

# Image acquisition strategy:

## Review of 2008




## Plan for 2009

## Proposal for 2010

	# of zones requested	# of windows or km <sup>2</sup> (VHR)	Budget (k€)
HR	256	758 (3 windows / zone)	2 620
VHR	280	180 000 km <sup>2</sup>	3 970
VHR back up	134	106 000 km <sup>2</sup>	1 060
Radar back up	12	36 windows	30
<b>Total</b>			<b>7 680 k€</b> <b>&gt; 6 500 K€</b>

Max technical capacity of VHR sensors: 160 000 km<sup>2</sup>

- **No reduction in the requested VHR area**
  - some reductions occurred after final selection of the zones, calculation of their actual area, move of some VHR window to autumn 2007 (2007 budget)
- **Reduction of 3 to 2 HR windows over spring-summer**
  - justification: redundancy between the HR window overlapping the VHR XS window; possibility of HR archive search if key period for CAPI not covered
- **New back up VHR strategy**
  - Back up is **hardly used**, request too high
  - Selection of zones by JRC on the basis of feasibility study of VHR providers
  - Delayed start of back up window (10 days)
  - Dynamic back up (closure of back up window if prime VHR acquired)
  - Programming of HR multispectral (10m) if VHR Pan only
  - Minimum **0.5 M€** dedicated to back up

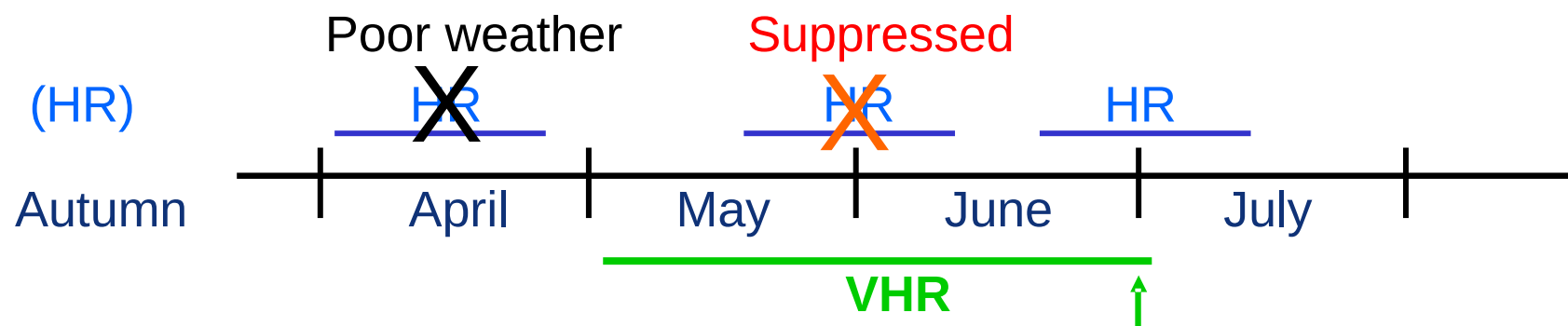
	# of zones requested	# of windows or km <sup>2</sup> (VHR)	Budget (k€)
HR 	244 (-12)	594 (2.4 windows / zone)	2 000 (- 620)
VHR 	264 (-16)	164 000 km <sup>2</sup> * (-16 000)	3 640 (- 330)
VHR back up 	JRC plan: 56 (-78)	47000 km <sup>2</sup>	860 (- 200)
Radar <del>X</del> back up	0 (-12)		0 (- 30)
Total			6 500 k€

\* excluding 6000 km<sup>2</sup>: 2700 km<sup>2</sup> directly as back up (DE), and 3400 km<sup>2</sup> autumn 2007 VHR (ES)

	Planned HR / VHR	Acquired HR / VHR	Budget (k€)
HR	594 (2.4 windows / zone)	538 (campaign 2008)	1 500 (-200 as 300 for autumn 08)
VHR	164 000 km <sup>2</sup> 264 zones	154 000 km <sup>2</sup> 242	3 100 (-540)
VHR back up	plan: 47000 km <sup>2</sup> (56 zones)	35000 km <sup>2</sup> * (41 zones, 29 HR)	600 (-260)
Autumn 2008 (for 2009)	114	74 + 3 autumn VHR (ES)	300
Total			5 500 k€

\* excluding VHR SAR back up for 4 IE zones (2000 km<sup>2</sup>)

- Reduction in the number of HR images over spring-summer: from 3 HR + 1 VHR to 2 HR + 1 VHR
- -> would be OK with cloud free weather

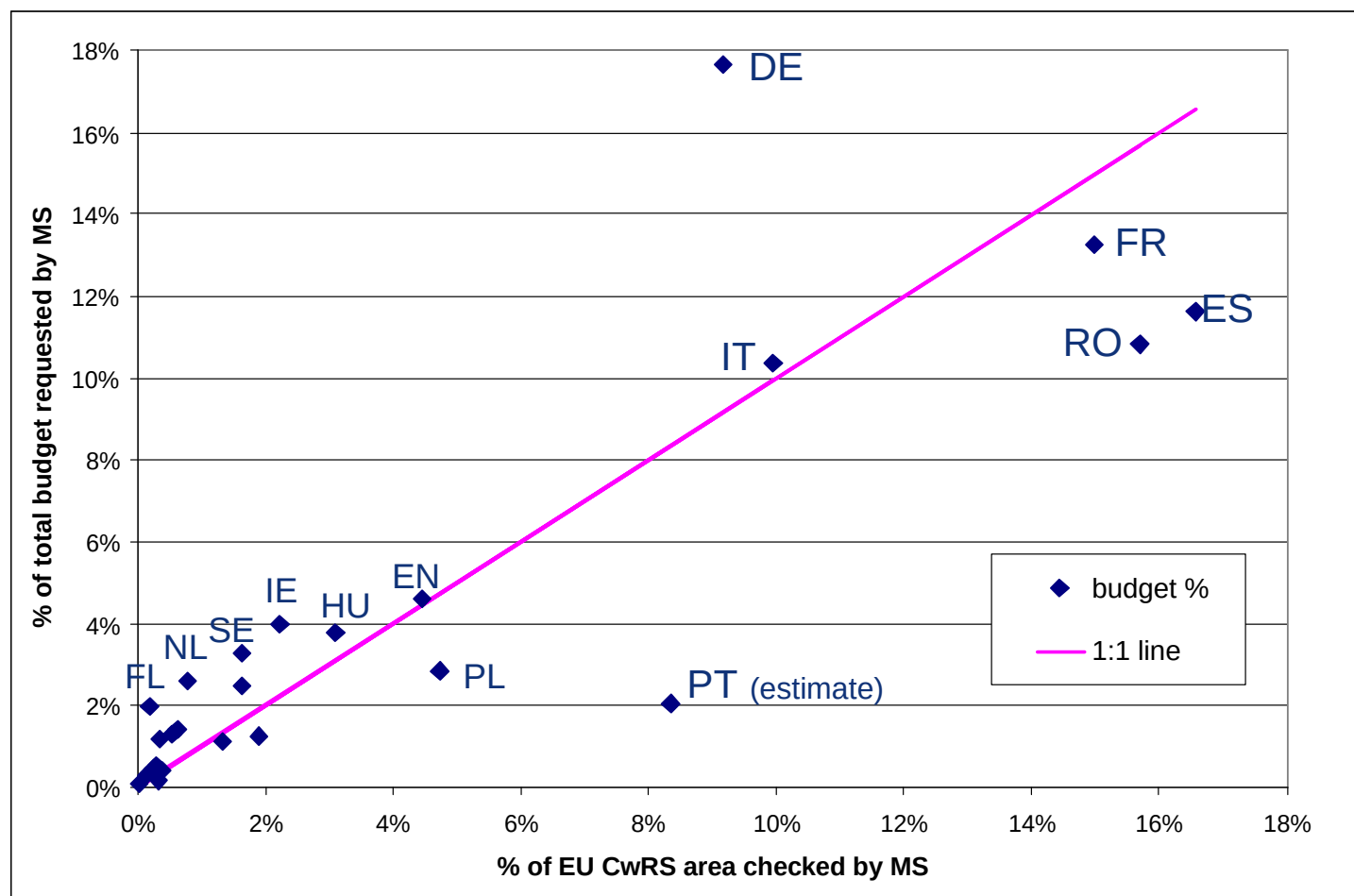


Lack of imagery over April – June on some zones in FR (due to acquisition failure of HR / delay in VHR)

- > **difficult crop recognition** (problem for checking coupled payments, RDP and cross compliance, e.g. nitrate directive, crop rotation)

- Re-establish the **3 HR windows over spring summer** to minimize the risk of lack of imagery at a key period for crop identification
  - 13 MS concerned: AT, BE-FL, (DE), FR, (NL), PT, (SE), (SI) ; BG, CY, HU, (RO), SK: 125 images (450 K€)
- **Collect MS requests early** (end July for 15/9 -> 15/10) so as to inform MS of possible budget cuts as early as possible
- What to do if requested budget > available budget?

## % of total budget requested vs % of area checked with RS

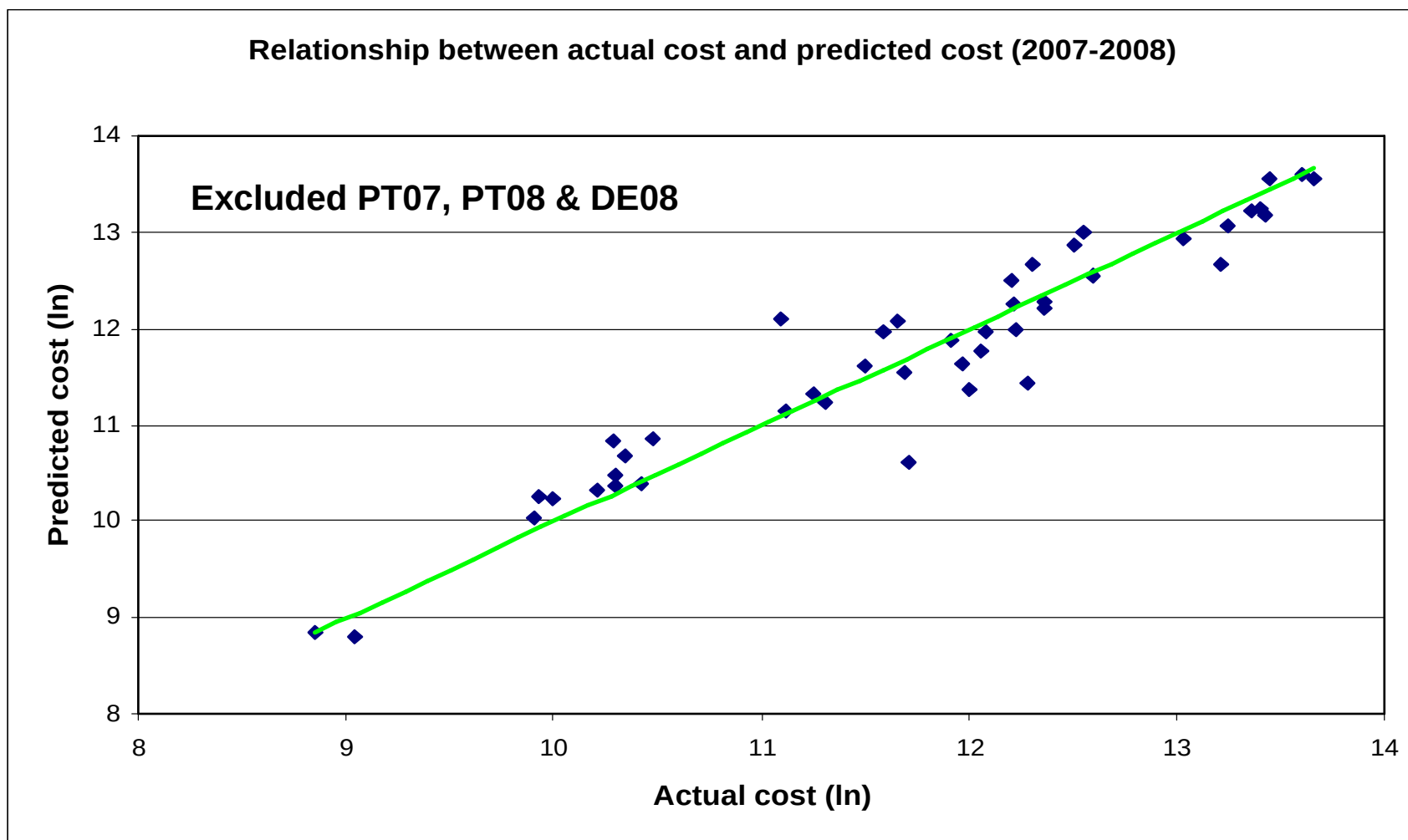


Total area checked  
with RS: 8M ha

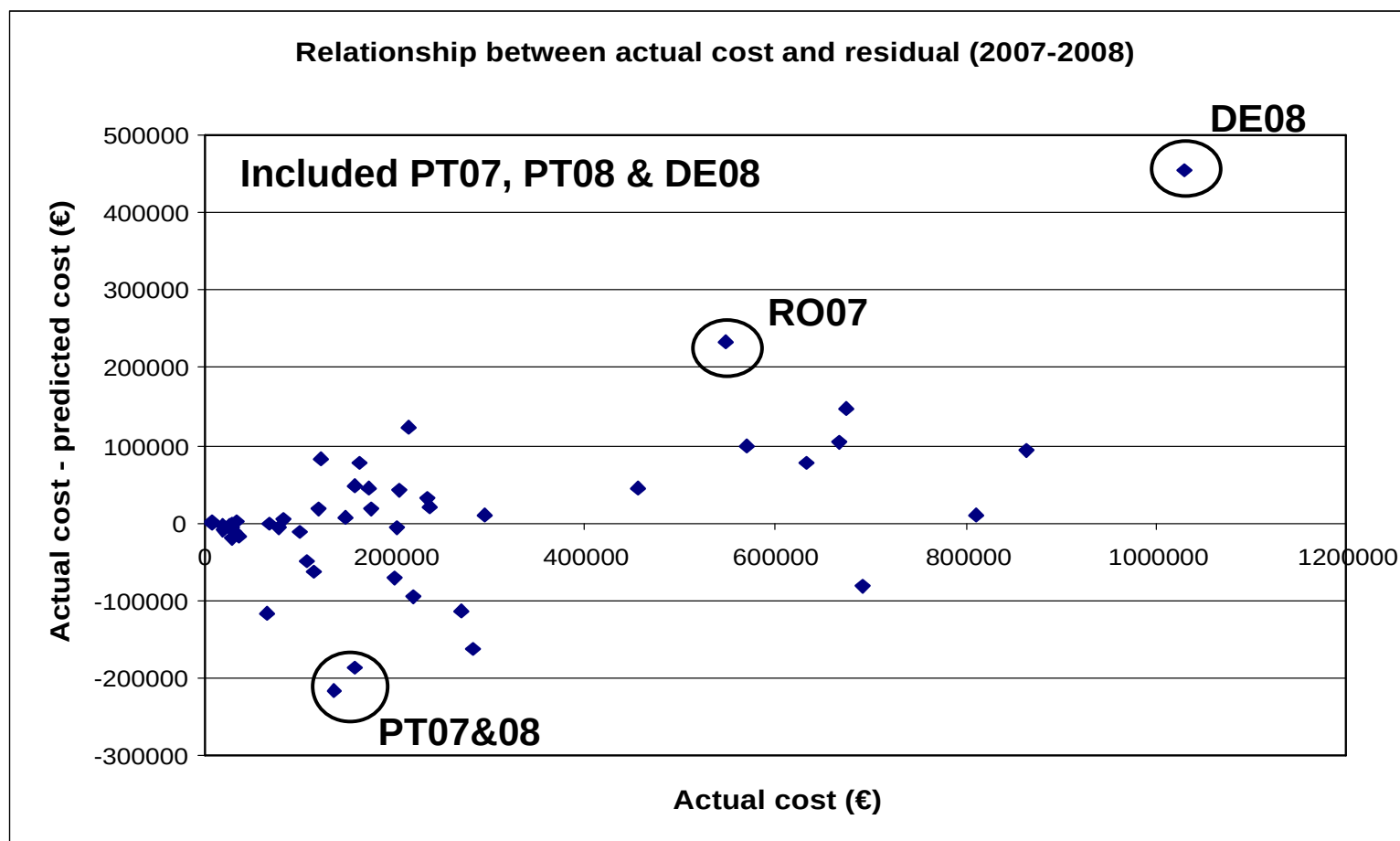
Need for a model to allocate image budget per MS



- Variable to be predicted: **max image budget** per MS (i.e. cost)
- Possible predictors:
  - amount of aid received by MS, number of claims checked with RS, claimed area checked with RS, farm size, % of HR zones
- Use of 2007 and 2008 image requests (27 MS, stable CwRS method per MS)
- Best model (logarithmic regression)
$$\begin{aligned}\ln(\text{cost}) = & 0.5 \cdot \ln(\text{claimed area checked with RS}) \\ & + 0.2 \cdot \ln(\text{amount of aid}) \\ & + 4.6\end{aligned}$$



**Average residual** (requested budget – prediction) = **€50,000**

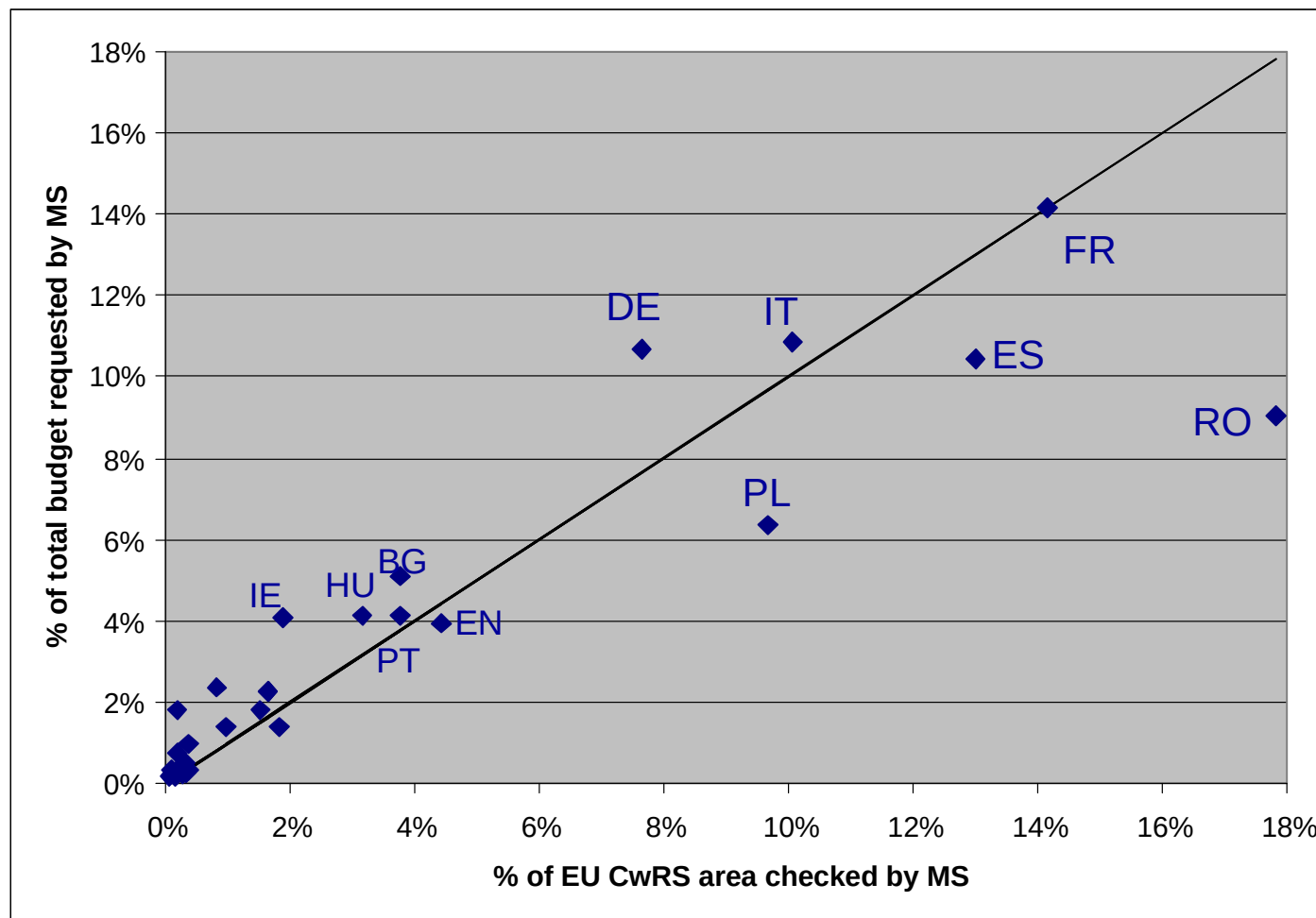


Would model be needed for 2009 ?

	# of zones requested	# of windows or km <sup>2</sup> (VHR)	Budget (k€)
HR	263 (+7)	749 (2.8 windows / zone)	2 500
VHR	301 (+21)	187 000 km <sup>2</sup> (+23 000)	4 100
VHR back up	57 (-77)	49 000 km <sup>2</sup> (-57 000)	
Total			6 600 k€

Request > 6.5M€ budget, without back up VHR!  
1 M€ remaining from 2008 needed

## % of total budget requested vs % of area checked with RS

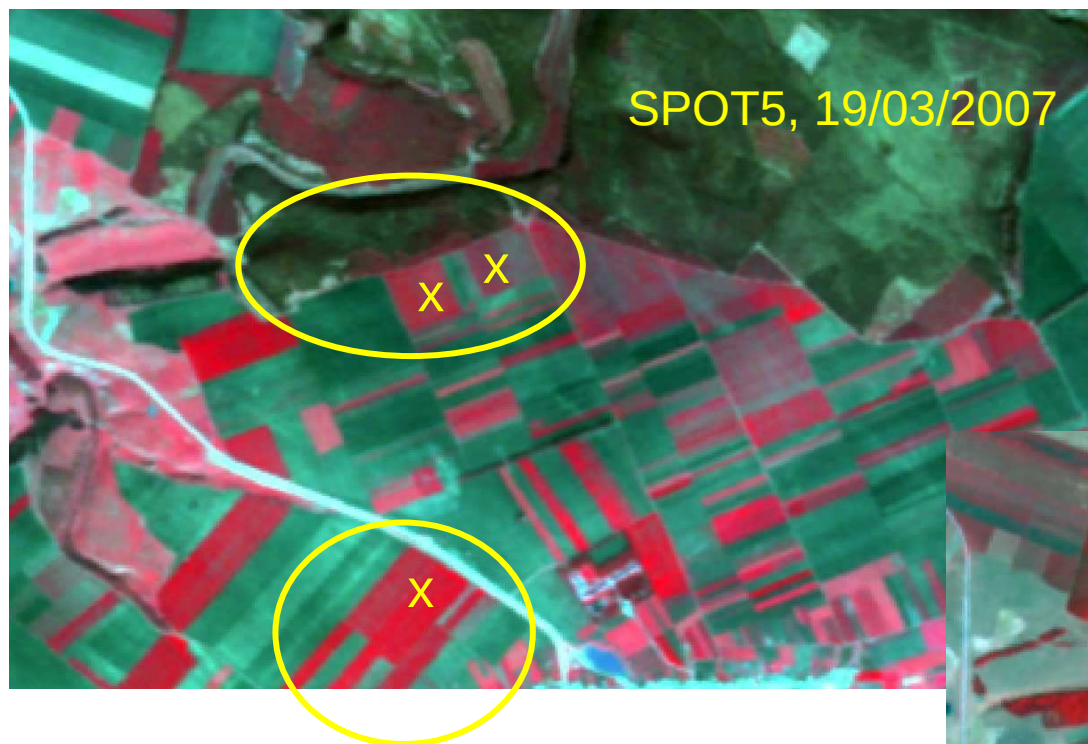


- Discussion with DG AGRI on image budget in mid July
  - Budget 2009 already fixed in spring 2008
  - possibility to use remaining 2008 budget for next campaign (need agreement from AGRI; orders to be placed in 2008)
  - possibility to **increase image budget** for checking **cross compliance** (XC) and **RDP** provided method is sound & cost effective: budget 2010 to be decided in Feb 2009
- JRC to check GAECs / SMRs requiring additional imagery
- JRC to inform MS of possibility to request additional images (windows or zones) for RDP/ XC checks
- JRC to collect MS wishes for 2010 and to report to AGRI

- Most GAECs are checked with spring/summer **VHR** (for specific objects e.g. landscape features, terraces, unwanted vegetation, olive trees...) or with **multi temporal HR/VHR** (for crop identification e.g. crop rotation, prohibition of row crops on slopes...)
- GAEC requiring an **additional window**
  - Ban of stubble/pasture burning: (late) summer image
  - Obligation of winter cover: winter image

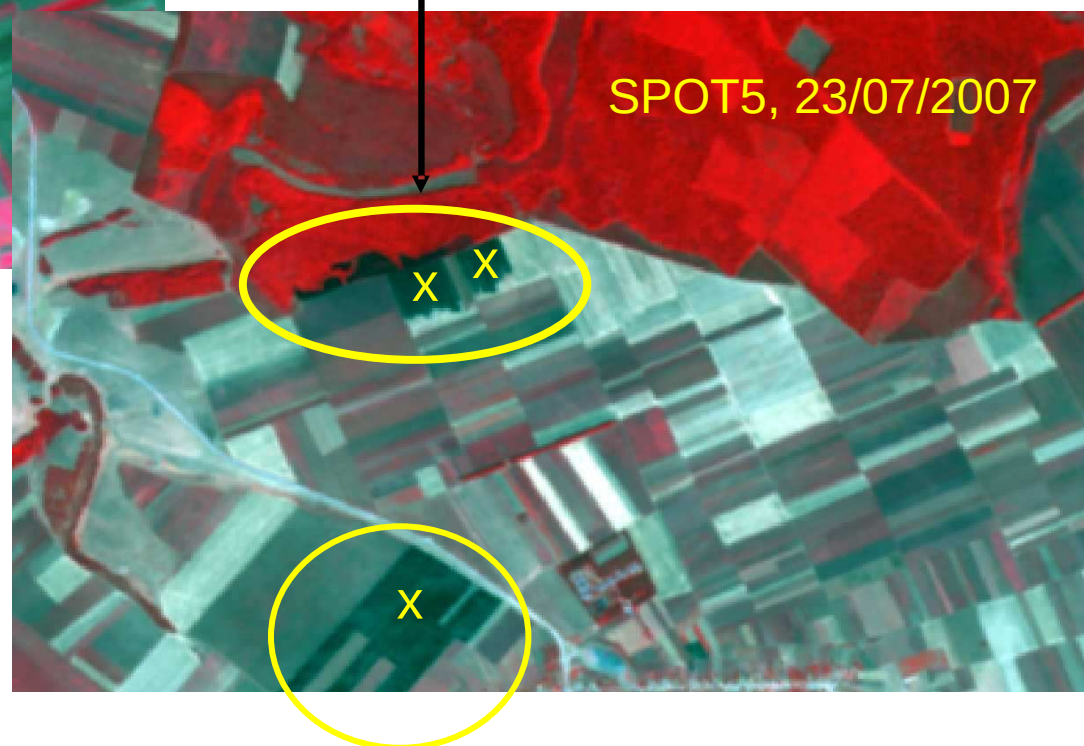
Image used for selecting the sample of parcels to check in the field -> **risk analysis** per (group of) standard(s)





Bulgaria, RS zone of Shoumen

Burnt stubbles and  
grasslands



Risk analysis for ban  
of stubble burning





Burnt stubbles and grasslands  
around the **village**



Bulgaria, RS zone of Plovdiv

- 23 MS potentially interested by this check in 2009
- Late summer HR to identify the parcels to be checked in the field ("risk analysis" sample)
  - > worth in MS where stubble burning is a common practice  
BG, RO, IT, CY, other ?
- Estimate: 50 zones?



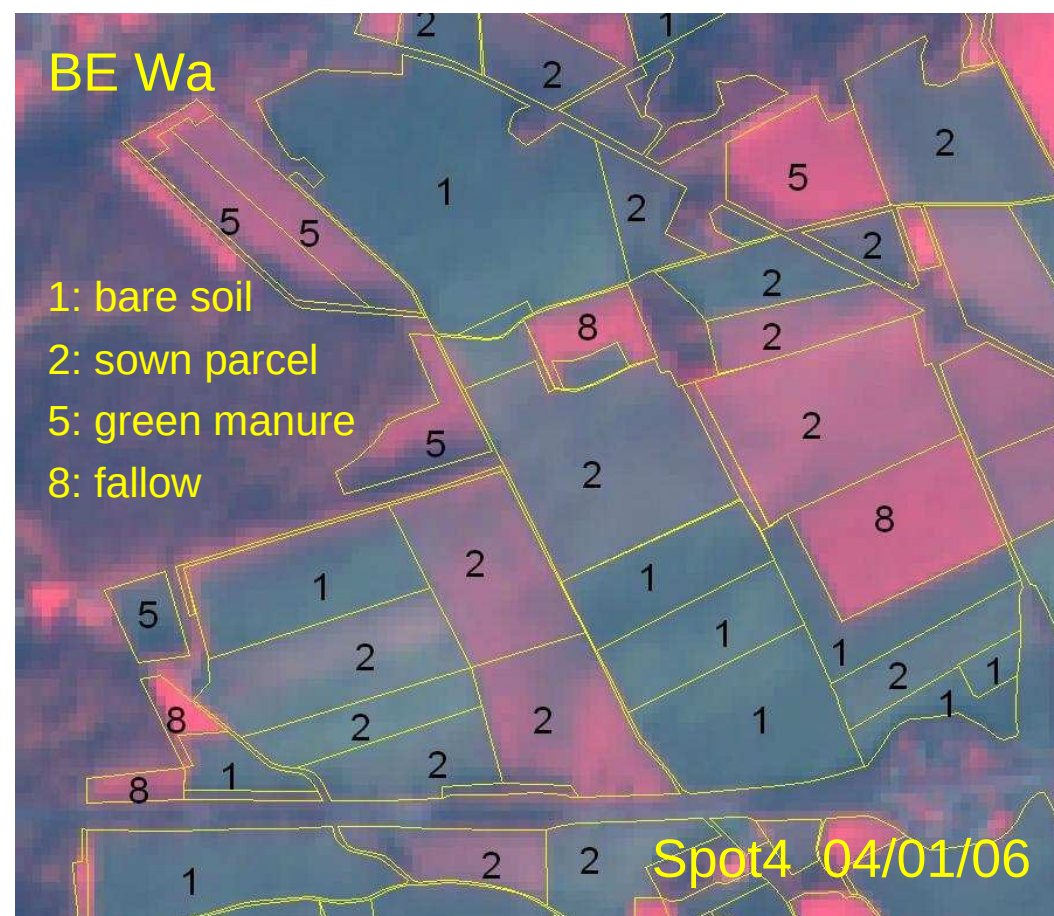


- Already done in PT (12 zones), DE (12 zones / 38)
- Winter HR to identify parcels to be checked in the field (pb of timing: claim not lodged yet -> select farms to check during the next winter)

- Additional MS:  
BE FL,RO, NL, other?

- Estimate 25 zones?

Estimate based on GAECs  
implemented in 2008 in MS



- Eligibility check with RS
  - 6.5M€ is too low for present request of 25 MS
  - Authorization to use remaining 2008 budget ... signed on 01/12/08 ☺
- AGRI favourable to XC / RDP checks with RS where justified; possibility to request for 2010
  - additional (RDP / XC) zones
  - additional windows (winter HR, late summer HR, extra VHR?)
- REPLY from interested MS needed by END of the year (only IT up to now)