South East Research Farm Inc.

Redvers, Saskatchewan

Intercropping Chickpea and Flax


ADOPT
Chickpea
Intercrop

Reasons to Consider Intercrops

- Agronomic Obstacles
  - Weeds (especially resistant weeds)
  - Disease pressure (including resistant diseases)
  - Maturity effects ???
- Over-Yielding
  - Sometimes the yield or value of two crops is higher than one.
  - Sometimes there is no difference

Reasons to Consider Intercrops

- Biodiversity
  - Rotations are generally 2 to 3 years
  - Wheat and canola predominate
  - Intercropping adds extra biodiversity without lengthening rotations
  - Spreads risk in case one crop fails
- Desire to complicate your life ??

Obstacles to Intercropping

- Both must be compatible with herbicide
- Complicates seeding, weed control, harvest
- Over-yielding is elusive, inconsistent
- Practical separation of harvested product

Types of Intercropping

- **Mixed Intercropping**
  - Seeded together, harvested together
- **Row Intercropping**
  - alternate rows or sections.
  - alley cropping with trees
  - strip cropping
- **Fast Crop / Slow Crop**
  - Seeded together, not harvested together
- **Relay Cropping**
  - Second crop sown after first, but before harvest of first
  - Harvest of first crop allows second crop to fully develop

Example? Chickpea-Flax Combination

Why this combo?

- High value chickpeas, large agronomic problems
- Flax as 'nurse crop' for chickpea; flax yield is a bonus
- Herbicide: Authority pre-seed registered on both
- Low levels of shattering prior to harvest for both
- Low cost of flax seed

Potential Benefits:

- Late competition affects chickpea maturity ??
- Lower chickpea disease pressure ?? (Aschochyta blight)
- Both are Arbuscular Mycorrhiza Fungi (AMF) associated
  - Sharing fixed N through fungus ??


Mid-July, 2012, SERF

Aug 23, 2012 at SERF

October 2012 – SERF Intercrop

Intercropping Chickpea Flax Trial – 2013, Redvers

3 rates of Kabuli Chickpea

3 rates of Desi Chickpea

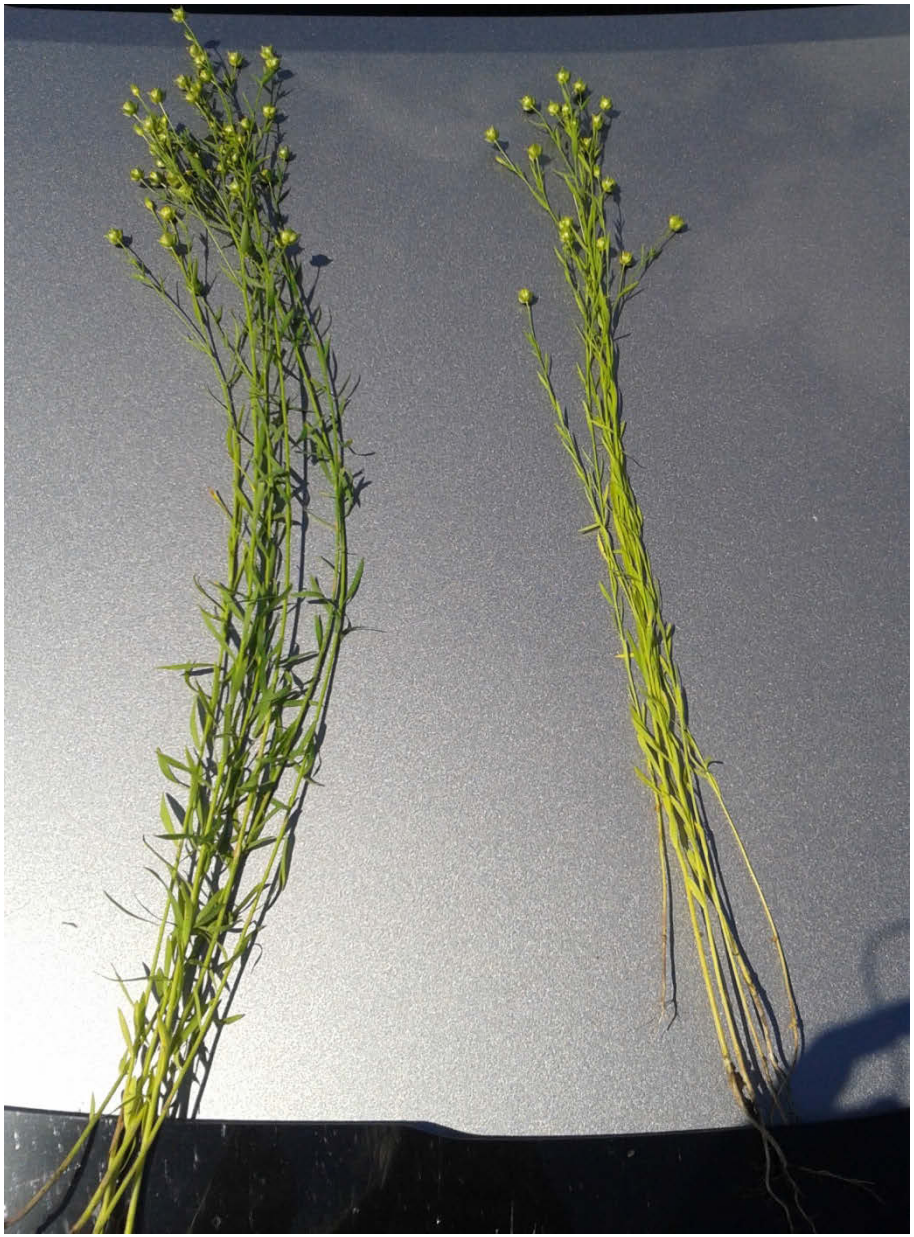
Compared with

Monocropped Flax (high N)

Monocropped Flax (low N)

Monocropped Kabuli

Monocropped Desi



Monocropped Flax (low N)

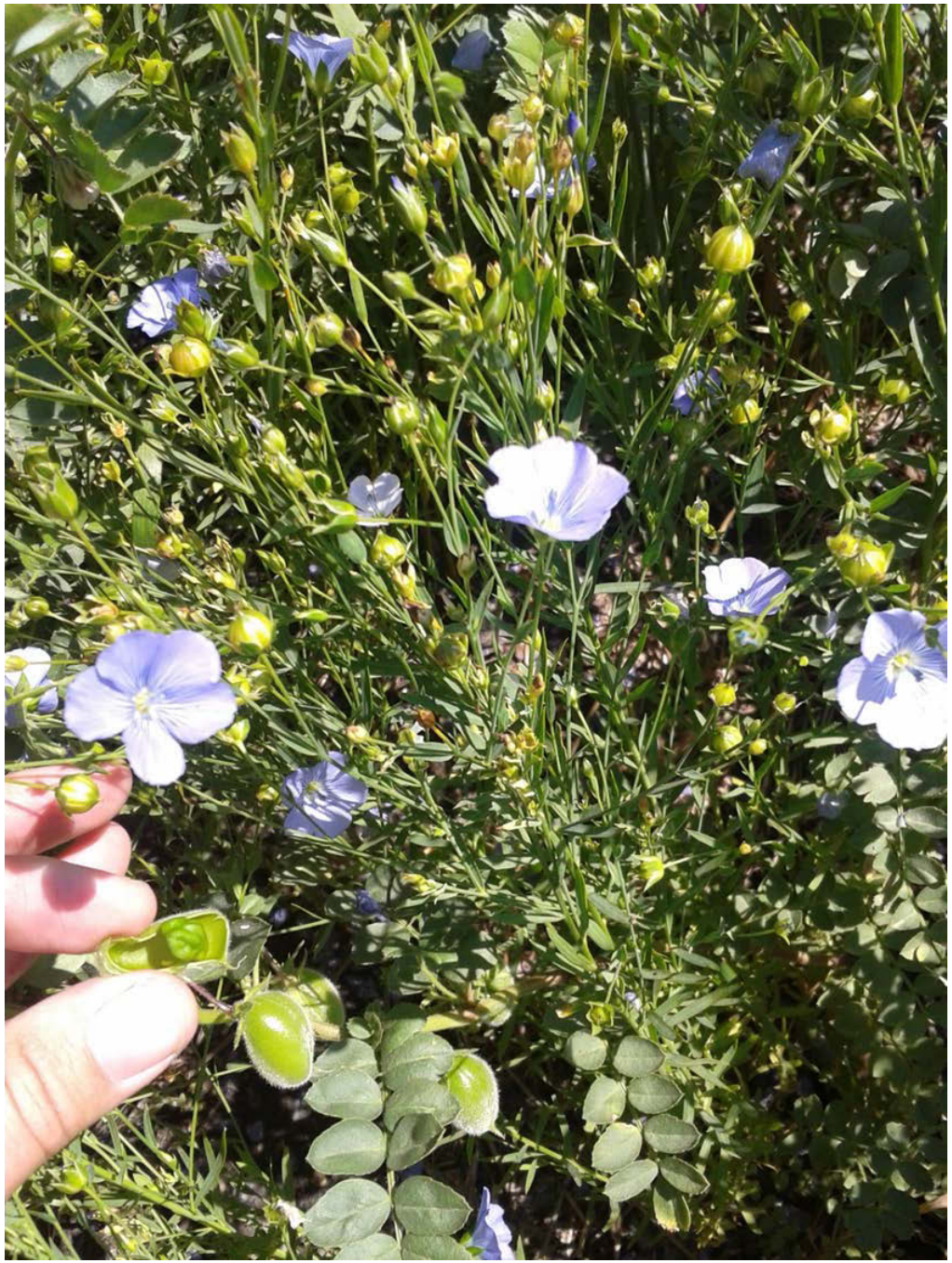
- Poor competition with weeds
- Low yield


108
Flax - Oblac N


Monocropped Flax – 50 lb/ac N

Desi Chickpea (40 pl/m2) and Flax

Chickpea Flax



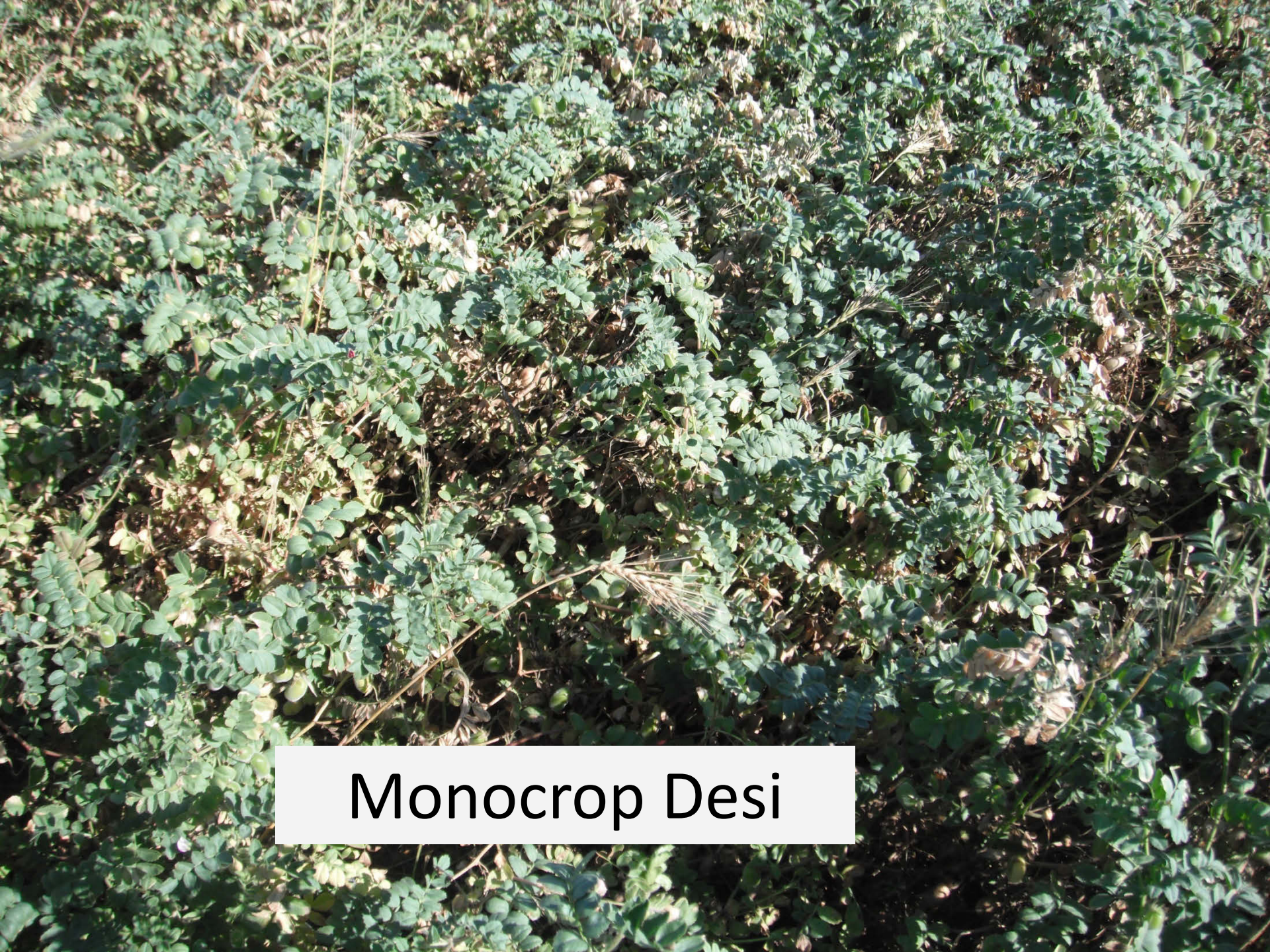

110 Desi (Lo Rate) Flax


Sept 17 High Rate Desi Chickpea

Monocropped Desi Chickpea

Sept 7, 2013

Desi chickpeas established well but were lodging under very moist conditions.


Monocrop Desi

	Desi Yield (kg/ha)	Flax Yield (kg/ha)	Flax (bu)
Monocrop	1131		
Intercrop1	1012	693	10
Intercrop 2	1195	672	10
Intercrop 3	1389	796	12
Flax		1130	17
Flax with N		1694	26

Chickpea	Desi Intercrop	Desi Monocrop	Kabuli intercrop	Kabuli Monocrop	Flax (black soil zone)
Yield	1200lb/ac 12 bu flax	1100 lb/ac	1400 lb/ac 12 bu/ac flax	1300 lb/ac	24 bu/ac
Revenue	$315 + 150 = $465/ac	$297	$490 + 150 = $640/ac	$455	$300
Seed costs	36 + 11	36	69 + 11	69	11
Fertilizer	13	13	13	13	49
Herbicide/Fungicide	36	36	36	53	14
Inoculant	11	11	25	25	
Total Input Cost	107	96	143	160	74
Return over inputs	**350**	**200**	**500**	**300**	**230**

Nitrogen dynamics are unknown

Left – Intercropped Flax - Low N

Right – Monocropped Flax – Low N

DISCOVER ESTEVAN

Colin Rosengren

Reducing your use of chemicals and getting more out of what you already have.

Utilizing resources that we have and not relying on Chemicals.

Colin Rosengren, grain farmer with Rosengren Farms in the Midale area says mixing crops can help save you money.

Rosengren adds it's good for the environment, cutting down on fungicide use and it's good for your pocketbook, not having to have fungicide applications during the year.

Rosengren says an good example is Chick Peas mixed with Flax.

The alternate rows of Flax worked as a physical barrier from disease, making growing Chick Peas without fungicides possible.

- Colin has grown flax and chickpea together in alternate rows for several years on field scale
- Combined with rotary combine
- Set for chickpeas, they will thresh the flax

Colin Rosengren – alternate rows

Contact SERF:

SERF Farm
Box 129
Redvers, SK
S0C 2H0
(306) 452-3161
Ted Wylie – SERF Technician
(306) 452-7253 (cell)
(306) 452-3645 (fax)
serf@sasktel.net
Lana Shaw – SERF Research Manager
(306) 891-5050
lshaw.serf@gmail.com