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About Redgram - The Climate Resilient Crop

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ABSTRACT

***Cajanus cajanifolius* is the progenitor of the cultivated species *Cajanus cajan* – the redgram. The protein content is 22%. The centre of origin is India. On mountain slopes, it is cultivated for erosion control. Optimum temperature range is 20-28^{0}C. 58 growing degrees are required for redgram as against the 70-75 degree days of soybean and groundnut. This crop can't tolerate waterlogging and frost. Well, adapted to drought condition. Salinity tolerant; thrives well in 5-8 pH. The salinity tolerant gene from rice is inserted in to the redgram. LAI is in the range of 4-6. Profuse flowering is observed. Flower dropping is more resulted in poor pod setting ratio. Harvest index is very less 0.11 to 0.22. 90x30 cm and 50x20 cm are the recommended spacings. 20-30 kg is the seed rate recommended. Ragi+ redgram, sorghum + redgram, pearlmillet + redgram and groundnut + redgarm are some of the intercropping systems practiced in India. 90% yield loss is obtained due to weeds. 30 days is the critical crop weed competition period. Pod borer is the major pest of redgram. Prophylactic spray of indoxacarb is recommended. Wilt is the major disease for which resistance varieties are evolved.**

INTRODUCTION

1. *Cajanus cajanifolius* is the progenitor of the cultivated species *Cajanus cajan* – the redgram
2. *Cajanus cajan var. flavous* is Tur
3. *Cajanus cajan var. bicolor* is arhar

- The protein content is 22%. The centre of origin is India and the secondary centre of origin is East Africa.
- The seed materials are present in the tombs of Egypt dating before 2200 BC.
- In India Redgram is cultivated in an area of 5.5 mha with a production of 4.36mt and 856 kg/ha. India is the largest producer and consumer of redgram in the world. In Tamil Nadu, the redgram is cultivated in an area of 0.5 lakh ha and with a productivity of 1065 kg/ha.

USES OF REDGRAM

- Used as dhal.
- Greens are used as vegetable.
- Leaves are used as fodder and as well as feeding silkworm ie., sericulture.
- Stems are used as fuel wood.

SIGNIFICANCE OF REDGRAM

- On mountain slopes, it is cultivated for erosion control.
- As windbreak.
- As component of Agroforestry system.

SOIL AND CLIMATE

500-600 mm of rainfall is required. It is grown in tropics and subtropics. Temperature range is about 10-40^{0}C. Optimum temperature range is 20-28^{0}C. 58 growing degrees are required for redgram as against the 70-75 degree days of soybean and groundnut.

It has deep extensive root system and hence breaks the plough known as biological plough.

This crop can't tolerate waterlogging and frost. Well, adapted to drought condition. Salinity tolerant thrives well in 5-8 pH. The salinity tolerant gene from rice is inserted in to the redgram this transgenic redgram is one of the biggest achievements in redgram breeding. ICRISAT and IIPR, Kanpur has jointly organized a collaborative research in breeding climate resistant varieties from May'2024.

PHYSIOLOGY

- Indeterminate
- Perennial
- Photosensitive
- Short day and
- Rationing ability

LAI is in the range of 4-6. Profuse flowering is observed. Flower dropping is more resulted in poor pod setting ratio. Harvest index is very less 0.11 to 0.22. For improving productivity, we have to improve the harvest index.

AGRONOMIC PRACTICES

SPACING AND SEED RATE

In vertisols, Broad Bed and Furrows (BBF) is to be adopted. In Andhra Pradesh, redgram yield was improved by following BBF. 90x30 cm and 50x20 cm are the recommended spacings. 20-30

kg is the seed rate recommended. In an experiment conducted by me, redgram was yielded 1600kg/ha due to seed driller sowing and two-way power operated weeder as against the 900 kg/ha yielded in manual sowing and manual weeding.

INTERCROPS

Sorghum, pearl millet, blackgram, greengram and groundnut are the recommended intercrops. Ragi+ redgram, sorghum + redgram, pearlmillet + redgram and groundnut + redgarm are some of the intercropping systems practiced in India.

SEASON

June-July is the major season of redgram cultivation. Besides this summer redgram is there cultivated during April and winter or rabi pigeonpea is there cultivated during September. There is a special cropping sequence is there redgram – wheat system for which short duration redgram is recommended.

WATER MANAGEMENT

500 mm of rainfall is required. Purely cultivated as rainfed crop. To produce 1 tonnes of the grain 200mm of water is required. 1%KCl+ Pusahydrogel application is recommended as drought mitigation technology at all India Level.

NUTRIENT MANAGEMENT

132 kg N, 20 kg P and 53 kg K was removed to produce 2 tonnes of the redgram. Responsive to Nitrogen, Phosphorous and Sulphur application. 20kg Sulphur is recommended supplemented through Gypsum and Single super phosphate application. 25:50:25:20 kg NPKS is recommended.

WEED MANAGEMENT

90% yield loss is obtained due to weeds. 30 days is the critical crop weed competition period. Alachlor, metalachlor, pendimethalin and oxadiazon are some of the Pre – emergence herbicides recommended. Imazathepyr and quizalofop ethyl are the post mergence herbicides recommended. To have a broad spectrum of weed control tank mix combination of Imazathepyr and quizalofop ethyl is applied.

INSECT AND DISEASES

Pod borer is the major pest of redgram. Prophylactic spray of indoxacarb is recommended. Wilt is the major disease for which resistance varieties are evolved. During 2016, the first report of sterility mosaic virus is documented in Co (Rg)8.

CONCLUSION

Redgram can't tolerate waterlogging and frost. Well, adapted to drought condition and as well as salinity tolerant among legumes; thrives well in 5-8 pH. The salinity tolerant gene from rice is inserted in to the redgram. ICRISAT doing collaborative research on climate resilient varieties. LAI is in the range of 4-6. Profuse flowering is observed. Flower dropping is more resulted in poor pod setting ratio. Harvest index is very less 0.11 to 0.22. 90x30 cm and 50x20 cm are the recommended plant spacings. 20-30 kg is the seed rate recommended. Ragi + redgram, sorghum + redgram, Pearlmillet + redgram and groundnut + redgarm are some of the

intercropping systems practiced in India. Weeds are considered to be the yield limiting factor in redgram followed by insects. Pod borer is the major pest of redgram. Prophylactic spray of indoxacarb is recommended. Wilt is the major disease for which resistance varieties are evolved.