

# DARD RECOMMENDED LISTS 2015

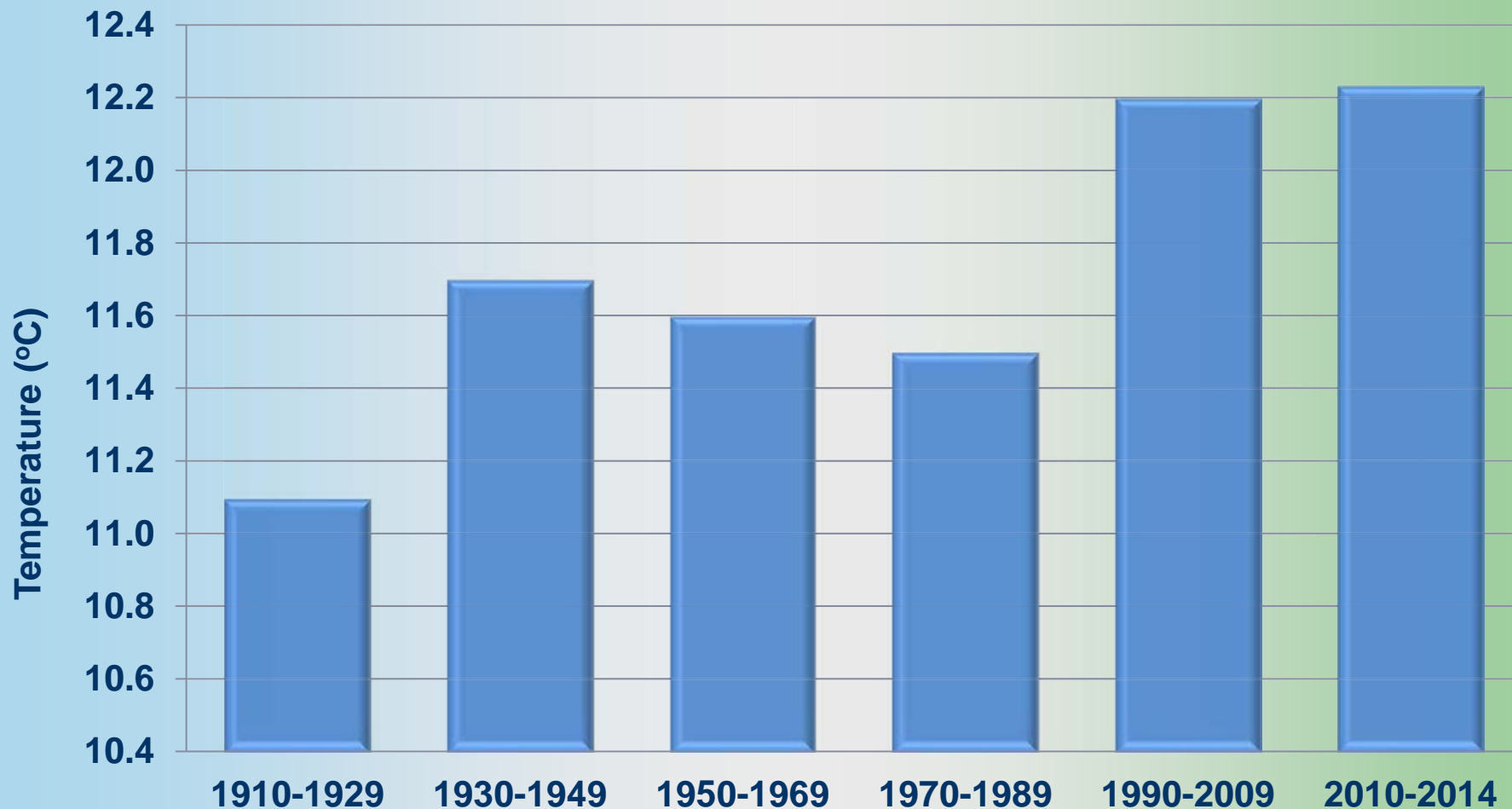
## Forage Maize

### AFBI – Crossnacreevy

**Dr Eamonn Meehan**

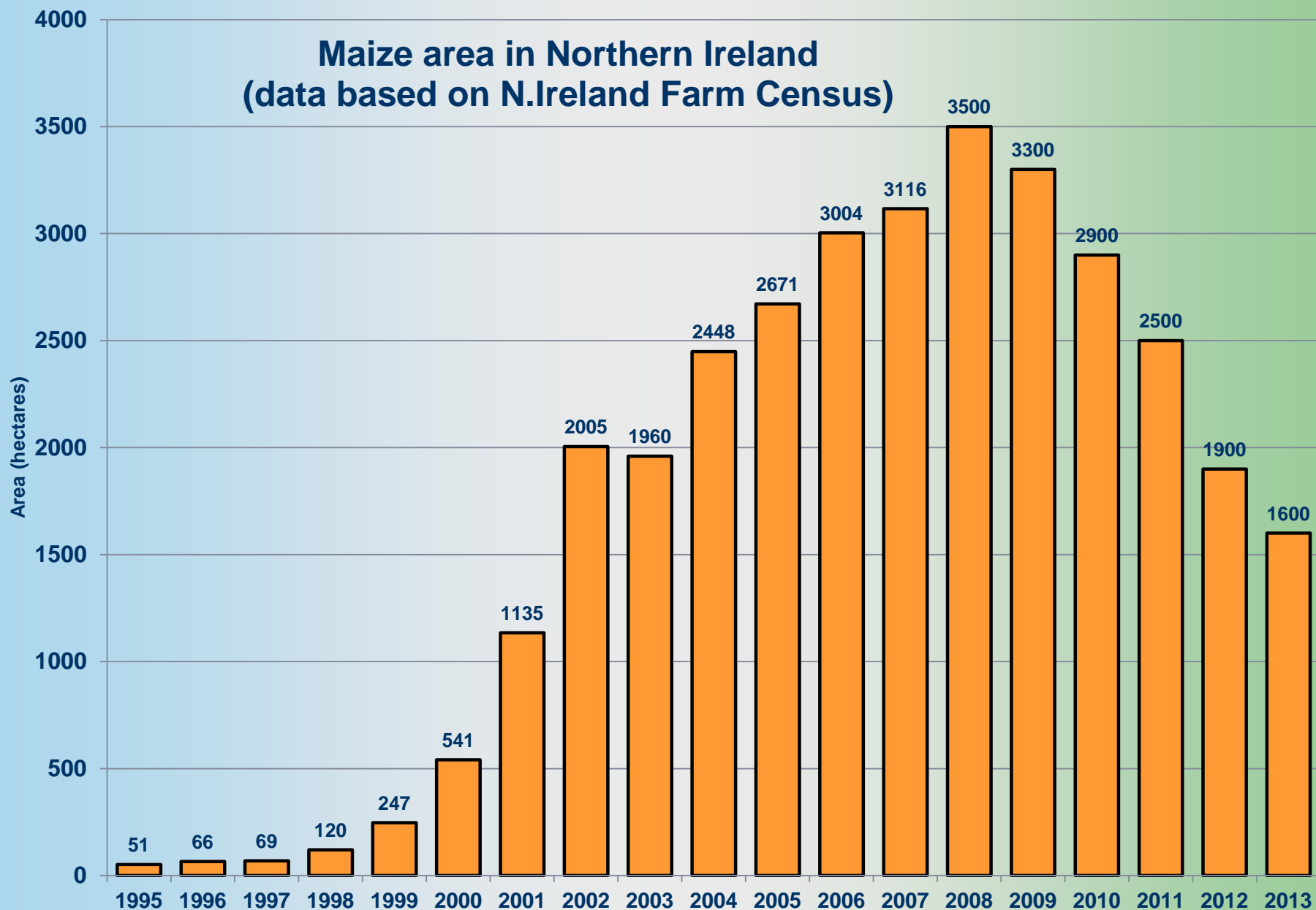


## Mean growing season (April -September) temperatures in N. Ireland 1910-2014



Temperatures in presentation from  
<http://www.metoffice.gov.uk/climate/uk/summaries/datasets>

## Maize area in Northern Ireland (data based on N.Ireland Farm Census)

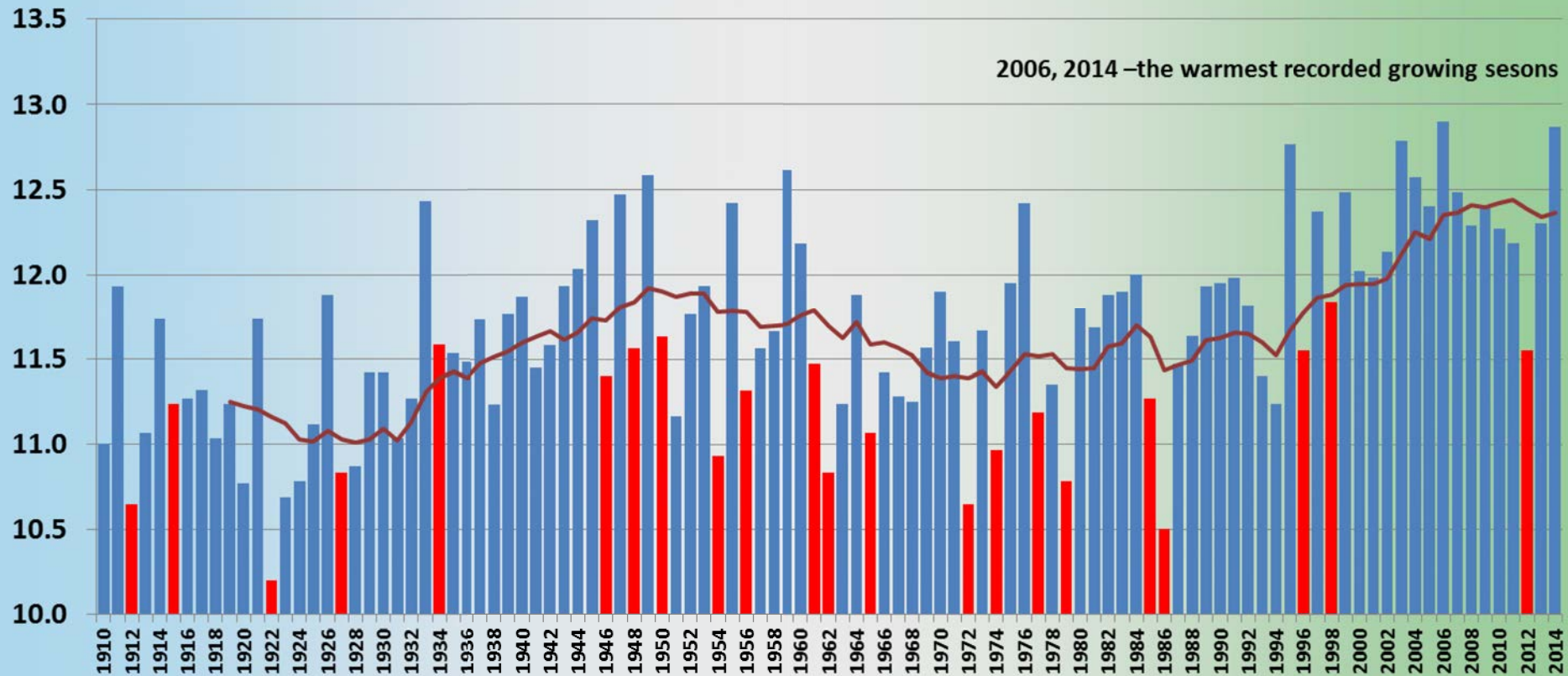




# Mean growing season temperature (°C) in Northern Ireland 1910-2014

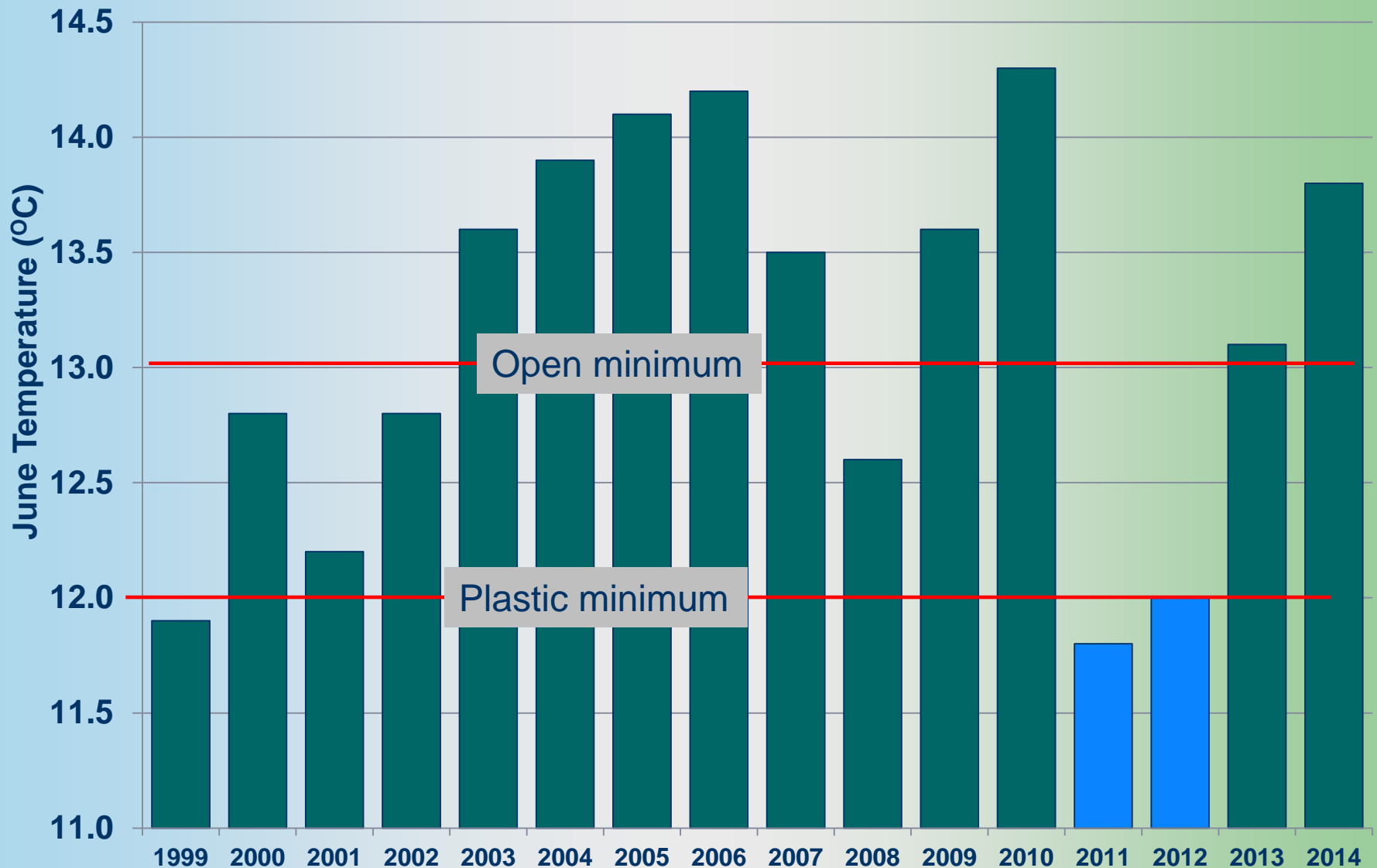
Red years are >0.5°C lower than the previous year.

Trendline is 10 year average

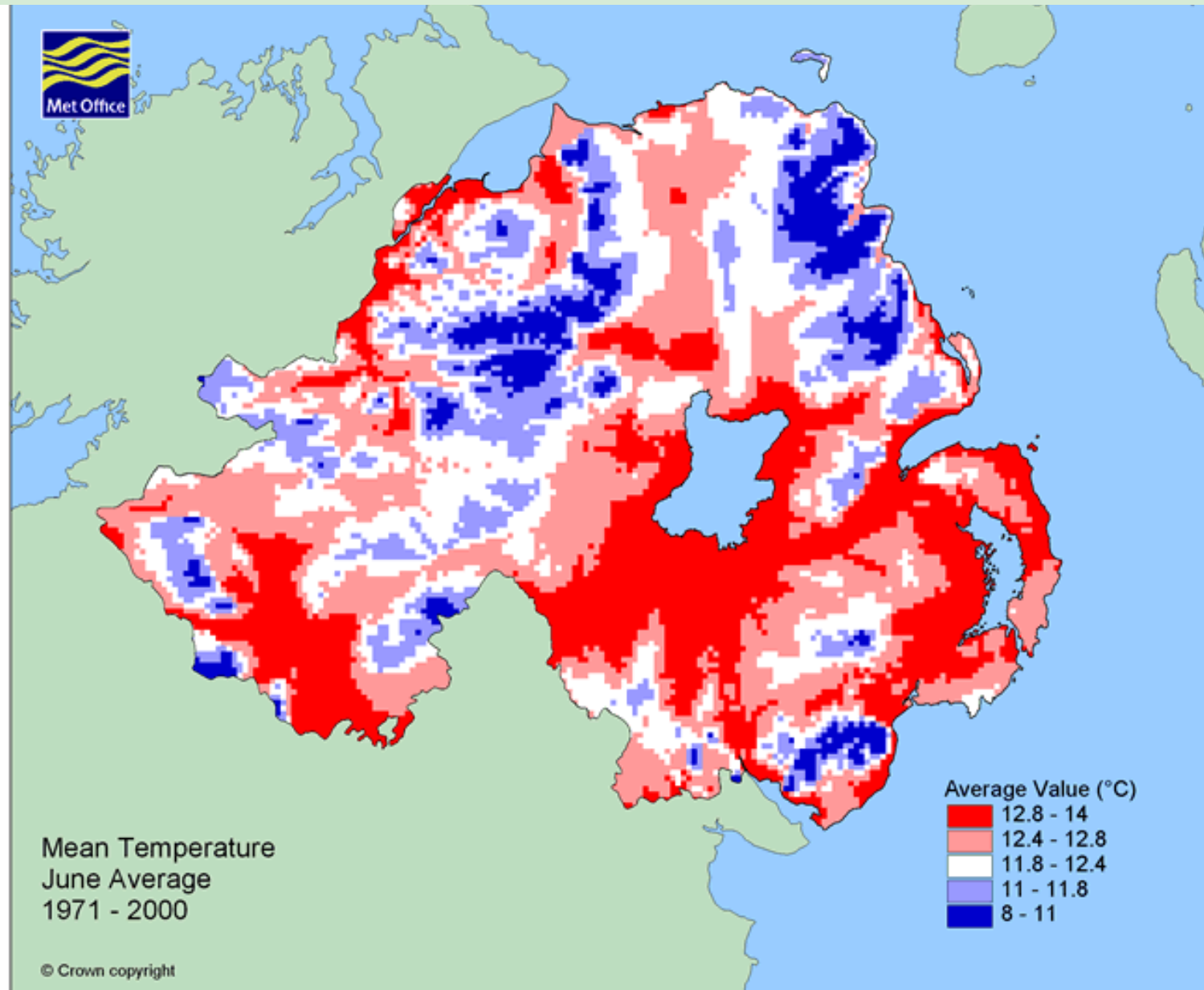




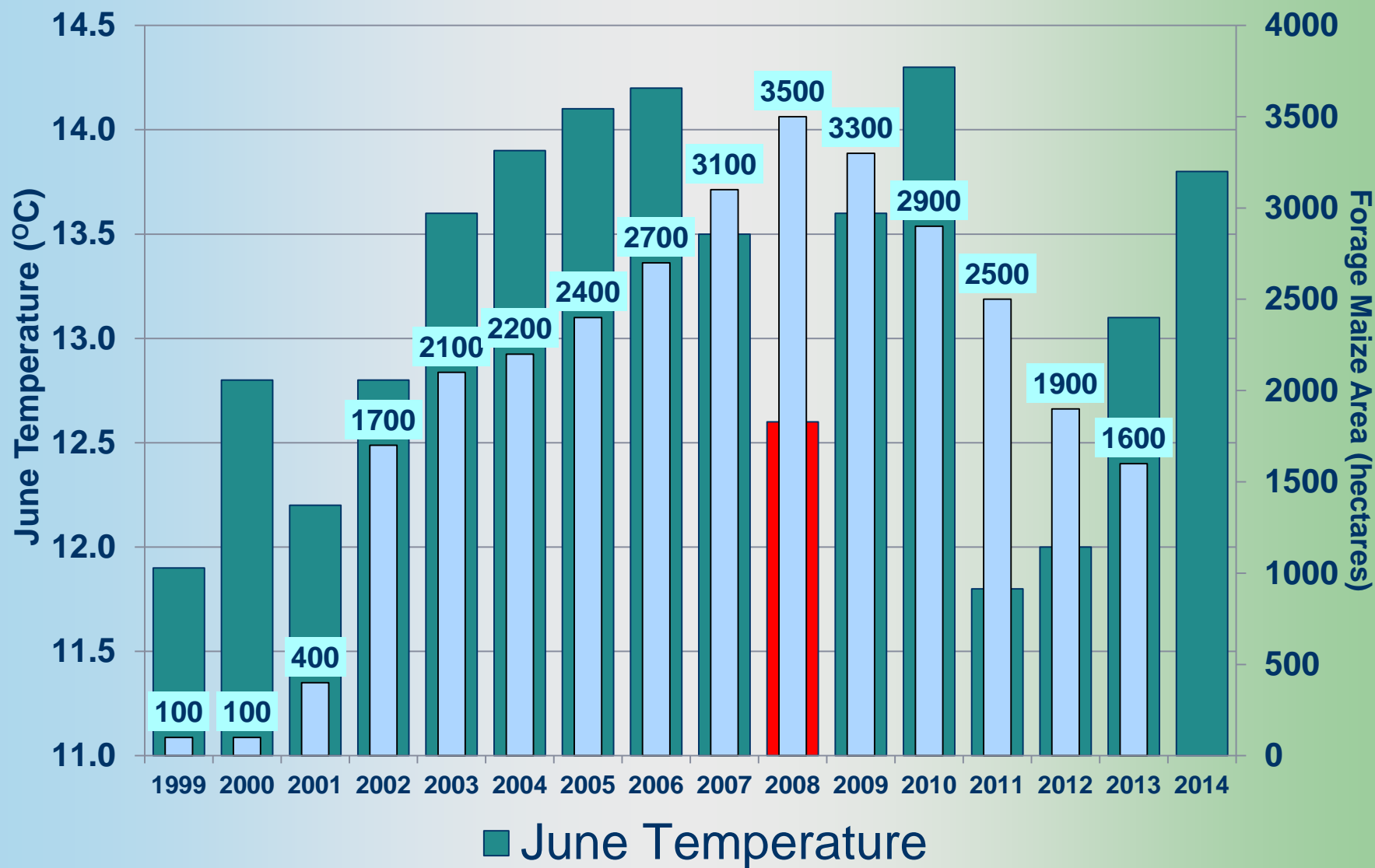
## June Temperature in Northern Ireland 1999-2014



# Maize growing would be best suited to the areas which have a warmer mean June temperature (red/pink areas)

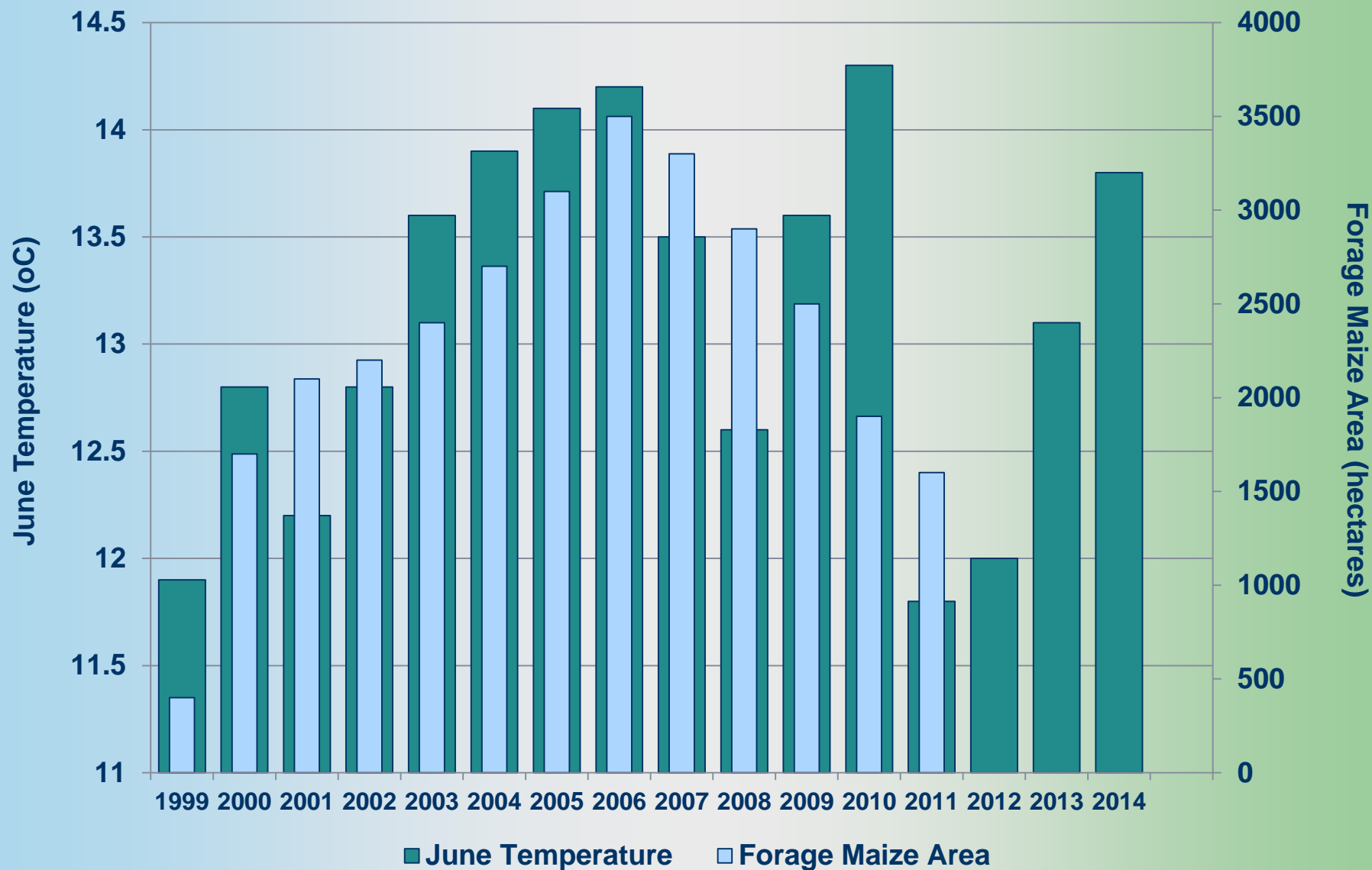


## Forage Maize area in Northern Ireland and June Temperature 1999-2013





Forage maize area curve follows June temperature curve two years later  
 - we might predict an area increase if temperatures are consistently good



## Open sown or plastic sown?

- Early maturing varieties (from UK National List tests) are chosen to test in the open for Northern Ireland maize trials
- High yielding varieties are chosen to test under plastic film.
- Some varieties which are both early maturing and high yielding are tested under both regimes:
  - 2010 3 varieties in both trials
  - 2011 5 varieties in both trials
  - 2013 6 varieties in both trials
  - 2014 only Ambition in both trials

# Annual Differences

Harvest Date, Yield & DM% (based on 'Top5' Dry Matter Yielding Varieties)

## PLASTIC System

## OPEN System

## Plastic Gain

Harvest Date Yield DM%  
(t/ha) %

Harvest Date Yield DM%  
(t/ha) %

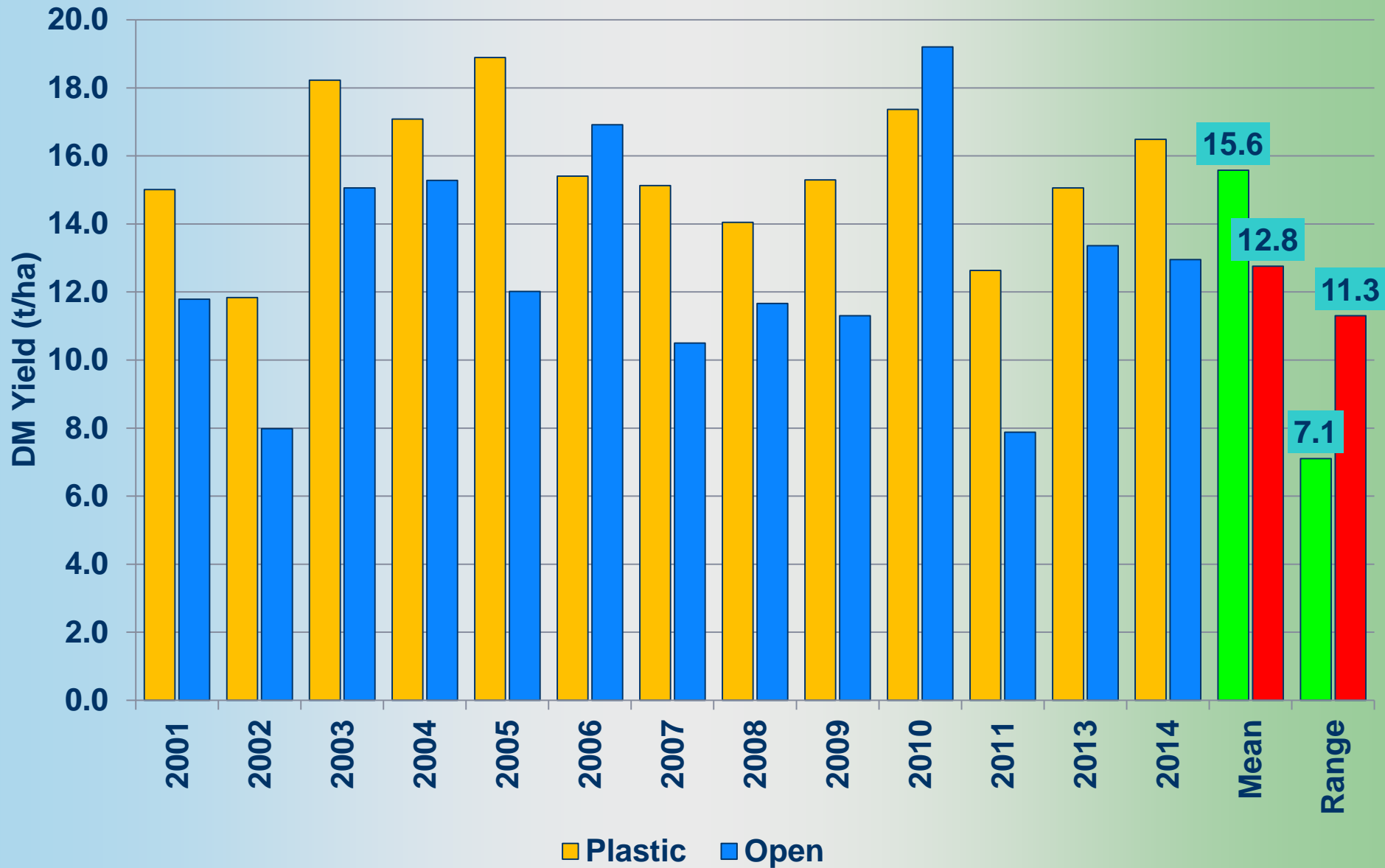
(t/ha)

2001	18 Oct	15.4	30	13 Nov	12.1	33	+3.2 (27%)
2002	14 Oct	<u>12.3</u>	<u>27</u>	4 Nov	<u>9.2</u>	<u>18</u>	+3.2 (34%) wet
2003	2 Oct	18.5	30	30 Oct	15.8	28	+2.8 (18%)
2004	26 Oct	17.5	32	1 Nov	15.3	30	+2.2 (15%)
2005	29 Oct	<u>19.2</u>	<u>35</u>	17 Nov	12.7	32	+6.5 (51%)
2006	1 Nov	16.6	34	6 Nov	<u>17.2</u>	<u>41</u>	-0.6 (- 4%) warm
2007	9 Oct	15.3	29	30 Oct	10.5	27	+4.8 (46%)
2008	24 Oct	14.1	32	3 Nov	11.9	32	+2.3 (19%)
2009	4 Nov	15.6	30	3 Nov	12.3	24	+3.3 (27%)
2010	25 Oct	18.1	35	2 Nov	19.5	26	-1.4 (- 7%) warm
2011	27 Oct	<u>13.5</u>	<u>32</u>	7 Nov	<u>8.1</u>	<u>27</u>	+5.4 (67%) wet
2012	22 Oct	<u>5.6</u>	<u>26</u>	22 Oct	<u>4.2</u>	<u>19</u>	+1.4 (33%) wet
2013	20 Oct	15.1	38	7 Nov	13.4	29	+1.7 (11 %)
2014	19 Oct	16.5	36	5 Nov	13.0	29	+3.5 (21 %)
Mean	22 Oct	15.2	32	4 Nov	12.5	28	+2.7t/ha DM (26%)

An extra 2.7t DM/ha does not justify cost of plastic at £300 hectare

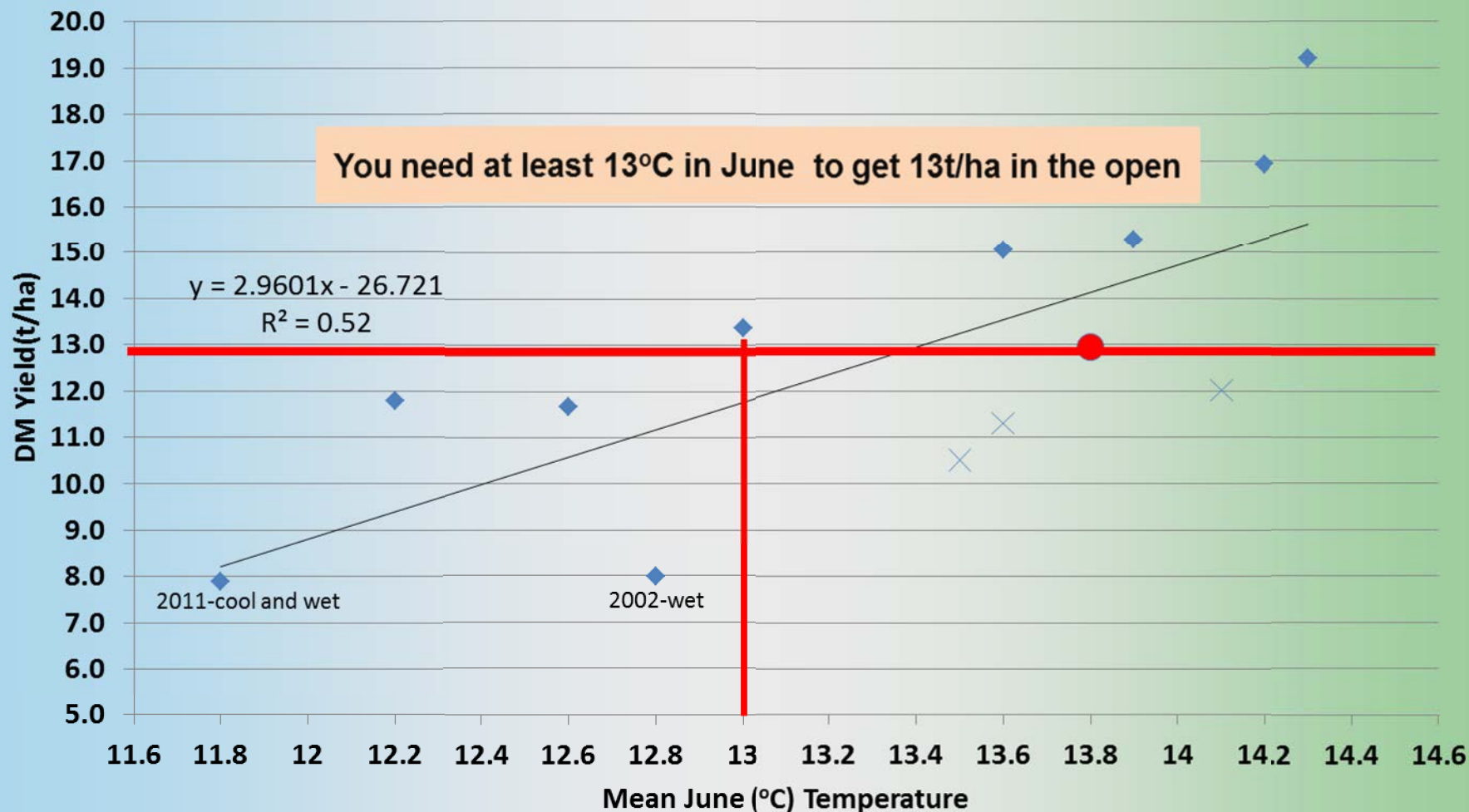


# Variability of Open and Plastic Sown Maize DM Yield 2001-2014



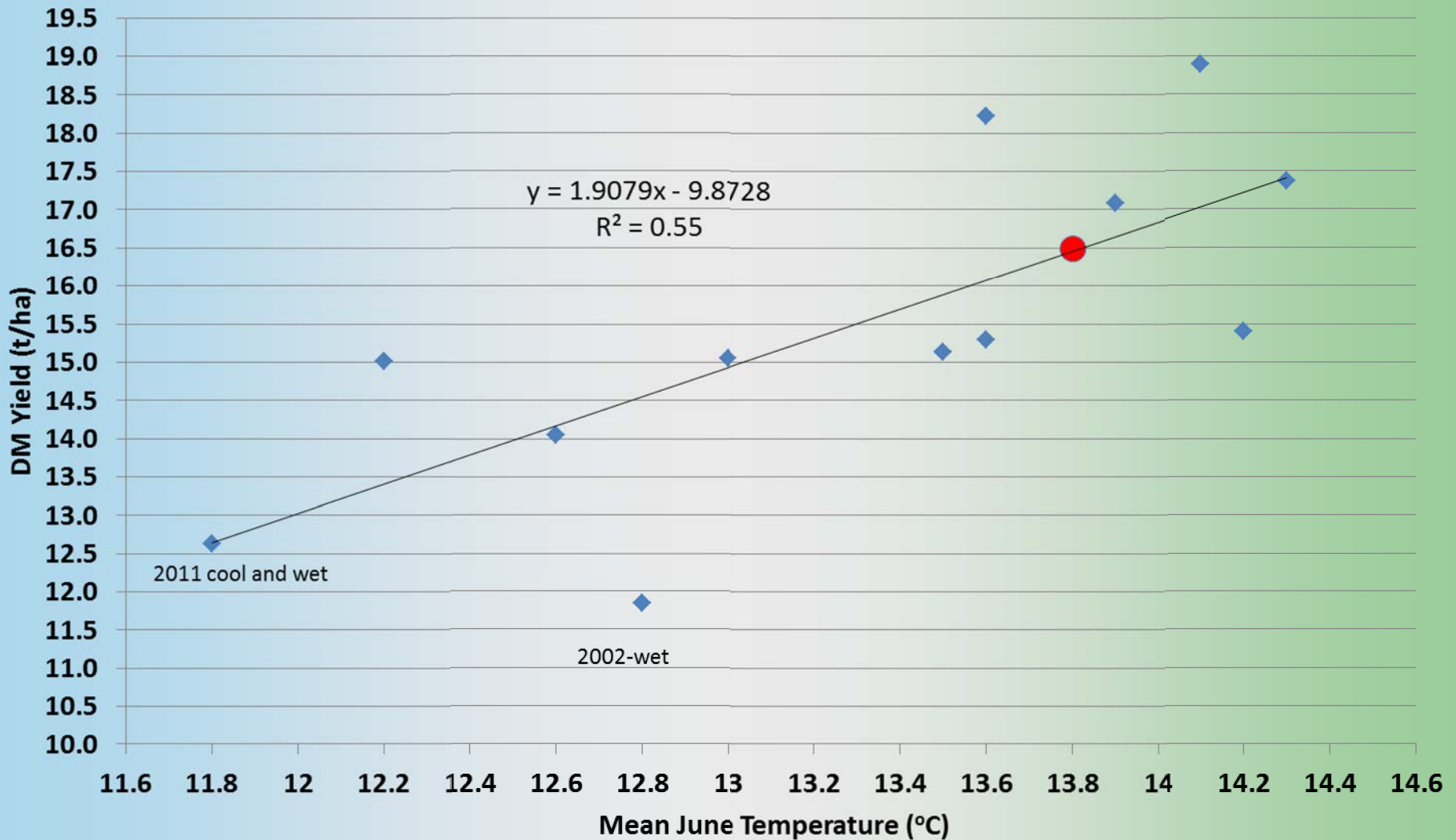
## Using June temperature to predict DM yield of the top five open sown varieties 2001-2014

June temperature in 2014 was 13.8°C: yield was 13.0 t/ha which was 1.2 tonnes below prediction (14.2 t/ha).



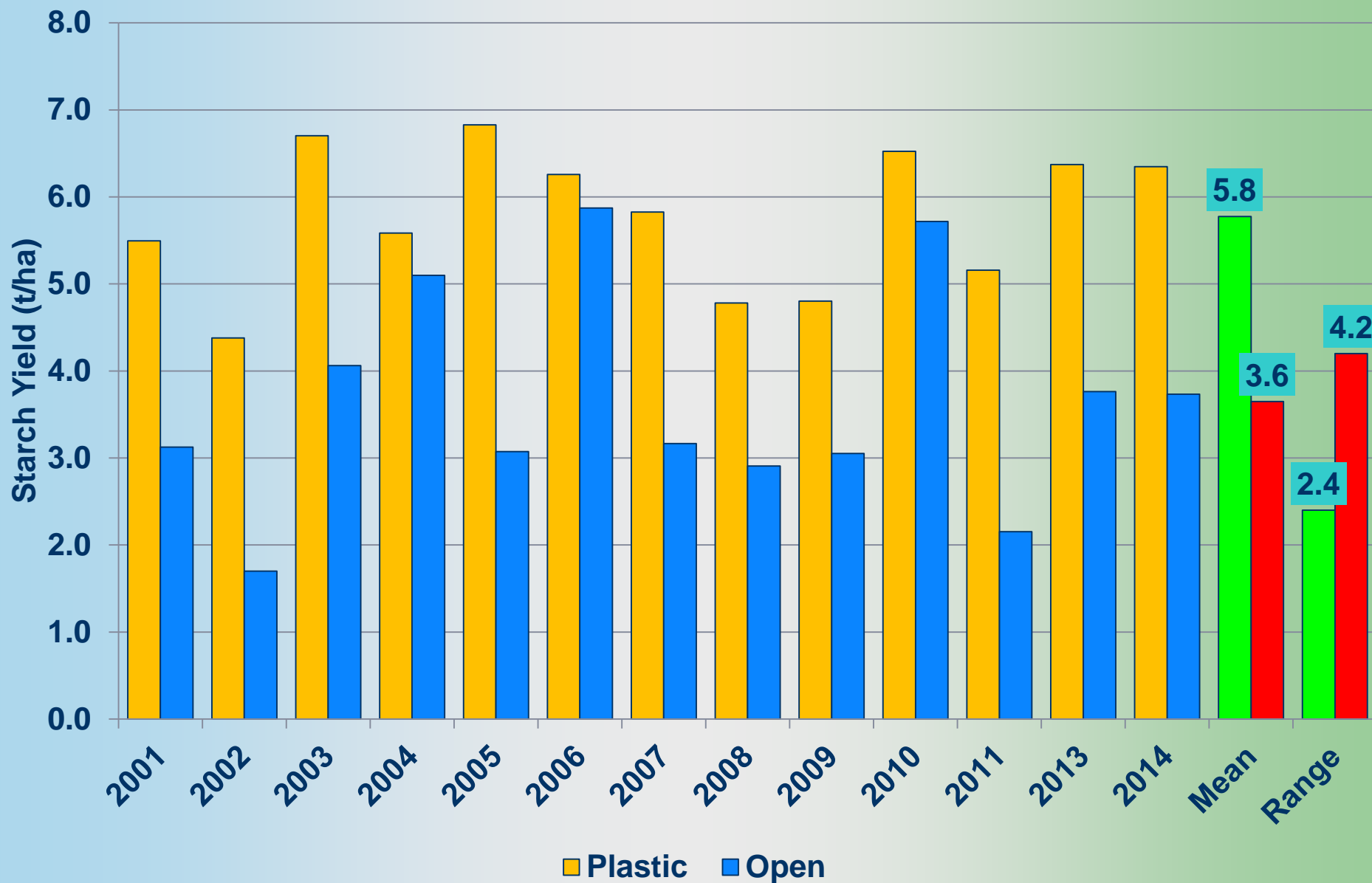
# Using June temperature to predict DM yield of top five plastic sown varieties 2001-2014

June temperature in 2014 was 13.8°C: yield was, as predicted, 16.5 t/ha





# Variability of Open and Plastic Sown Maize Starch Yield 2001-2014



# Maize: 25<sup>th</sup> June 2010



Plastic mulch maize

Open maize



Maize: 27<sup>th</sup> June 2011



Plastic mulch maize

Open maize



1<sup>st</sup> July 2013 Carrowdore, Co. Down, N. Ireland





# An independent (AFBI) plastic sown forage maize trial growing in Northern Ireland 1<sup>st</sup> September 2014



- Large plants for high DM yield
- Dark green colour as 6 weeks before harvest and not near target 30% DM
- These plants will produce 5-6 tonnes starch/ha
- The starch yield and 30%DM target for mid October could not be achieved without the use of plastic film.



## One of two varieties which brackled: 6<sup>th</sup> October 2014- the day after a storm





# A commercial maize trial growing in Northern Spain

30<sup>th</sup> September 2014



Short plants - probably very high starch value as lots of cobs



# The price of maize starch: internet advert from Spain, November 2014

<b>Product / service:</b>	Corn Starch for animal nutrition
	Cornstarch.
Corn Starch For Animal Nutrition	Obtained in the milling process of corn wet
	Humidity 13%
<b>Description:</b>	Quantity price
	In bulk or on pallets of 1000 kg
	trucks of 24 tons.
	Merchandise located in Martorell
<b>Contact:</b>	Manuel Baldovinos Civit [ <a href="#">COMERCIAL DISTRIBUIDORA AGRÍCOLA S.L</a> ]
	<a href="#">Contact the Supplier</a>
<b>Price per unit:</b>	680 €/per ton
<b>Total price:</b>	<b>680 € (= £540      date: 20.11.14)</b>
<b>Is the price negotiable?</b>	Based on the quantity purchased
<b>Payment method:</b>	To be agreed
<b>Category:</b>	Livestock, Pet and animal feed
<b>Sales area:</b>	Spain
<b>Product origin:</b>	Martorell
<b>I can supply:</b>	100 T - Tons in one week
<b>Delivery time:</b>	1 week
<b>Minimum order:</b>	25
<b>Transport included</b>	No
<b>Courier:</b>	Buyer

**Fully ripened, mature cobs contribute to high starch yields**

**Fieldstar (Starch = 6.7 t/ha)**



**Severus (Starch = 5.4t/ha)**



**Both varieties were sown under plastic film**



## Results

### Mean annual yields and costs for forage maize grown in Northern Ireland in three growing seasons

Year	2010			2011			2013		
Mean June Temperature (°C)	14.3 (warmest)			11.8 (coolest)			13.1 (average)		
	Open	Plastic	Sig.	Open	Plastic	Sig.	Open	Plastic	Sig.
DM yield (t ha <sup>-1</sup> )	18.8	17.0	P<0.05	7.7	9.6	P<0.001	12.1	12.0	N.S.
Production cost (€/ t UDM)	123 (-35)	158	-	300 (+15)	285	-	187 (-38)	225	-
Starch yield (t ha <sup>-1</sup> )	5.2	6.3	P<0.01	1.8	3.7	P<0.001	2.8	5.0	P<0.01
Production cost (€/ t starch)	336 (+17)	319	-	1016 (+516)	500	-	626 (+278)	348	-
Sig – Significance of difference between open sown (Open) and sown with plastic mulch (Plastic)									

## Varieties sown in the open and under plastic 2013 values

VARIETY	DM Yield (t/Ha)			M.E. Yield (GJ/ha)			Starch Yield (t/ha)			Starch value (£/ha) At £500/ t		
	open	plastic	Diff.	open	plastic	Diff.	open	plastic	Diff.	open	plastic	Diff.
AMBITION	12.7	14.1	1.4	135	164	30	3.3	6.2	2.8	1650	3100	1450
KARRIOL	12.4	12.4	0.0	130	141	10	2.9	5.1	2.2	1450	2550	1100
KOUGAR	13.1	13.0	-0.1	139	147	8	3.1	5.3	2.2	1550	2650	1100
KROMWELL	12.0	12.6	0.6	129	141	12	3.1	5.1	2.0	1550	2550	1000
MAS 07B	11.6	13.8	2.2	123	160	37	2.6	5.8	3.1	1300	2900	1600
MAS 11F	12.0	14.6	2.7	123	166	43	2.2	6.0	3.8	1100	3000	1900

**\*There is also an average of 2.7t/ha DM more for plastic sown varieties**

# “Ambition” in 2013 and 2014

-The value of the starch product alone outweighs the extra cost of the plastic.

	DM Yield (t/Ha)			Starch Yield (t/ha)			Starch value (£/ha) At £500/ t		
VARIETY	open	plastic	Diff.	open	plastic	Diff.	open	Plastic (- extra cost at £300/ha)	Difference
AMBITION (2013)	12.7	14.1	1.4	3.3	6.2	2.9	1650	3100 (-300)	+ £1150
AMBITION (2014)	13.1	15.2	2.1	3.6	6.3	2.7	1800	3150 (-300)	+ £1050

- When economic value is based solely on DM yield there would be little point in sowing this variety under plastic as only 1-2 tonnes extra yield is achieved.
- Quality analysis allows a reassessment of the crop

# Open Maize Recommended List

Variety	No. of Trials	Silking Date	Silking Height	DM Yield	%DM	Starch Yield	Starch Content	M.E. Yield	M.E. Content	2015 Status
			<b>180 cm +/-</b>	<b>13.0 t/ha</b>	<b>30%</b>	<b>3.3 t/ha</b>	<b>25%</b>	<b>137 GJ/Ha</b>	<b>MJ/kg DM</b>	
<b>KOUGAR</b>	<b>5</b>	<b>13 Aug</b>	<b>5</b>	<b>104</b>	<b>-2</b>	<b>107</b>	<b>1</b>	<b>105</b>	<b>10.6</b>	<b>BOLD</b>
<b>LAPRIORA</b>	<b>4</b>	<b>14 Aug</b>	<b>-1</b>	<b>102</b>	<b>-2</b>	<b>114</b>	<b>4</b>	<b>103</b>	<b>10.6</b>	<b>BOLD</b>
Ambition	3	11 Aug	14	102	2	118	5	104	10.8	Plain
Arcade	3	10 Aug	5	97	3	111	4	99	10.7	Plain
P6862	3	11 Aug	-10	94	0	105	4	95	10.7	Plain
Karimbo	5	13 Aug	1	94	0	100	2	93	10.4	Plain
Surprise	6	15 Aug	16	97	-3	98	1	98	10.6	Plain
Kroesus	8	19 Aug	30	105	-3	96	-1	104	10.5	Plain
Sergio KWS	2	10 Aug	-2	102	5	129	8	104	10.7	(P)
Sunlite	2	11 Aug	0	95	0	117	7	99	11.0	(P)
Glory	2	09 Aug	0	98	4	113	5	99	10.7	(P)
Ramirez	2	08 Aug	-5	95	3	110	5	96	10.7	(P)

# Plastic Maize Recommended List 2015

Variety	No. of Trials	Silking Date	Silking Height	DM Yield	%DM	Starch Yield	Starch Content	M.E. Yield	M.E. Content	2015 Status
			180 cm +/-	15.9 t/ha	30%	5.6 t/ha	30%	174 GJ/Ha	MJ/kg DM	
SALGADO	5	30 Jul	22	96	4	106	9	97	11.1	BOLD
MAS10C	4	29 Jul	10	100	6	106	7	101	11.2	BOLD
AWARD	7	02 Aug	17	104	2	104	5	103	10.9	BOLD
MAS12A	7	28 Jul	8	100	6	100	5	100	11.0	BOLD
NK JASMIC	4	01 Aug	20	102	1	97	4	102	11.0	BOLD
PADDY	5	30 Jul	2	98	5	97	5	98	11.1	BOLD
BENICIA	6	07 Aug	35	106	-5	92	1	104	10.7	BOLD
Ambition	3	28 Jul	18	100	12	116	11	103	11.3	Plain
P7892	3	30 Jul	23	106	5	115	8	110	11.4	Plain
Mas08G	3	28 Jul	-7	94	9	100	7	96	11.1	Plain
PR39V43	4	29 Jul	24	95	3	98	6	94	10.9	Plain
Borgi CS	3	05 Aug	28	106	-1	97	2	103	10.6	Plain
Fieldstar	2	28 Jul	8	100	10	117	11	104	11.4	(P)
Mas 11F	2	29 Jul	23	104	4	106	6	103	10.9	(P)
ES Remington	2	29 Jul	9	95	10	105	9	97	11.2	(P)
Asgaard	2	30 Jul	24	97	5	103	8	99	11.2	(P)

# Conclusions

In a marginal maize growing region such as Northern Ireland:

- Sowing maize with plastic film provides less variability in DM yield and delivers much greater starch yields than when sown in the open.
- The value of the increased starch yield greatly outweighs the increased input costs for plastic film.
- It is economically beneficial to sow forage maize under plastic mulch.



# Thank you

## Thanks to AFBI Crossnacreevy VCU staff





# DARD RECOMMENDED LISTS

## Forage Maize

### 2015

### AFBI

### Crossnacreevy

