By Izak Hofmeyr

Japanese radish for winter grazing

Fodder radish *(Raphanus sativus var. oleiformis)* is commonly used as winter grazing in the eastern parts of South Africa, especially KwaZulu-Natal and the Eastern Cape. The crop, known as Japanese radish, is mainly used as a cover crop in other parts of the world.

Japanese radish is the ideal winter grazing for cattle.

Exciting new radish cultivars are in the making and will continue to produce satisfactorily in late winter and early autumn to bridge the notorious fodder flow squeeze of that period, explains Dave Goodenough of the Animal Production Institute of the Agricultural Research Council (ARC) at Cedara. The first of these cultivars, Endurance, should become commercially available soon.

Endurance, he explains, is a late-flowering cultivar, which means it can also be utilised for longer. If it is established in March, it can produce satisfactorily until late September. Endurance is a cross between two cultivars bred at Cedara and a late-flowering cultivar from New Zealand. After these cultivars were crossed, it was followed by eight years of breeding and selection before Endurance was released.

It is a cultivar with soft leaves that retains its quality for longer and continues growing for up to seven months, compared to other cultivars that survive for five or at most six months, but with significant leaf loss and tuber decline at the end of the fifth month and longer.

Another promising cultivar, currently only known as Line 2, is another late-flowering cultivar under development which will be released within the next few years.

Fodder brassica crops

Japanese radish is usually classified with so-called fodder brassica crops, consisting of turnips (rape), kale (*boerkool*) and rape (*weikool*), and sometimes swede (*Sweedse raap*). In South Africa, it is mainly used as winter grazing, although it is utilised in summer and early autumn in countries such as New Zealand.

In the eastern parts of South Africa, summer plantings of fodder brassica often suffer from severe insect infestation which must be treated with insecticides. Higher temperatures lead to lower yields compared to grass species, and good weed control is often needed.

According to an article by Sigrun Ammann, Derryn Nash and Dave Goodenough in the *Research and Technology Bulletin number 2015/17* of the Department of Agriculture and Rural Development of KwaZulu-Natal, Japanese radish and rapes are commonly used in the province, with rapes planted more commonly in the colder southern parts of the province.

The various fodder brassica species differ with regard to the days they take from planting to maturity, from 90 to as many as 180 days, of which a combination forms an ideal fodder bank. The main function of the crops is as a fodder bank in winter, when there are traditionally feed shortages.

Correct application

The authors, however, advise that Japanese radish and fodder brassica should not constitute more than 70 to 80% of the ration of dry cows and only 30% of the ration of cows in milk. Brassica

are high in protein and energy, but low in fibre, which means that cattle should also have some kind of roughage available.

Animals should not be given sudden access to brassica pastures, but should rather be gradually exposed to it over a period of two weeks. Grazing strips can be made available using electrified fences. Although the crops are high in moisture, it is nevertheless important that animals have access to enough good quality water.

Brassica grazings do not do well in waterlogged soil, and they have a high nitrogen, potassium and phosphate requirement. Sometimes boron is needed while sufficient molybdenum is essential. A soil analysis prior to planting is vital.

Seeds can be planted in rows or can be broadcast. Rows should be 30 to 50cm apart for tuber crops and between 15 and 20cm for other types. Good planting dates are from the beginning of February until mid-March to ensure good tuber development and efficient utilisation of the soil moisture after summer rains. In certain areas it is necessary to spray against aphids. Japanese radish can become infested with especially root-eating aphids.

Effect of row spacing

According to an experiment on the effects of row spacing on yield, the authors say it does not seem as if there will be a yield loss if the rows are closer to one another. It seems that the perception that wider spacing leads to larger tubers, resulting in a higher yield, is incorrect.

Root-eating aphids can become a significant problem in Japanese radish. The use of a systemic insecticide such as imidacloprid at an early stage, when the crop is still young, can make a substantial difference in the yield, especially if the crop is saved for later usage.

The crop can be utilised for three to five months after planting and cultivars with a longer production cycle up to six-and-a-half months, or from three to nine weeks after the first frost, if it was planted from February to mid-March. The long-production cultivars produce tubers until late September. With regard to leaf production, Japanese radish weakens substantially after June, with only the long growers producing leaves in September. The planting date largely determines how long production will continue.

Kale.

According to tests conducted at Cedara, plantings early in February can reach peak production after only four months. This is probably as a result of the more rapid growth rate due to higher temperatures. The planting date will therefore determine the exact month of peak production.

During the 2010 planting at Cedara, which was fairly late, the total yield per hectare was approximately seven tons of dry matter (DM). The longer growers still increased in biomass until early September, while the other cultivars already peaked in July and then declined significantly. The yield will naturally be affected by rainfall and temperature.

Digestive systems adapt

The authors warn that animals should be gradually exposed to brassica pastures so their digestive systems can adapt to it. It is important that the animals are not hungry when they are moved to the pastures for the first time. As brassica is highly metabolisable, the animals can easily become bloated.

As a result of the high sugar and low fibre content, there is a risk of acidosis if the brassica grazing makes up an excessively large percentage of the ration. If fertiliser with a high nitrogen content is used, there is even the danger of nitrate poisoning. Brassica contains glucosinolates which can interfere with thyroid operation, and s-methylcysteine sulfoxide (SMCO), which can suppress intakes and cause haemolytic anaemia. It is therefore necessary that foggage is fed in addition to the brassica being grazed.

A turnip.

Swede.

According to Dave Endurance is expected to have a great effect on farms, especially in KwaZulu-Natal and the Eastern Cape. With late summer to mid-autumn plantings, it is usually planted on dryland, or under strategic irrigation. Since it flowers late, the tubers can be utilised for longer – until early spring when other Japanese radish cultivars have already begun to rot.

Endurance will be made available by Pannar shortly.

For more information, contact Derryn Nash on 033 355 9256 or derryn.nash@kzndard.gov.za, and Dave Goodenough on 082 776 0433 or goodenoughd@arc.agric.za. SF