UNIVERSITY OF AGRICULTURAL SCIENCES, RAICHUR

KRISHI VIGYAN KENDRA, BIDAR

Transplanting Technology in Redgram

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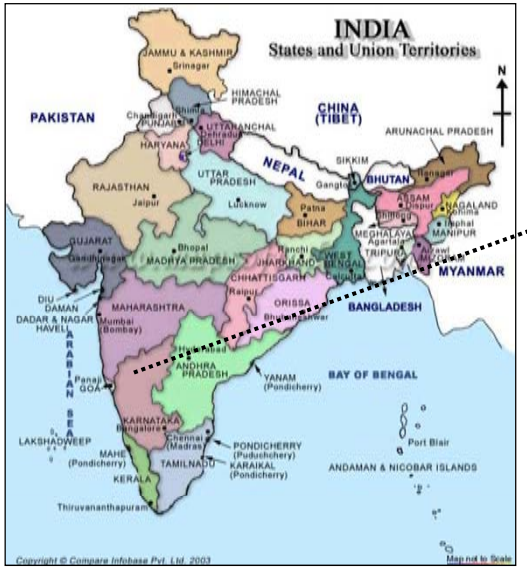
INDIA
States and Union Territories
PAKISTAN
CHINA (TIBET)
NEPAL
BHUTAN
BANGLADESH
MYANMAR
BAY OF BENGAL
ARABIAN SEA
ANDAMAN & NICOBAR ISLANDS
LAKSHADWEEP
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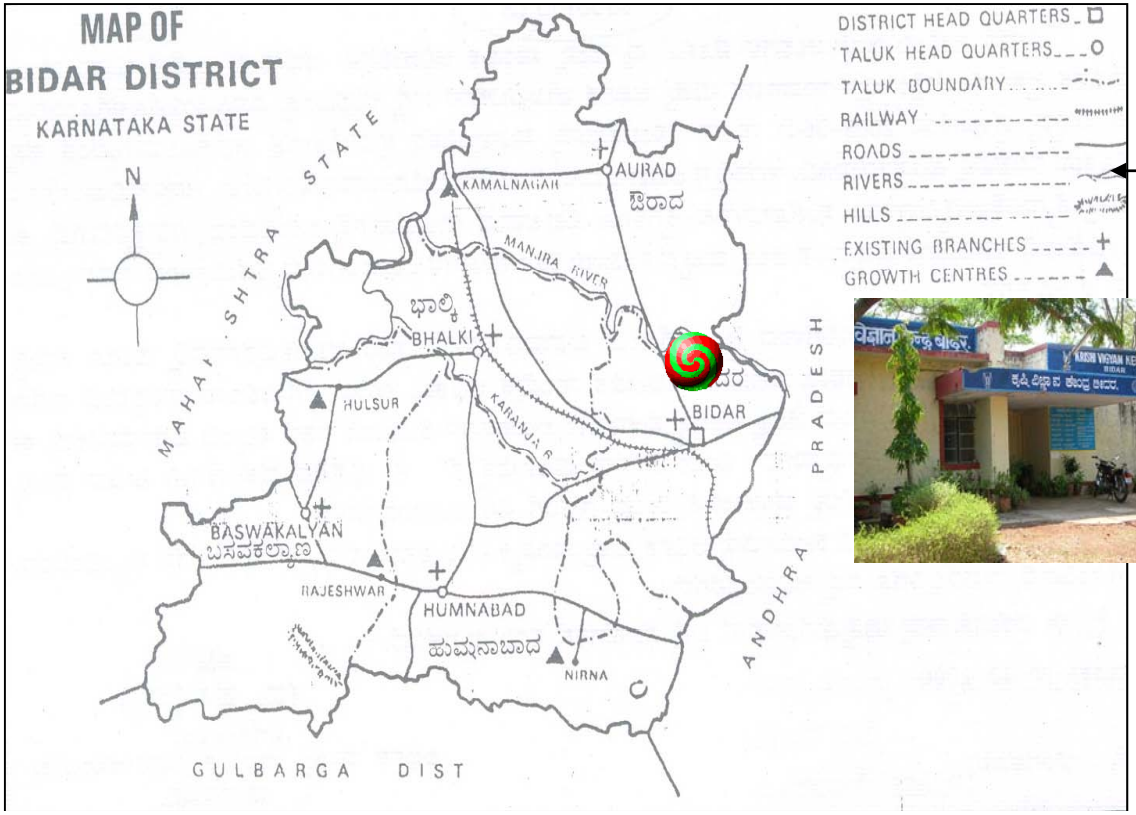
Map not to Scale

Karnataka
(District Map)
MAHARASHTRA
ANDHRA PRADESH
TAMILNADU
KERALA
GOA
ARABIAN SEA
Bidar
Gulbarga
Bijapur
Belgaum
Bagalkot
Raichur
Dharwad
Koppal
Gadag
Bellary
Uttar Kannad
Haveri
Devangere
Chitradurga
Tumkur
Shimoga
Udupi
Chikmangalur
Kolar
Hassan
Bangalore
Dakshin Kannad
Mandya
Kodagu
Mysore
Chamrajnagar


MAP OF
BIDAR DISTRICT
KARNATAKA STATE
N
MAHARASHTRA STATE
ANDHRA PRADESH
GULBARGA DIST
DISTRICT HEAD QUARTERS
TALUK HEAD QUARTERS
TALUK BOUNDARY
RAILWAY
ROADS
RIVERS
HILLS
EXISTING BRANCHES
GROWTH CENTRES
AURAD
ಔರಾದ
KAMALNAGAR
MANJRA RIVER
ಭಾಲ್ಕಿ
BHALKI
HULSUR
KARANJA R.
ಬೀದರ
BIDAR
BASWAKALYAN
ಬಸವಕಲ್ಯಾಣ
RAJESHWAR
HUMNABAD
ಹುಮನಾಬಾದ
NIRNA

KRISHI VIGNAN KENDRA

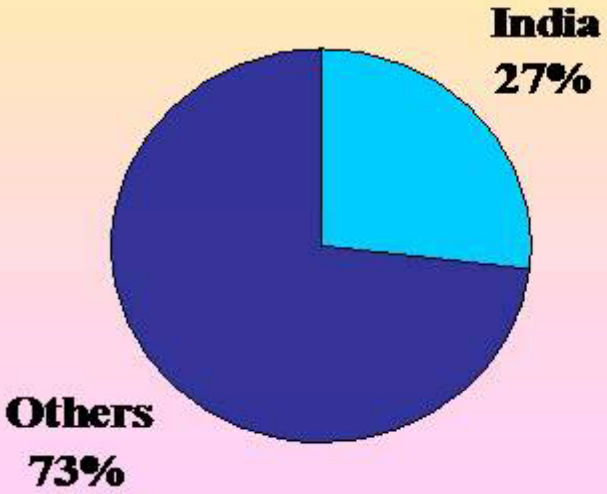
Redgram Average Productivity levels (kg/ha.)

World	National	State	District	Potentiality	Yield gap
714	685	766	829	2700	**1871**

Importance of Pulses in World

In the world India has 37% of area and 27% of production

Area

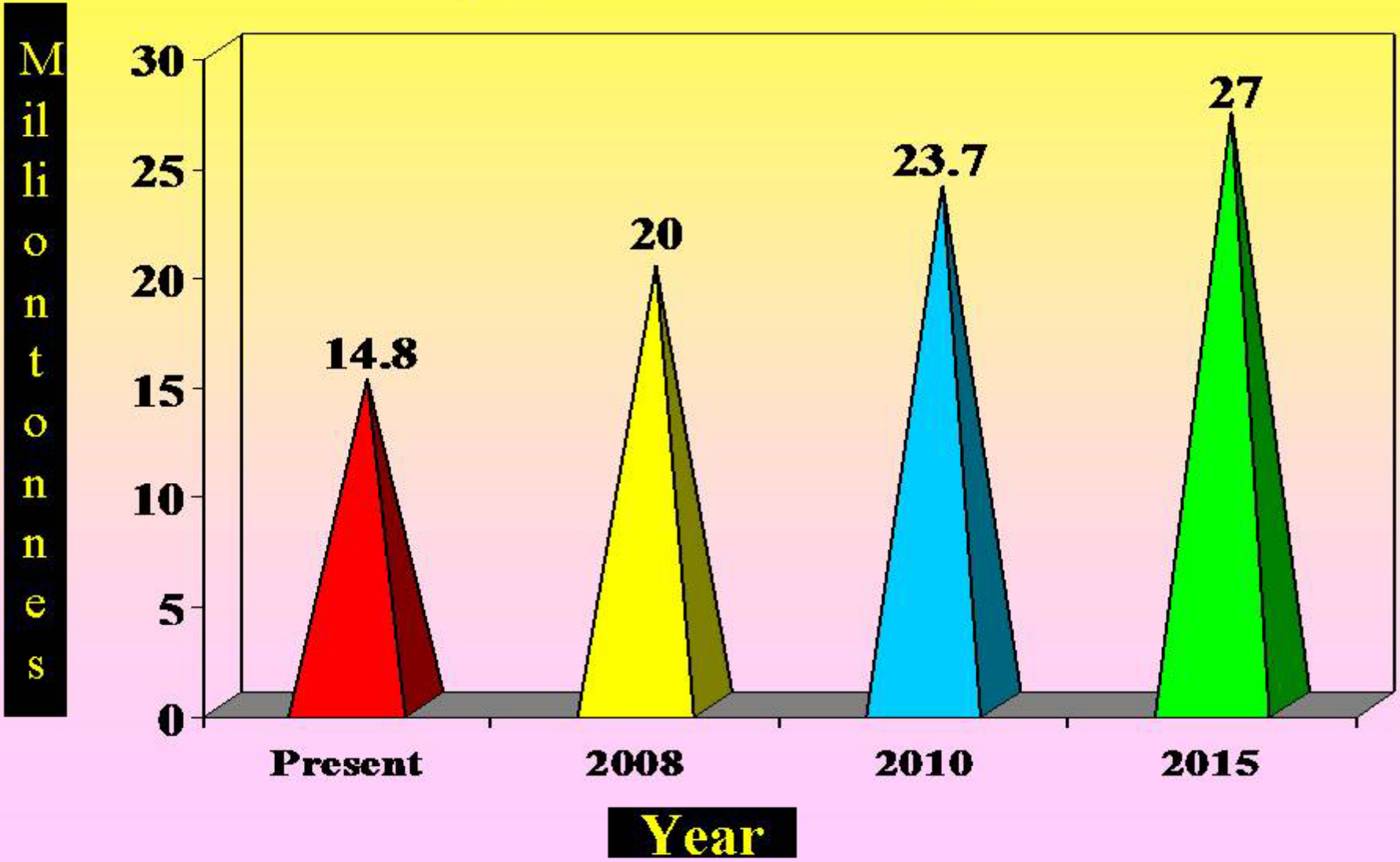


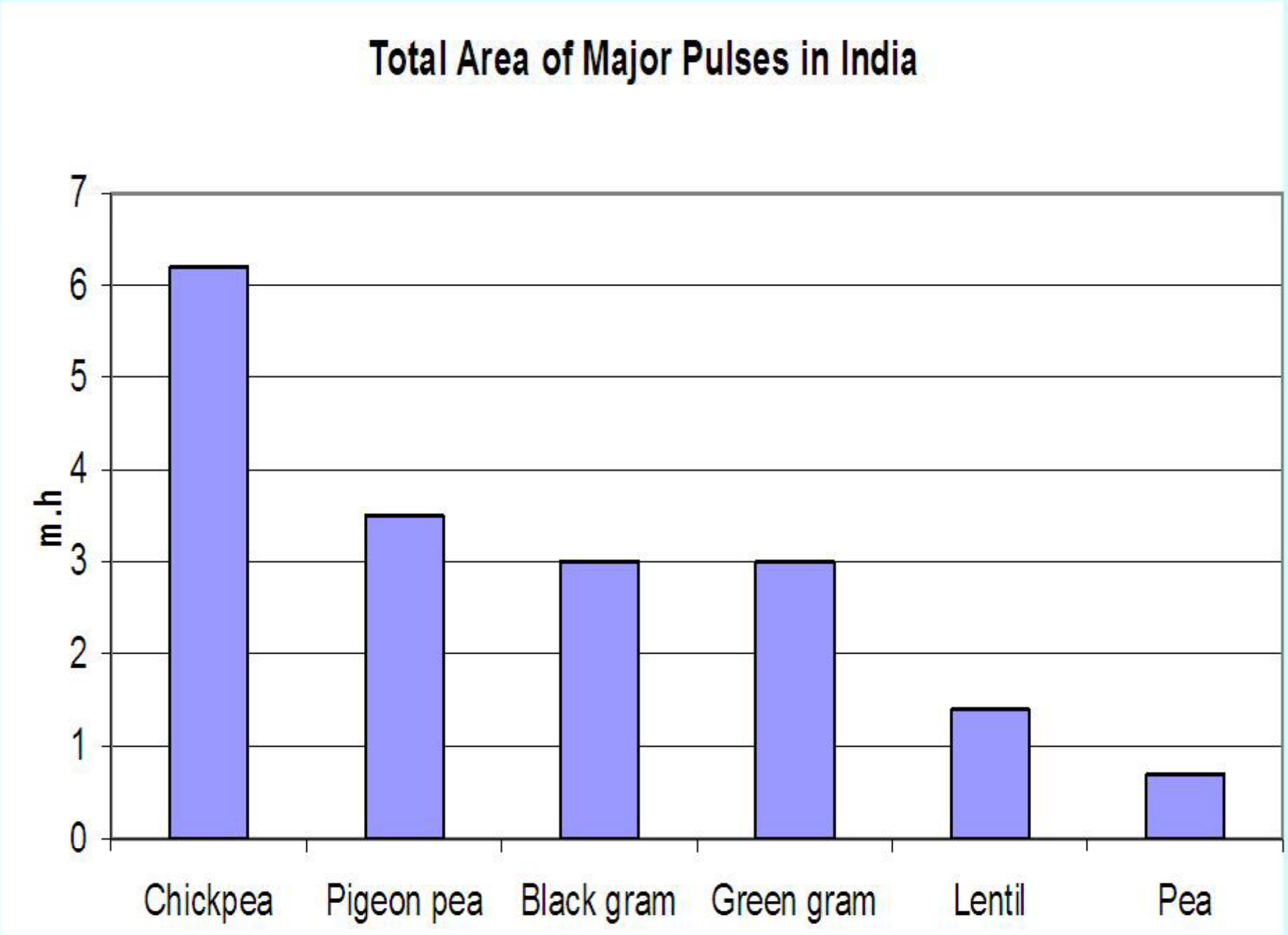
Production

DECREASING AVAILABILITY

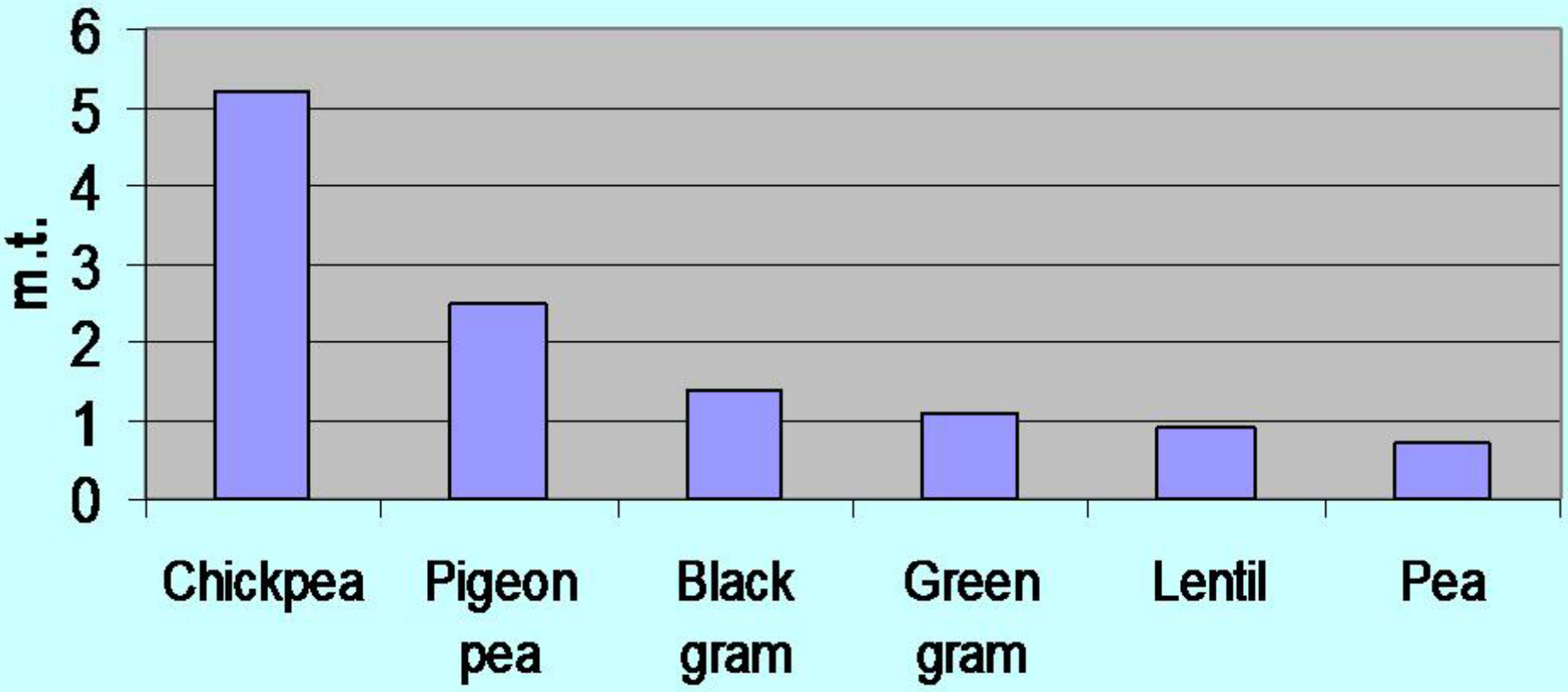
1965	70 g /day/person
1975	50 g /day/person
1985	45 g /day/person
1995	35 g /day/person
2005	<30 g /day/person
WHO	80 g /day/Person

Demand

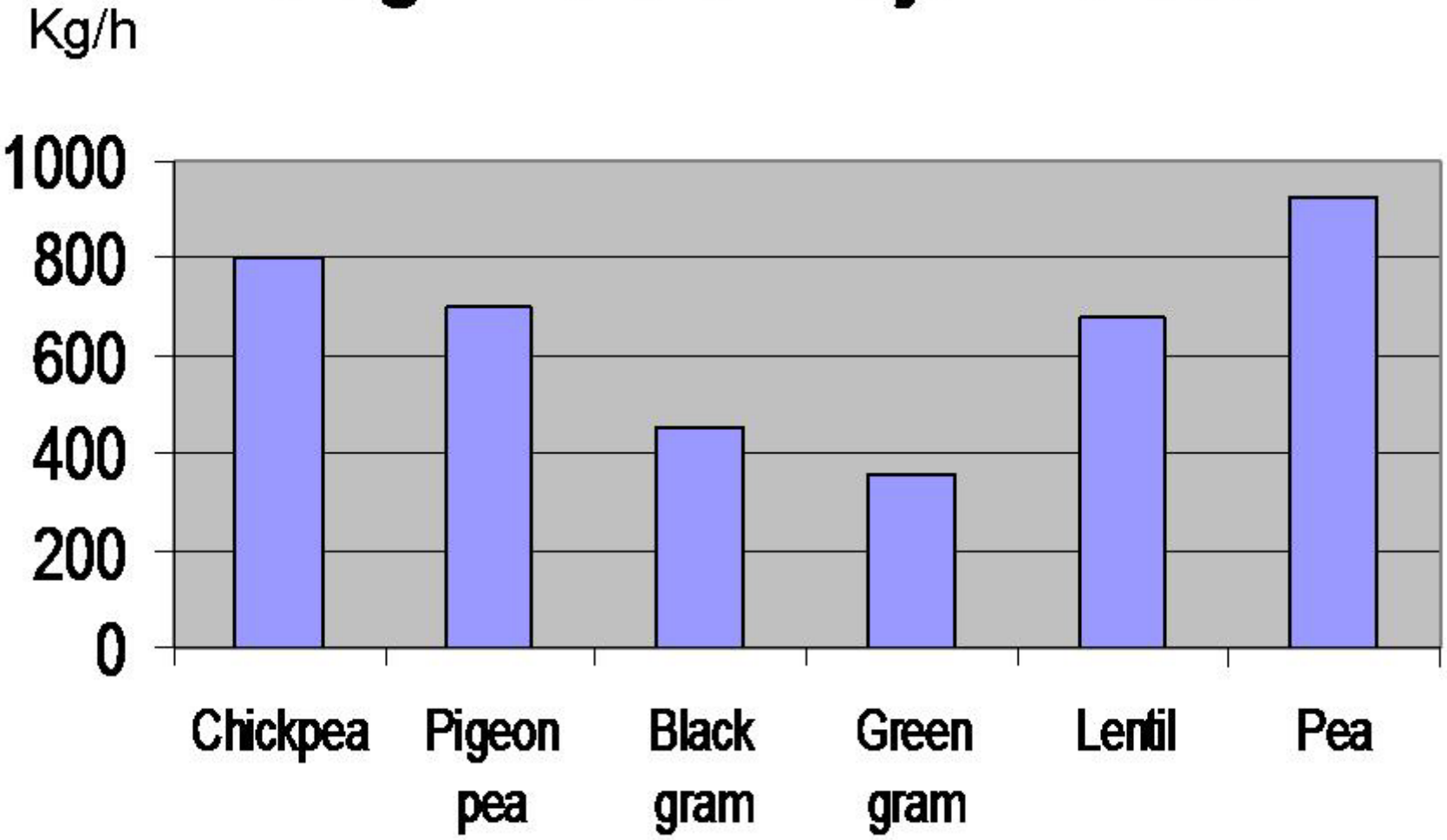

Million tonnes
30
25
20
15
10
5
0
14.8
20
23.7
27
Present
2008
2010
2015
Year


Total Area of Major Pulses in India
m.h
0
1
2
3
4
5
6
7
Chickpea
Pigeon pea
Black gram
Green gram
Lentil
Pea

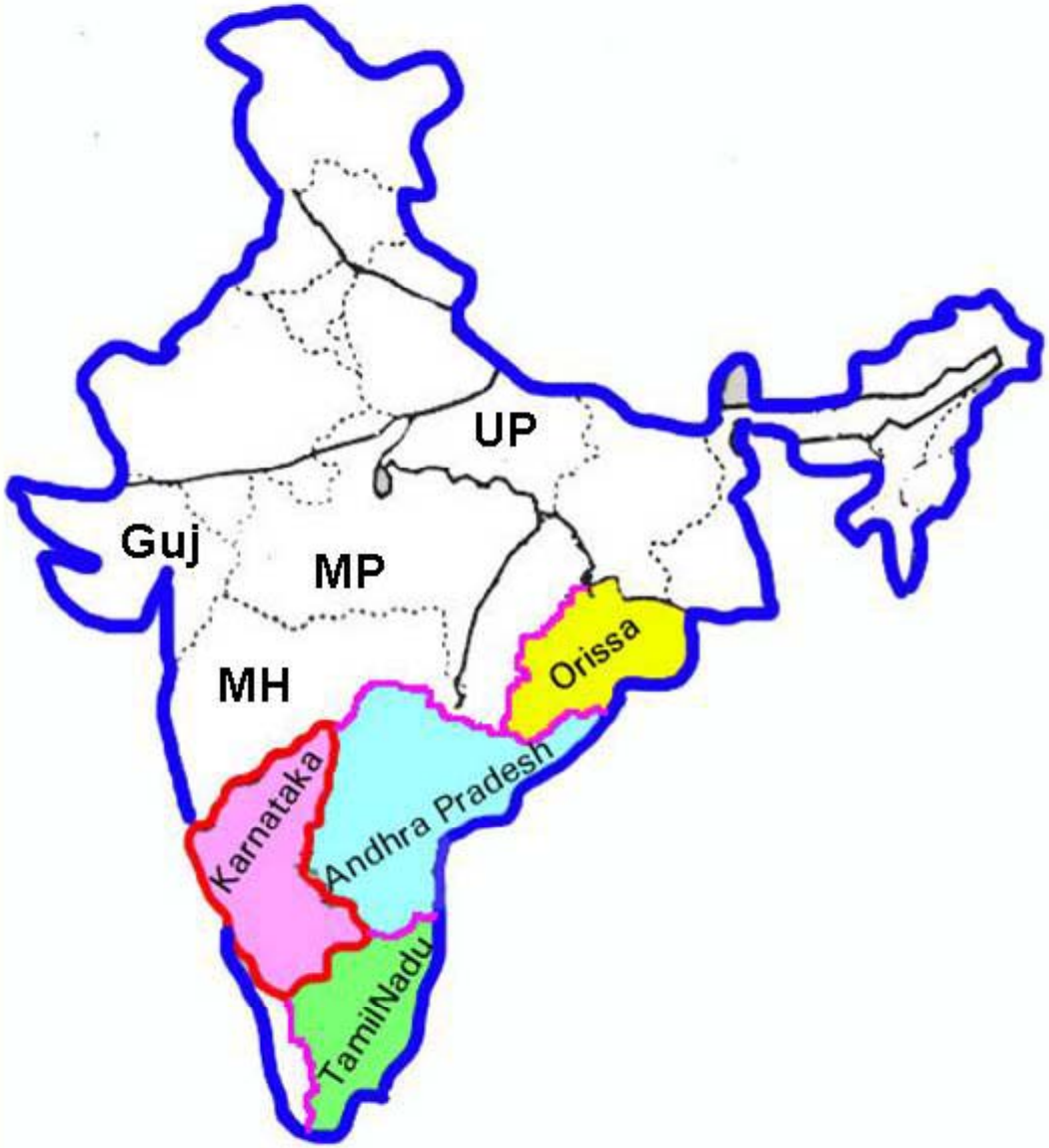
Production of Major Pulses in India



Average Yield of Major Pulses

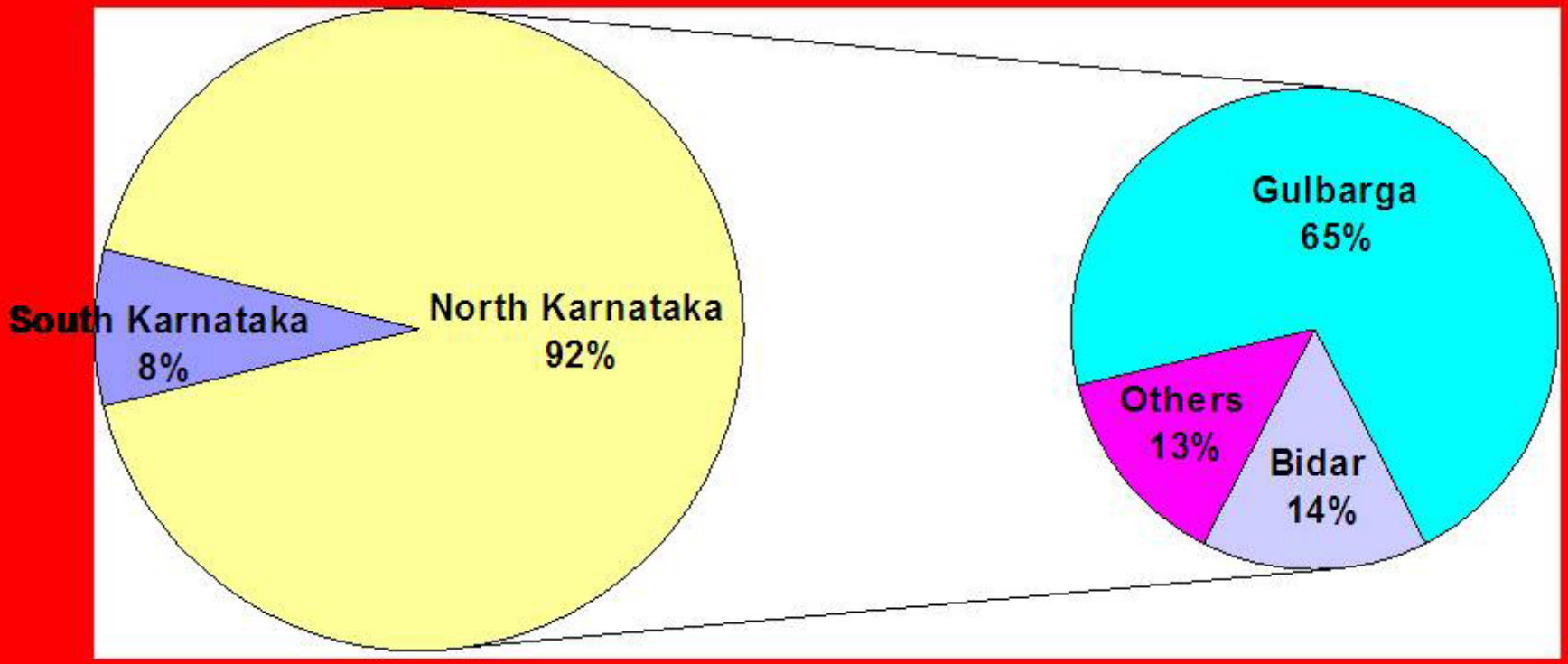


India – Largest producer of pulses



- Chickpea
- Pigeon pea
- Mung Bean
- Urd Bean
- Lytherus
- Lentil
- Rajmas
- Peas

Distribution of Pigeonpea area in Karnataka state



MAIN REASONS FOR LOWER YIELD

- Use of low yielding varieties
- Poor level of management practices particularly plant protection measures
- High plant population
- Lack of adopting proper agronomic practices

Contd

Contd

- Damage due to dry spell and heavy rains in rainfed areas
- Spread of diseases in the crop particularly sterility mosaic virus and alternaria blight
- Imbalanced use of fertilizers
- Lack of awareness on INM and maintenance of soil fertility

INNOVATIVE IDEAS GIVEN BY

1. **Dr. S.A Patil, Vice Chancellor, UAS, Dharwad during his visit to Bidar in the year 2003-04 clicked the idea of Transplanting technology to the scientists of KVK Bidar.**
2. **Sri. Rajeshwar Shivacharyaji, Tadola, Basavakalyan narrated success story of Dibbling of Jowar by Dabolkar in Maharashtra state.**
3. **Sri. Gurubasappa Sherikar, Meenkera, Humnabad dibbled Redgram in Wider spacing on an area of 1 acre during 2003-04, which was witnessed by KVK, Scientists and analysed the advantages of wide spacing.**

TRIALS OF KRISHI VIGYAN KENDRA, BIDAR

Redgram transplanting technology

- **Feeler trial : 2004-05**
- **OFTs : 2005-06 and 2006-07**
- **FLDs : 2006-07 and 2007-08**

Redgram grown as

Sole Crop

Mixed crop

Intercrop

- In recent years *kharif* rains (monsoon) are generally becoming irregular due to which sowing in first week of June is delayed and many times happens in July,

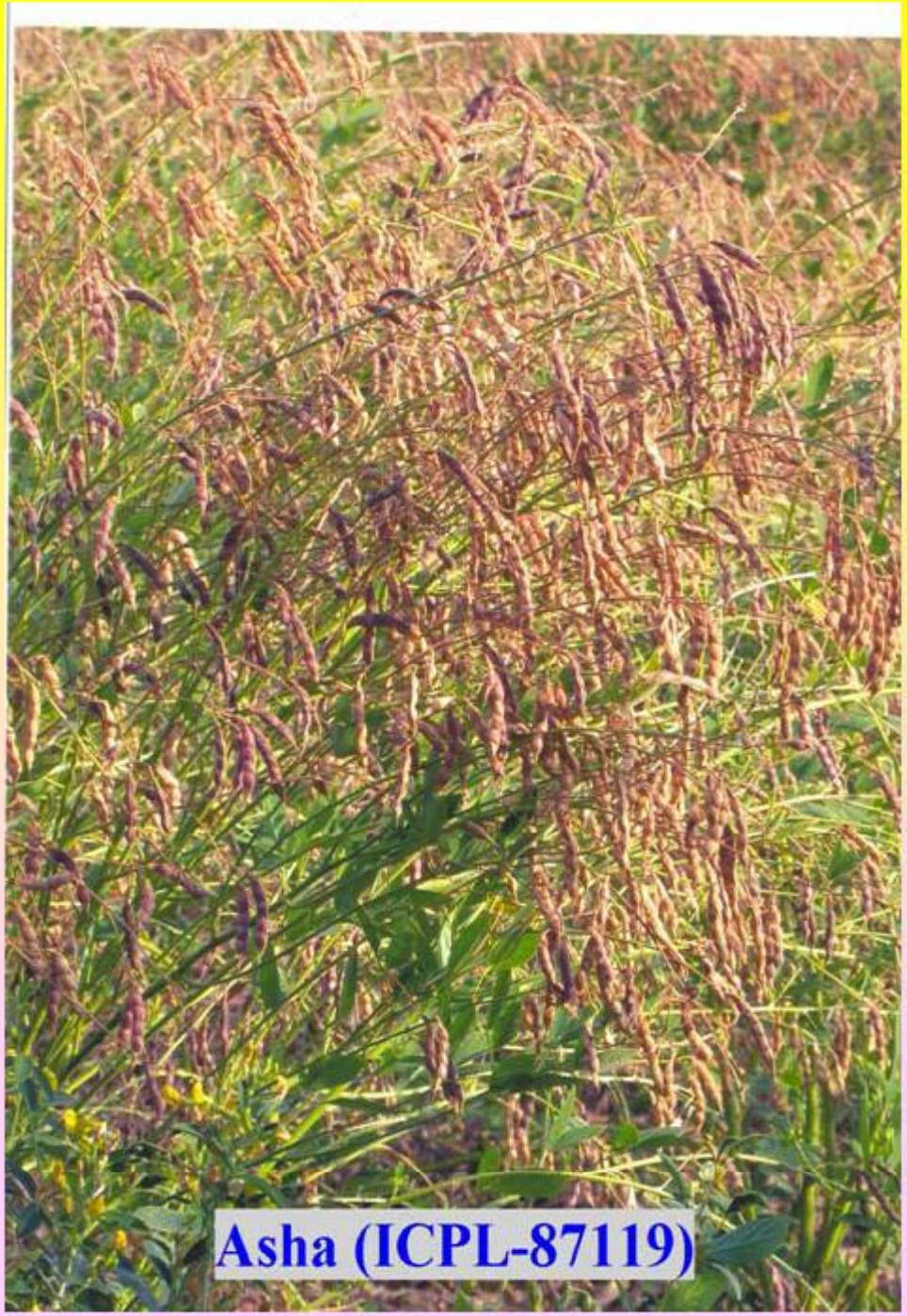
- because of this optimum yield is not obtained and due to the late sowing the crop encompass many disease and pest problems.

BSMR-736

1. Resistant to wilt and sterility mosaic disease
2. high yielding suitable to medium /deep black
3. soils areas having 1-2 irrigations
4. duration 190-200 Days

ICPL-87119 (ASHA)

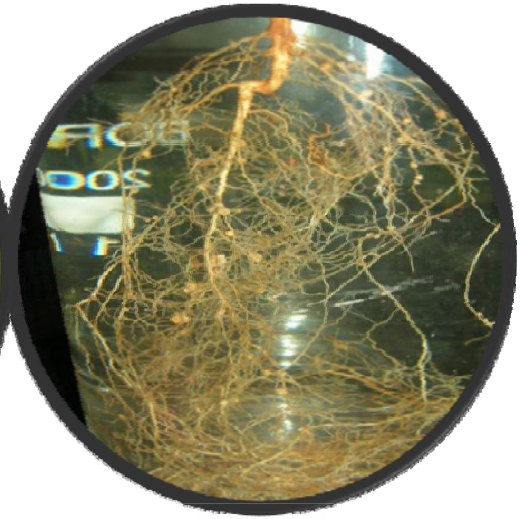
Year : 2001
Yield : 16-17q/ha.
Maturity : 190-195 days
Growth habit : Indeterminate
Seed size : 10.5g
Seed colour : Red
Other features: Resistant to wilt and SMD and high yielder



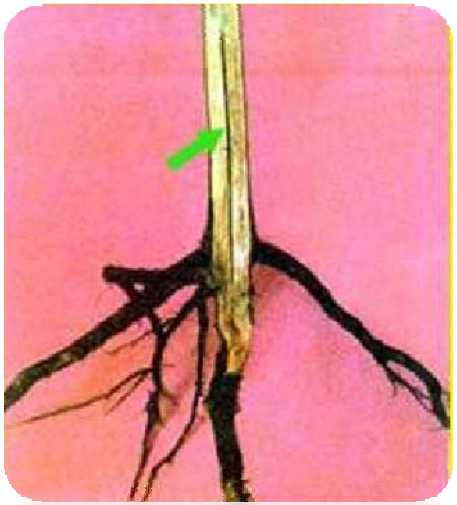
TS-3R : Newly released variety

- Red seeded variety
- Resistant to wilt
- Early medium duration (145 days)
- Higher yield &
- Good quality dhal

Seed treatment with Ridomil MZ @ 4gm/kg



PSB-200g/ac
Rhizobium-200 g/ac



Trichoderma- 4 g/kg

Seed treatment

Var: BSMR-736
2
Seed treatment
3
Filling with pot mixture
4
Dibbling treated seeds
14
Nipping 50 DAS
TRANSPLANTED REDGRAM
5
Watering Daily
13
Fertilizer application
6
Weeding & After care
12
Irrigation
7
Spraying with Chlorophyriphos
11
Planting
10
Removing polythene bag
9
6"
Farrow opening
8
Transportation

POLYTHENE BAG

5’ x 3’ (2904 / ac)

6’ x 3’ (2420 /ac)

POLYTHENE BAG

5’ x 3’ (2904 / ac)

6’x 3’ (2420 /ac)

ARRANGEMENT OF POLYTHENE BAG

SEED DIBBLING

May 15

DAILY WATERING

8th Day

15th Day

Seedling raised under partial shade

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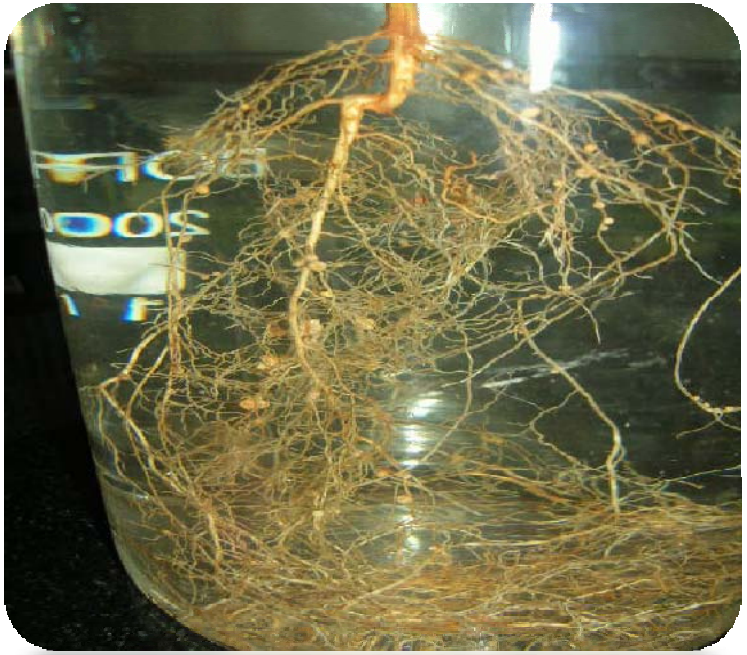
Weeding at 20 DAS

PP Measures

Fle beetle – controlled by chlorophyriphos @ 2 ml/lt of water



Root Development

SEEDLINGS READY FOR TRANSPLANT

30 days old seedlings

Summer Ploughing

PREPARED MAIN FIELD

Ready plot

SEEDLING PREPARED FOR TRANSPLANT

1 SOWING INTER CROP

2 TRANSPLANTING

3 IRRIGATION

4 ESTABLISHED SEEDLINGS

IRRIGATION AT CRITICAL STAGES

1. Dibbling / transplanting
2. Pre flowering
3. Pod development

Drainage management in Redgram

Furrow Opener

Distance between furrows

INTER CROPPING

Redgram + onion (1:8)

Redgram + Ginger (1:3)

Redgram + sesame (1:3)

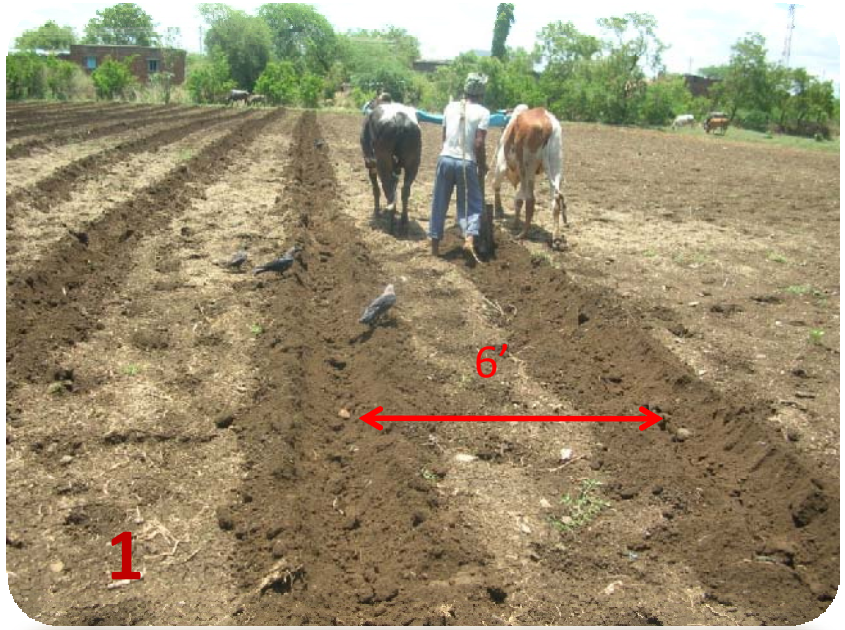
Redgram + Soybean

Redgram+Greengram

Redgram+Blackgram

DIBBLING METHOD

- Availability of irrigation water during the month of May
- Well prepared land
- Non availability of labour
- Big farmers



Dibbling Seeds

Intercropping in Dibbling method

Redgram Dibbling method

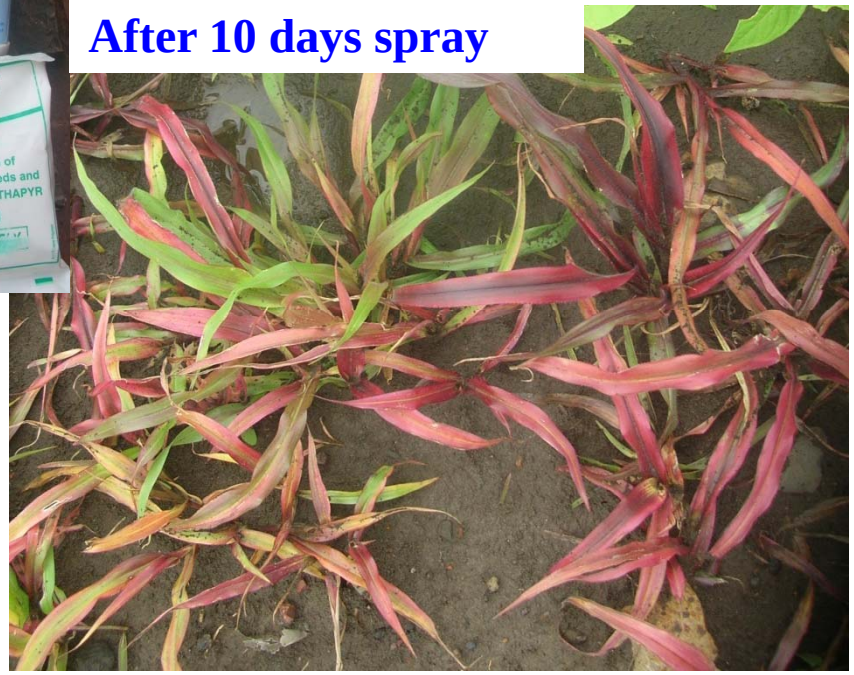
❑ Parsuit (Imazethapyr) 2ml/ltr @ 75g a.i/ha (20 DAS) Cost : Rs.400/ac

Before Spray

After 3 days spray

After 6 days spray

After 10 days spray



Nipping at 20 DAT

Seedling age - 50 DAYS

Recommended dose of Fertilizers (gms/plant)

Spacing (Ft)	No. of seedlings per acre	N	P	K	ZnSo4
5 x 3	2904	3.4	6.88	1.72	2.06
6 x 3	2420	4.13	8.26	2.06	2.47
7 x 2.5	2490	4.01	8.03	2.00	3.30
7 x 3	2074	4.82	9.64	2.41	2.89
8 x 2.5	2178	4.60	9.18	2.29	2.75
8 x 3	1815	5.50	11.01	2.75	3.30

* 10:20:5.0 **Kg NPK/ac**
* **DAP : 1 bag /ac**
* **MOP 5 kg/ac (Red soil)**

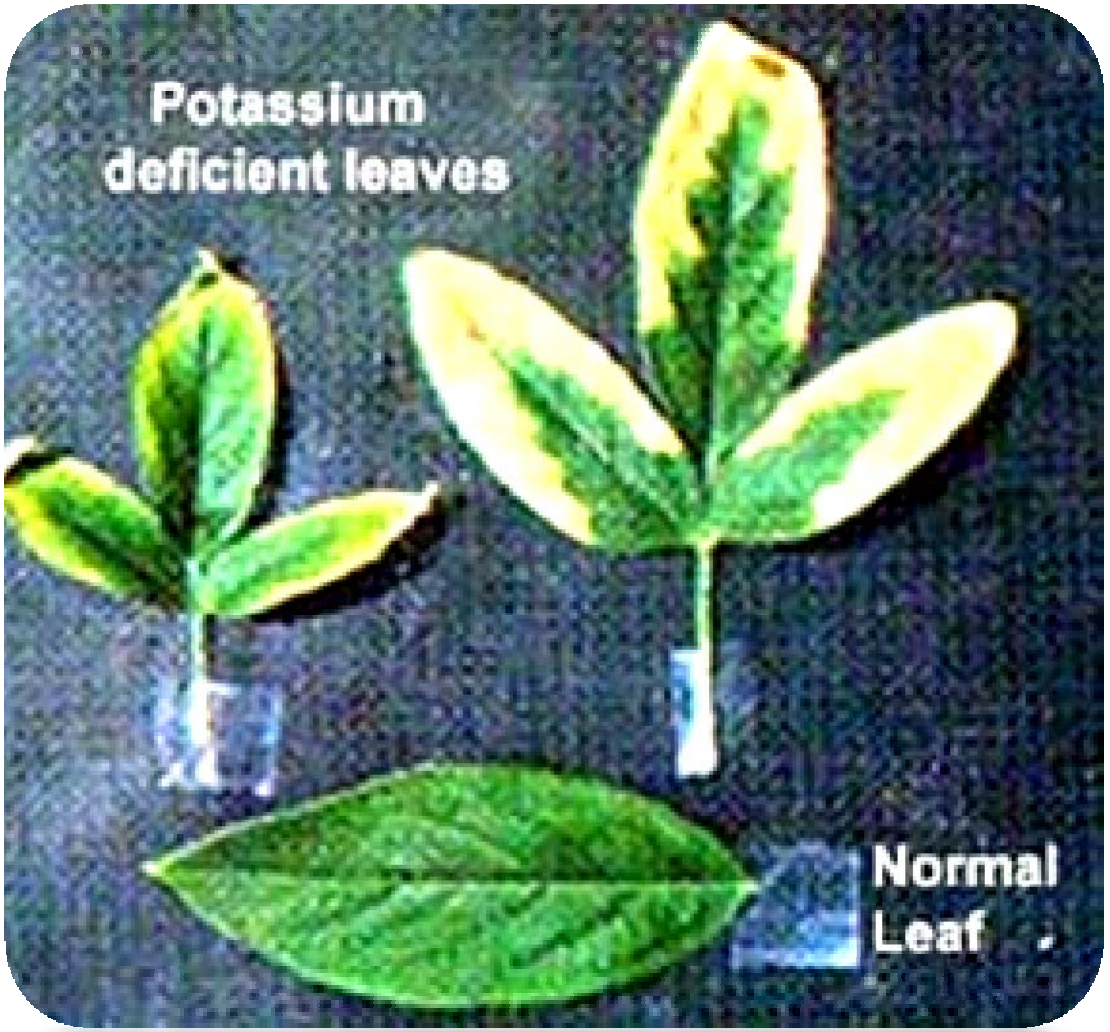
Based on Soil test

* 6 kg zinc sulphate / ac
* 80 **kg/ac Gypsum**
* **2kg/ac Boron**

DAP and MOP application should be made at 20-30 DAT in ring method

Fertilizer Application

POTASSIUM DEFICIENCY



Control : MOP @ 5-8 kg /ac (Redsoil)

ZINC DEFICIENCY

Control : 5 kg Zinc sulphate +
50-100 kg FYM /VC

SULPHUR DEFICIENCY

80 kg Gypsum/ ac

Different crop stages

Pre-Flowering stage

Pod formation stage

CROP SEASON

Sowing month	Crop growth period	Reproductive period	Total Duration (DAYS)
May	130 Days	70 Days	200
June	120 Days	65 Days	185
July	110 Days	60 Days	170
Aug	90 Days	45 Days	135

Advantages of Technology

1. Sowing will be in May Month

Biotic Constraints in pigeonpea

Sever in Oct-Nov

Helicoverpa armigera

2

Pod borer insect damage is avoided due to early sowing

Drought Resistance Develops Due to Deep Rooting

3

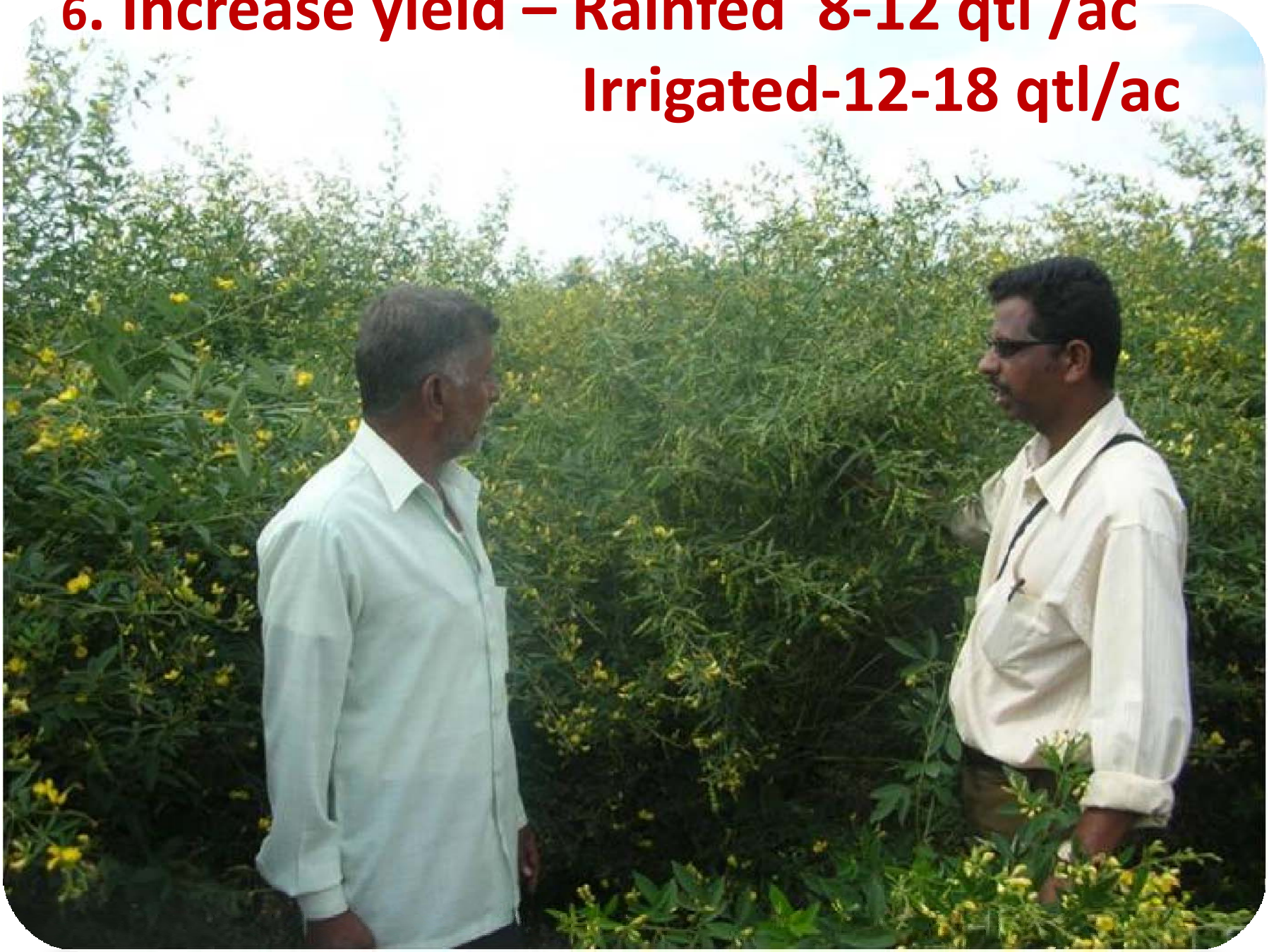
30 days Old Seedlings 30 cm Root Development

4. Easy for insecticide spray as plants are at definite interval

5. Savings in seeds

Sowing method-4-5 kg /ac
Dibbling/Transplanting method- 1 kg/ac

6. Increase yield – Rainfed 8-12 qtl /ac
Irrigated-12-18 qtl/ac



7. Alternate Profitable Crop to Sugarcane

Table : Comparison between Sugarcane & Redgram cultivation

Particulars	Sugarcane	Redgram
Duration	12 month	6 month
Nutritional requirement	Exhaustive crop	Improves fertility
Water requirement	High (25 irrigations)	Less (3 irrigations)
Average yield	62.5 ton/ha.	27.5 qtls/ha.
Cost of Cultivation	Rs. 65,000/ha.	Rs. 17500/ha.
Gross returns	Rs. 1,25,000/-	Rs. 1,32,000/-
Net return	Rs. 60,000/-	Rs. 1,14,500/-
Marketability	Perishable & Can't stored	Non-Perishable & can be stored

Advantages of Red gram Cultivation

- Requires less water
- Less duration
- Improves soil fertility
- Non dependency for marketing

Lessons Learnt

- Requires wider spacing of more than 6 feet
- Technology required to restrict the
- Biomass production

8. Suitable for small and marginal farmers

Economic Analysis 2009-10(irrigation)

No of farmers - 25

Market Rate - Rs- 4800 / Qtl

S,no	particulars	Farmers practice	Transplanting
1.	Seeds	18 kg/ Ha.	2.0 kg/ Ha.
2.	Population	72,500/ Ha.	6050/ Ha.
3.	yield	12 Qtl / Ha	28.56 Qtl / Ha
4.	Coc(Rs/ha)	10,250/-	12,500/-
5.	GR(Rs/ha)	57,600/-	1,37,088/-
6.	NR(Rs/ha)	47,350/-	1,24,588/-
7.	CB ratio	1:4.61	1:9.96

CROP AT MATURITY

CROP AT MATURITY

Field visit

KRISHI MELA- BIDAR

South Zone Krishimela at Hyderabad (AP)

REDGRAM INTERCROP WITH WATERMELON (FERTIGATION)

Redgram Intercrop with watermelon (Fertigation)

Name of the Farmer : Shahaji Maruthirao Biradar (09902226944)

Village : Kankatta Tq/ Humnabad Dst/ Bidar

Fertigation in Redgram Dibbling Method (Plastic Mulching)

Soil : Redsoil

Redgram Variety : BSMR-736 (Duration 180-200 days)

Seed Rate : 500 gm/ac

Seed Dibbled : June 16th 2010

Plant population /ac : 1815 (12 x 2 ft)

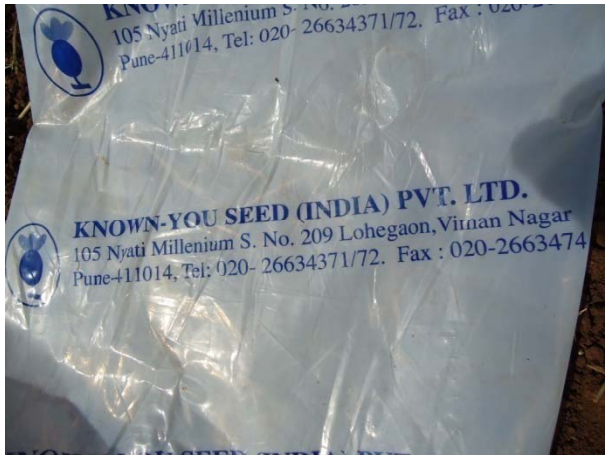
Watermelon Variety : Namdari (Duration 65-70 days)

Seed Rate : 300 gm/ac

Nursery Preparation : May Month

Plant population /ac : 1815 (12 x 2 ft)

Land Preparation for fertigation in Redgram + Watermelon



Polythin Mulching

Polythin Mulching

Fertilizer Application

Dibbling Redgram Seeds

Watermelon Seedlings & planting

Redgram
6 ft
Watermelon

Watermelon Nursery

Filling of Cocopit in tray

Seed dibbling in Cocopit tray

Daily Watering to Cocopit tray

Watermelon Seedling planting in polythin mulch

REDGRAM IN FERTIGATION

Watermelon

FERTIGATION IN REDGRAM

ORGANIC AND INORGANIC FERTILIZER/AC(BEFORE PLASTIC MULCH)

Sl.No	Inputs	Doses	Amount (Rs.)	Total Amount (Rs.)
1	FYM	5 Tractor	1200 /tractor	6000
2	DAP	50 kg	11/kg	550
3	Gypsum	40 kg	2.45/kg	98
4	Zinc Sulphate	5 kg	45/kg	225
5	Boran	2kg	55/kg	110
6	Magnesium Sulphate	15 kg	25/kg	375

Fertilizer for fertigation(Both crops)

Fertilizer	Quantity/ day	Duration (Days)	Amount (Rs./25kg)	Total Amount (Rs.)
19:19:19	3.0	0-25	1600	4800
12:0:61	3.0	26-36	2100	2520
0:52:34	3.0	37-46	2800	3360
0:0:50	3.0	47-60	1300	2496
			Total	13176

- Cocopit (Rs. 9/kg) : Rs.380 /-
- Plastic mulch(Rs. 5.75/ mtr) : Rs.11500/-
  (5 bundle(400 mtr each) /ac)
- Labour cost for plastic mulching : Rs.1000/-
  (10 labour/ day)
- Tractor for bund formation : Rs.2000/-
  (3days)
- Watermelon seed (300gm) cost : Rs.10000/-
- Redgram seed (500 gm) cost : Rs.25/-
- Plastic tray : Rs.592/-
- Other cost : Rs.3000/-

Economics

Cost of cultivation (Redgram+watermelon)	: Rs.48942
Returns (10 tonns watermelon/ac)	: Rs. 80000
Returns(16 qtl Redgram/ac)	: Rs. 67200
Total Income/ac	: Rs. 147200
Net Income/ac	: Rs. 98258
Cost benefit ratio(C:B)	: 1:3

DIGNATARIES VISIT TO TRANSPLANTED FIELDS

Dr. P.K. Basu Principal secretary GOI, Dr. B.V.Patil Vice chancellor UAS, Raichur & Dr. S.A Patil Chairman Krishi Mission GOK

Dr. K.D.Kokate DDG (Extension), ICAr, New Delhi ,
Dr. Prabhukumar ZPD, Zone-VIII, Bangalore

Dr. S.L Mehata Ex. Vice Chancellor, MPUAT,Udaipur & other dignitaries

Dr V Sadamate Advisor , Planning commission GOI & other dignitaries

Dr R.K.Gupta Coordinator CISA & other dignitaries

Scientist from Moracco with other Dignitaries

THANK U