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FORAGE FOR RANGE AND RANCH
Bulletin 120

Devoted to the Interest of Cattlemen, Dairymen and all Live-Stock Breeders

AGGELER & MUSSER SEED CO.
620 South Spring Street
Los Angeles, Calif.
MR. CATTLEMAN, READ THIS

There is scarcely a rancher in the Southwest who has not at some time been greatly in want of good and undamaged land, and who has not suffered much loss from lack of feed following a season of light rainfall.

These periodical losses we believe can be reduced to a minimum by co-operation on the part of cattleman working together to improve the range by a systematic elimination of the undesirable vegetation and introducing new vegetation by planting seeds of grasses that are known to thrive under similar conditions in other parts of the country and from other parts of the world.

We are doing this some of these acres, the Missouri, and companies have been taken over by selection and adaptation. Given to the Southwest the best class of grasses produced anywhere in the world, the resulting condition may be the building up of this feed supply.

One's greatest effort to be of a substantial benefit to the Great Southwest is to assist the stockman to find some valuable forage plants that will endure cold and every condition that exists on the vast masses of the desert and mountains, and may be covered with grasses that will maintain some good of stock.

The following has brought about a realization of the wonderful work or grasses that passed unnoticed or, if noticed, little good was given them.

One great source of waste exists in the barren condition of which are placed desert, gullies and water holes. Hill sides, plains, valley walls, and many other conditions. Without much study and care, we have concluded that a substantial gain in grasses should be made in these conditions so that a common grass that will enable these barren places to support considerable herds of cattle without the loss of feed.

All the work done on this subject we have brought forward and have noticed that we now grow a great deal of grasses such as we had been missing, the result of a good crop of pasture grasses, and very great gains have been made. The Department of Agriculture has passed a good reference to the present work for the Southwest, systematic agrospecies are being worked on by various experiment stations, and the plants are being improved for future use. Some of these grasses have been distributed to all States and works of soil conservation are being carried out. In the meantime it is necessary to raise feed, and a large proportion of the grain that is now grown on the farms is used for feed in the South. This is very unfortunate, for the grain could be canned and utilized for other uses.

We invite you to see our demonstration at the rear of our warehouse, 1934 S. Fifteenth Street, one block east of Alameda Street.

WHAT MAY BE SEEN GROWING THERE

Grasses
- Redtop
- Italian Rye
- Perennial Rye
- Chewings Fescue
- Various sorghums
- Alfalfa
- Common Smooth Peruvian Hairy Grass

MR. DAIRYMAN AND STOCKMAN, READ, THIS

You want the best as well as the most economical feed you can obtain upon a limited acreage. To get this you want the crops that will give you the best quality and greatest tonnage for your silo. You also want to produce that will give you best quality and quantity extending over the longest season. You also want the crops best suited to your soil and climatic conditions. We have given much attention to your requirements and we are sure you will find in this bulletin something suited to your purpose. We also invite you to see our demonstration referred to on the preceding page.

POULTRYMEN

To the small stock breeder and poultryman you will find in this bulletin just as much of interest to you as to the large breeder. Read it carefully.
Mr. Stockman: You have what is known as a small range. Here is the data you want. This is the table. These figures show that you can estimate the size of your range, and from this you can calculate the required amount of seed. We therefore have this form of rough estimate, which can be used for rough estimates on a small range. Use this table to determine the ground area. It will give you the correct area, and from this you can calculate the required amount of seed. You can then estimate the size of your range, and from this you can calculate the required amount of seed. This estimate may seem impractical and unwarranted, but you can expect valuable grasses to grow with less attention than could be given to other crops.
Napier Grass as a Wind Break
A NAPIER grass is a hardy species capable of growing to a height of from 3 to 12 feet or more, depending upon the amount of moisture and fertility of the soil. The plants need external air to grow, hence the name, which is derived from the Sanskrit word for the plant. Corn is a member of the grass family, and it is considered by some botanists as having been produced by a close parent of the NAPIER grass. The variety known as NAPIER grass is a large plant, and will grow to a height of from 5 to 6 feet or more. The leaves are produced from the base and not from the crown, as in some species. The leaves are long, pointed, and about a foot wide, with a whitish under surface and a dark green upper surface. There is considerable variation in the leaves of different species of NAPIER grass. The flowers are white, and the fruit is a small, dry, oval-shaped seed.

The Right Way to Plant NAPIER Joints

There are several ways to plant NAPIER, and the following is recommended:

Planting in spring or fall. In spring, the planting should be done after the soil has begun to warm up, and before the soil becomes too wet. In fall, the planting should be done after the soil has begun to cool down, and before the soil becomes too dry. The planting should be done about 1 foot apart, and the depth of the hole should be about 1 inch. The planting should be done in the afternoon, and the plants should be watered well after planting.

Planting in fall. In fall, the planting should be done after the soil has begun to cool down, and before the soil becomes too dry. The planting should be done about 1 foot apart, and the depth of the hole should be about 1 inch. The planting should be done in the afternoon, and the plants should be watered well after planting.

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For frequent cutting we advise planting twelve inches apart each way; thus one plant to each square foot will quickly fill the space solidly with succulent green feed that may be pastured or cut frequently for hay or green feed for chickens, rabbits or goats.

The grass is also said to possess drought resistant qualities to a marked degree, but it will thrive best where soil moisture is not lacking.

In a discussion of this grass as found in a state of nature in Tropical Africa the author says:

"It occurs along watercourses and in marshy depressions, but also enters the bush and forest where open spaces afford sufficient light. In rich marsh land it attains a height of 15 feet, while in drier soils it only grows 6 feet high."

During the past year Napier grass has received considerable advertisement. In some cases over enthusiasm has led to error and exaggeration and the impression has become more or less prevalent that this grass will produce very large crops on practically any type of land and that it requires little or no cultivation. This belief is based upon a misapprehension. Plantings made during the past year indicate that results will vary directly with the fertility of the soil and the amount of moisture. Its habit of growth is like millet and is about as easily eradicated as kafir corn. It grows very rapidly and may be cut when 3 or 4 feet high, supplying a heavy crop of green feed or hay. In nutritive value and palatability, Napier Grass is not excelled by any similar non-leguminous feed. When cut at the height of 3 or 4 feet, the stubble is in a tender growing condition. This tends to promote a quick and vigorous growth and insures a maximum number of good cuttings during the growing season, yielding about 3 tons or more of dry hay per acre each cutting, and it has been known

Guinea Napier
Just Five Months' Growth from Dormant Joint
NAPIER (Continued)

Napier grass, when grown from cuttings of 3- to 5-inch lengths, will produce a yield of 10,000 pounds per acre of 12-inch green hay on average. Napier grass can be cut at any time and will produce several cuttings of at least good leaf and quality. If given the same treatment as proposed, Napier grass could be harvested in the form of: 1) Tissue or leaves, especially suited to grazing for dairy and other livestock; 2) Forage, which is suitable for silage; 3) Hay, which is suitable for hay-making; 4) Green manure, which is suitable for soil improvement; 5) Forage, which is suitable for cattle and other livestock; 6) Green manure, which is suitable for soil improvement; 7) Forage, which is suitable for cattle and other livestock; 8) Green manure, which is suitable for soil improvement.

The following table illustrates the prices per ton and per bushel for some common cuttings of Napier grass:

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For further information, contact your local agricultural extension service or visit the website of the U.S. Department of Agriculture. Prices quoted are subject to change without notice.

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NAPIER DROUGHT RESISTANT

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We have but little information concerning this grass. Mr. Nichols of Beaumont, Texas, is our authority for saying it is an excellent permanent pasture grass. Mr. Nichols operates a large ranch near San Antonio, Texas, and states that "Guinea grass is excellent for fattening stock and growing forage." Mr. Nichols adds that he has numerous varieties of the grass, and that the highland or Indian Guinea grows readily from the crown at the root and grows six feet high with abundant forage. The grass is used extensively in Europe and Asia for fattening stock.

The grass grows readily from the crown at the root and grows six feet high with abundant forage. It is perennial and grows well in a variety of soil conditions. We offer the highland or Indian Guinea at $1.00 per dozen, postpaid, to anyone wishing to experiment with it.

RHODES GRASS

Write Department of Agriculture, Washington, D.C.
Ask for Farmers' Bulletin No. 1648.
RHODES GRASS (Continued)

Was discovered in South Africa by Cecil Rhodes in 1893 and developed by him on his farm from a few handfuls of seed he found wild. It was taken to New Zealand and Australia and is responsible for the development of the sheep industry there. It was named to honor of Mr. Rhodes. About 12 years ago it was brought to Florida where it became known as the East Coast Grass, and where it made records of wonderful growth.

For first-hand information we are indebted to Mr. C. R. Renfrow, who with Mr. W. D. Looney have 320 acres of Rhodes Grass growing at Naples, Cal. The soil is heavy and salty, for this land borders on the Salton Sea. They are cutting it 8 times a year and two tons per cutting.

After two years' experience with Rhodes Grass, Mr. Renfrow says of it. "It is a plant which thrives well in warm climates. In Florida it is perpetual in a temperature above 70 degrees and thrive at 125 degrees. It stands drought remarkably well and will endure much neglect and pasturing. It does not scald in hot weather from excessive moisture. Like alfalfa it is highest in protein of any grass tested. Stock like it and will not show blast."

Rhodes Grass will drive out Bermuda and other weeds because of its dense growth. It is easily controlled by being plowed once and let stand for sixty or ninety days. It adds humus to the soil.

The best time to plant Rhodes Grass is from March 1st to September 1st.

The soil must be well prepared by thorough pulverizing, then plowed (see page 4). Broadcast 11 pounds of seed per acre, mowing once the field twice. Move north and south, and east and west sowing 7 pounds each way. Keep the soil continually moistened until the grass is established. It grows so rapidly that the first cutting may be had in the sixth week after pasturing until after the second cutting.

"Price per lb. $1.00 postpaid. Write for quantity price."

Another year of experience with Rhodes Grass has added much to its popularity. It might be claiming too much to say that for a permanent pasture field it excels alfalfa, but it is no exaggeration to say it has a wide usefulness, because it will thrive on soil too alkaline for alfalfa. It will endure more drought, more pasturing, more neglect, and will support as many head of stock per acre.

The following extract is from the U. S. Department of Agriculture Bulletin 744. Rhodes Grass was first cultivated because of its pasture value. It bears trampling well, recovers quickly after it is eaten down, and is relished by all kinds of live stock. In pastures where it is located, Rhodes Grass will support about two steers to the acre for 9 to 10 months and double that number during the more favorable parts of the year. The quality of hay made from Rhodes Grass is superior to that of most other grasses in that it contains a larger proportion of leaves, while the stems are slender, tender, and sweet, so that the hay is eaten with very little waste. It retains its color well in drying, therefore making an attractive bale for market.

Mr. McArthur of this city planted twenty acres near Holtville in Imperial Valley, on soil that was white with alkali. He was enthusiastic concerning it. He says it is the most valuable grass he has ever come to Southern California. There is no longer any excuse for waste places, every acre of alkali soil may now be converted into valuable grazing land.

The following was copied from the Orchard & Farm, contributed by Dr. F. B. Kennedy (Grass and Forage Plant Investigation), University of California: "Rhodes Grass hay tender, and well liked by all classes of stock. It has an attractive appearance and lends itself admirably to baling for market. One to two tons hay per acre can be considered a poor yield, and might be expected on poor soils with insufficient irrigation, while on good soils with ample irrigation and a long season, eight tons per acre may be reasonably expected. The grass grows very rapidly during the warm summer, thirty days being sufficient to produce a cutting, but as the season advances and the mean temperature becomes lower, the growth becomes less rapid.

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PASTURE PLANT

"Perhaps the best way to utilize Rhodes Grass is to make two cuttings of hay and then pasture for the remainder of the season. Continuous grazing is not to be recommended, although the plant withstands pasturing well. We have not as yet determined the carrying capacity of Rhodes Grass for California conditions, but the reports from other states are really remarkable. A very conservative estimate would be three cows per acre for eight months.

Since California must from now on produce more forage under intensive cultivation we believe this to be one of the grasses that may help to solve the forage problem.

Experience with feeding Rhodes Grass in Imperial Valley has been very gratifying, and our foresees that it will be a valuable addition to the animal husbandry and value products of the West.

Rhodes Grass does not grow underground sprouts like Johnson or Bermuda grass, but sends runners over the surface like strawberries. This casts eradication.

Just Six Months' Growth from One Joint
Phalaris Stenopectra.

This very fine hair-like seedlings are exposed to severe frosts they are not injured. It grows rapidly and produces large clumps the first season. The foliage is devoid of hairy coverings of any kind, and is free from rust, thus tending toward a clean hay and palatable pasturage. During the first season the flower-bearing stems are comparatively few and grow only about two feet high. During the second season a dense leafy mass three feet high is produced with the flower-bearing stems four to six feet high, depending on the rainfall.
Feeding experiments with calves, in co-operation with J. Woll at the University Farm at Davis, show that the winter grasses, particularly Phalaris reported to thrive very favorably with alfalfa as a base. All classes of stock are partially to it.

Small trial plots at Berkeley have also done well, although growth is much slower.

P. B. KENNEDY

Cuttings grown to J. of 'Kennedy,' asked Woll introducing it submitted to. This shows an analysis conducted March 6-2-19. I acre.

Composition of Harding Grass

<table>
<thead>
<tr>
<th>Protein</th>
<th>Nitrogen</th>
<th>Ash</th>
</tr>
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<tbody>
<tr>
<td>1.00</td>
<td>0.09</td>
<td>1.90</td>
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The sample was not a typical one, as it was taken from a plot which, however, did not seem to hurt the grass appreciably. The grass was 6 to 12 inches high at this time. Cuttings taken during the growing season showed that the same grew to a height of 3 to 4 feet or more on this plot. Would doubtless show a lower percentage of protein and a higher fibre content. The results of the analysis of the sample submitted show, beyond a doubt, that this grass is exceptionally rich in protein, fat and mineral content, and suggests that it will prove a most valuable addition to the list of California forage plants.

Feeding trials with this grass conducted with stock at the University Farm show that it is very palatable to dairy cows, sheep and goats.

I shall watch with great interest further developments in introducing this grass, and making its merits known to stock-men of the State. It would appear to me that it is a remarkably promising plant that may prove of great value to our stock interests.

Very truly yours,

(Signature) F. W. WOLL
Prof of Animal Nutrition

(The King of All Winter Grasses)

For cold districts Phalaris is the grass. It seems to thrive on the cold, and grows a-inch in a day or more in the depth of winter. Thoroughly perennial, and makes a valuable and permanent pasture. Can also be made into hay. Plant from March to June at the rate of 2 to 3 pounds per acre. Can also be established from roots planted from May to August, about 18,000, eighteen inches apart, being required to cover an acre.

J. D. THOMSON,
Altadena.

Mr. Thomson says also that after cutting his Harding Grass for seed the plot lay dormant until September; then, without any irrigation, it started to grow, and before rain-fall made considerable growth.

Dear Sirs:

Regarding the Harding Grass (Phalaris Stenoptera) I wish I could get more. Having a few seeds in 1918 I planted them in six times, beginning Oct. 12, the last planting being on March 25th. I am well pleased with the results, although it does not grow very high in our granite soil, it is the only grass I know of that will pay here.

A. LAFORGE,
Newcastle, California.

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PARA GRASS

Para Grass is the second season without irrigation, grown in a vacant lot in the City of Los Angeles.

ALFILARIA

(Erodium cicutarium)

This valuable coastal grass is particularly well suited for the Range. It is found on sand- or gravelly ground and on bare soil in southwestern United States and in the West Indies. It grows well on sand hills but roots survive even in sandy soil with shallow moisture. It will maintain a good growth in dry locations and will produce a good crop for hay or grazing. It is well adapted to all range work and is considered a valuable for summer and spring on desert or mountain pastures. It requires little or no preparation and is easily propagated. A few pounds of seed are sufficient to sow an acre or more broadcast. It attains a height of 15 to 20 inches. It is well adapted to all ranges and is particularly good on range bottoms. A few pounds of seed are sufficient to sow an acre or more broadcast.

Per box, $1.60 postpaid. Write for quantity price.
AUSTRALIAN SALTBUSH

(Atriplex semibaccata)

Australian Saltbush Growing by the Roadside

One plant growing by a roadside on clay soil having had no moisture other than the season's rainfall.

Cardinal points: For range near the coast or interior low-lands where fogs are of frequent occurrence—any kind of soil—endures much alkali—thrives with a minimum of moisture—very succulent during winter, spring and early summer, when it is relished by all stock—becomes parched by heat in late summer; then it is less palatable to stock, but they will thrive if forced by hunger to eat it—it seeds freely. Requires no preparation of soil for seeding. Cannot cut and dry as hay—has one tap root—easily eradicated.

Per lb. $1.00 postpaid. Write for quantity price.

The best way to get a stand of Saltbush is to sow broadcast the seed during the months of January and February. Five pounds of seed will sow one acre broadcast.

Saltbush has made a new record which establishes a value. Heretofore, this has not been appreciated, although for years we have tried to make plain that its principal use was for sheep and goat pasture.

Mr. Maurer, who has large interests in the San Clemente Islands, and maintains large herds of sheep and goats, states that were it not for the several hundred pounds of Saltbush he purchased from us several years ago he would, undoubtedly, have lost his herd. If you have any waste land, sow Saltbush; it may be depended upon when all else fails.

Had the owners of Guadaloupe wisely sown Saltbush seed over their island several years ago they would not have found it necessary to ship their herds to the mainland, entailing much expense and inevitable loss of animals.

Fire may devastate the range and destroy all dry forage in its path, but the Saltbush being perpetually green is absolutely uninjured by fire.
RUSSIAN BROME GRASS

(Bromus inermis)

Brome grass, or brome, is one of the hardiest perennial grasses known, and will grow in almost any soil. It grows in dense, tufted sod, and is very hardy. It will grow in any kind of soil.

The following information is from Mr. J. S. Kohnle, of the USDA, and is based on his observations in the Western states. Brome grass is a very hardy grass and will grow in almost any soil. It is very hardy and will grow in any kind of soil.

**Price per lb. postpaid.**

Russian Brome Grass is essentially a winter grass, but it will grow during the summer months if it is given enough water. It is very hardy and will grow in almost any kind of soil. It is very hardy and will grow in any kind of soil.
BERMUDA GRASS

(A Zoysia daecylon)

Bermuda Grass is a hardy, high yielding, and very productive
pasture grass. It is well suited for use in lawns and
landscape plantings. It grows, under proper conditions,
quickly and fills in dead areas, forming a dense sod.

It is especially valuable in regions where the summer
months are hot and humid. It withstands considerable
frost injury. It is resistant to disease and insects if
properly cared for.

It is not a sod or turf grass. It is a close mowing,
re-seeding grass which grows, under proper
management, more like a lawn than a sod. It grows
quickly by matting the dead leaves down into the
soil, but it grows only by the spreading of the
seed. It does not produce a sod. It is not adapted to
the short, close mowing of a lawn, but can be
managed as a sod to produce a coarse matted
sward. It is not a good lawn grass because it grows too
broadly and will not stand the close mowing
required for a fine lawn.

Bermuda Grass is adaptable to many soils, but
preference should be given to the sandy, well-drained
soils, soils with a high organic content, and
sandy loams. It grows slowly on heavy soils, and will
not stand close mowing or heavy grazing. It will not
grow on poorly fertilized, heavy soils, nor in cold
climate. It must have access to sunlight and
air when it is young. It adapts itself to a wide
range of growing conditions and is used in the
southeastern United States, wherever soils, climate
and management are favorable.

It is capable of growing under many conditions
and is, therefore, adaptable to many climates. It
thrives best in the southern and southeastern
United States and in parts of the north where the
summer months are hot and humid.

This grass is ideal for pasture use in the south. It is
valuable for grazing on soils too poor for other
pasture grasses and for use in small gardens and
flowerbeds. It is a valuable pasture grass for use in
groves and for underplanting in lawns. It will also
stand close mowing and will not require much
fertilizing. It will grow well in the north as long as
the soil is not too heavy and the climate is not too
cold.

Bermuda Grass is excellent for a sod on ditch banks
and road sides.

Strictly speaking, Bermuda Grass is not a rotation
plant. Because of the difficulty found in eradicateing
this grass and because of its continuity in growth, its
highest use is found in permanent pastures.

The seed falls and is spread by the wind. The
seedlings are very small and are easily killed by
mechanical damage. Therefore, they must be
protected from injury by mowing or foot traffic.

The seed is not only low in germinating power but the
young plants from the seed grow so slowly that they are
liable to injury from the crowding of weeds unless
well cared for.

A pound of seed should sow one-fifth to one-third of an
acre. The method of sowing the seed in drills would doubt
less be preferable.

Bermuda Grass is unquestionably the best pasture
grass of the south, viewed from the standpoint of palatability,
productiveness and permanence. There are reasons for be
lieving that in its proper climate it will produce more graz
ing and more meat than blue grass under the most favored
conditions. Sheep can graze upon it from 7 to 8 months in
the year according to the growing conditions.

In seasons of much drought the plants wilt, on some soils, and are hardy to die, but when rains come they will revive again.

Bermuda Grass is a valuable pasture grass in many
situations. It is a valuable pasture grass in many
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situations. It is a valuable pasture grass in many
situations.
SMILO GRASS

(Oryzopsis willowensis) Many Flowered Millet

Recommended by the University of California. A hardy evergreen perennial, drought-resistant bunch grass that thrives on dry hills among rocks and brush and is a wonderful producer when planted in good soil. It must have sufficient moisture to get a good root system before the dry season. It also thrives under trees.

Smilo seed originally came from Southern Europe, where it is considered one of the best forage grasses.

Smilo will not become a pest, as it has flat fibrous roots which penetrate very deep, but is easily cultivated out.

Smilo grass does not do well planted thick. Plant drills about 14 inches, using from to to 1/2 pound of seed per acre. Thin to one every 14 inches in row. When sown broadcast, sow very thin and hoe out the surplus roots.

Do not plant seed over 1/4 inch deep. Better sow on top of ground and harrow lightly. When planted deep we have known Smilo to lie in the ground two years, but as soon as brought to the surface and got sufficient moisture it came up and made a good stand.

Smilo grass is a slow grower the first year until it gets a good strong root system (unless irrigated), when it is a good producer and will stand many months without moisture.

When possible plant seed before fall rains, during September and October, so it may get a good root system before the cold weather and will stand the following dry season.

In a small way plant seed in a seed bed, using the same care you would in planting a lawn. At the beginning of the rainy season transplant to permanent place, setting the roots straight down with the bulk about one inch below the surface.

We have a limited amount of seed which will be sent postpaid. Packet, $0.10; one pound, $0.50. 10 pounds, $3.00 postpaid. Good, well rooted.

Plants 75c per 100 postpaid; $4.00 per 1000 f.o.b. here.

Two years ago a brush fire got started on our hills. Before the rainy season started we sowed several pounds of Smilo seed broadcast. We got a good stand, but did not rain for several weeks we feared the birds would get all the seed. Consequently, on this hill land, that for ages has produced nothing but brush and wild animals, we pastured several head of horses all summer. The last week I rented it for a nice sum to Burt Erwin, lessee of the 9000-acre old Spreckels ranch, who has 35 head of his work horses and mules in my pasture.

G. D. STEAD, San Diego County.
This grass should be established on the range. Grows on any kind of soil—endures some alkali—excel lent for permanent pasture on marsh or mesa—grows winter and summer with moisture—excellent for hay—may be cut every six weeks—becomes dormant with drought, but revives with less moisture than any other grass, yet will survive if submerged for several weeks—stools and seeds freely. It has been tried and proven in this section to be one of the best of grasses for permanent pasture in meadow or on mesa where it must depend solely upon the season's rains. The seed takes root among the weeds and makes, when checked out everywhere it is, a dense, tufted grass, choking out everything in its way. The dense tufts of grass make a thick sod capable of supporting live cattle on narrow land. The stock relish it as well as alfalfa. It makes a fine hay free from the weed. It is as easy to eradicate as Timothy or as any other bunch grass. Ten pounds is sufficient to sow one acre broadcast. The second year's growth of Paspalum on our trial ground excels all the low bent grasses for quick recovery after drought.

Per lb. 75c postpaid. Write for quantity price.

19
RED TOP
(Agrostis vulgaris)

Red Top is a perennial grass, grows from a low
matted root which is known as the stolon. The
stolon is a non-woody root, and the shoot is
referred to as a tiller. The leaves are fine
and long, with a somewhat shiny appearance.

PERENNIAL RYE GRASS
(Lolium perenne)

Also under description Rye, though the robust
winter grass of pastures, and in cultivation results
better, and is not grown as extensively as
other grasses. It makes good year-round use, with
a Ten-day fall seeding for harvests under
the usual growing seasons. It is a third crop
for rotation. It is a good forage for grazing stock.

ITALIAN RYE GRASS
(Lolium italicum)

Sow several months before the last frost and
produces an early and a winter crop of
herbage. The duration being
about three years. It is adapted for
permanent pastures and highly valuable for rotation of crops. It is
not affected by rust.

BARLEY AS A WINTER PASTURE

Several other plants furnish good winter pasture, but none
are so valuable as Barley. It affords grazing earlier, more
abundantly. It recovers more rapidly after being grazed
down. It is more relished by stock and more wholesome. It
stands up so that stock can eat it with less dirt or other
object of pasture, and it is never affected by rust.

Sown in September it affords good grazing until May, but
if the stock are taken off in March, a good crop of grain may
be harvested.

For this purpose sow 100 pounds per acre and irrigate
if needed.

Barley sown in an alfalfa field during October will make
good pasture during the winter when alfalfa is dormant, or
it may be grown for hay without injury to the alfalfa.
Montana contains is prepares. such roots furnishes better. seeds 55.33 green is crop grows. 13. write and Alba, Melilotus sweet. 20. is. 17. 11. Oat growth: Alfalfa. 21. Now the land is more. hay cut. Land (2nd cutting) 21. 20. sweet clover prevents erosion. 10. Will not bloat cattle or sheep. 4. Equal to alfalfa for pasture. 5. is a great milk producer. 6. Furnishes early spring pasture. 7. Contains more protein than red clover. 8. Fits well in the crop rotation. 9. is a great soil enriching crop. 10. Better than any of the common clovers as a green manure crop. 11. is a valuable plant for honey bees. 12. Prepares the soil for alfalfa. 13. Roots are soft and give no trouble in plowing. 14. Roots being tender become inoculated more readily than alfalfa. 15. Never damages cultivated crops. 16. Its roots decay rapidly, adding much nitrogen and humus to the soil. 17. Grows and will produce a crop in all parts of the United States. 18. Seeds freely in both humid and dry sections. 19. Sweet clover prevents erosion. 20. Will grow under conditions where clover and alfalfa fail; (a) On land too low, too wet, or too alkaline for alfalfa; (b) On land too hard or too compact for alfalfa; (c) On soil too poor for alfalfa, especially where there is lime. 21. It is immune to nematodes.

Now read again these twenty-one reasons for planting Melilotus Alba and see wherein it suits your particular case.

Sweet Clover and Alfalfa Hay Compared

The Massachusetts State Station Report for 1894 gives the following analyses of sweet clover at different stages of growth:

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<th>Digestion coefficient.</th>
<th>Nitrogen</th>
<th>Dry</th>
<th>Pro-Crude free ex-matter.</th>
<th>Ash. talm. fibre. tract. Pat.</th>
<th>Oat Straw</th>
<th>Sweet Clover hay (M. alba)</th>
<th>Alfalfa hay (1st cutting)</th>
<th>Alfalfa hay (2nd cutting)</th>
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21 Reasons for Planting Melilotus Alba

1. It is not a weed.
2. Like alfalfa it is rich in protein.
3. Will not bloat cattle or sheep.
4. Equal to alfalfa for pasture.
5. Is a great milk producer.
6. Furnishes early spring pasture.
7. Contains more protein than red clover.
8. Fits well in the crop rotation.
9. Is a great soil enriching crop.
10. Better than any of the common clovers as a green manure crop.
11. Is a valuable plant for honey bees.
12. Prepares the soil for alfalfa.
13. Roots are soft and give no trouble in plowing.
14. Roots being tender become inoculated more readily than alfalfa.
15. Never damages cultivated crops.
16. Its roots decay rapidly, adding much nitrogen and humus to the soil.
17. Grows and will produce a crop in all parts of the United States.
18. Seeds freely in both humid and dry sections.
19. Sweet clover prevents erosion.
20. Will grow under conditions where clover and alfalfa fail; (a) On land too low, too wet, or too alkaline for alfalfa; (b) On land too hard or too compact for alfalfa; (c) On soil too poor for alfalfa, especially where there is lime.
21. It is immune to nematodes.
SWEET CLOVER

At one time despised as an obnoxious weed. Investigation proves it to be a valuable crop.

By P. L. Holden, Director Agricultural Extension Department, International Harvester Company of New Jersey.

For many years we have observed Sweet Clover, or mililotus, as it is commonly called, growing under adverse conditions, by the roadside, in fence corners, along the ditches in irrigated sections, and on unoccupied land in nearly every state.

Its great value as a pasture plant will be found in sowing it on worn-out and over-stocked pastures. There the stock will permit enough to mature for reseeding, thus making a permanent pasture. It is almost impossible to kill out by over-pasturing, but very easy to eradicate by proper cultivation.

It furnishes an abundance of pasture in dry mid-summer, when all other grasses are dead. This fact alone should commend it for serious consideration.

As for prophecy, I firmly believe the time is not far distant when Sweet Clover will be considered a valuable asset to any farm that maintains a permanent herd of live stock and needs a pasture crop to feed a milk cow and stock raising at reasonable expense on the poorest of farms. It will certainly prove its merit in the "drouthy" West.

When all other forage has been withered and killed by the scorching sun, when the cornfield and silage crop are already exhausted, Sweet Clover will come to your assistance, making acceptable ensilage and tide over a most critical period.
Continued

Where to Sow.—The best results are obtained by sowing in early spring as soon as the ground is dry and warm enough to put in condition for a good shallow seed-bed—this latitude April 1 to 15, before spring rains. In the South where the rainfall is copious in winter, fall plowing will be better.

Where to Sow.—Any place on the farm, especially on the poor, worn-out spots, fence rows, ditches. It prevents erosion.

How to Sow.—Preferably in a fine shallow seed-bed on a firm sub-soil. If sown before a rain it needs no harrowing. Always cover very lightly, as deep seeding is unsuccessful. Corn stubble, or any ground cropped the preceding year, by discing and harrowing, putting the top two inches of soil in fine condition, is suitable for sowing. Always cover seed shallow. Without nurse crop preferred.

General Remarks.—With a favorable season and good stand it can be pastured without injury to the plant in about 10 weeks. The first season, pasture or cut crop of hay; the second season, pasture hay or seed. It is most valuable as continuous pasture, when it will reseed itself without thought or care of the grower.

It will never bloat stock, horses, cattle, sheep or hogs, turned out at any time, even in rain or dew. A good stand will pasture 20 head of hogs to the acre. Ring the hogs. The bitter taste of sweet clover is caused by the presence of cumarin, which prevents the bloating. It does not affect flavor of milk. Sweet clover will thoroughly inoculate the land for alfalfa, as the bacteria of both plants are the same.

Sow 12 to 15 pounds per acre.

A Few Don’ts

Don’t plow deep.
Don’t sow deep.
Don’t cut low in mowing—at least 6 inches high.
Don’t have subsoil loose.
Don’t be afraid to sow sweet clover

Meliolus Alba for the Range

Mr. Stockman, as soon as you read this send for some seed of this Sweet Clover and just to get a start sow at the rate of one pound per acre all over your range. On any kind of soil. If not pastured too closely you will soon have a valuable range for your stock.

The same advice applies also to Smilo.

Sow also Burr Clover on heavy soil and Alfilaria on any kind of soil.

Burr Clover

Like Alfilaria is native to the southwest and thrives best on adobe soil, enduring considerable alkali. It starts growing as soon as the fall rains set in and with a minimum of rainfall such as we have in “dry years” it grows luxuriantly, bearing enormously of seed pods. When mature the whole plant drys, forming a mat of good cured forage relished by all stock. Per lb, 40c postpaid.
Three 100-ton Silos Belonging to Mr. Greening, Norwalk, California. These Silos are Filled Each Year With Sorghum and Corn to Fatten Cattle.

MR. DAIRYMAN, READ THIS

THE SILO:

A LABOR-SAVING CONVENIENCE

A. WENDELL BAKER

With this book before you, it is possible to build a silo for a small outlay of labor and still produce a high grade of feed for your stock. No man will have to cultivate an acre of land to raise corn or to grow hay in order to feed his stock. The silo is a labor-saving contrivance. It is complete in its information and after reading it you have all the information you will need in order to build a silo. It is prepared so that you can build a silo of any size you desire. With this book you will gain a complete idea of what a silo is and how to build one. The book tells you what crops are best and what proportion of each crop to use. When begun properly, a silo will last as long as the barn, and the animals will always have good feed. The book is complete and you cannot possibly make a mistake from the building of the silo to the time when the silage is ready to feed to the stock.
BEST CROPS FOR THE SILO

Now that you have the silo you want to grow the best and most productive crops.

Indian Corn heads the list as recommended by the Department. Aggeler & Musser Seed Co. have at all times endeavored to give their customers the best of everything; therefore we make the following recommendations as to varieties of corn that will produce the most tonnage.

Branching corn for rich land. It grows more stem, more foliage, and more ears than any other variety of Indian corn. As for grain, Mr. Newbill says it yields just twice as much grain as other varieties.

Orange County Prolific and Eureka Ensilage are about equal as to the tonnage they will produce. Mr. King formerly of Long Beach said the former is sweeter and on that account is to be preferred. Hickory King is an old favorite and is hard to beat. If for any reason planting is delayed until July 15th, plant King of the earliest.

It can have only a small soil with no irrigation make anywhere else. It may always be counted upon to make a big ear. For the silo, corn should be cut April 1st and be cut to harvest

Next to Indian Corn, Dwarf Yellow is recommended as the best non-saccharine sorghum because of its wonderful standing properties and enormous yield of grain.

But when this recommendation was announced we had not introduced our Wonder Forage Plant (Sudan Sorghum). This easily surpasses all other sorghums, saccharine or non-saccharine. (See the picture.)
**SUDAN SORGHUM**

**THE WONDER FORAGE PLANT**

The crop for the silo. More tons of silage per acre. Sudan is the silo. 60 tons of silage per acre. Surely a boon to Dairymen and Stockmen.

This valuable forage plant first appeared during the summer of 1918 on the ranch of Mr. Benedict in Riverside. Mr. Benedict realized he had something extraordinary; he therefore saved all the seed from this one plant and in 1917 a small plot that thrived convinced him and his neighbors that he had a wonderful forage plant. The seed from this plot was carefully harvested in 1918 and in 1919 a field of ten acres was grown. This field, by a roadside, attracted the attention of all persons who passed. It has been visited by agricultural experts who have given favorable expression as to its merits. It is the result of a cross-pollination between Amber Cane and Sudan grass because it has the appearance of an Amber-cane of Sudan and the seed is very similar to Amber-cane. The plants range up to six feet tall and stumps for silage are 30 inches and smaller. When the seeds mature, the stems become more than an inch in diameter, and are good for silage. Other seed heads are 2 to 3 feet in length and provide good forage. The stem is succulent and sweet, as saccharine cane, not dry as non-saccharine cane. Therefore it is as good as sorghum for dairy cows. Stock will eat every particle of it and when suspended or cut for the silo it is ideal forage analysis. Our demonstration clearly indicates the Wonder Forage Plant will yield more than twice the tonnage of any...
other sorghum. Seed planted April 3rd the plants averaged six feet high on June 1st, on August 1st were 12 feet high and ready for the silo. Plants cut July 1st produced a good second crop. Its growth was not checked by the cold weather during April as were other sorghums growing beside it. Cultivate as a sorghum, 5 lbs of seed is sufficient for one acre. Price of seed, 60c per lb, postpaid.

Mr. M. C. Connell planted seed in June. August 15th he made the first cutting. It stood ten to twelve feet high well headed. The tops were panicle shaped and because of the multitude of stools, it easily leads other varieties in quantity of grain, none of which is lost in harvesting, which was done with an alfalfa mower. About October 1st it will be ready for second cutting, which he says, may be done with the same mower by raising the blade. Mr. Connell says also that it is the ideal silage for the silo because it is sweeter than non-saccharine and has less sugar content than Saccharina, therefore it is less prone to ferment. Cows prefer the green stalks to alfalfa.

Next in line of sorghums for tonnage is the Silver Tip, Texas Seeded Ribbon Cane, and Honey Sorghum.
SUDAN

Utica College of Agriculture, Berkeley, Cal., for Bulletin No. 277

Sudan Grass

Sudan Grass is a hardy, coarse, long-lasting grass that thrives in the Mediterranean climate and is ideal for growing with the Cow Peas. It is a good thing to plant in an area where there is a poor stand. The stem supports the vines, and the mixture makes a ration for the stock. It is a good silage.

JAPANESE SUGAR CANE

This is considered one of the most prolific of all sweet sorghums with the advantage of being a permanent source of sugar. It produces no seed, but is propagated by planting joints like Napper. (See page 6.)

Price of Joints, Per Dozen, $1.00 Postpaid
100 Joints, $5.00 Postpaid
The largest corn stalk you ever saw. Two ears on main stem and five branches with one ear on each branch.