

Shaw creeping vigna seed production

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Opportunity exists for increased seed production of the persistent tropical legume Shaw creeping vigna (*Vigna parkeri*) in the Tweed and Richmond Valley districts of NSW. The domestic and export seed market for Shaw creeping vigna has enormous potential to develop. There is also demand from Florida in the US where Shaw flowers in December and frost prevents seed production. A South American demand could be developed as well.

Site selection

The land must be frost free. It should be well drained, level and free of stones, sticks and stumps. Annual rainfall should be at least 1100mm.

Companion grass

A companion grass is necessary to support the slender lateral vines of Shaw creeping vigna and keep the majority of pods well above ground level, thus assisting the harvest process.

A grass cover is needed to suppress broadleaf weeds, hold the soil together and make a productive good quality pasture for livestock. Low growing stoloniferous grasses and some with short rhizomes are suitable, provided they are not too competitive. Queensland blue couch would be ideal. Tall bulky bunch grasses like setaria are unsuitable however high seed production has been obtained with Strickland finger grass. Narrowleaf carpet grass alone or with common paspalum is suitable. Kikuyu can be suitable; however, a bulky kikuyu sward competes with Shaw and slows down the harvest process.

Crop development

Shaw sown in the spring should be ready to lock-up for a seed crop in the summer of its second year. In the weeks preceding "lock-up", grazing pressure should be set to maintain a low leafy canopy which will encourage strong stolon development. Lax grazing results in reduced stolon and lateral development while repeated close grazing weakens Shaw. Long periods of moisture stress kills stolons.



Shaw seed producer Ron Thorne, Upper Stratheden, harvesting 130 kg clean seed/ha crop July 2008.

Slender lateral vines arise from stolon axillary buds. Inflorescences on vines are axillary racemes with mostly from 3 to 5 flowers per raceme. Flowers are in alternate pairs either side of a glandular node. Although flowering occurs under shortening day-length, the main stimulus is a rainfall event with drop in temperatures.

On the Richmond-Tweed, Shaw seed crops are locked-up in late January/early February. At "lock-up", graze evenly or mow to leave a residual sward height of about 125 mm. A lower residual height for kikuyu/Shaw results in reduced seed yields.

The first few flowers appear in March with increased frequency of flowering from early April. Peak flowering is usually around mid-May and little flowering occurs after mid-June. Flowering is indeterminate and seed does not ripen uniformly. Ripe seed may shatter particularly under dry conditions. Crops are usually ready to be mowed and dried for harvesting in early July.

A Shaw crop is fertilised according to those requirements for trailing and twining sub-tropical legumes based on soil test results. Shaw has a moderate molybdenum (Mo) requirement. On acid soils apply 50 – 100 grams Mo/ha. The high rate applies to heavy textured soils and those with high phosphorus fixing ability.

Pests and diseases

Leaf and stem diseases can develop in bulky crops under humid wet conditions. *Colletotrichum truncatum* and *Rhizoctonia solani* can ruin maturing seed crops.

Other foliar diseases are *Cercospora* and *Stemphyllium*. It is possible to gain APVMA Minor Use Permits to control these diseases. Leafhoppers have been seen in crops but no major insect pests have been observed in Northern Rivers' crops. Minor pod-sucking bug damage has been observed.

Harvesting

Mow when the maximum quantity of seed is physiologically mature. A large proportion of pods will be brown to black. A minority will be greenish-brown with a dark blush. Fully filled dull-green pods are capable of producing viable seed. Physiologically mature seeds are those separated from the funicle (seed stalk) and can be rolled in the opened pod with gentle finger pressure.

A drum mower is preferred for cutting and forming a broad windrow for drying. In light biomass crops two windrows can be raked to form one windrow. Windrows are picked-up with a header equipped with a draper front or pick-up reel. Header speed is a little slower than normal walking pace. This is best achieved with hydrostatic control of ground speed. Seed is easily threshed but is prone to cracking. Use a low drum speed of 500 – 600 rpm. Have the concave a quarter open. Apply moderate wind over partly closed adjustable sieves.

The harvested seed with admixture is promptly dried to avoid heating. Seed grading can occur later. Commercial seed yields are very variable and a fair average yield is 100 kg/ha. Yields of 130 kg/ha have been achieved. Seed count is 75,000/kg. Seed is grey to brown with black mottling to entirely black.

Shaw seed has an exceptionally high level of hard seed which can be reduced by hot water treatment for 20 minutes at 70 degrees C.

References: Hawton, D *et al* (1990); A guide to the susceptibility of some tropical crop and pasture weeds and the tolerance of some crop legumes to several herbicides *Tropical Pest Management Journal*, 1990 Vol. 36(2) 147-150.

Clarke, J B (1992); Shaw creeping vigna – a subtropical legume *Agfact P2.5.36* NSW Agriculture.

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Flowering Shaw creeping vigna seed crop in mid April. This crop was locked-up early February. Flower density was lower than usually expected.



A sample of pods at mowing. The green pod, centre-top-left, probably does not contain mature seed. The funicle attachment to the seed hilum should be examined when in doubt.

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