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HEALTHY PASTURES

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

In sweeping away forests to make room for pastures we have taken on the responsibility of maintaining these areas in a condition suitable for the growth of pasture plants. This is done by a choice of suitable species, fertilising, cultivating, drainage, control of grazing and by weed and insect control.

Now let us consider some of the moisture relationships of pasture plants in the higher rainfall areas.

The very sandy soils of the west and south coast have a very poor capacity to hold moisture. They can grow only short-lived or deep rooting pasture species. Serradella, which is relatively deep rooted, is more successful on sandy rises than sub clover in some cases during the first few years. When organic matter in the soils increases the soils hold more moisture and sub clover and better pasture species can be carried. Earlier varieties of subterranean clover, such as, Dwalganup or Yarloop have been successfully established on dry banks. A mistake frequently made is total clearing of she-oak-banksia rises, as this surface cover prevents excessive evaporation from the surface. Feeding of hay on such areas increases the organic matter in the surface soil and assists in later establishment of pasture. Where kikuyu has been successfully established on sandy soils it has been successful in providing a cover on the surface of the soil to retain moisture and at the same time increase the organic matter in the soil as its old roots rot away.

Other areas receive too much water. This prevents root growth during the winter months and causes pastures to stagnate at this time. With a very shallow rooting system plants are unable to feed and their growing period is greatly shortened. Weak and unhealthy plants are very susceptible to attacks by diseases and insects. Drainage is necessary to overcome these conditions, encouraging root growth during the winter months and encouraging winter growth of leaves. Spring growth will be more vigorous and what is even more important the plants will continue to grow for a longer time in the spring because of their deeper rooting system. Root growth in many plants is most active during the winter and early spring months whereas leaf active growth comes later. A common sight on some winter wet pasture paddocks is the late spring and summer growth of stinkwort. Essentially this plant is using up reserves of soil moisture which were not used by the pasture plant in spring because of its too shallow rooting system. Stinkwort makes later growth and its roots have the opportunity of developing as the water table recedes.

Where drainage is very difficult because of the lack of a suitable outlet for drainage water or the nature of the soil, plants with ability to succeed reasonably well under these conditions should be planted. These include such legumes as Yarloop subterranean clover, Tallarook subterranean clover, Lotus major, Strawberry clover and white clover and grasses such as kikuyu, Water couch, Paspalum and Phalaris arundinacea and ordinary couch. Lucerne should never be planted under waterlogged or winter wet conditions.

An unusual moisture relationship occurs in some of our soils in that they are difficult to wet when dry. This occurs in the sandy soils along the west coast and may cause a good deal of trouble in establishing subterranean clover. This condition is overcome by deep seeding and on these sandy soils sowing of subterranean clover to a depth of 2 inches has been successfully employed.
On the fibrous acid peaty sand soils which occur along the south and west coasts the soils may only become moist enough for germination as they flood from below. Even after 6 inches of rain had fallen in 7 days the soils may be dry in the top 4 inches though there is a permanent water table at about 5 inches below the surface. The removal of the fibrous material by burning and the mellowing of the soil by the growth of softer roots in it helps to improve its physical condition.

The lack of water may induce deficiency diseases in plants in some instances and a good example is manganese deficiency in oats which becomes obvious during a dry spell. Another deficiency which is related to water supply in some cases is potassium. This is very marked in winter waterlogged flats where a very shallow rooting system is developed. In the spring the very shallow and restricted root system is unable to obtain sufficient potash to supply the heavy requirements of the plants. The same position is very common in our irrigation areas. Waterlogging during the winter months has prevented bacterial action and organic matter accumulates in the surface of the soil. Plant roots are unable to penetrate this organic layer and the very short roots are unable to obtain the large amounts of nutrients required for vigorous growth. Pastures become unhealthy and show signs of potash and other deficiency symptoms.

Root growth and nutrient uptake from soils is greatest when the soil is wet to field capacity, that is, when there is a reasonable film of water around each particle of soil but between the particles there are air spaces enabling roots to breathe. Where this condition prevails through a good depth of soil roots penetrate deeply, branch freely and can absorb very much greater supplies of nutrients for pasture growth. Pasture plants may die of thirst or be drowned. It is our responsibility to prevent this.

A NEW TOMATO

An excellent crop of a new hybrid tomato variety bred by the Department of Agriculture was recently inspected by the Minister for Agriculture (Mr. C. D. Nalder), who said that the plants were remarkably vigorous, very free of spotted wilt and were producing heavy yields of good quality round fruit.

The new hybrid is being tested commercially by Mr. L. Buktenica, an Osborne Park market gardener, who is growing more than 4,000 plants of this variety, and the fruit because of its attractive appearance and good keeping qualities has realised a much better average price than the standard “Early Crinkly” tomato variety grown under similar conditions.

The new hybrid has been evolved by the Government Plant Pathologist, Mr. W. P. Cass Smith and Plant Pathologist, Olga M. Goss, after trials extending over 10 years with the object of developing a disease resistant tomato that is round fruited and early maturing and which can satisfactorily replace the local “Early Crinkly” variety which has poor fruit characteristics.

It is anticipated that seed selected from superior plants of this year’s crop will be bulked in 1961 and available to commercial growers for planting in 1962.
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