

Disease orientated threshold values as tool for effective early blight control

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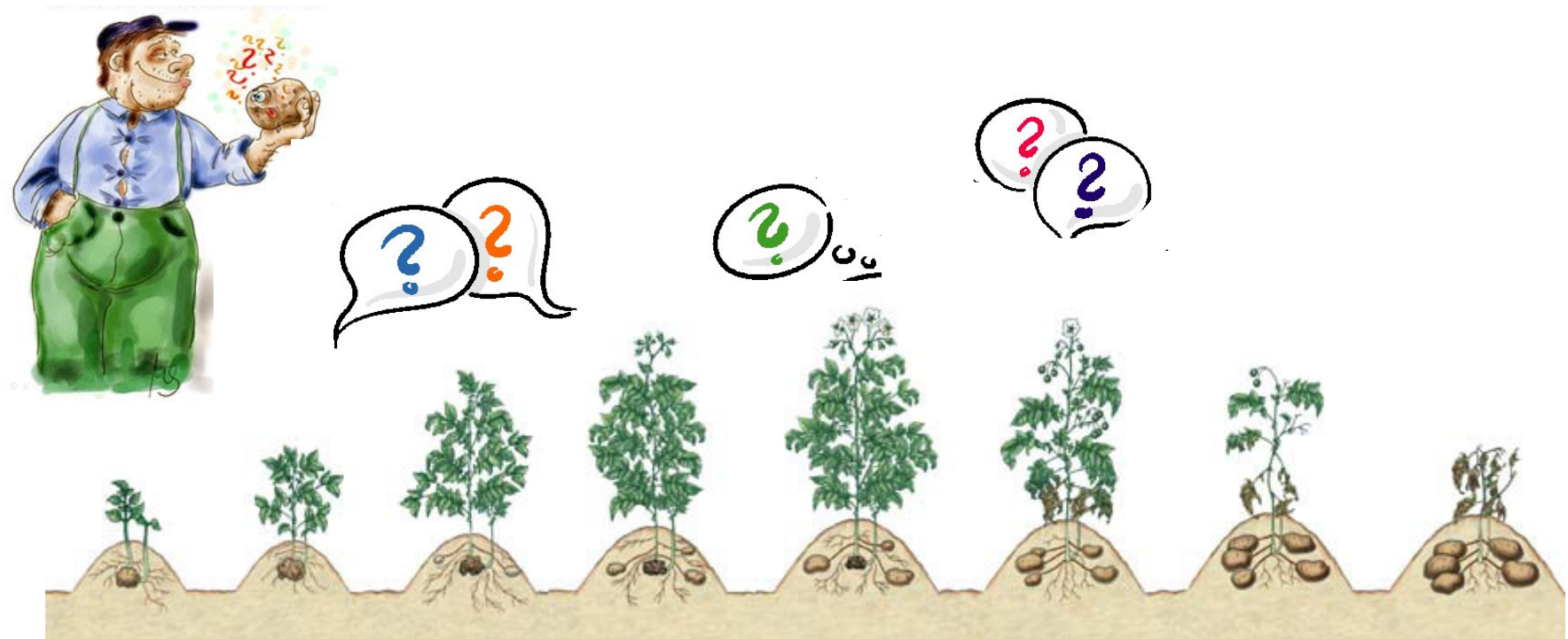


data published online in Plant Disease:

<http://apsjournals.apsnet.org/doi/pdfplus/10.1094/PDIS-05-11-0431>



Termination of EB specific fungicides in the course of the growing season



- avoid unspecific EB treatments
- adapt treatments to EB epidemics in the field



 aim:

Increase efficacy (applications with high effectiveness)
Reduce numbers of applications (Ø 8 treatments in US)

Threshold values:

Orientated to EB disease progress (DI=disease incidence, DS= disease severity)

Single application:

50% DI, 100% DI, 1% DS, 5% DS, 25% DS



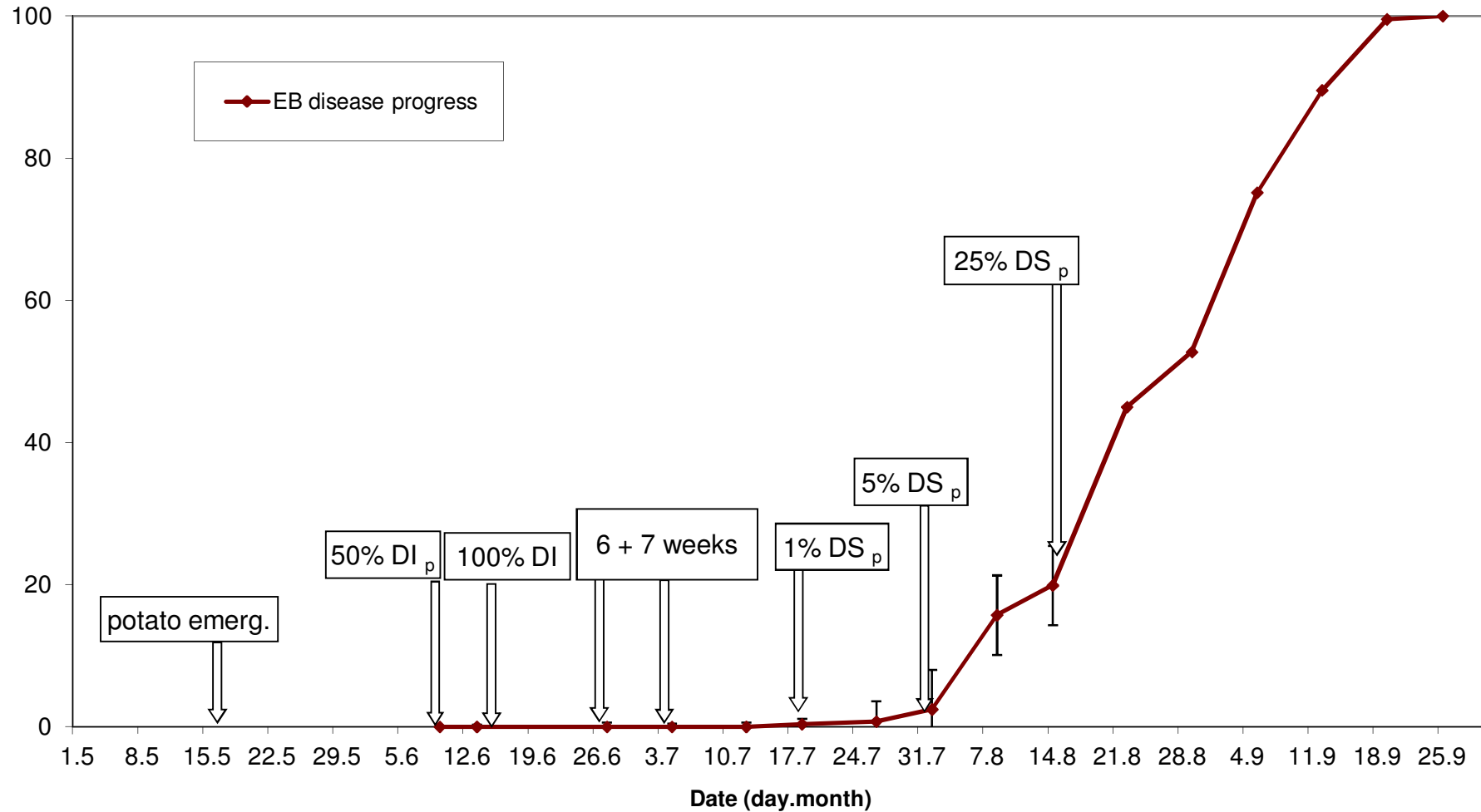
Multiple treatments:

- combination of different threshold values (50% + 100% DI, 100% DI + 1% DS)
- double treatments according to potato emergence (6+7 weeks after emerge)
- excitation of *P. infestans* with Ranman (coverspray)
- plots with weekly EB treatments in order to characterize local yield potential
- (mancozeb (1350 gr. a. i./ha), azoxystrobin (125 gr. a. i./ha))
- application of azoxystrobin (125 gr/ha) in threshold treated plots
- plots randomised, 4 repetitions

2005

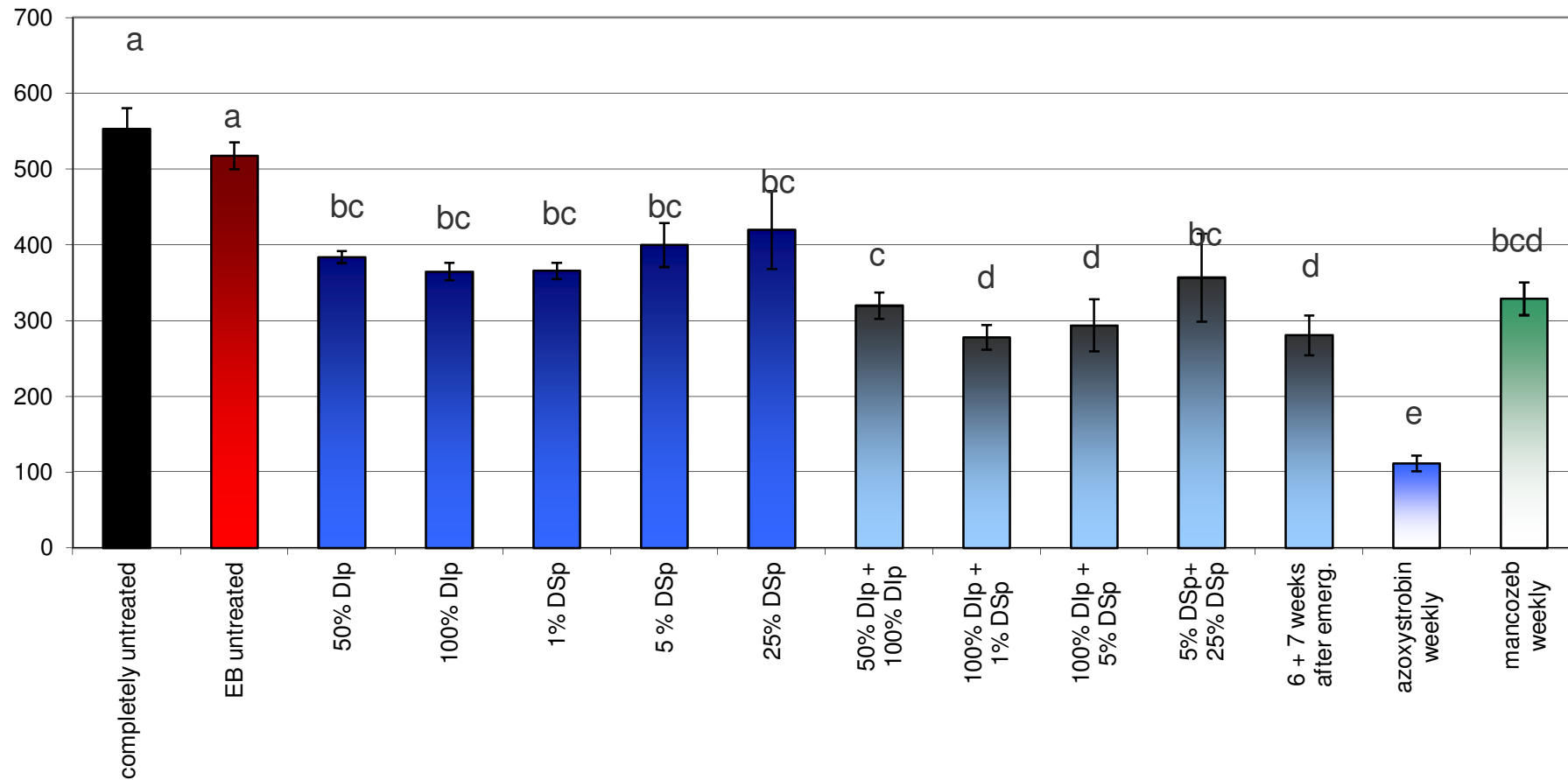
Location Straubing, variety Kuras

disease severity (%)



AUDPC control thresholds 2005

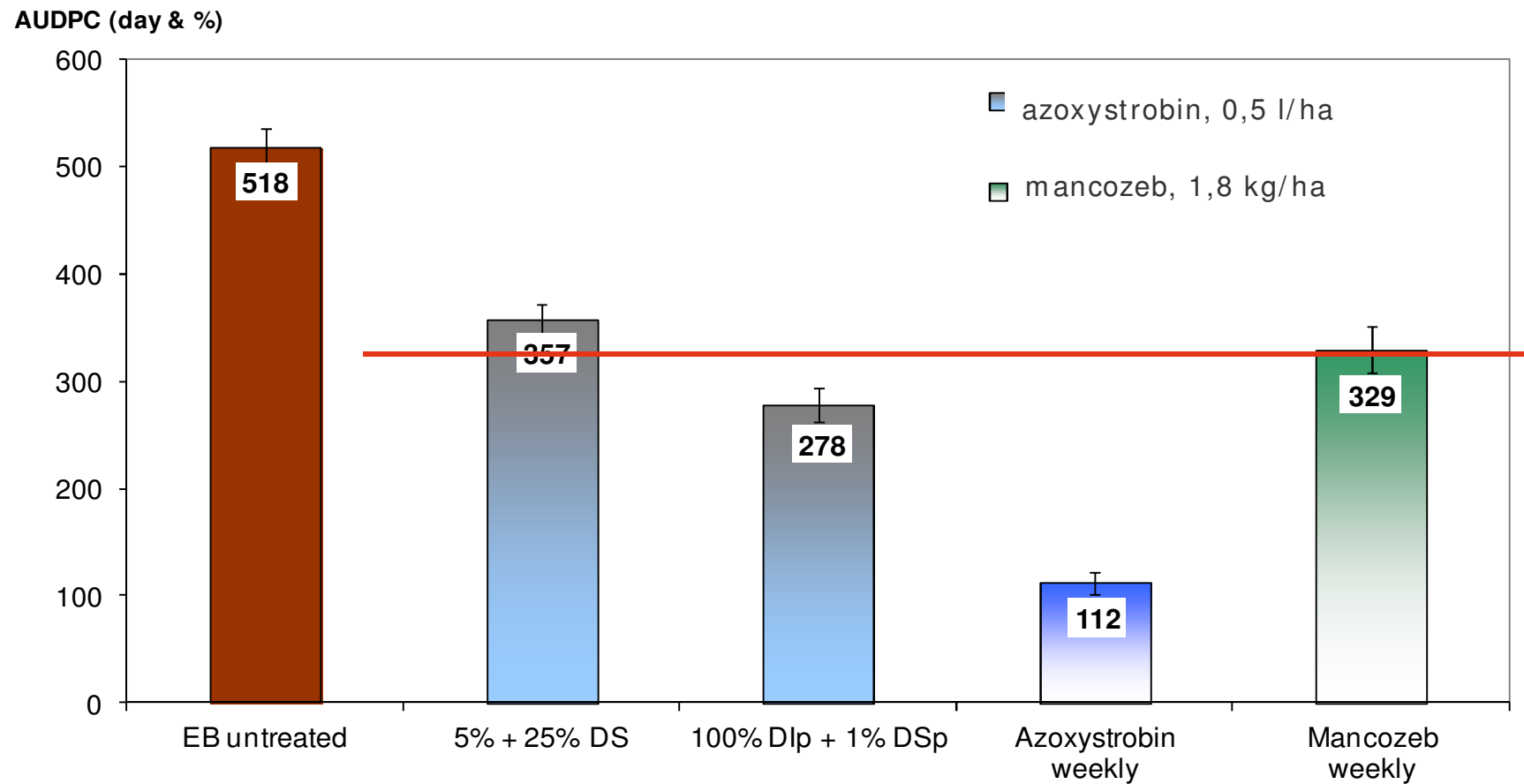
AUDPC (day & %)



Location Straubing, variety Kuras



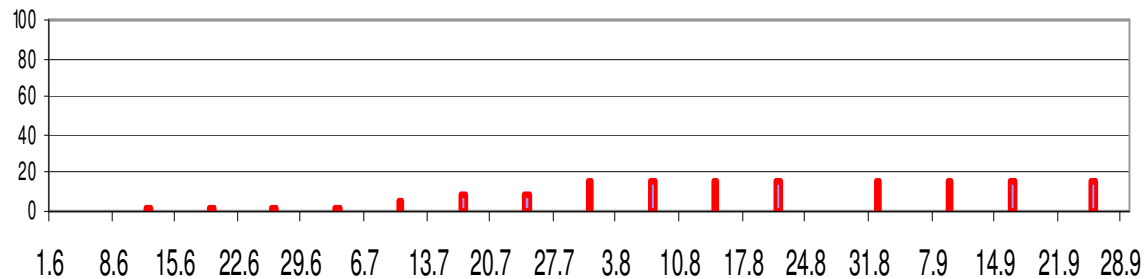
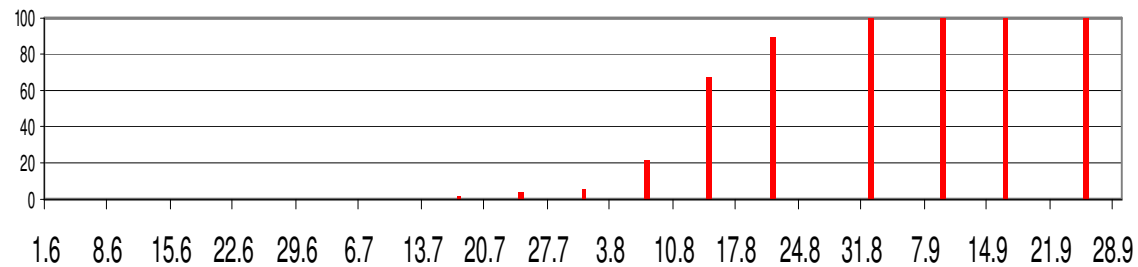
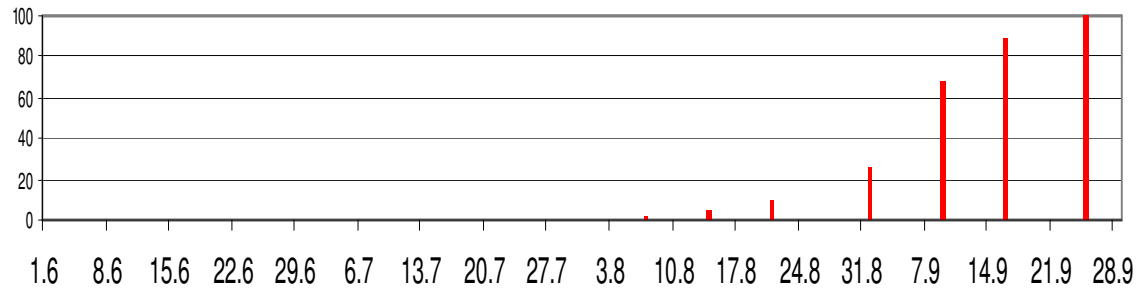
Control strategy– fungicide timing



location Straubing, Kuras, 2005



EB development on single leaf levels

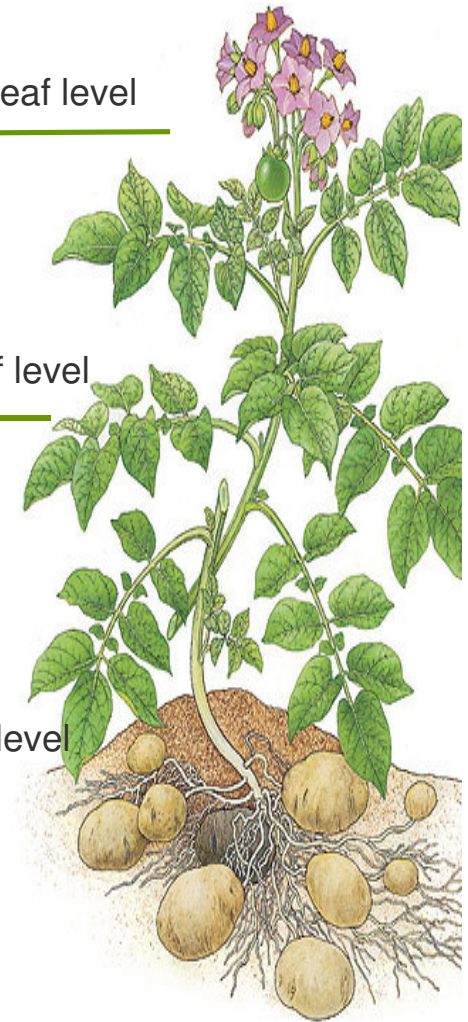


EB untreated

upper leaf level

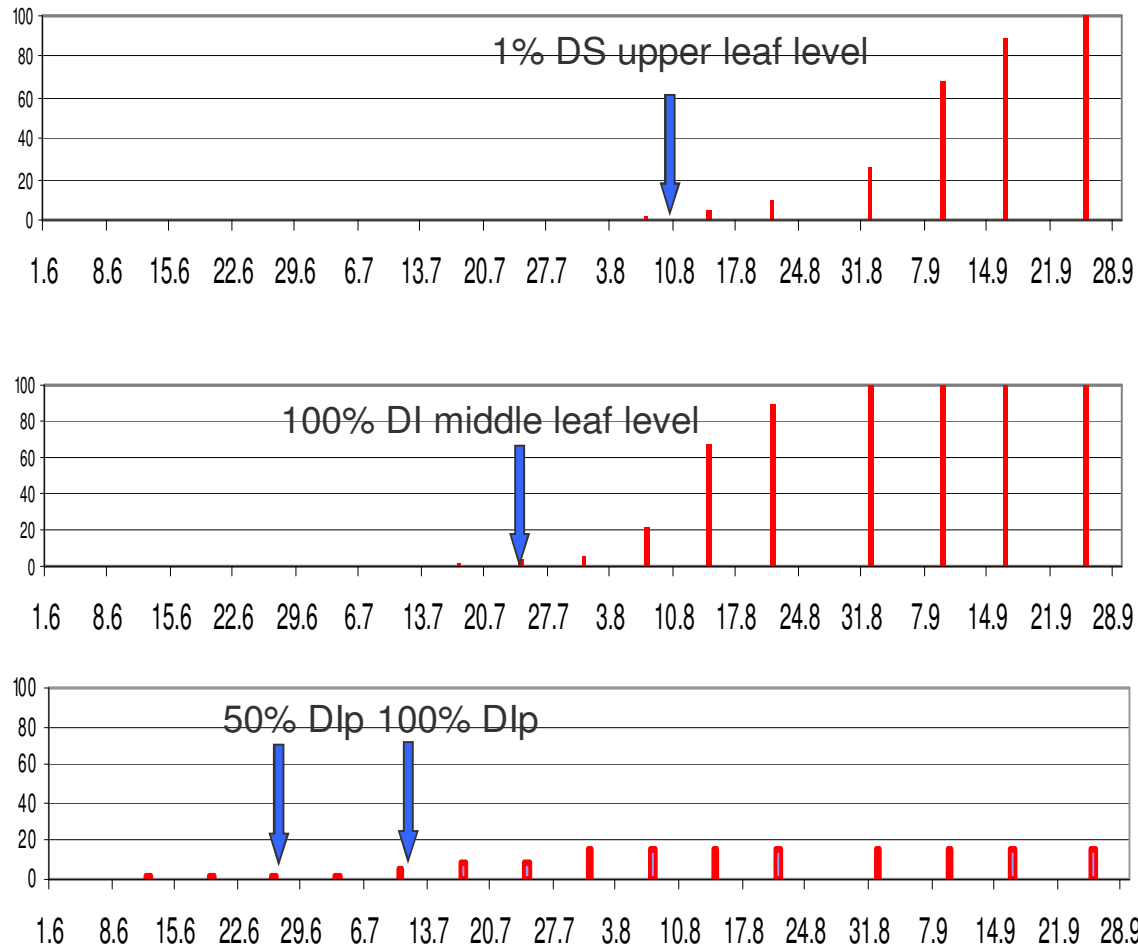
middle leaf level

lower leaf level

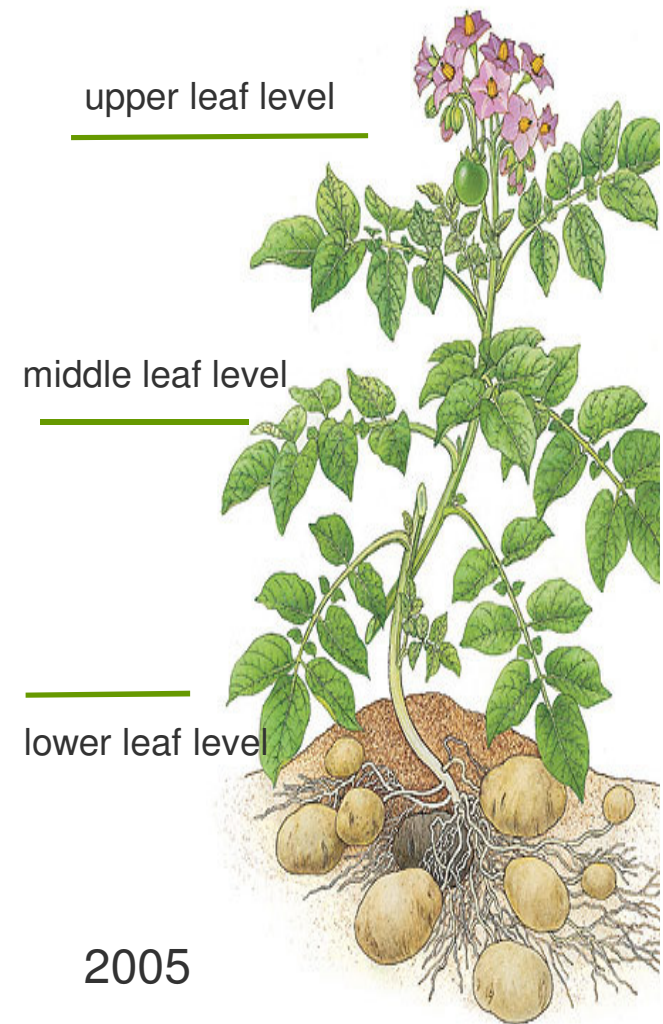


2005

EB development on single leaf levels



EB untreated



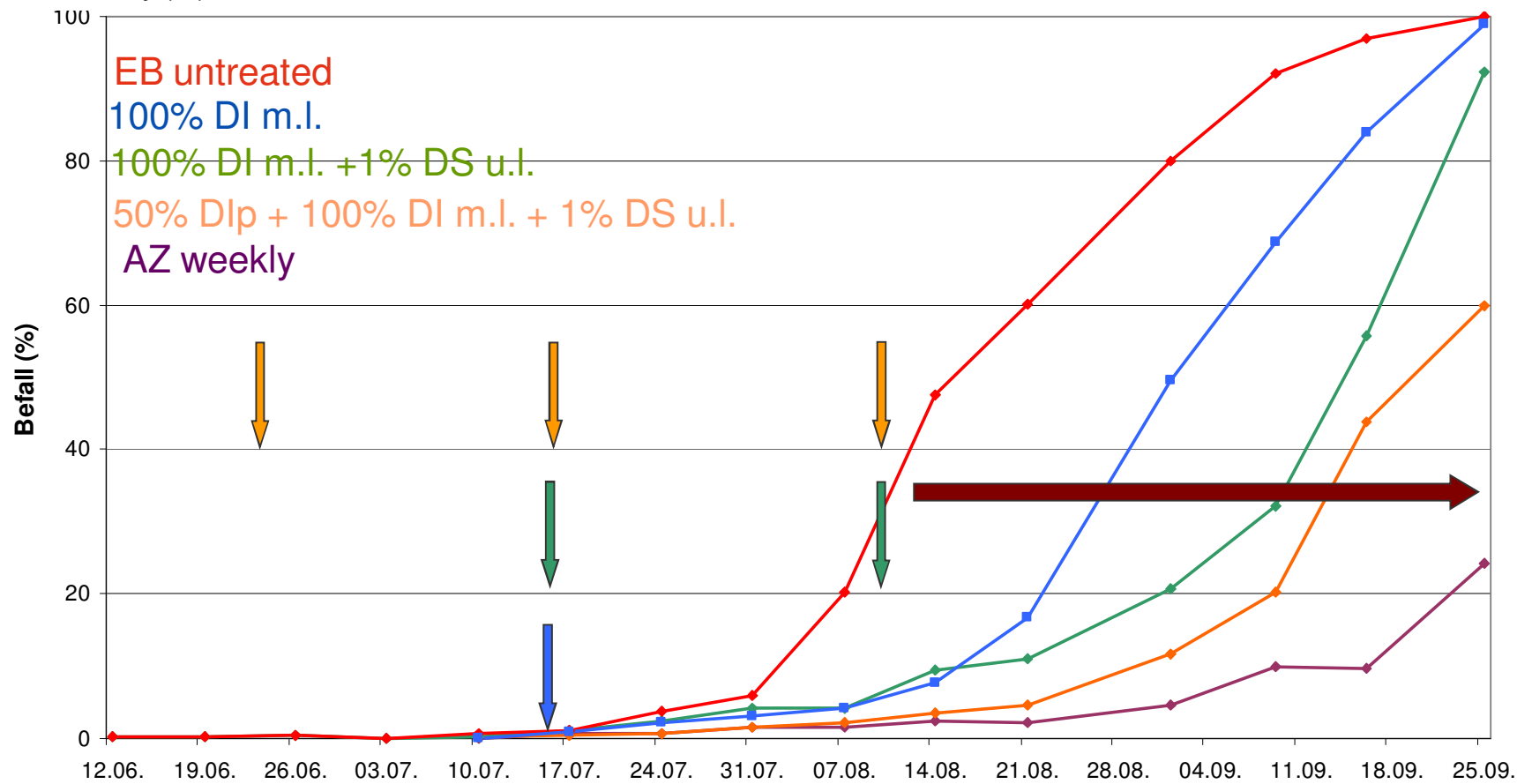
2005

Location Straubing, variety Kuras

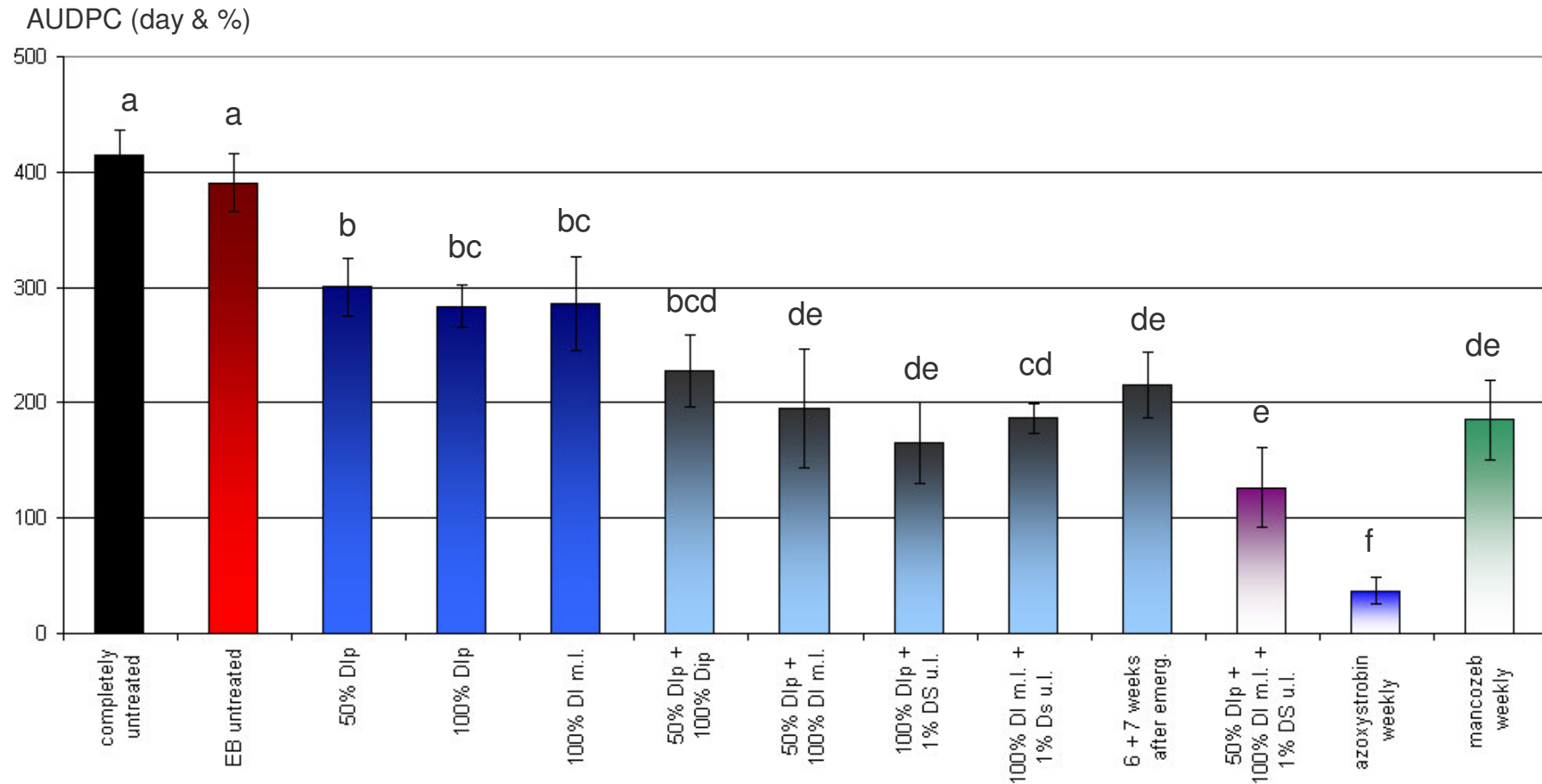


EB disease 2006

Disease severity (%)



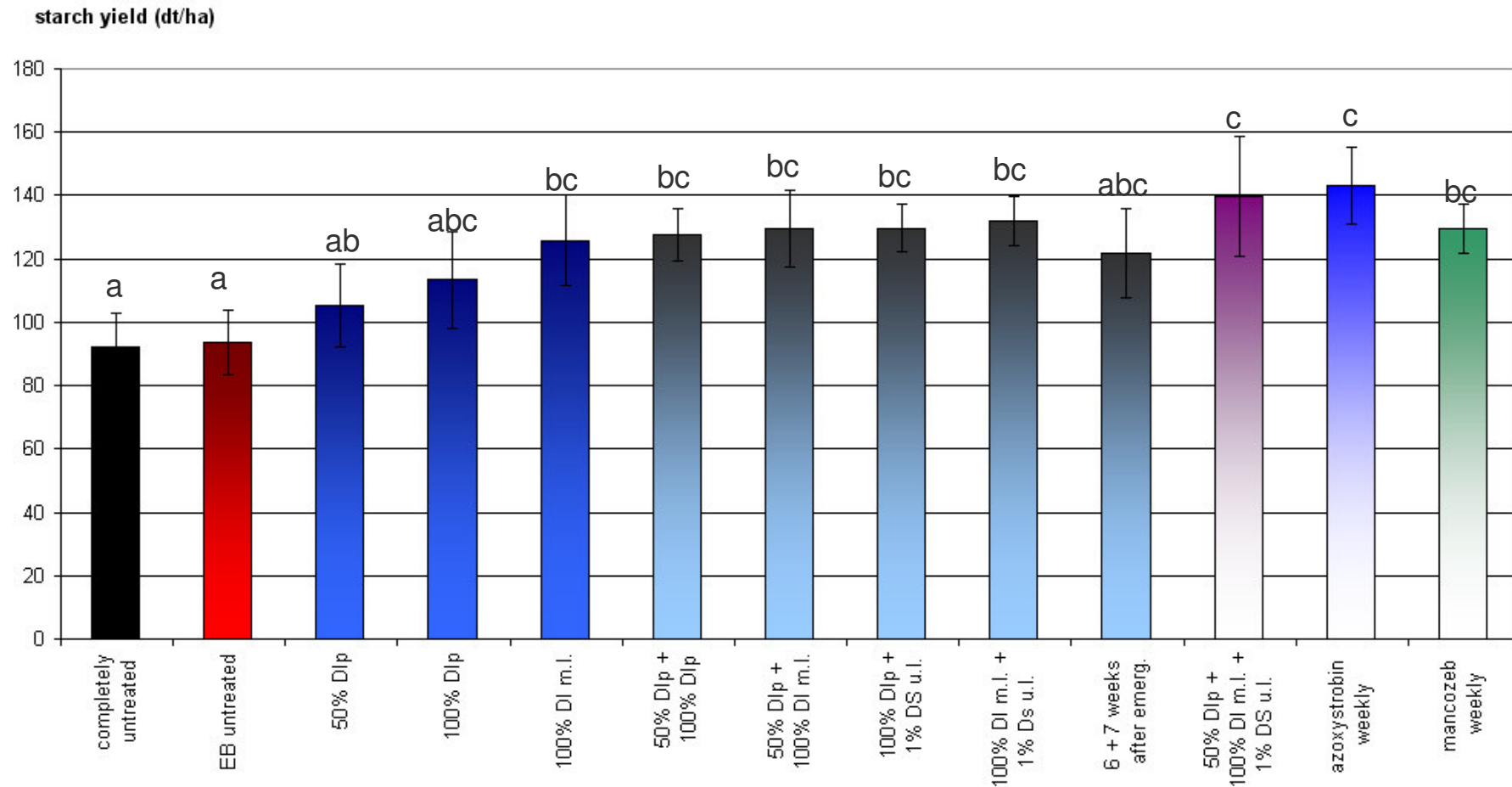
Control threshold 2006



Location Straubing, variety Kuras



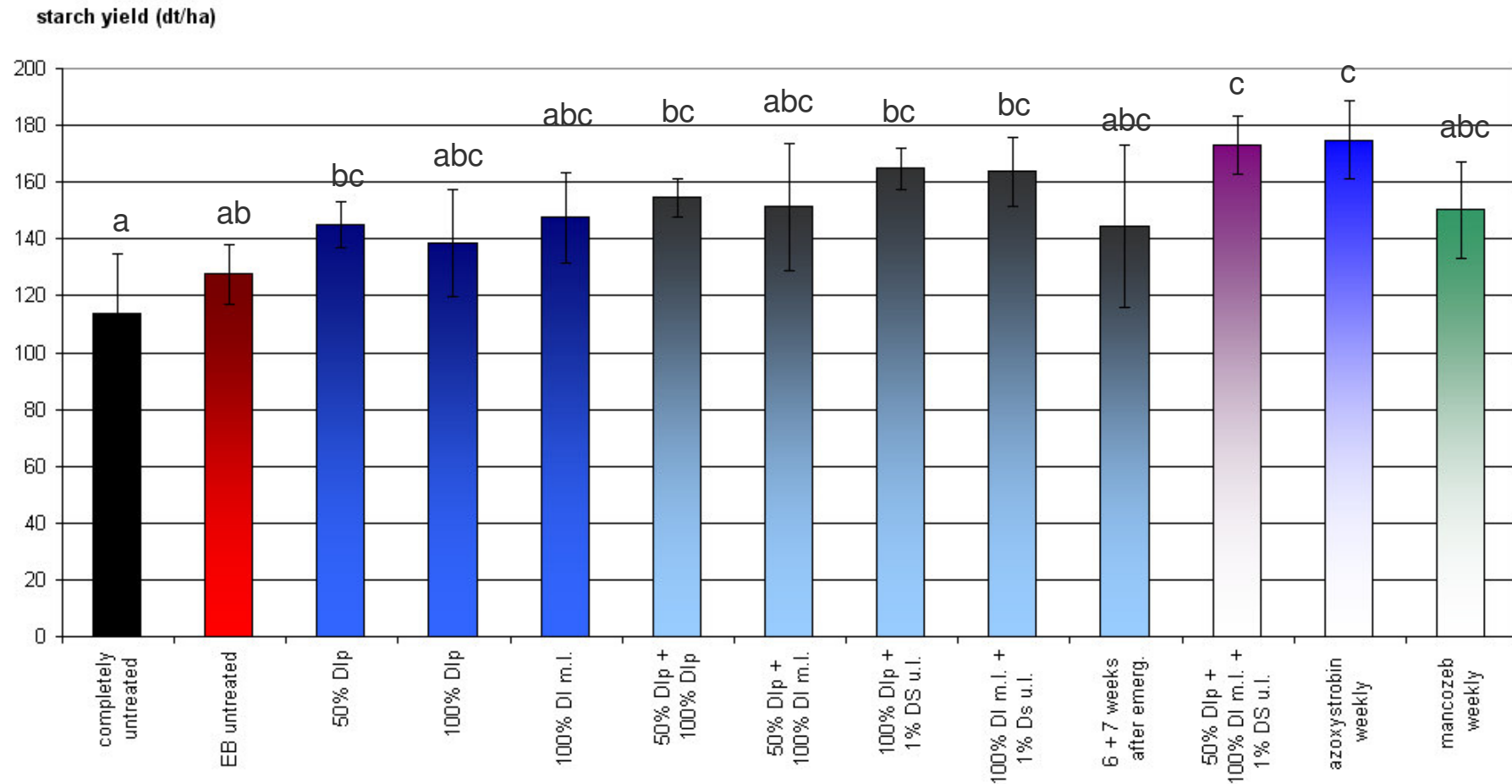
Starch yield 2006



Location Straubing, variety Kuras



Starch yield 2007



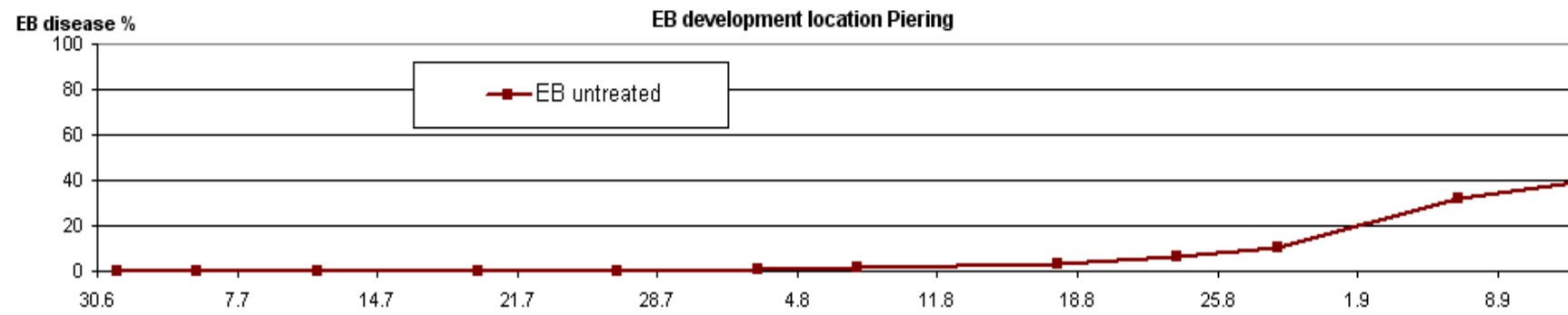
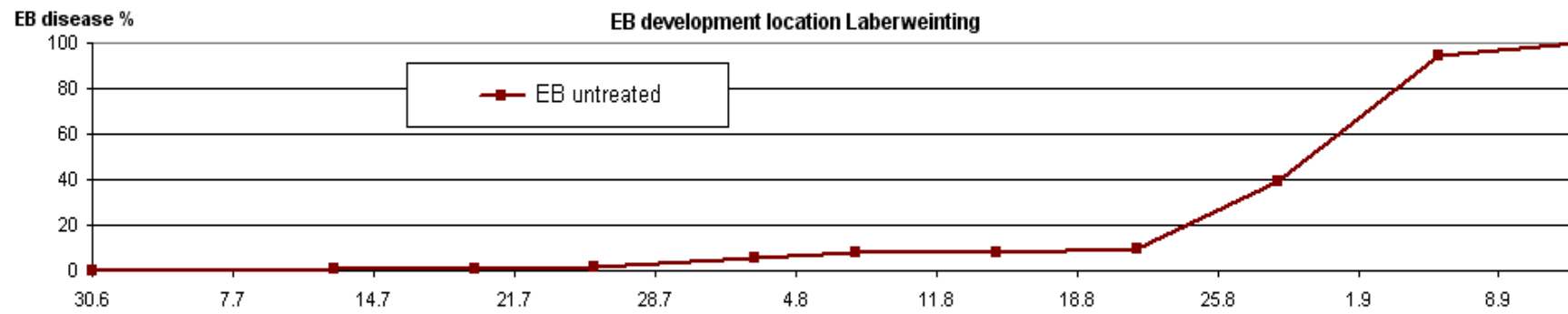
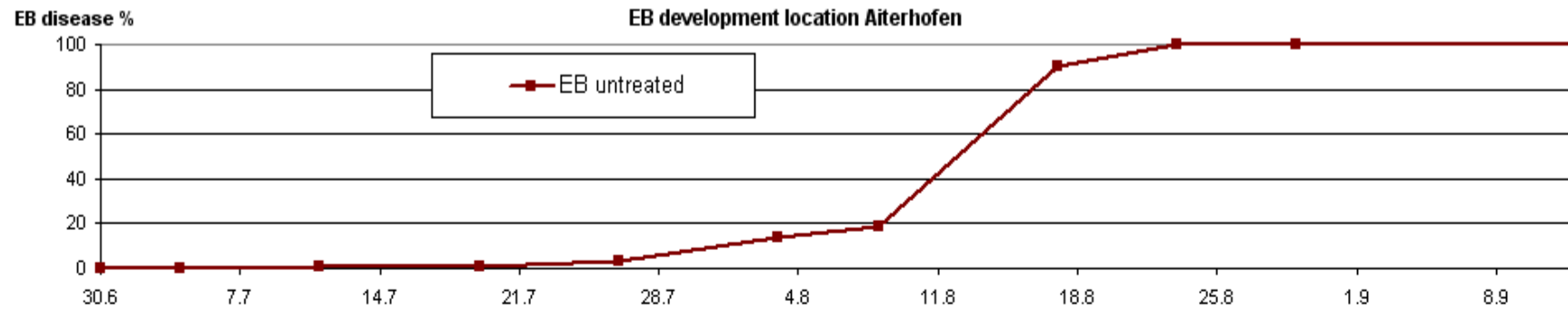
Location Straubing, variety Kuras



- 2009, 3 locations (Piering, Laberweinting, (variety Kuras), Aiterhofen, (variety Westamyl))
- Plot size each 1.000 qm
- elimination of *P. infestans* with Infinito, Ranman, Revus
- EB control according to disease development (Azoxystrobin)
 - Var. 1: single treatment (50% DI_{Plant})
 - Var. 2: double treatment (50% DI_P + 100% $DI_{m. leaf layer}$)
 - Var. 3: triple treatment (50% DI_P + 100% $DI_{m. leaf layer}$ + 1%DS u. leaf layer)
- Comparison to EB untreated and 6 fold treatment with Azoxystrobin
- harvest (4 repetitions)



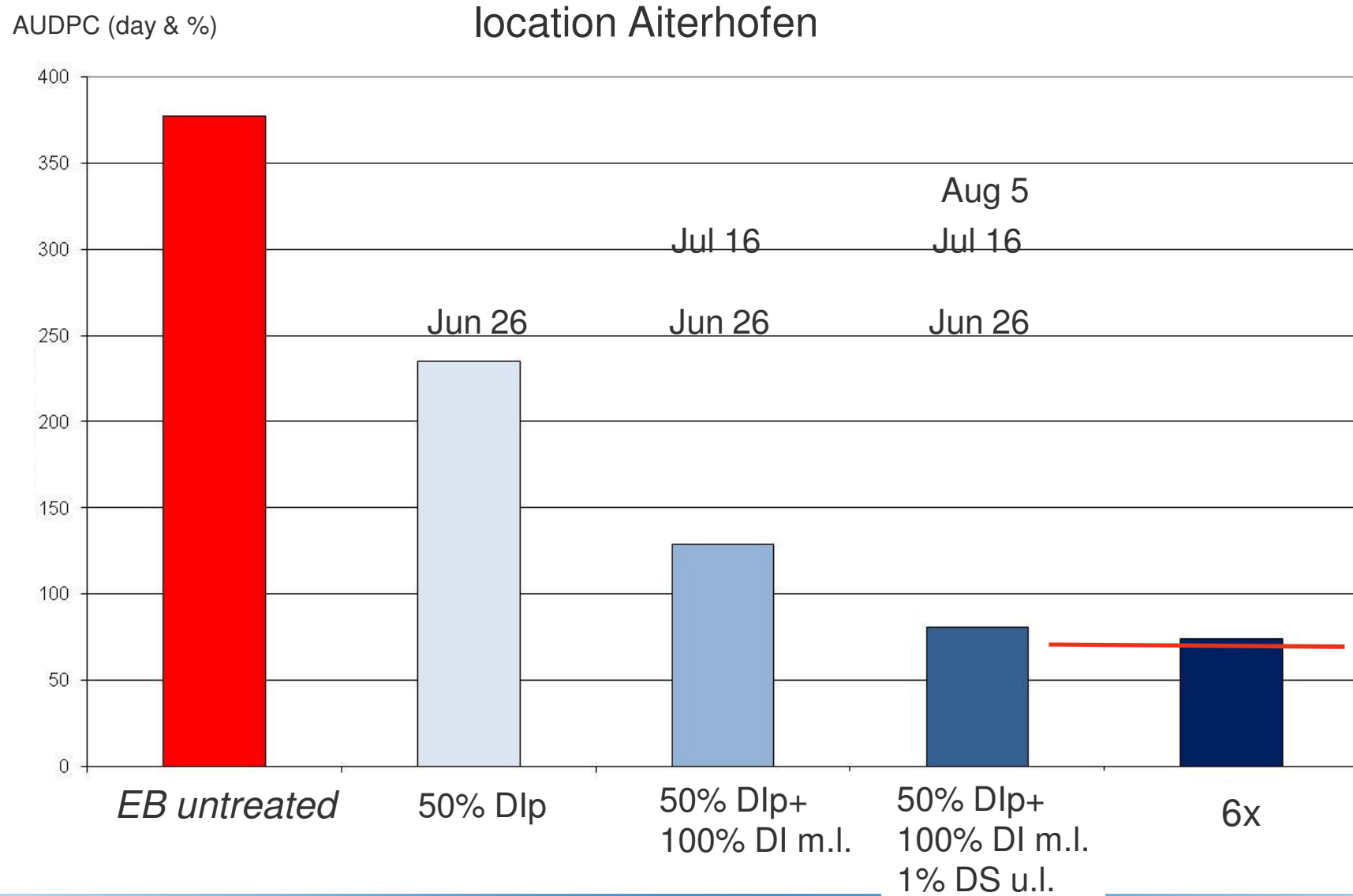
Site-specific *Alternaria*- progress



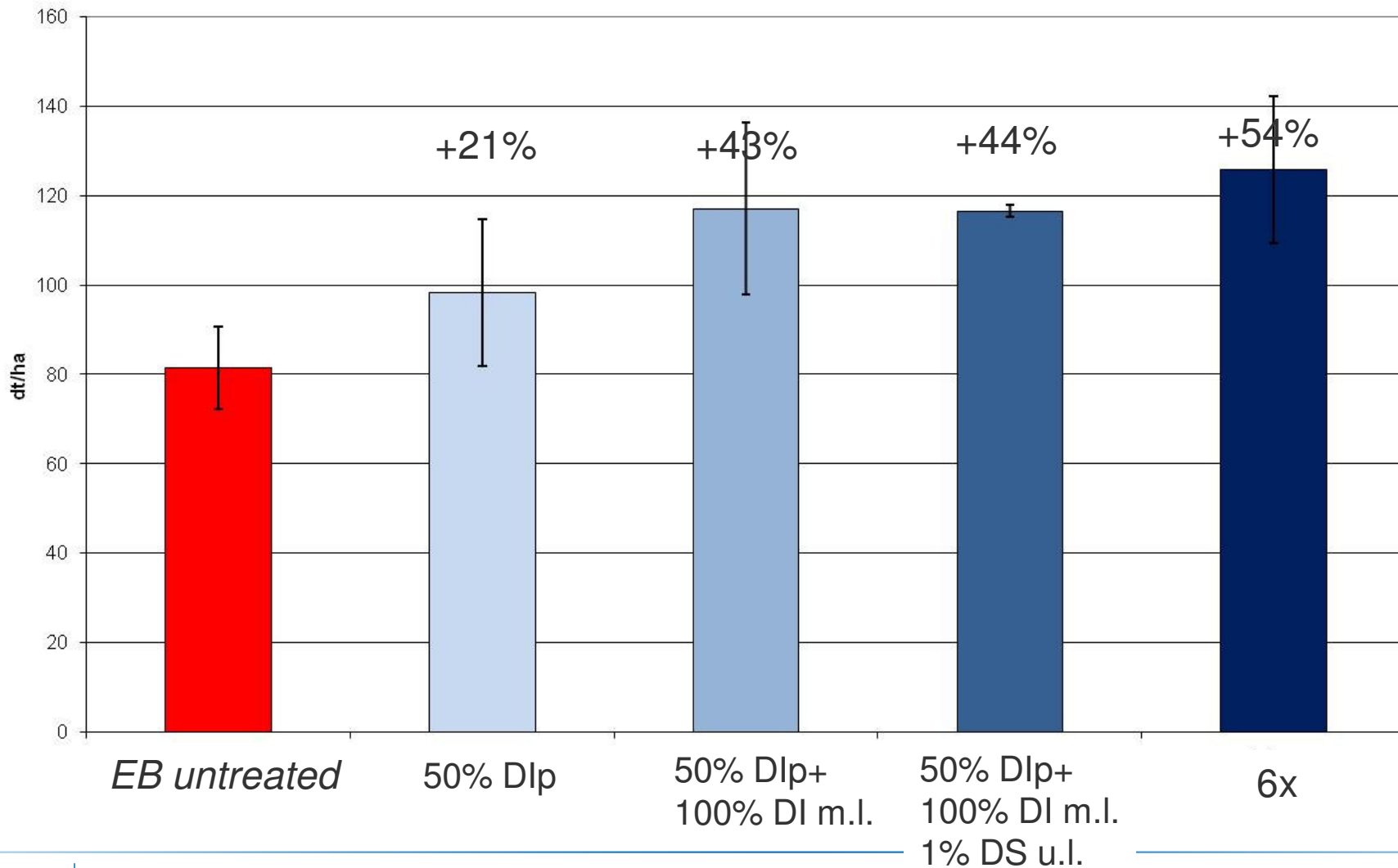
Year 2009



Site-specific EB treatment according to disease development



location Aiterhofen, starch yield (dt/ha)



- disease orientated threshold lead to effective EB control
- fungicide timing essential for disease control
- Need: prevention of primary infections and protection of higher leaf levels for pathogen spread
- thresholds aimed at maintaining health of middle and higher leaf levels are highly effective
- early increase in EB disease required multiple treatments
- Yield after three time, disease orientated application is almost equal to that after weekly application with azoxystrobin
- lower frequency of application helps to reduce the build up of fungicide resistance



Thanks for your attention !

