



Department of
Primary Industries and
Regional Development

Journal of the Department of Agriculture, Western Australia, Series 3

Volume 5
Number 6 November-December, 1956

Article 17

11-1956

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Recommended Citation

Ryan, F. E. (1956) "Kikuyu (*Pennisetum Clandestinum*)," *Journal of the Department of Agriculture, Western Australia, Series 3*: Vol. 5: No. 6, Article 17.

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KIKUYU GRASS

(*Pennisetum clandestinum*)

By F. E. RYAN, B.Sc. (Agric.), Agrostologist

MANY dairy farms in the South-West of this State have a small patch of kikuyu grass. It grows in the vicinity of the milking shed and is used to prevent erosion due to the heavy trampling of stock. Under these conditions, it forms a firm, close sod providing a green bite, but not very much bulk.

At the farm house it may be used to provide a fine lawn but more often it is found growing rankly in flower beds and around the house and out-buildings on the farm. Here it is merely a nuisance and because of this has been frowned upon by some farmers as a pasture plant. It is however, a most valuable plant as a pasture species when grown in the paddock.

Kikuyu was first recorded in Western Australia about 35 years ago and has spread since then until today, it is fairly well known throughout dairy farms in the South-West.

GROWTH HABIT

This grass is a perennial and spreads by means of stolons on the surface of the soil and by rhizomes underground. The underground rhizomes are only developed in friable soils and reach their maximum development in sandy soils where they may reach down to a depth of two to three feet beneath the surface of the soil. The plant is deep-rooting and is able to tap lower levels of the soil for moisture and plant nutrients.

By reason of its vigorous creeping stems, it rapidly forms a mat on the surface of the soil where it is very resistant to grazing. In its native habitat in Africa, it makes spring and summer growth but has adapted itself very well to conditions in Western Australia. Here it is capable of late spring, summer and early autumn production.

SEED PRODUCTION

For many years this grass was considered incapable of forming seed under our conditions but in recent years, seed production has been observed in many stands throughout the South-West including the lower South. Seedling plants have also been observed in new areas where the seeds have been carried by stock. A seed-producing strain was obtained from the Waite Institute some years ago in an attempt to produce commercially available seed of this valuable pasture plant. Unfortunately it has not been possible to produce and harvest sufficient seed to make seed production a commercial proposition and it is necessary when sowing kikuyu to do so from roots and runners.

PROPAGATION

Propagation is by vegetative means. This is done by laying roots in furrows and covering over with soil, leaving some leaf material protruding. It is sometimes done by ploughing furrows across a paddock at a distance of three or four feet apart, dropping roots in the furrow and then filling in the furrow. A suitable implement to use is a single-furrow plough. Plough the furrow with one run, place the roots in the furrow and then heel them in with the wheel of the tractor when ploughing the next furrow. Where a mouldboard plough is used, it is possible to plant closely in each furrow and cover it when the next furrow is turned.

Several other alternatives exist. On sandy soils it is possible to spread a layer of fresh roots from the back of a truck or utility and rotary hoe these in to a depth of three or four inches. A number of sections will die out but many will succeed in taking root. Kikuyu can be planted between the rows of a maize crop on summer-moist soil. It will not establish itself and grow rapidly enough to interfere with the maize crop but when the maize crop has been removed, the kikuyu will be established firmly.

Where roots are planted by any of these means, grazing on the paddock should be avoided for some considerable time as the stock tend to pull the roots out of the ground if they are grazed too soon after planting.

SPRIG PLANTER

A machine known as a Bermuda sprig-planter which plants sprigs of kikuyu has been demonstrated in the Denmark-Walpole area. The supply of kikuyu roots is obtained by rotary hoeing and raking. These fresh roots are placed in a hopper on the implement and are moved to a planting chute as they are teased out by means of "walkers."

The implement opens up two furrows spaced three to four feet apart, plants the kikuyu root in the furrow, fertilises it, fills the furrow with soil and presses the soil in position. In operation this machine has worked very satisfactorily on previously cultivated land but results from these plantings will not be known until next summer when the degree of establishment can be determined.

RENOVATION

This operation is essential if high production is to be obtained from kikuyu. To be most successful, a kikuyu sward should not be allowed to become sod-bound. A rigid-tyne cultivator or a similar implement fitted with fine "tickler" points may be used and renovation should be carried out every two or three years before the sward is allowed to become sod-bound. A combine has been successfully used for this purpose. Some of the points were removed and the combine drawn through

the kikuyu in two directions. This operation was carried out during March-April period. On one property at Margaret River, as a result of this operation, subterranean clover and ryegrass grew very strongly on the kikuyu patch and was cut to yield $3\frac{1}{2}$ tons of hay per acre which consisted of an excellent mixture of ryegrass and subterranean clover. When the hay was removed in the spring, the kikuyu made excellent growth and carried a large number of stock for several months.

After a paddock of kikuyu has been allowed to become sod-bound more drastic treatment may be necessary to open up the pasture. A combine with some of the points removed has been used for this purpose but a powerful tractor is necessary to pull the implement through the kikuyu. A rotary hoe working to a depth of two inches may be used to break the surface mat of roots and stems in a sod-bound kikuyu stand. Following this rotary hoeing a tyne implement such as a rigid-tyne scarifier, a semi-rigid-tyne scarifier or a combine could be pulled through the paddock to a depth of four or five inches.

These operations should take place in the autumn in March, April or May. If it is considered necessary, the renovated area could be over-sown with subterranean clover and Wimmera ryegrass following this renovation.

It is better however, not to allow the stand to become sod-bound, but to commence renovations in the second year after establishment and before the operation has become too difficult.

NUTRITIVE VALUE

Kikuyu is found to be very palatable to all classes of animals, including cows, horses, sheep and even poultry. In a young leaf stage, it is highly nutritious but if allowed to grow tall and rank its nutritive value declines rapidly. Young leaf samples taken from a sward at Margaret River gave the following analyses to compare kikuyu with subterranean clover.

Thus, in the young leaf stages, kikuyu is as nutritious as clover or even lucerne hay. Analysis was made of a sample of hay cut from a pure kikuyu stand. The

	Subterranean Clover.				Kikuyu.			
	July.	Aug.	Oct.	Nov.	July.	Aug.	Oct.	Nov.
Nitrogen, per cent.	3.46	3.69	3.55	2.72	2.35	2.57	2.89	2.78
Protein, per cent.	21.62	22.96	22.19	17.00	14.69	16.10	18.06	17.37
Phosphorus, per cent.338	.301	.279	.276	.375	.397	.363	.333
Potassium, per cent.	1.20	1.49	1.40	1.37	2.41	2.80	3.74	3.10
Copper, p.p.m.	18.0	15.25	13.5	12.75	9.25	9.9	10.5	16.45

protein content of the hay was 4 per cent. which was no better than an average sample of oaten hay and lower than most oaten or meadows hays. Kikuyu then should never be allowed to make rank growth.

VALUE AS A PASTURE PLANT

One of the most important aspects of kikuyu as a pasture plant is its ability to produce vigorously at periods of the year when annual pastures are normally unproductive. After subterranean clover and ryegrass pastures decline in the late spring, kikuyu commences vigorous growth. When the spring growth of the annual species is over, the kikuyu paddocks will be carrying a bulk of forage and if moisture relationships are suitable will continue to do so during the summer months.

During the autumn and immediately following any autumn rains, kikuyu makes vigorous growth. At this time of the year, annual plants are germinating as seedlings and are not in a suitable state for grazing, nor do they produce any great quantity of feed, consequently the value of kikuyu at this time of the year cannot be over-estimated.

On sandy soils, kikuyu has proved very suitable. These soils dry out very rapidly if not protected by a surface cover and this is most effectively done by means of kikuyu. Establishment of the kikuyu on such situations is slow and the planting of sods rather than roots is recommended.

Around cowyards, along raceways and even in gateways, the only plant capable of withstanding heavy trampling from the stock is kikuyu. It becomes sod-bound and is not highly productive but even so is the best grass available for such a situation.

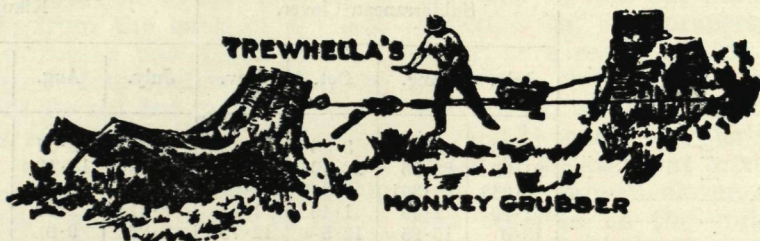
"MILK AND BUTTERFAT RECORDING: A WORLD SURVEY"

By E. D. ASHTON, B.Sc. (Milk Marketing Board, England)

This is the first book published for 21 years surveying the systems used in different countries for recording the production of milk and butterfat of the world's dairy cows. During this period great changes and developments have occurred. The author is the Head of the Bureau of Records at the Milk Marketing Board in England and therefore in a unique position to survey, compare and contrast the different methods used not only in Britain, but also in other countries.

The book is divided into two main parts, the first dealing with the historical development of milk recording and butterfat testing, the organisation of societies and associations, their financing and the use of records by various interested bodies such as herd book societies, artificial insemination centres and research workers. The second and larger part gives in considerable detail the growth and organisation of recording societies in a large number of countries. Throughout the book there are some 88 tables giving details of numbers of cows, yields, butterfat tests, etc., as well as a number of appendices. Photographs illustrate the technique of milk recording and butterfat testing under widely differing conditions from Iceland to Australia.

(Commonwealth Bureau of Dairy Science and Technology, Technical Communication No. 3. (224 pages including 88 tables.) Obtainable from the C.A.B. Liaison Officer at 314 Albert Street, East Melbourne, C.2, Victoria. Price, 37s. 6d.).



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