

Overview of herbicide results – P2R and Reef Protection R&D trial, Mackay

What drives herbicide loss in runoff?

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Treatments

- P2R - 2009/10, 2010/11 and 2011/12

	ABCD Classification	Soil Management	Nutrient Management	Herbicide Management
Treatment 1	CCC	1.5 m current practice	Generalised recommendation	Regulated
Treatment 2	BBB	1.8 m controlled traffic	Six Easy Steps	Non-regulated

- Regulated = Velpar K4 or Bobcat @ 3.8 kg/ha (diuron and hexazinone)
- Non-regulated = Flame @ 0.4 L/ha (imazapic)

Treatments

- Reef Protection R&D – 2012/13

	ABCD Classification	Soil Management	Nutrient Management	Herbicide Management
Treatment 1	CCC	1.5 m current practice	Generalised recommendation	Regulated
Treatment 2	BBB	1.8 m controlled traffic	Six Easy Steps	Non-regulated
Treatment 3	BCC	1.8 m controlled traffic	Generalised recommendation	Regulated
Treatment 4	BBB	1.8 m controlled traffic	Six Easy Steps	Regulated (banded)

- Regulated = Velpar K4 or Bobcat @ 3.8 kg/ha (diuron and hexazinone)
- Non-regulated = Flame @ 0.4 L/ha (imazapic)
- Regulated (banded) = Bobcat @ 3.8 kg/ha on 33% band (diuron and hexazinone)

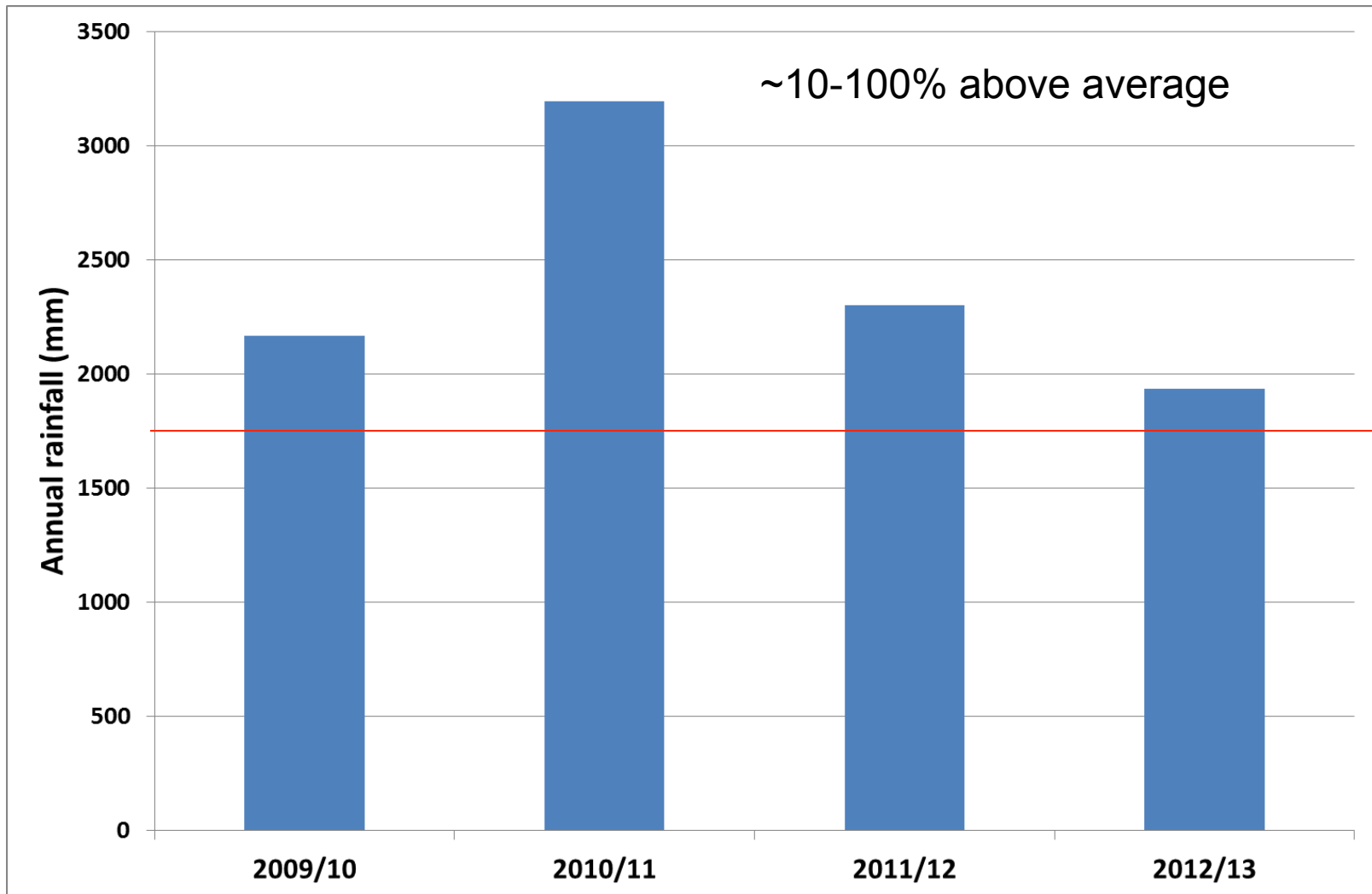
Site – Victoria Plains



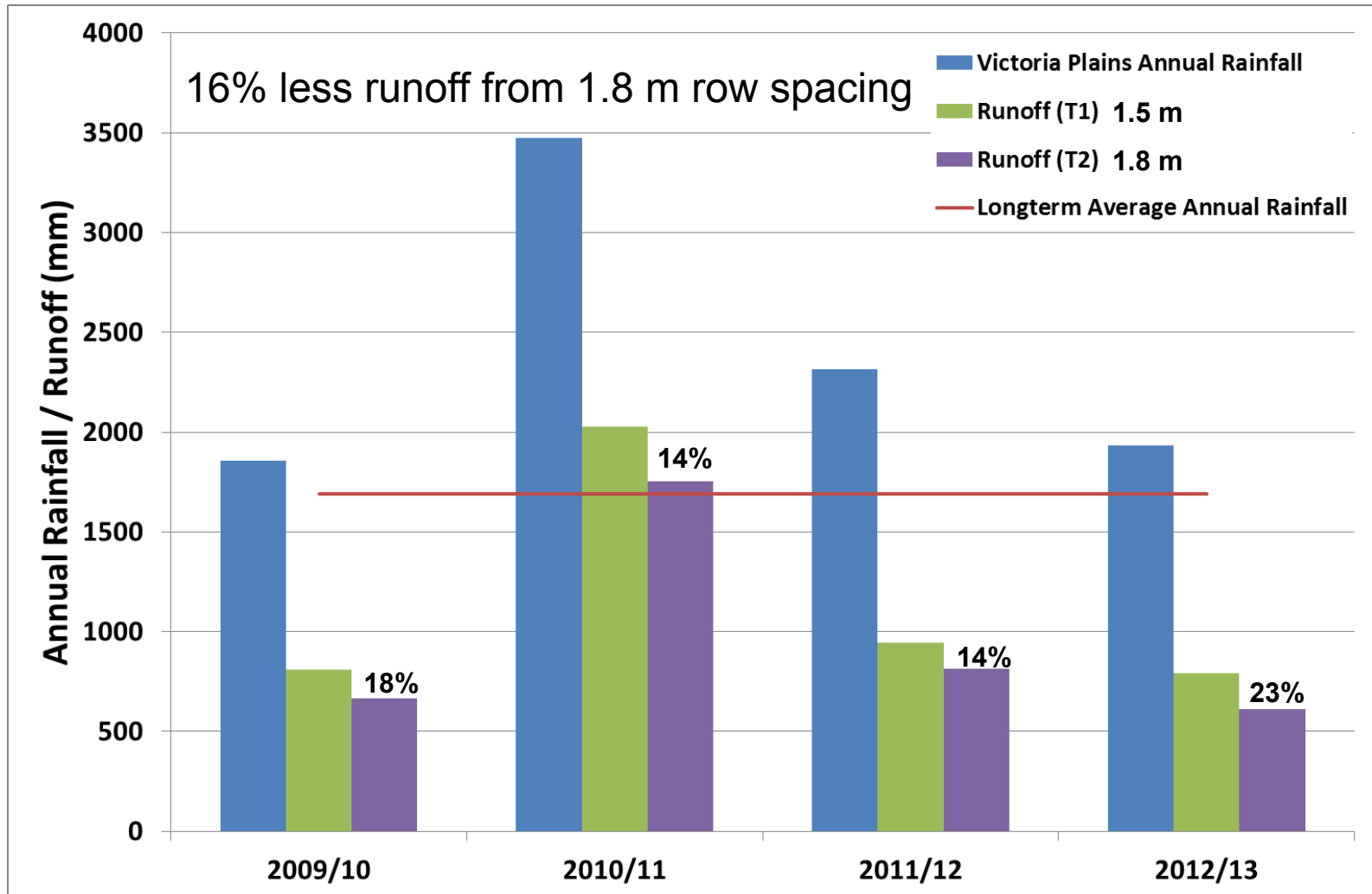
Methods



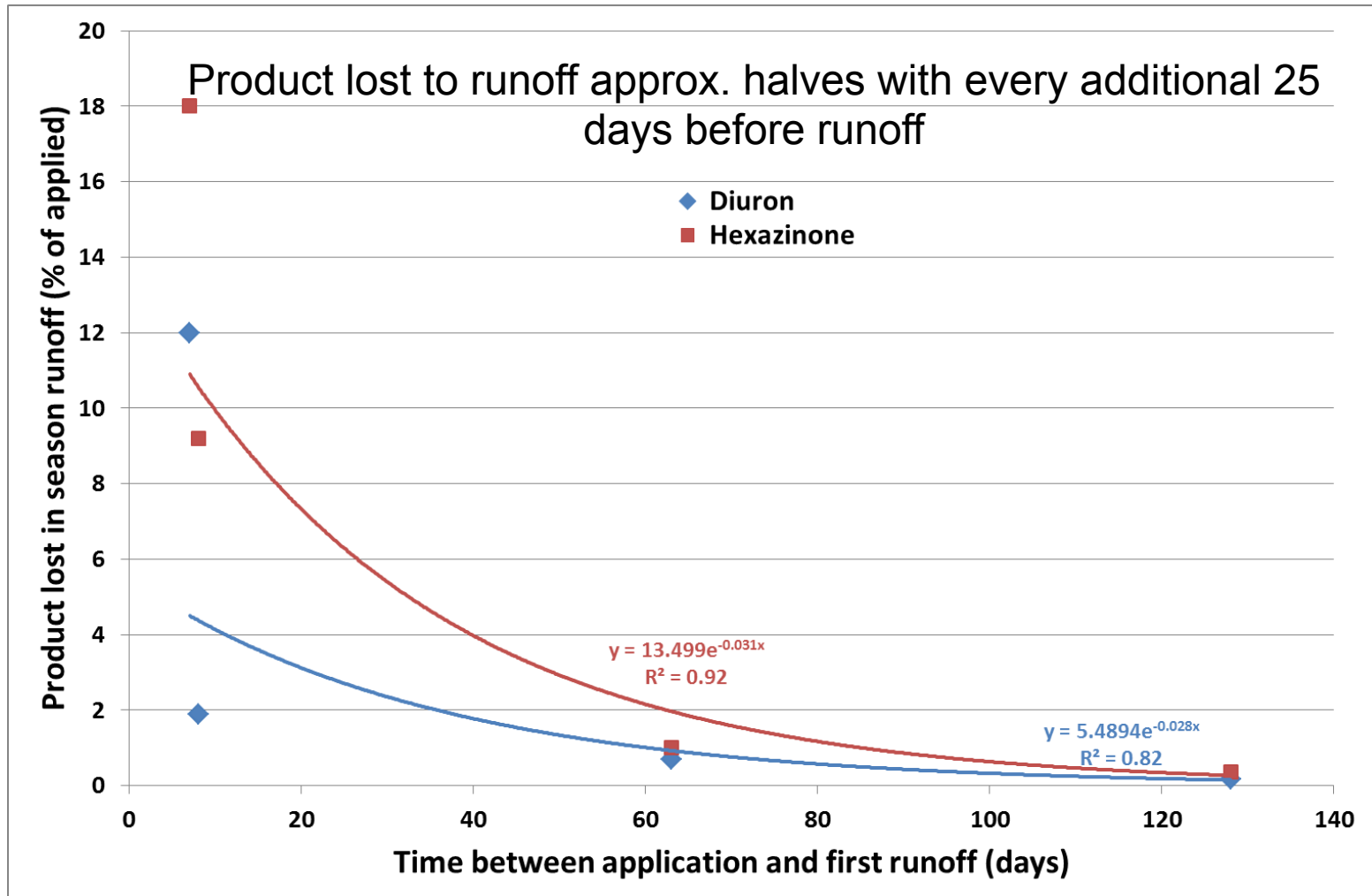
Annual Rainfall (October – September)



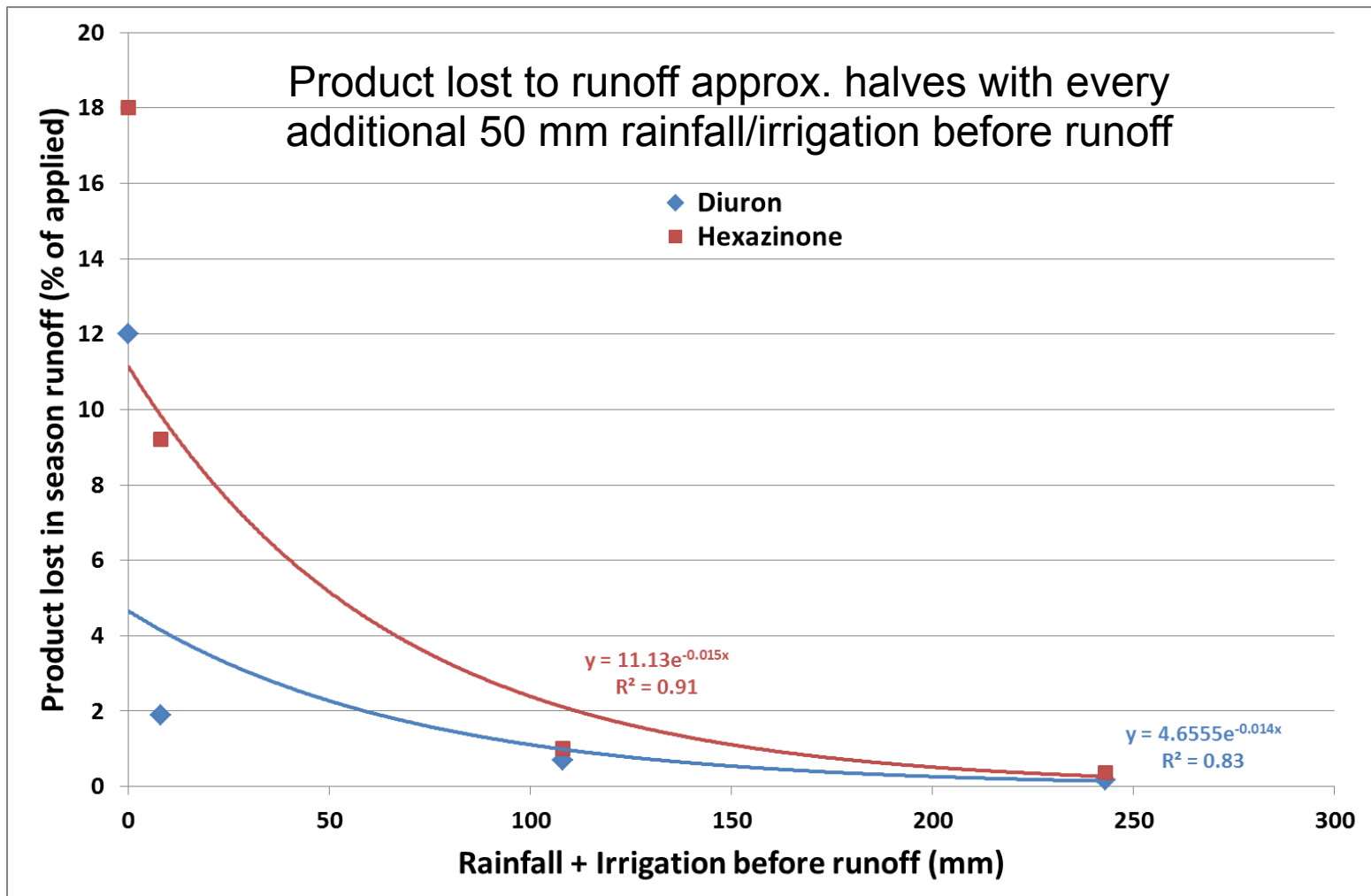
Annual Rainfall and T1 & T2 Runoff (2009 – 2013)



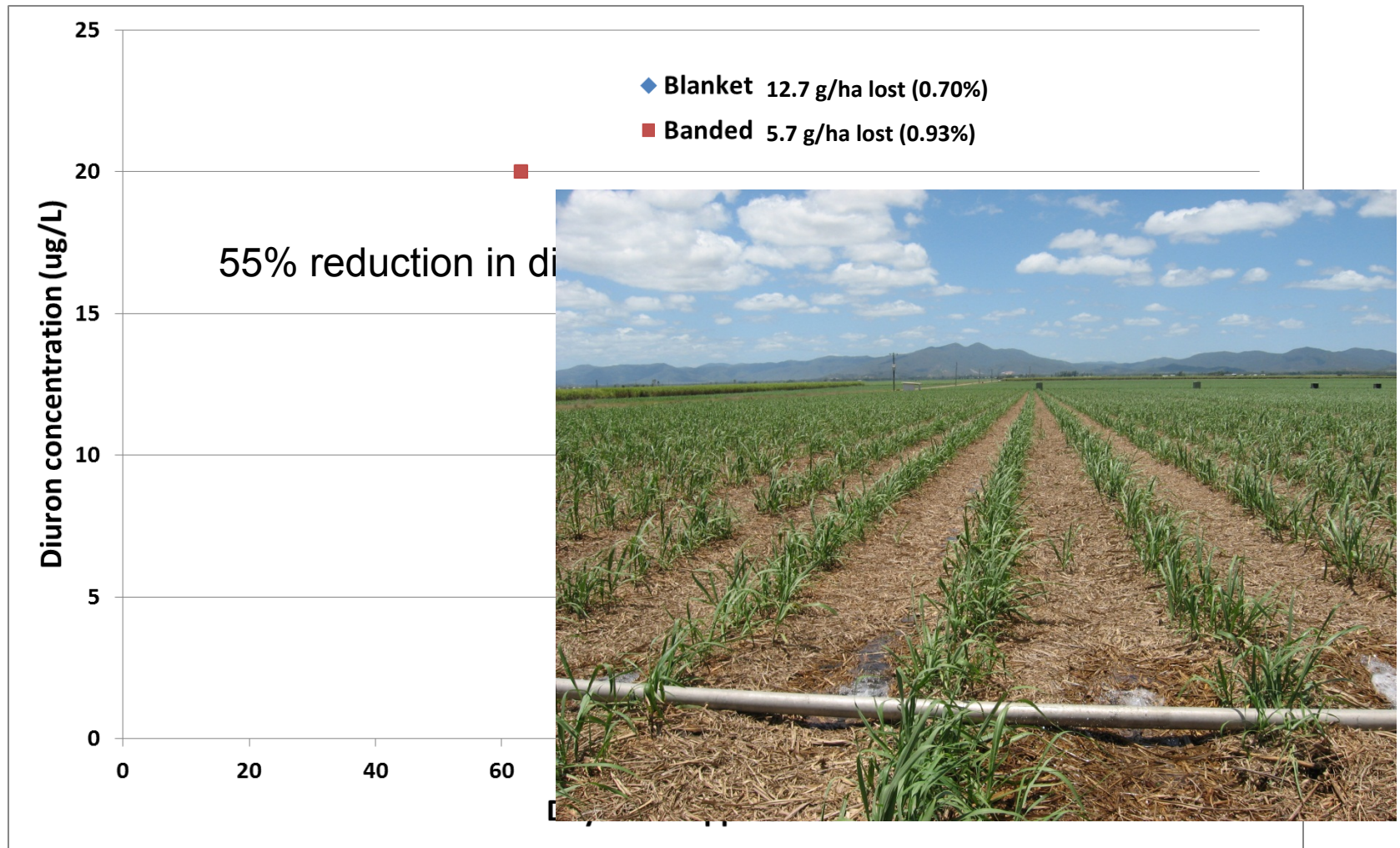
Impact of “timing” (in relation to first runoff)



Impact of “incorporation” (rainfall/irrigation)



Impact of “application rate” (blanket vs. banding)





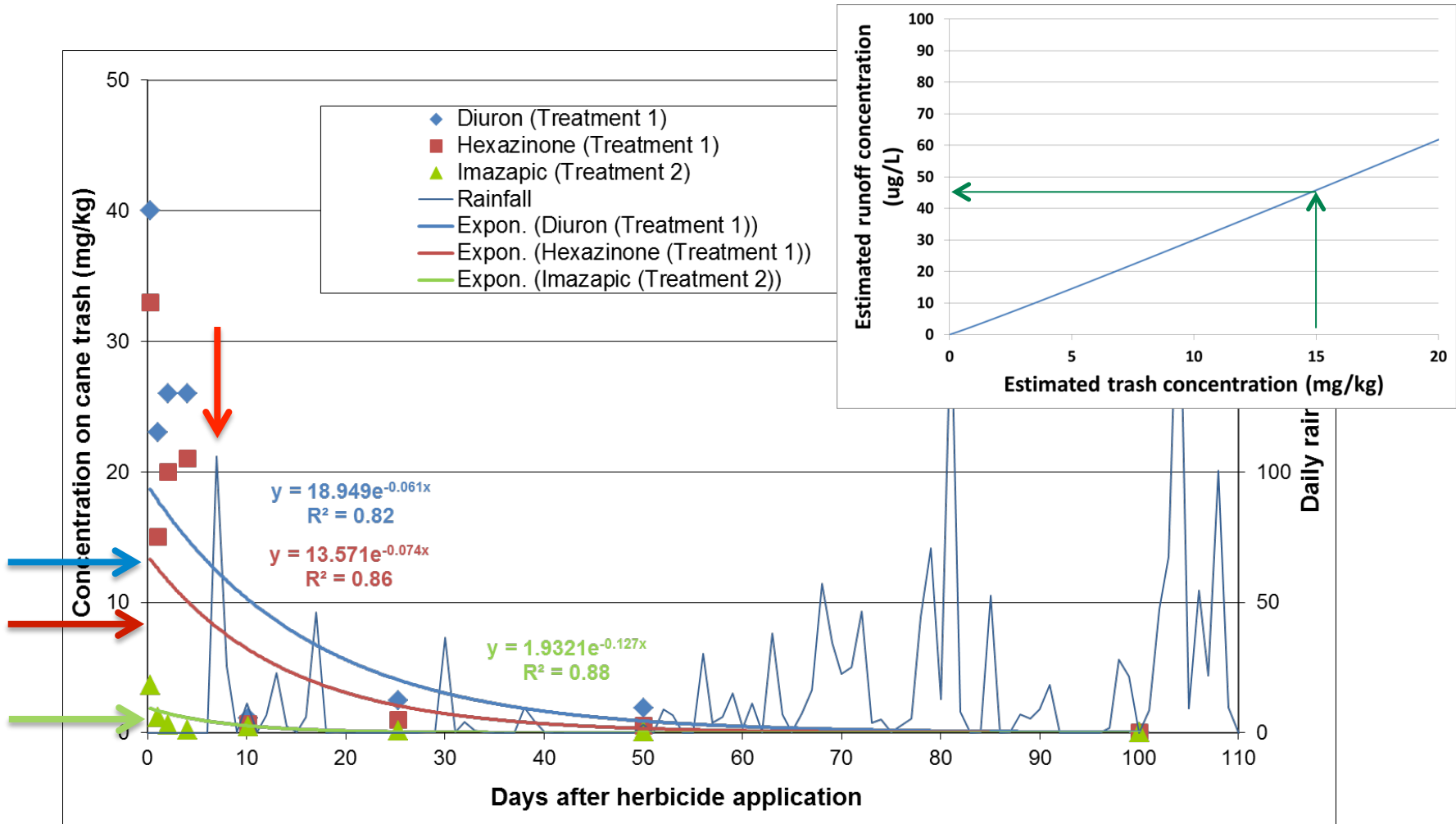
Impact of “application rate” (product selection)

- Velpar K4/Bobcat @ 3.8 kg/ha
 - Diuron @ 1778 g/ha
 - Hexazinone @ 502 g/ha
- Flame @ 0.4 L/ha
 - Imazapic @ 96 g/ha

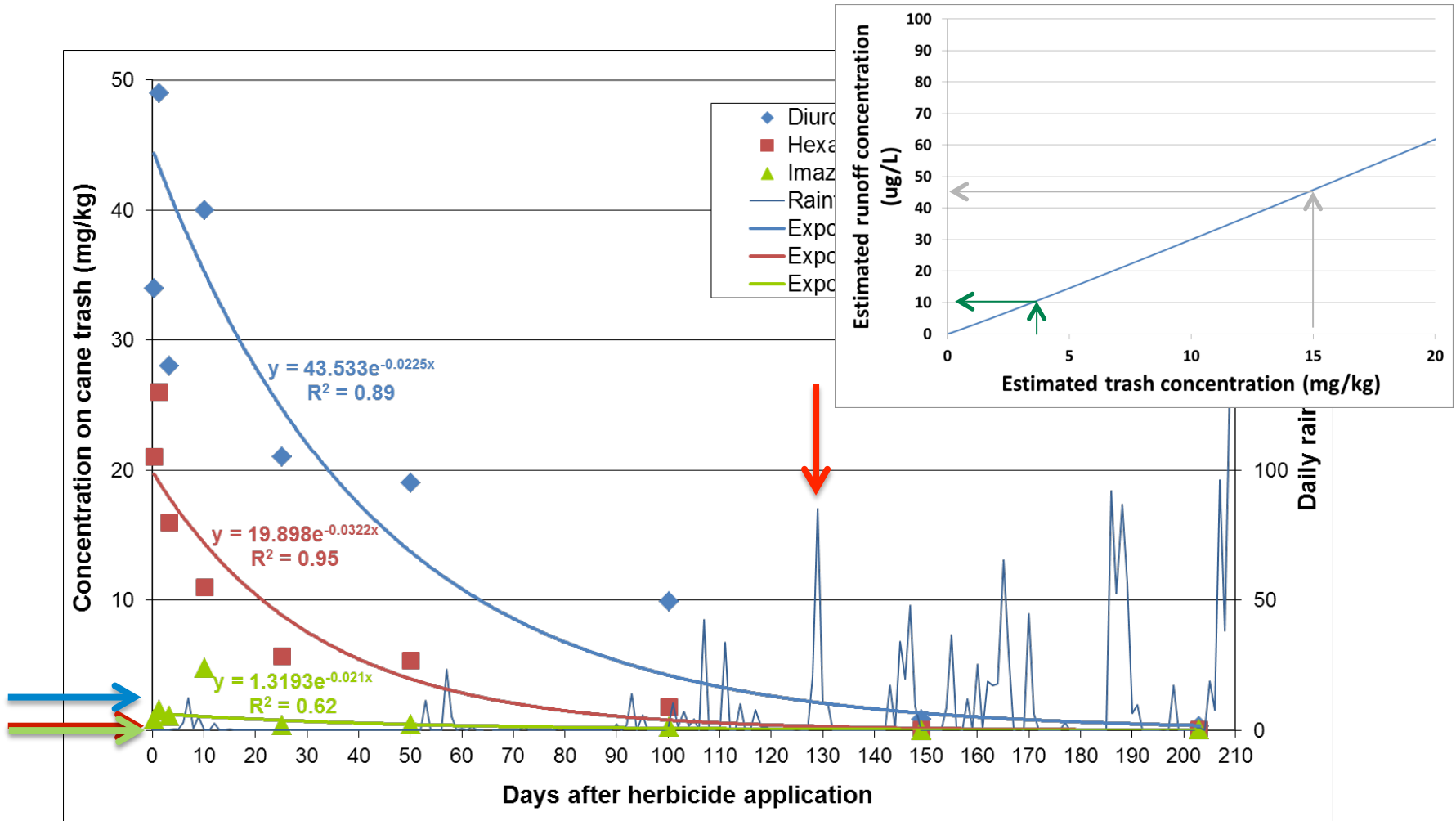
Seasonal runoff concentrations (flow-weighted mean)

- Diuron 0.28-10 µg/L
- Hexazinone 0.18-6 µg/L
- Imazapic not detected (<1 µg/L) in 76% of samples
 - Highest concentration (6 µg/L) in irrigation 40 days after application

Dissipation of herbicides – “worst case”



Dissipation of herbicides – “best/better case”



Little difference in weed control





Key messages – herbicides

- Apply as early as possible to allow time for the herbicide to dissipate before runoff occurs
 - every 25 days halves runoff losses
- Incorporation of herbicides by rainfall/irrigation (without runoff) will significantly reduce runoff losses
 - every 50 mm halves runoff losses
- Banded spraying reduces runoff losses (half), but not as much as good timing and incorporation (up to 2 orders of magnitude)
- As long as efficacy and ecological effects (e.g. toxicity) are no worse, applying less herbicide (e.g. banding) or using a herbicide with a lower application rate (e.g. Velpar vs. Flame), will reduce runoff losses

