

Pulse crop breeding update

March 16, 2011



UNIVERSITY OF
SASKATCHEWAN

Food production is down, hunger is up and prices are rising

Published Wednesday, Jan. 05, 2011 11:51PM EST

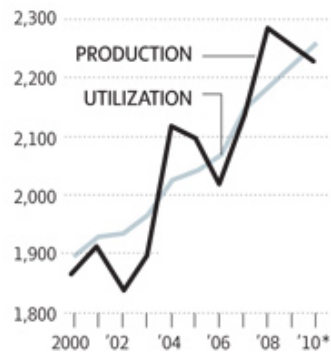
Last updated Thursday, Jan. 06, 2011 3:02AM EST

UN issues warning after its price survey of 55 foodstuffs in December reaches record level

Production is down...

Production increases in developing nations were offset by decreases in developed nations leaving a more than 5 per cent gap that will have to be filled by carryover stocks.

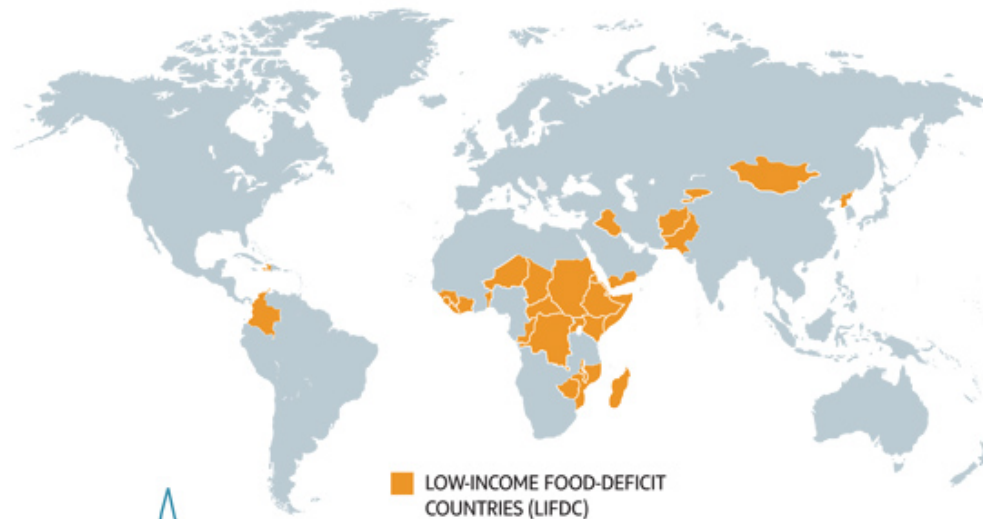
WORLD CEREALS, Millions of tonnes



*Forecast

...hunger is up...

Despite record or bumper 2010 cereal harvests in most regions, 29 countries around the world face food difficulties and are in need of external food assistance.



...and prices are rising

Dec. '10: 214.7
United Nations' Food and Agriculture Organization's monthly food price index hits an all-time high



June '08: 213.5
Food shortages in 2008 prompted riots around the world.

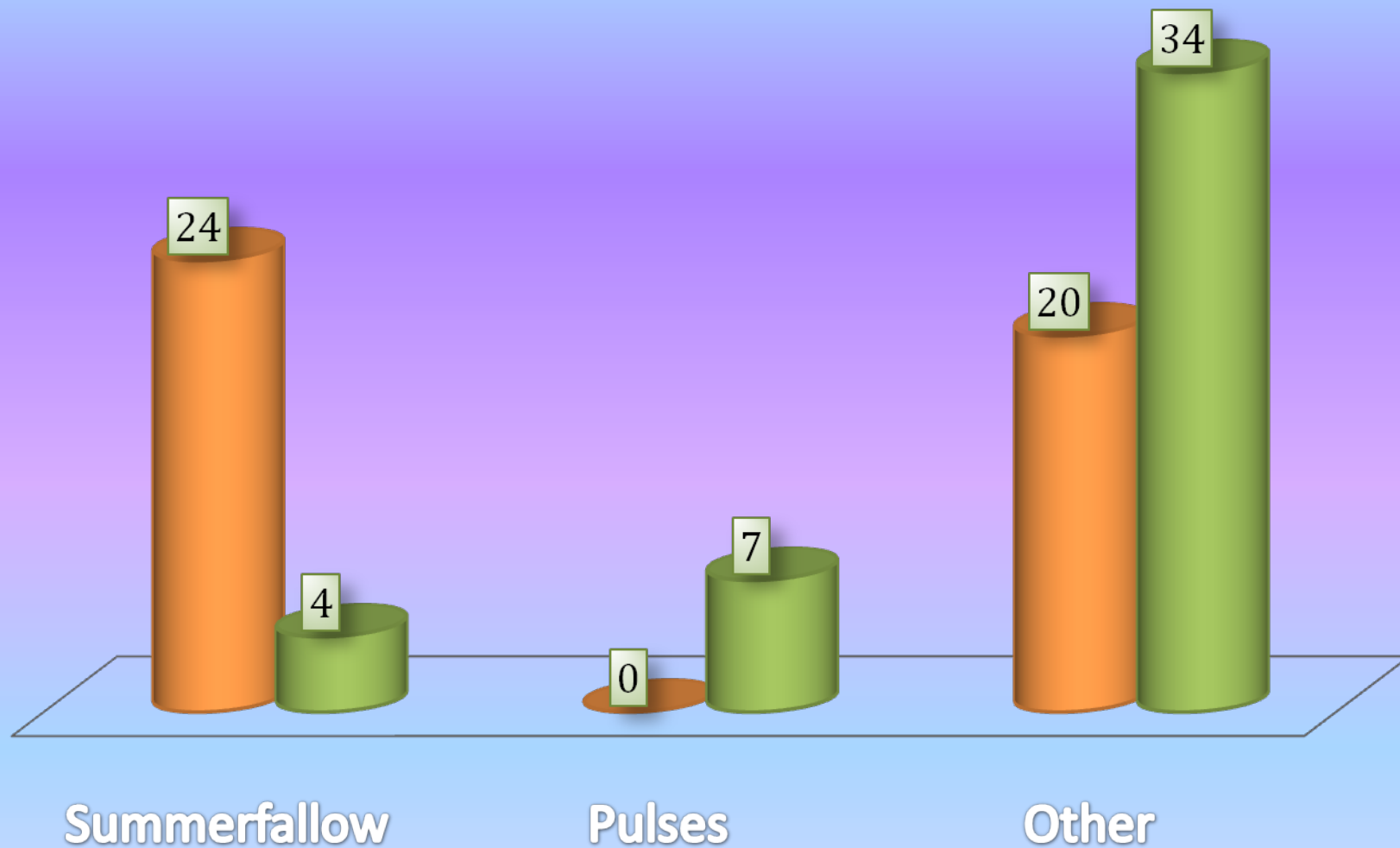
2002-2004 = 100 (Food price index consists of the average of six commodity group price indices)



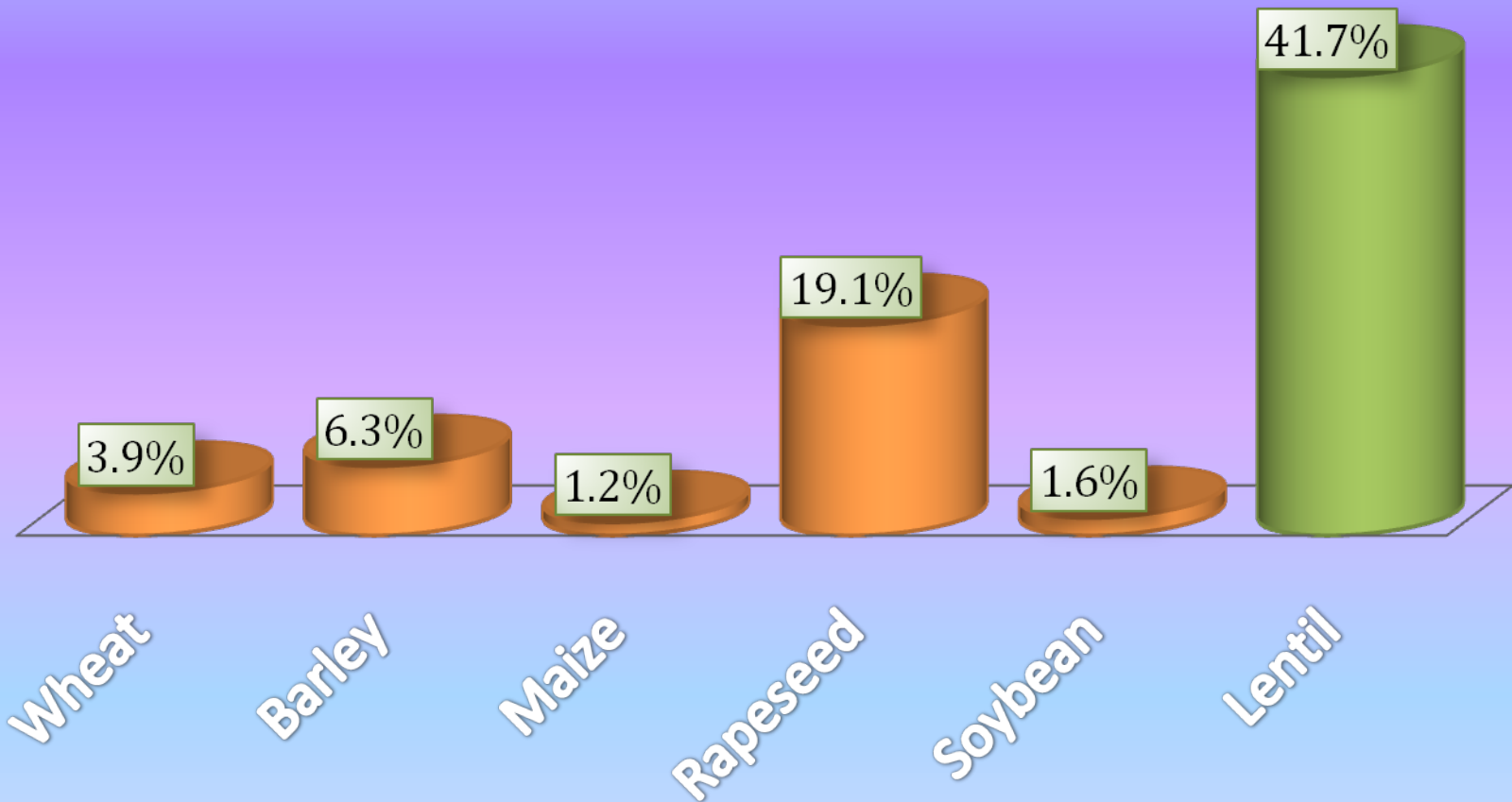
TONIA COWAN/THE GLOBE AND MAIL » FAO WORLD FOOD SITUATION REPORT, JAN. '01, FAO CROP PROSPECTS AND FOOD SITUATION, DEC. 2010

Saskatchewan Crops (Millions of Acres)

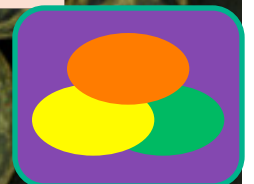
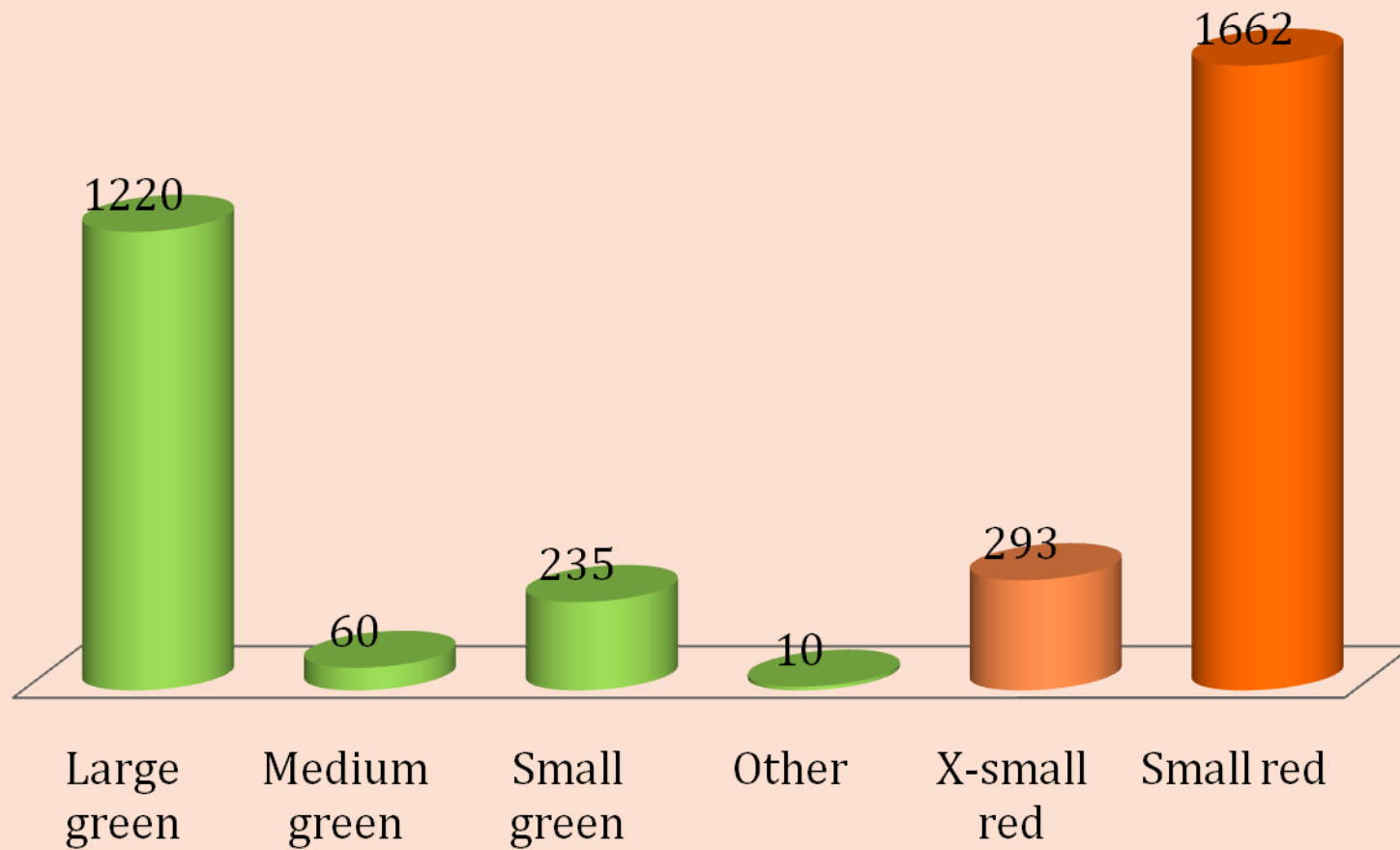
1970 2010



Canadian Share of Global Lentil Production 2009



Canada - Acres '000



Large green	Variety	Years Tested*	Yield % CDC Milestone		Maturity Rating	Seed Weight (g/1000)
			Area 1 & 2	Area 3 & 4		

Laird‡	15	78	72	VL	67
CDC Glamis	11	84	83	VL	60
CDC Grandora	10	78	84	VL	69
CDC Greenland	9	104	87	ML	64
CDC Impower CL	4	98	80	ML	64
CDC Improve CL	5	86	88	M	67
CDC Plato	11	99	89	ML	62
CDC Sedley	9	81	85	M	68
CDC Sovereign	10	90	89	L	66

Small red	Years Tested*	Yield % CDC Milestone		Height (cm)	Days to Flower	Maturity Rating	Seed Weight (g/1000)
		Area 1 & 2	Area 3 & 4				
CDC Blaze‡	9	84	82	30	47	E	34
CDC Cherie	3	124	na	32	51	EM	39
CDC Dazil CL	3	121	na	33	53	EM	35
CDC Imax CL	4	108	102	35	51	EM	45
CDC Impact CL	5	88	87	30	47	E	34
CDC Maxim CL	4	111	119	34	51	EM	40
CDC Redberry	8	105	111	34	50	EM	42
CDC Redcliff	4	121	123	35	51	EM	38
CDC Redcoat	4	117	106	33	50	EM	39
CDC Red Rider	6	103	98	34	52	EM	45
CDC Rouleau	6	104	107	33	52	M	37



Recalling 2010

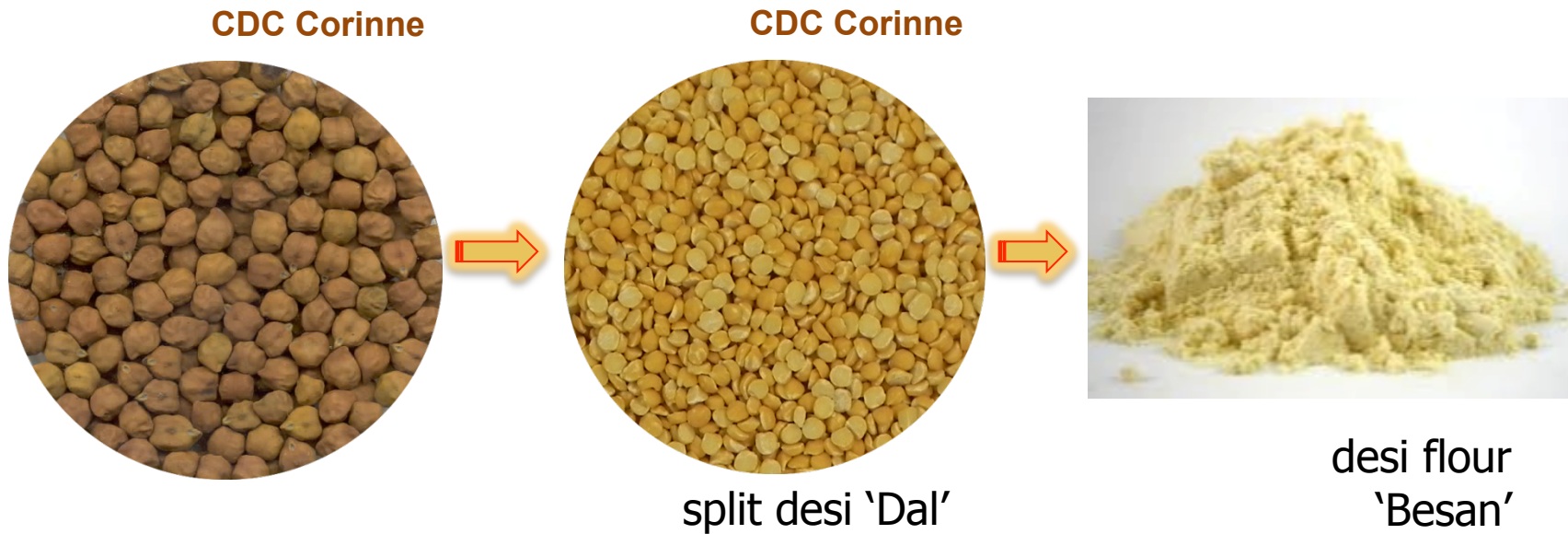


Lentils: Whole Food for the Whole Planet





Desi chickpea dehulling efficiency



Variety	Dal recovery (% weight)
CDC Vanguard	78
CDC Cabri	77
CDC Corinne	76

Chickpeas: Whole Food for the Whole Planet

Canning quality of Canadian kabuli chickpeas

CDC 493-24



CDC Frontier



CDC Orion



CDC 493-24



GOOD CANNING QUALITY!

(30 min cooking time)

2011 Varieties of Grain Crops

KABULI Variety	Years Tested	Yield (% Amit)		Seed Weight (g/1000)
		Area 1	Area 2	
Amit (B-90) ^	12	100	100	258
CDC Frontier	9	106	104	347
CDC Luna	8	100	100	366
CDC Orion	4	110	106	434
CDC Alma	2	108	98	353

DESI Variety	Years Tested	Yield (% CDC Vanguard)		Seed Weight (g/1000)
		Area 1	Area 2	
CDC Vanguard	8	100	100	219
CDC Cabri	8	92	96	304
CDC Corinne	8	108	103	243
CDC Cory	2	111	102	254

Other characteristics

KABULI	Ascochyta Blight	Maturity
Variety		
Amit (B-90) ^	4.6	L
CDC Frontier	4.4	L
CDC Luna	5.4	ML
CDC Orion	5.0	ML
CDC Alma	5.8	L

DESI	Ascochyta Blight	Maturity	Seed Shape	Seed Coat Colour
Variety				
CDC Vanguard	5.1	ML	P	T
CDC Cabri	4.6	M	P	T
CDC Corinne	4.2	M	A/P	T
CDC Cory	4.2	M	A/P	T

Ascochyta Blight at pod filling period: 0-9 scale;

0 = no symptoms;

1 = <2 % plant area affected (PAA);

2 = 2-5 % PAA;

3 = 5-10% PAA;

4 = 10-25% PAA;

5 = 25-50% PAA;

6 = 50-75% PAA,

7 = 75-90% PAA;

8 = >90% PAA;

9 = plants dead;

Plants with rating 6 usually show large lesions,

Plants with score 7 or higher usually exhibit coalescing lesions with stem girdling.

2011 Release – Kabuli

NAME	Long term Yield (% Amit - Area 1)	Long term Yield (% Amit - Area 2)	Seed weight (g/ 1000 seeds)
Amit (B-90)	100	100	258
CDC Frontier	106	104	347
CDC 493-24	108	106	373

NAME	2010 Mean Asco. Blight (0-9 scale)	2010 Mean Maturity (1 – 4 scale)	2010 % Green Seeds
Amit (B-90)	4.7	2.0	8
CDC Frontier	4.4	3.3	90
CDC 493-24	4.2	2.2	10

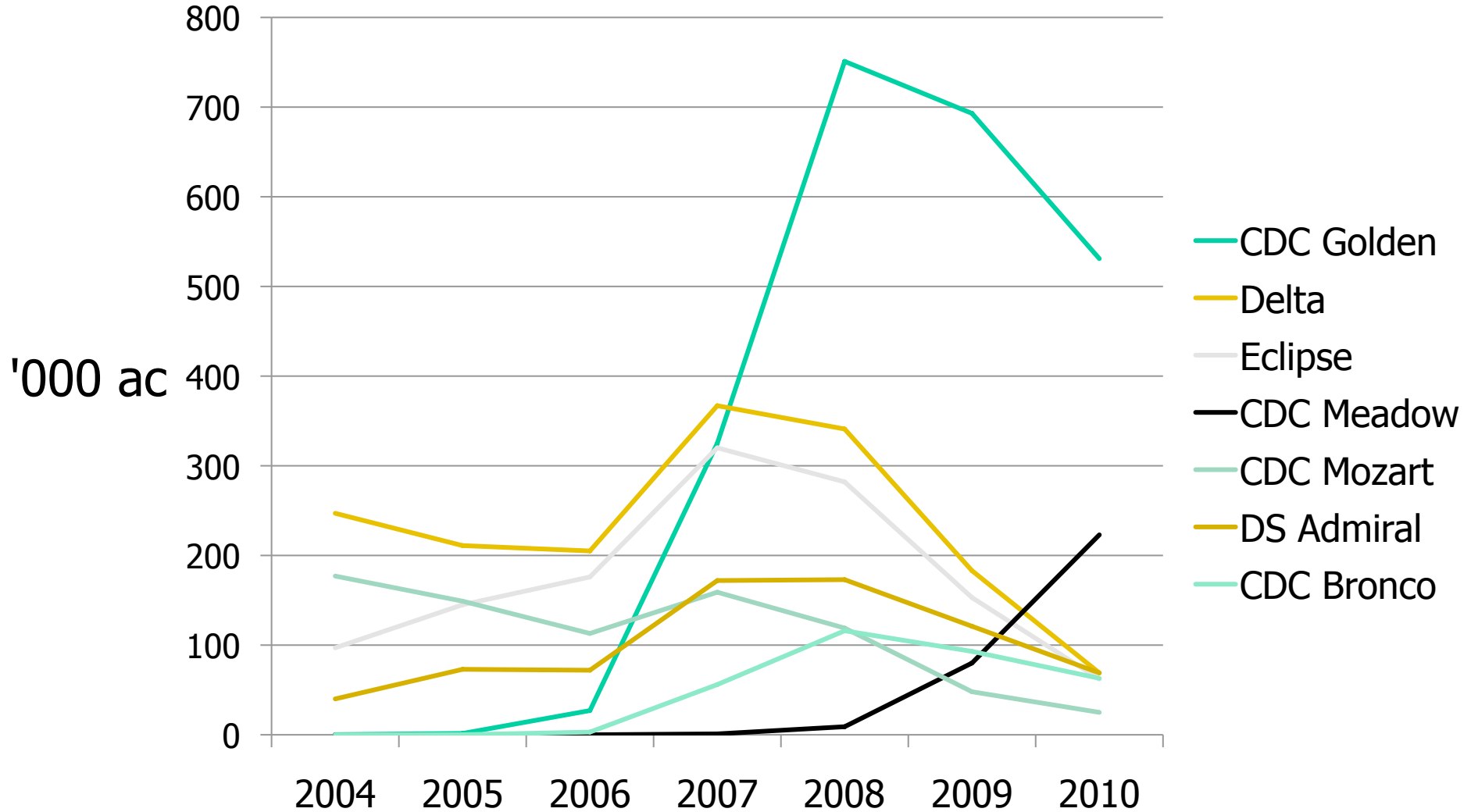
Maturity scale: 1 = early; 2 = medium; 3 = late; 4 = very late



Peas: Whole Food for the Whole Planet



Insured acres, yellow pea (SCIC)

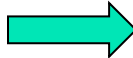
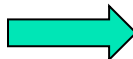
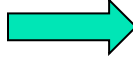




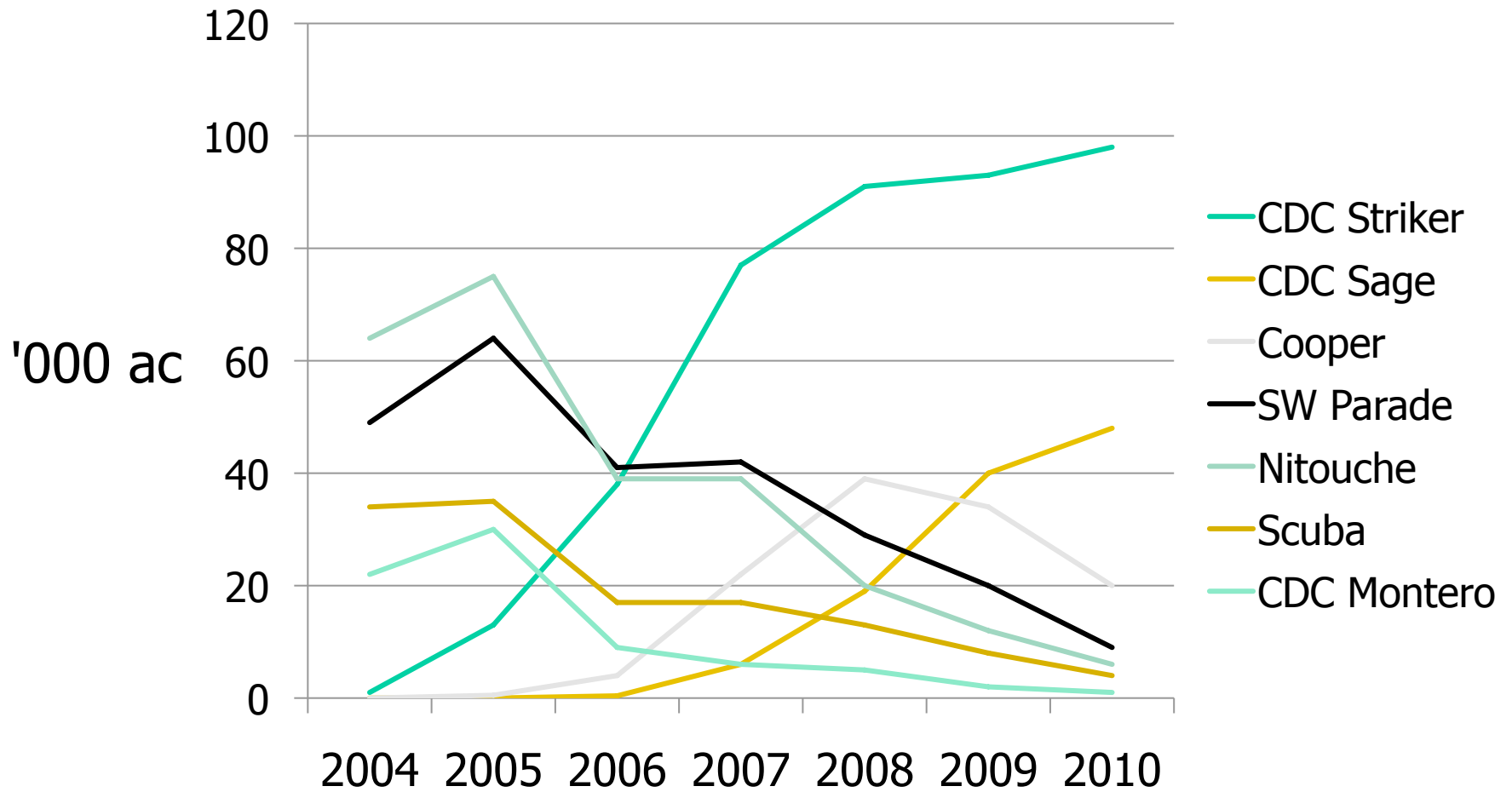
YELLOW PEA VARIETIES - LONG-TERM MEANS IN SK



Variety	Yrs	South	North	Mean	Myco	PM	Fusarium
Agassiz ^	6	111	112	112	F	VG	F
Hugo	3	112	110	111	F	VG	G
Argus	3	109	111	110	F	VG	F
CDC Centennial	5	106	112	109	F	VG	F
CDC Meadow	8	106	109	108	F	VG	F
CDC Bronco	8	109	104	107	F	VG	F
Thunderbird ^	6	106	106	106	F	VG	F
CDC Golden	8	106	101	104	F	VG	F
CDC Hornet	5	103	104	104	F	VG	F
CDC Treasure	6	100	107	104	F	VG	F
Polstead ^	7	102	105	104	P	VG	P
CDC Mozart	7	104	101	103	F	VG	F
Reward ^	5	98	107	103	F	VG	F
CDC Prosper	6	99	103	101	F	VG	G
CDC Minuet	5	100	101	101	F	VG	F
Cutlass	11	100	100	100	F	VG	F
Canstar ^	5	96	101	99	P	VG	G
CDC Handel	5	103	93	98	P	VG	F
DS Admiral ^	6	93	103	98	F	VG	F
Eclipse ^	11	98	98	98	F	VG	P
Sorento ^	5	99	97	98	F	VG	F
SW Capri ^	4	94	101	98	F	P	F
SW Midas ^	5	96	91	94	F	VG	F
Delta	4	93	92	93	P	P	---



Insured acres, green pea (SCIC)



GREEN PEA VARIETIES - LONG-TERM MEANS IN SK

Variety	Yrs	South	North	Mean	Myco	PM	Fus	Lodg	Bleach	Sdwt
CDC Pluto	3	109	102	106	F	VG	F	G	G	160
CDC Tetris	4	104	106	105	F	VG	G	G	G	210
Stratus ^	7	105	99	102	F	VG	P	F	F	270
CDC Patrick	6	100	102	101	F	VG	G	G	G	190
Cooper ^	9	103	97	100	F	VG	F	G	G	270
CDC Striker	11	93	100	97	F	P	G	G	G	230
Camry ^	5	96	90	93	F	VG	P	G	F	260
CDC Montero	6	91	89	90	F	VG	F	F	F	230
Tamora ^	5	92	87	90	F	VG	P	G	F	290
Nitouche ^	7	86	91	89	F	P	F	G	G	250
SW Sergeant	5	88	87	88	F	VG	F	G	G	200
Venture	4	89	82	86	P	P	P	F	F	220
CDC Sage	5	80	84	82	F	VG	G	G	G	220

Varieties of Grain Crops 2011, Saskatchewan Ministry of Agriculture

Pea varieties released in 2010

➤ Certified seed in 2013

CDC Hornet
yellow



CDC Horizon
forage



CDC Mosaic
maple



CDC Pluto
small green



CDC Tetris
blocky green

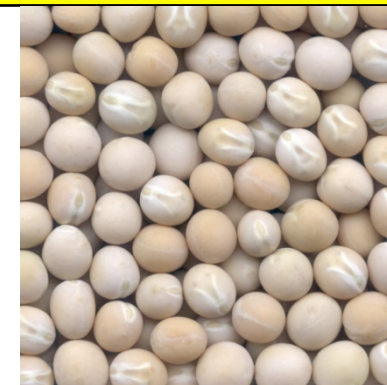


CDC Dakota
dun



Yellow pea variety CDC 2093-22 2011 release

Variety	Grain yield				LODG	SW	Shape	SCB (%)
	2008-10	2010	2008-09	DTM				
ECLIPSE	98	104	94	104	3.3	247	2.7	4
CUTLASS	104	100	106	102	3.7	235	2.8	5
CDC 2093-22	113	118	110	103	2.9	249	2.4	2
LSD05				0.9	0.5	6.3	0.2	3
NLocation	34	13	21	21	19	21	21	8





CDC 2093-22 yellow pea – Nasser farm (Saskatoon), 2010

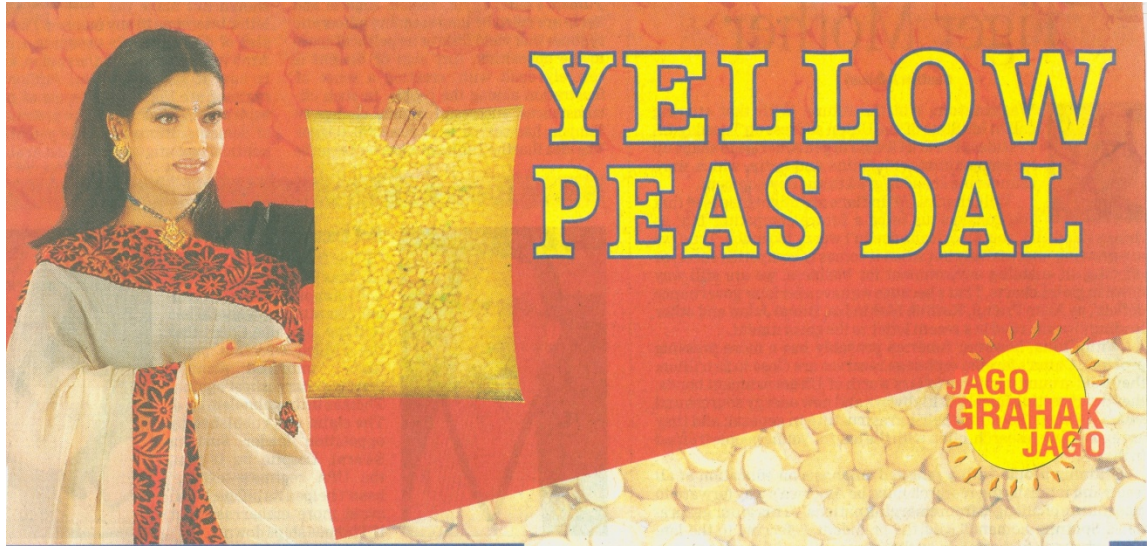
Green pea variety CDC 2235-4 2011 release

Variety	Grain yield			DTM	LODG	SW	Shape	Dimp	SCB %	Bleach	MB	FW %	PM
	2008-1 0	2010	2008-0 9										
CDCSTRIKER	106	124	94	102	3.2	247	1.8	9	2	3.0	5.9	10	S
COOPER	106	106	106	105	3.7	275	3.0	24	11	3.3	6.2	44	R
CDC 2235-4	105	118	98	103	3.1	228	2.1	11	3	2.7	5.5	15	R
LSD05				0.9	0.5	6.3	0.2		3	0.2	1.3	29	
NLocation	34	13	21	21	19	21	21	6	8	21	2	2	2



Pulse crop breeding trends

- **Biofortification**: increased micronutrients, increased folate and carotenoids, reduced phytate
- **Genomic** approaches to dissect productivity and quality
- Improved **visual quality**: shape, dimpling, colour, colour retention
- Improvements in **disease resistance**: mycosphaerella (pea), anthracnose (lentil), ascochyta (chickpea)
- Organoleptic quality: **flavour, cooking time**
- Improved **N-fixation** in pulse-cereal rotations



YELLOW PEAS DAL



Consumers have the choice to a Nutritious and Healthy diet at a reasonable cost.

Benefits of Yellow Peas Dal

It's an excellent source of :

- **Proteins** • **Carbohydrates**
- **Fibre... and other benefits**

(as per the study conducted by Central Food Technology Research Institute, Mysore - Report can be accessed at www.fcamin.nic.in)

Available in Delhi at outlets of



Kendriya Bhandar



NAFED



NCCF Counters



Mother Dairy Booths

dayp 08101/13/0089/1011

Consumers ! For any help/clarification, feel free to call :

National Consumer Help Line No. 1800114000

(Toll free : Monday - Saturday 9.30 a.m. to 5.30 p.m.) :
011-27662955, 56, 57, 58 (Normal Call Charges Apply)



Issued in Public Interest by:

Government of India

Ministry of Consumer Affairs, Food and Public Distribution

Department of Consumer Affairs,

Krishi Bhawan, New Delhi-110001, [website : www.fcamin.nic.in](http://www.fcamin.nic.in)



2011

CENSUS 2011 9th to 28th February 2011
YOU COUNT, THEREFORE, WE COUNT

The data of each and everyone is valuable, make sure you are part of this nation building exercise.

In New Delhi newspapers
Jan 29, 2011.

Food inflation
rate 18%.



Preston Ave, (Saskatoon) Sept 14, 2010

Variety ¹	Years Tested	Yield	Corn Heat Units	Days to Maturity	# seeds/lb	Distributor
RR Rosco	2	100	2450	125	2800	Hyland Seeds
NSC Warren RR	2	100	2350	123	3062	NorthStar
Isis RR	2	102	2400	127	2830	Brett Young
NSC Argyle RR	2	102	2475	128	2300	NorthStar
LS 0028RR	2	104	2400	128	3600	Delmar
LS 0036RR	2	104	2425	129	3600	Delmar

All varieties in this table are Roundup Ready type. For complete list see Seed Manitoba 2011 (www.seedmb.ca).

Varieties of Grain Crops 2011, Saskatchewan Ministry of Agriculture

Acknowledgements

- Pulse breeding crew
- Pulse pathology crew
- Breeder seed crew



Acknowledgements



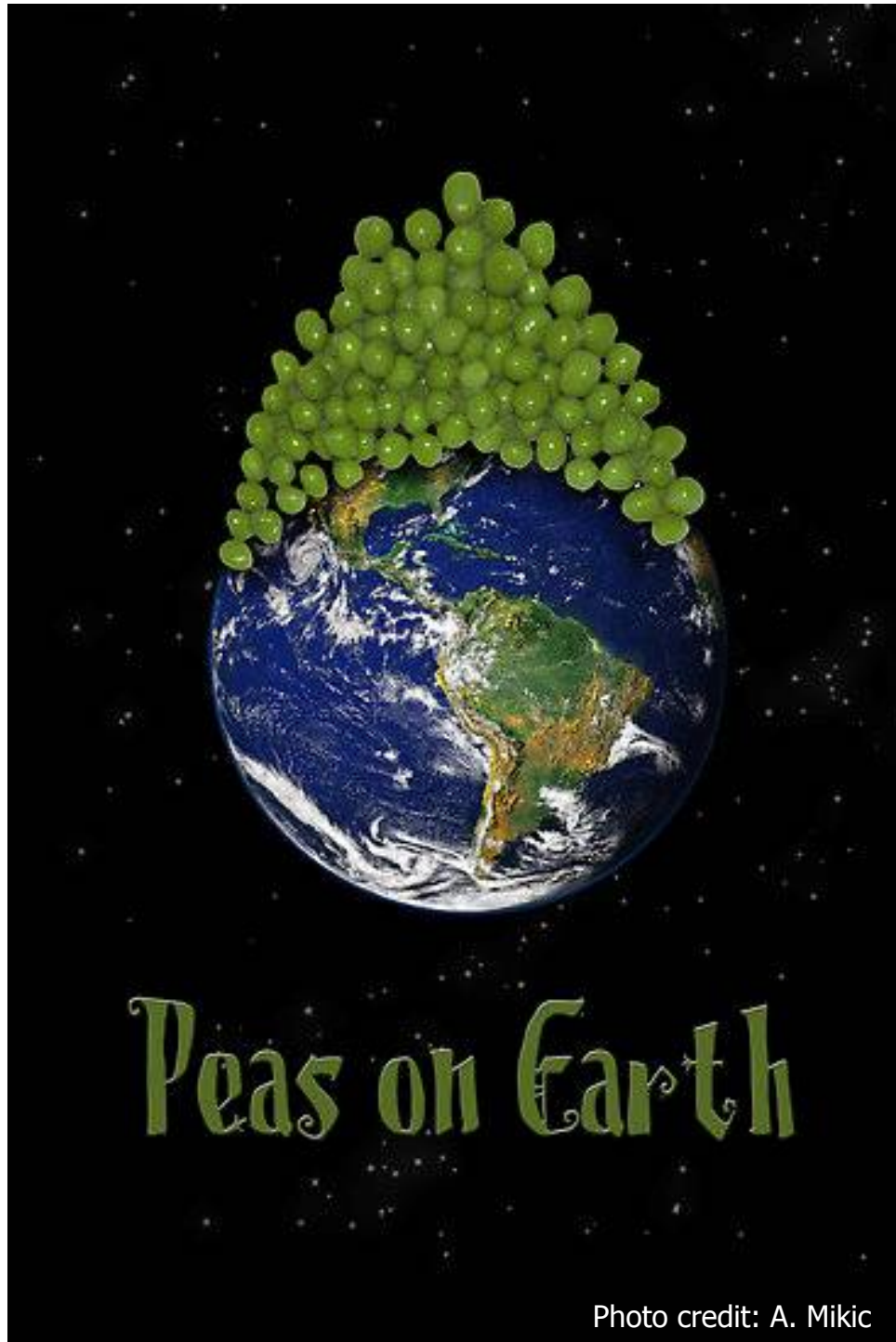
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Peas on Earth

Photo credit: A. Mikic