JACKET.

jacket or a bolero with open or closed fronts, plain stitching being the only decoration. For more elaborate gowns there is the tunic skirt or the skirt with several circular flounces and the bodice with a pelerine or double revers. As for trimming, there are folds and stitched straps of cloth or satin, scallops, vandykes, circular ruffles, applications of cloth and embroideries made directly upon the goods, not to mention braiding, either plain or fanciful. Attractive costumes of black venetian cloth show applique decorations of black silk or satin outlined with braid or cord, the same adornment covering the revers, which are, however, of white silk or cloth instead of black. The lining of skirts and boleros is usually of silk of a light or bright color—rose, mauve, cherry or pea green.

The illustration shows a jacket of mastic cloth. It has a tight fitting back, without seams, and the basque is shorter on the hips than elsewhere. The front is straight and crosses over to the left, closing with two rows of pearl buttons. The large collar is faced with white cloth, and the jacket is finished with lines of stitching. This little coat may be worn as a separate jacket or may be accompanied by a skirt to match. JUDIC CHOLLET.

FASHION HINTS.

Facts Concerning the Details of Present Styles.

The draped tunic and the redingote opening over the skirt are enjoying eminent success in fashionable circles and appear in all sorts of gowns, from the tailor made costume to the evening toilet. The skirts over which the tunic or redingote appears need not be of the same color or goods. It may be entirely different if the general scheme of the costume demands such variation, or it may be covered with lace or guipure while the tunic is left plain. In some of the summer models of light gowns the body of the gown is of silk or satin, the tunic of gauze of the same color.

The favorite fashion of fluffy neckwear —bows, ruches, etc.—is gradually leading to the revival of tulle and mousseline bonnet strings. These pretty soft scarfs are seen on some of the newest hats and are likely to be welcomed, as they are usually very becoming when tied in a fluffy bow under the chin.

Boleros and coat bodices divide empire over the upper part of the costume. The

SILK PETTICOAT.

coat bodice is the more dignified of the two and is therefore more suitable for mature women, but as the bolero now comes down to the waist line behind and sometimes a trifle below it while in front it is frequently elongated in points or squares it is not very flippant and may be appropriately worn by almost any woman.

A picture is given of one of the simplest of the present fashionable petticoats. It is of fawn and blue glace taffeta and, like the skirts of gowns, is molded to the figure at the top. Around the foot is a deep flounce, increasing in height toward the back and headed by a pinked ruche of taffeta. The flounce is bordered by a pinked ruffle of taffeta. The corset usually matches the petticoat in color, or at least harmonizes with it, and in this case a corset of either fawn or blue satin might be chosen. JUDIC CHOLLET.

PRETTY ACCESSORIES

Attractive Details of the Summer Fashions.

Some of the new parasols have painted designs of flowers thrown across them or forming an elaborate pattern around the entire circle. The simplest painted parasols are of plain, thin silk, white or of a delicate color, with a spray of apple blossoms or roses at one side, but more elaborate ones are ruffled with gauze and almost covered with painted flowers. Another novelty in parasols has the edge cut in deep tabs or scallops and bordered with little ruchings.

Incrustations of cloth have been much worn, but now there is a new development, in which the cloth designs are appliqued on a foundation of heavy net, the goods thus created being used for parts or the whole of costumes.

Maize and golden tan straws are the newest. Italian straws and straws min-

GIRL'S HAT.

gled with chenille, tulle and gauze are also seen. Hats are still worn forward over the eyes, and the back is more or less lifted, with trimming placed under the brim near the hair. Violet and blue are the most fashionable millinery colors, and therefore violets and bluets, or cornflowers, are used in great profusion in both dark and light shades.

Children's hats are extremely attractive this season. They are large and are usually simply trimmed. Some of the prettiest are chiefly ornamented with field flowers—buttercups, daisies, poppies, cornflowers or red and white clovers, with grasses and plain or plaid ribbons. The hat shown in the sketch is of the old fashioned leghorn variety and is trimmed with pink taffeta ribbon at the top and under the brim on each side, the ribbon also forming strings which tie in front. A spray of hawthorn is placed in front, falling upon the brim. JUDIC CHOLLET.

MILLINERY NOTES.

Colors and Styles of Warm Weather Hats.

Fine Milan straws are again in style. The braid is used alone or combined with fancy braids of other kinds, lace braids and chips. There are very open braids, through the interstices of which are run bands of straw of a different color. Piece goods of woven straw and chip are also to be obtained, very soft and flexible, which are used for draped toques. When these goods are of an open character, they are lined with mousseline de soie of the same color as the trimming of the toque.

Tulle and mousseline hats are a feature of the new styles and are very pretty as

STRAW HAT.

well as being light and comfortable to wear. The great fault of many hats is their weight, which is bad for the head and the hair. A comparatively large hat of tulle or chiffon, even although covered with ruchings and puffings, is so light as to be no burden unless it is loaded down with other trimming.

Bright colors are characteristic of the prevailing millinery. Not only are the trimmings gay, but the foundation upon which the decoration is built up is often of a lively coloring, whether it be straw, crepe de chine, tulle or mousseline. Red, deep rose, green, violet and bright blue are favorite shades, and there are also golden browns, delicate grays and fawns which are extremely attractive. Fawn with gold trimmings and gray with silver trimmings are two of the fashionable combinations in delicate effects.

The hat shown in the picture is of pinkish lilac straw. It has a waved brim, under which is a ruche of tulle to match. The left side is lifted by a cluster of small pink roses with foliage, and around the brim is a drapery of mauve taffeta with groups of tucks, passing through a gold buckle at the back. At the left side is a high trimming of plaited tulle. JUDIC CHOLLET.

BODICES.

Big Bouquets Are Worn Upon the Front of the Gown.

Light bodices are to be worn this summer. They will be made of taffeta, mousseline de soie and foulard and will be worn with separate skirts of lightweight goods like etamine, crepe de chine and mousseline de laine. Among the materials brought out for warm weather are very attractive wool and mohair grenadines in both plain and fancy weaves. They require a silk lining, as they are transparent and will compose cool and attractive gowns, especially in the light and bright colors. All the new shades are represented—a dull reddish pink, the whole gamut of bluet blues and the violet range, also a rather light but subdued greenish blue, which is particularly pleasing. Pearl gray or light beige

SUMMER MANTLE.

grenadine over a highly colored lining has a changeable effect which is often satisfactory.

Immense bunches of violets are now worn upon the front of the bodice in the street, and the clusters are sometimes eight or nine inches across, suggesting great purple cabbages rather than the modest and poetically retiring violet. The latest novelty is to tie a violet silk cord with tasseled ends around the stems of the flowers.

High collars continue to be ornamented with points, tabs and wings, bordered with puffings, ruches and plaitings.

The illustration given today shows a long mantle of black bengaline. A ruffle of black mousseline de soie hemmed with black satin and headed by a vine of black embroidery designs a redingote outline upon the skirt, and the embroidery passes up the sides of the front. The yoke is tucked, and from it depend pointed pelerine sleeves embroidered with black and terminating in triple ruffles of black mousseline bordered with satin bands. In front are revers of black satin bordered with a ruche of mousseline de soie, and the valois collar is trimmed in the same way. JUDIC CHOLLET.