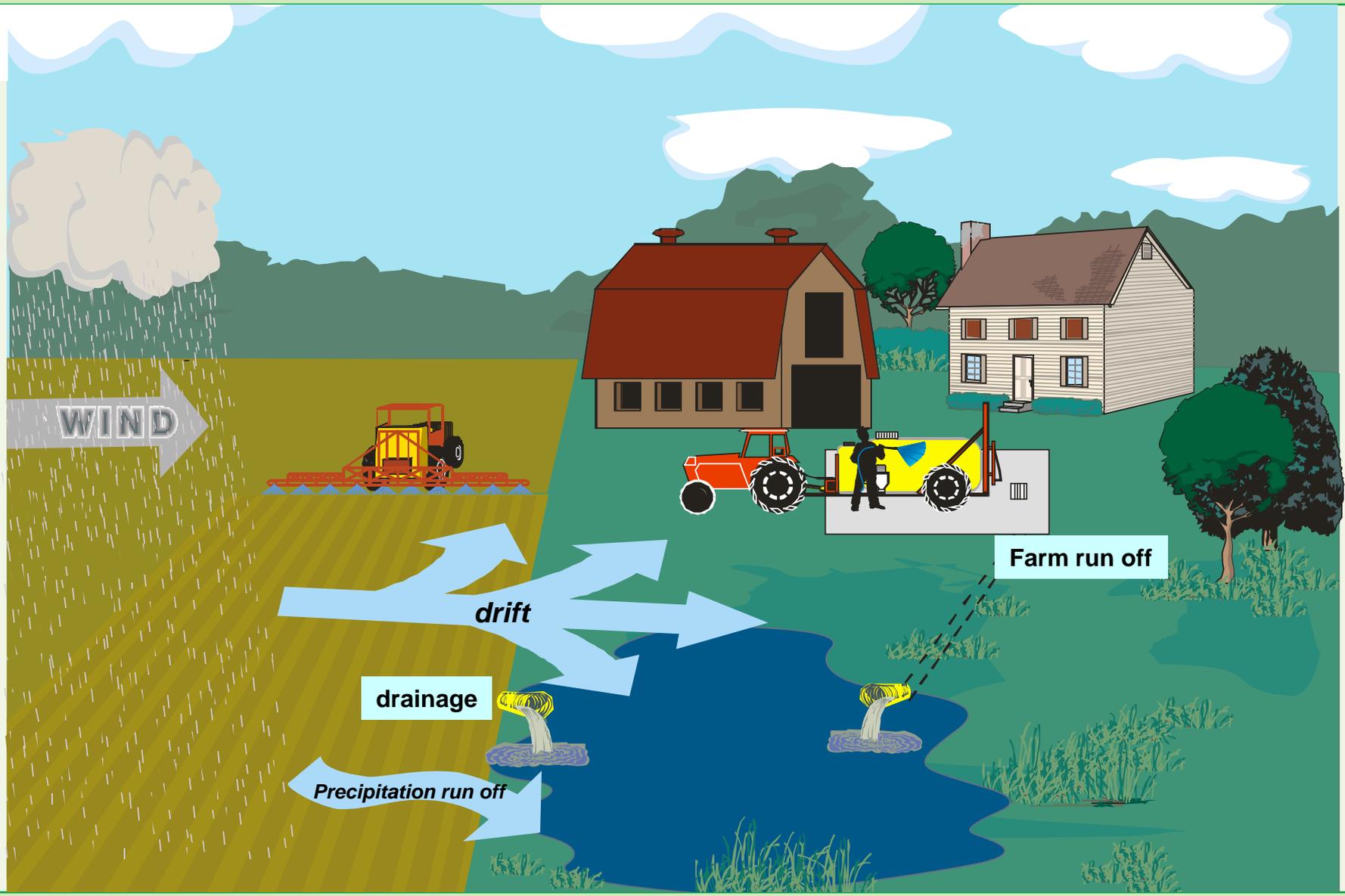


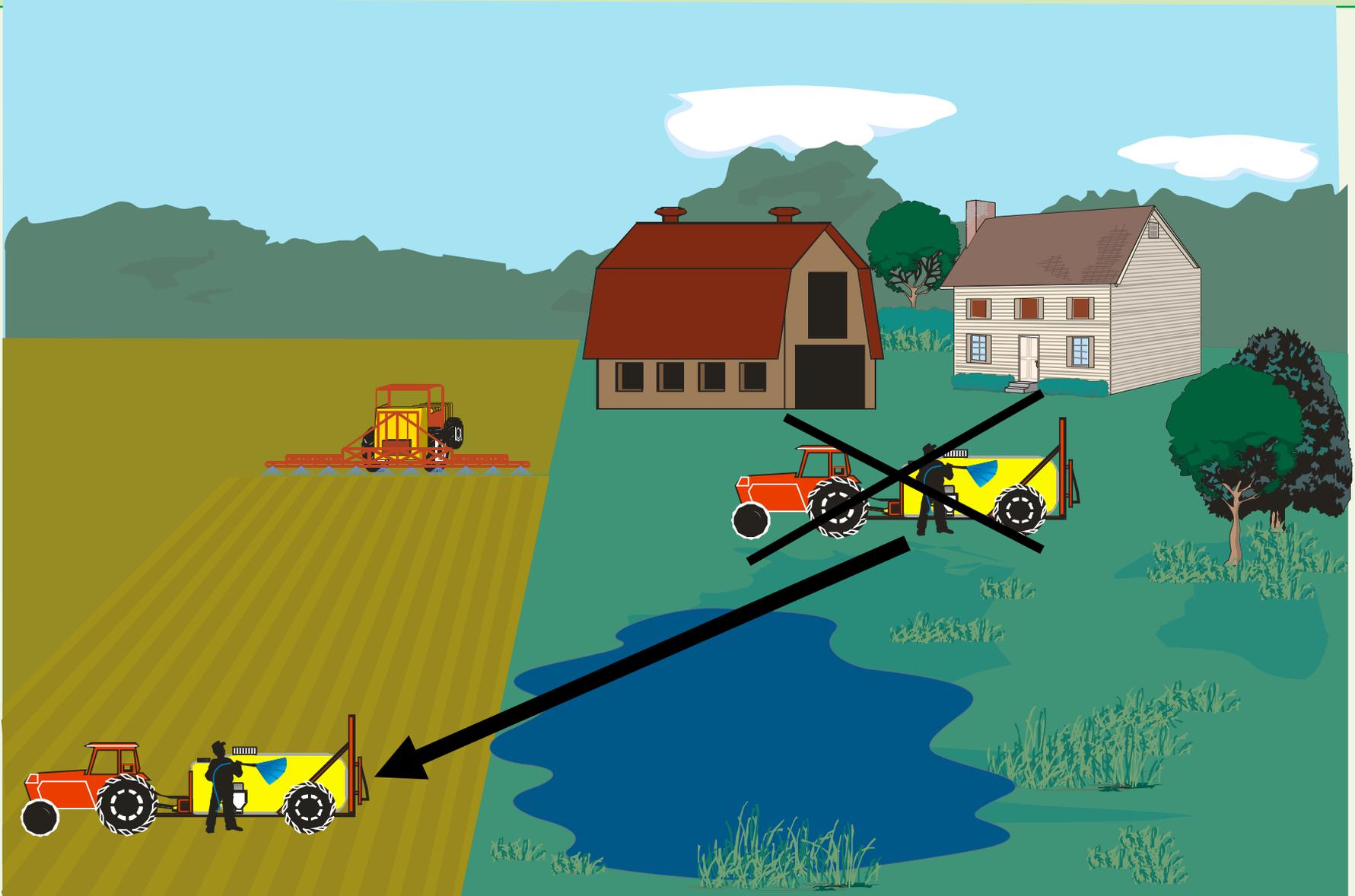
# Situation of sprayer cleaning in Germany - is there a chance for biobeds?

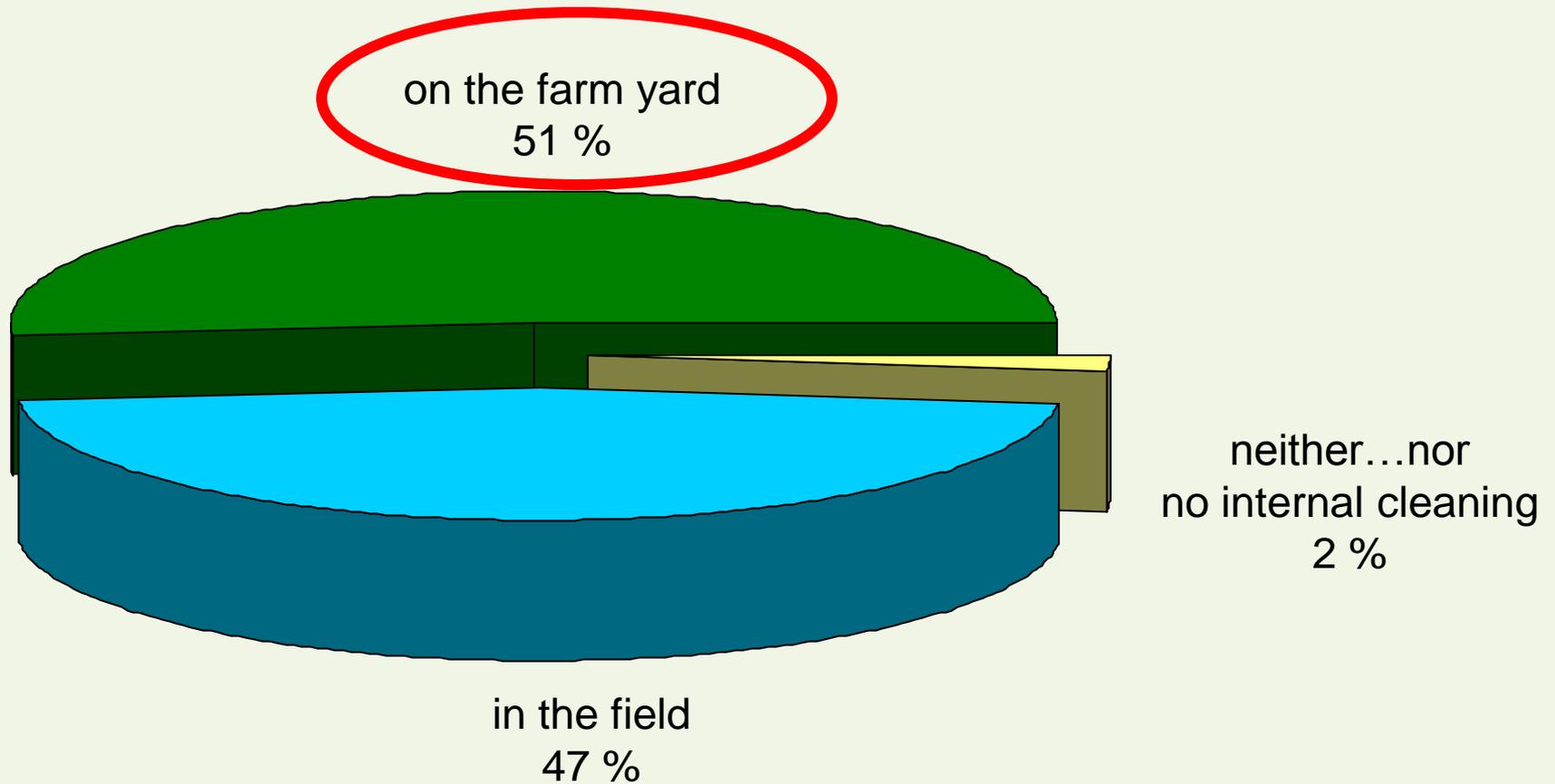
Harald Kramer  
Chamber of agriculture North Rhine Westphalia  
Plant Protection Service

# Pesticide entry into surface water

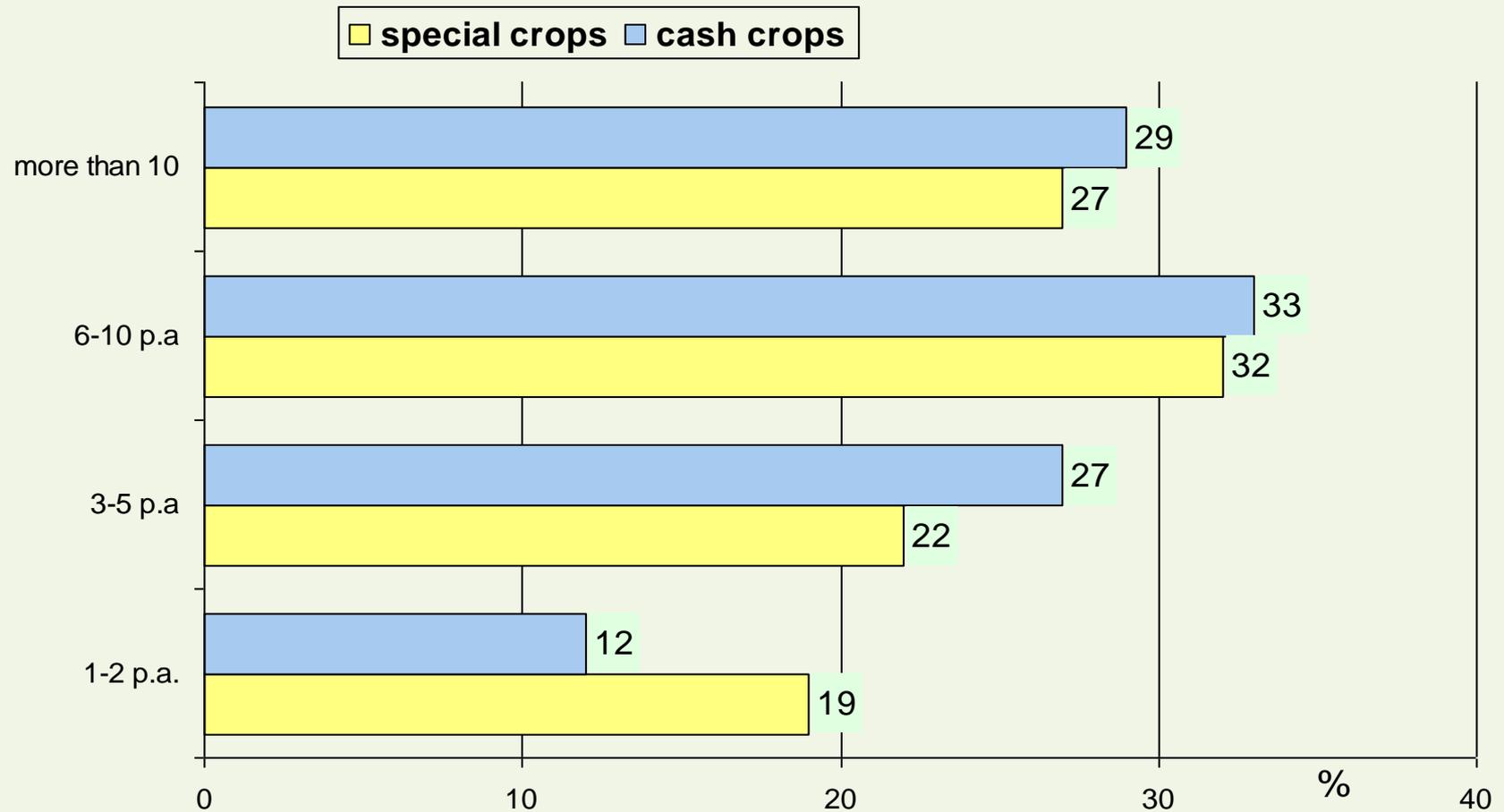


source: Wehmann



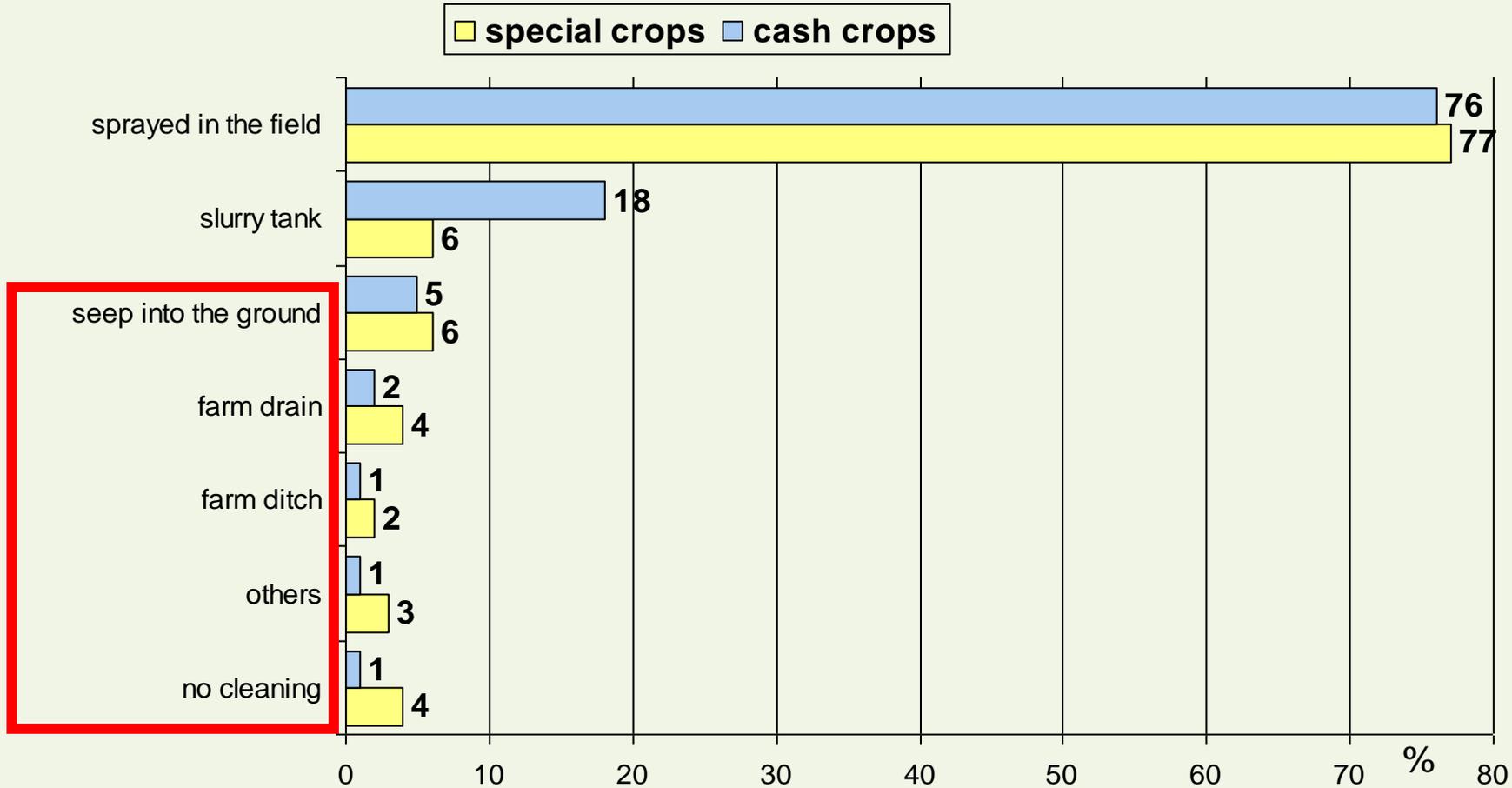


Source: IVA survey 2002

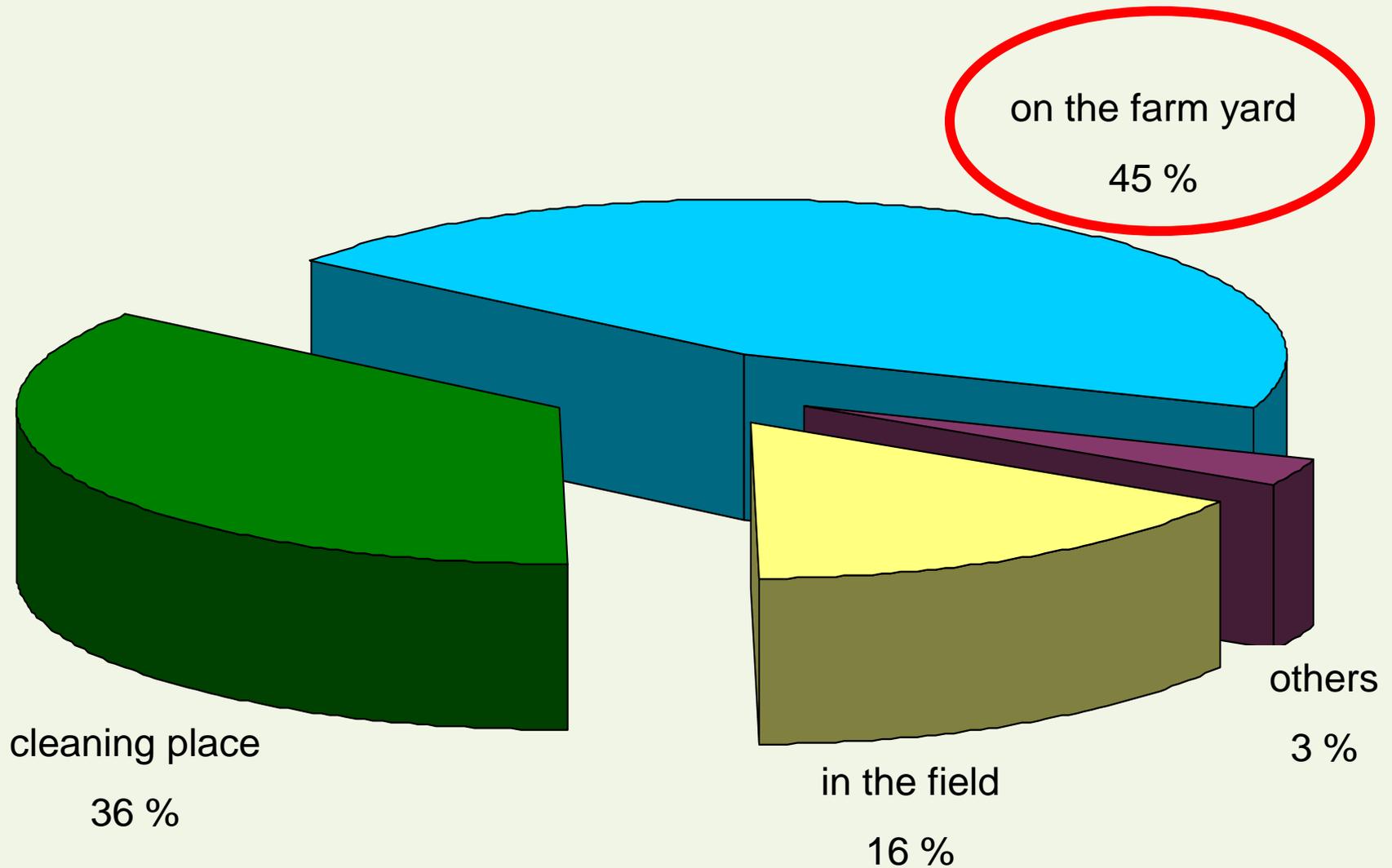


Source: IVA survey 2002

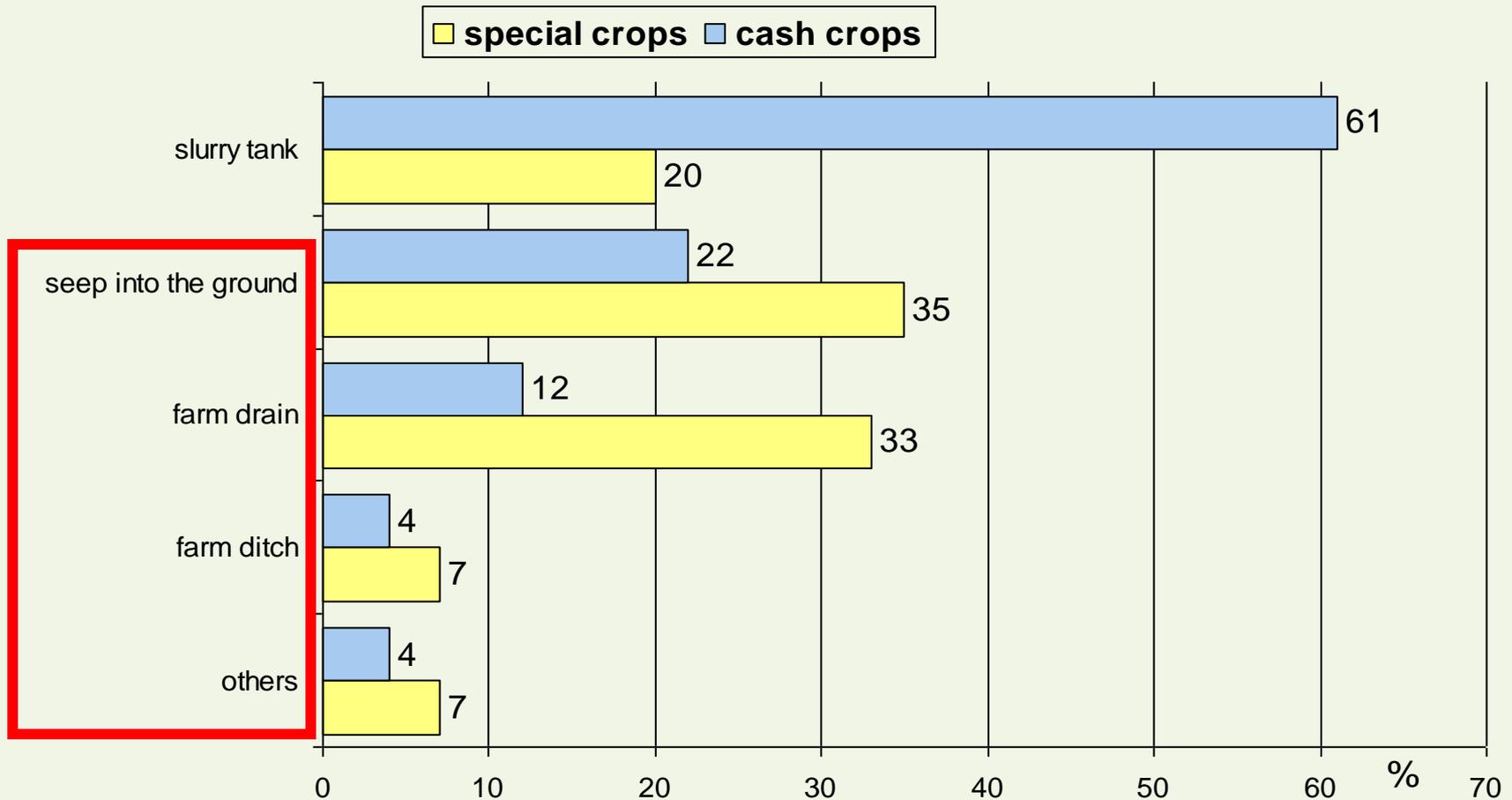
# Place of disposal of the rinsing water



Source: IVA survey 2002



Source: IVA survey 2002



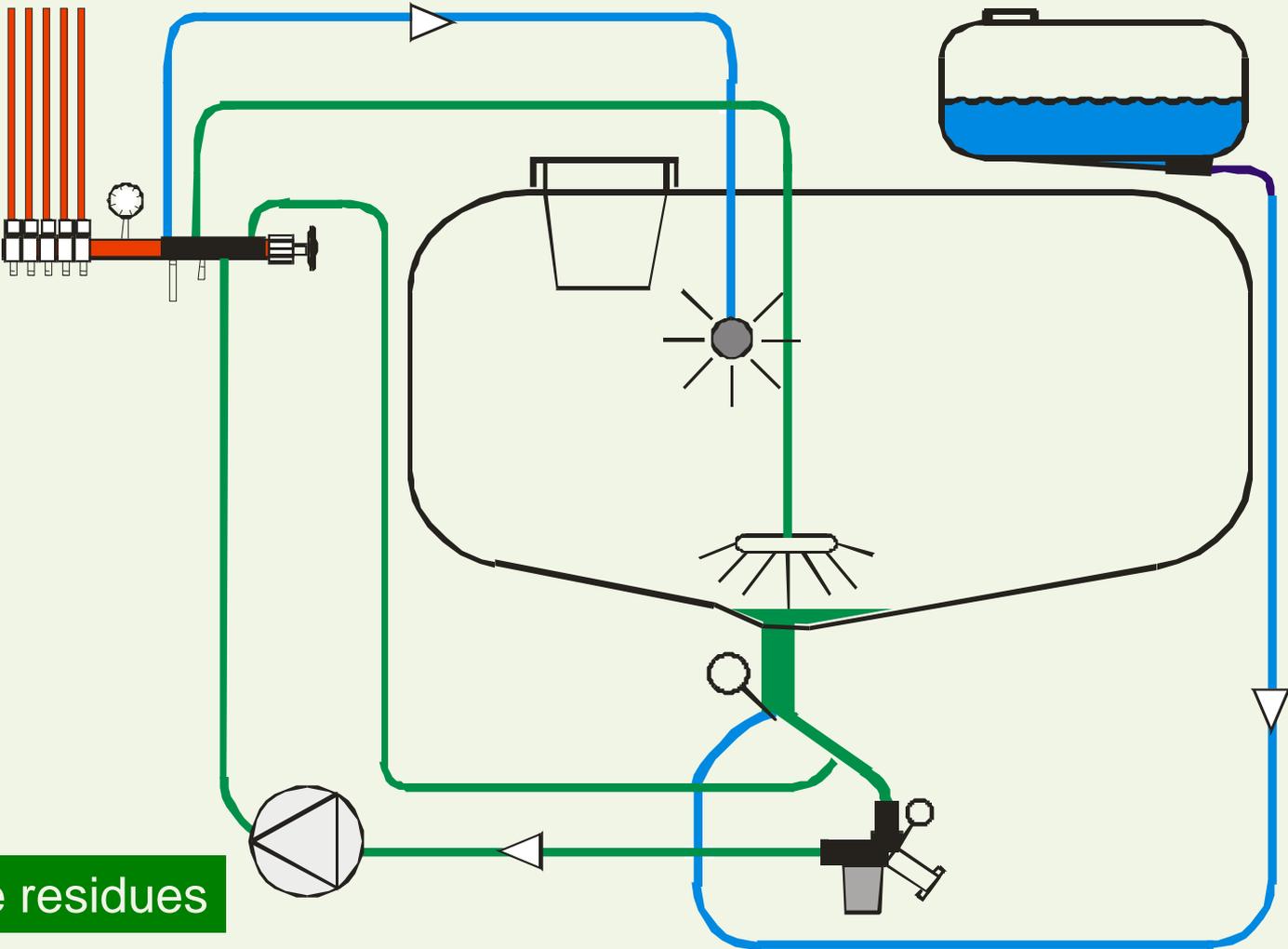
Source: IVA survey 2002





Non rarefiable residues

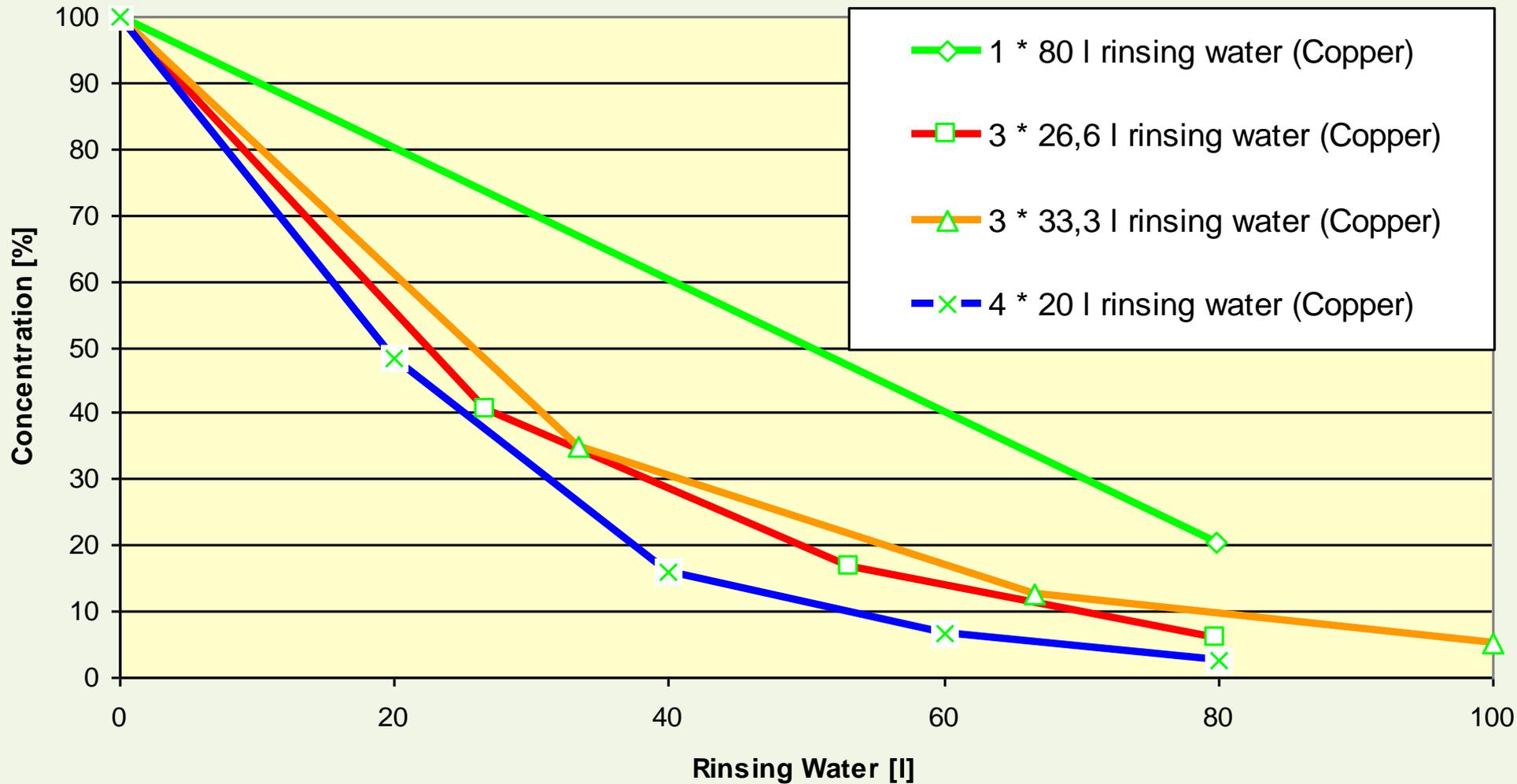
Rinsing water



rarefiable residues

source: Wehmann





source: Wehmann



High pressure cleaner



Spraying tube with nozzle



Cleaning brush

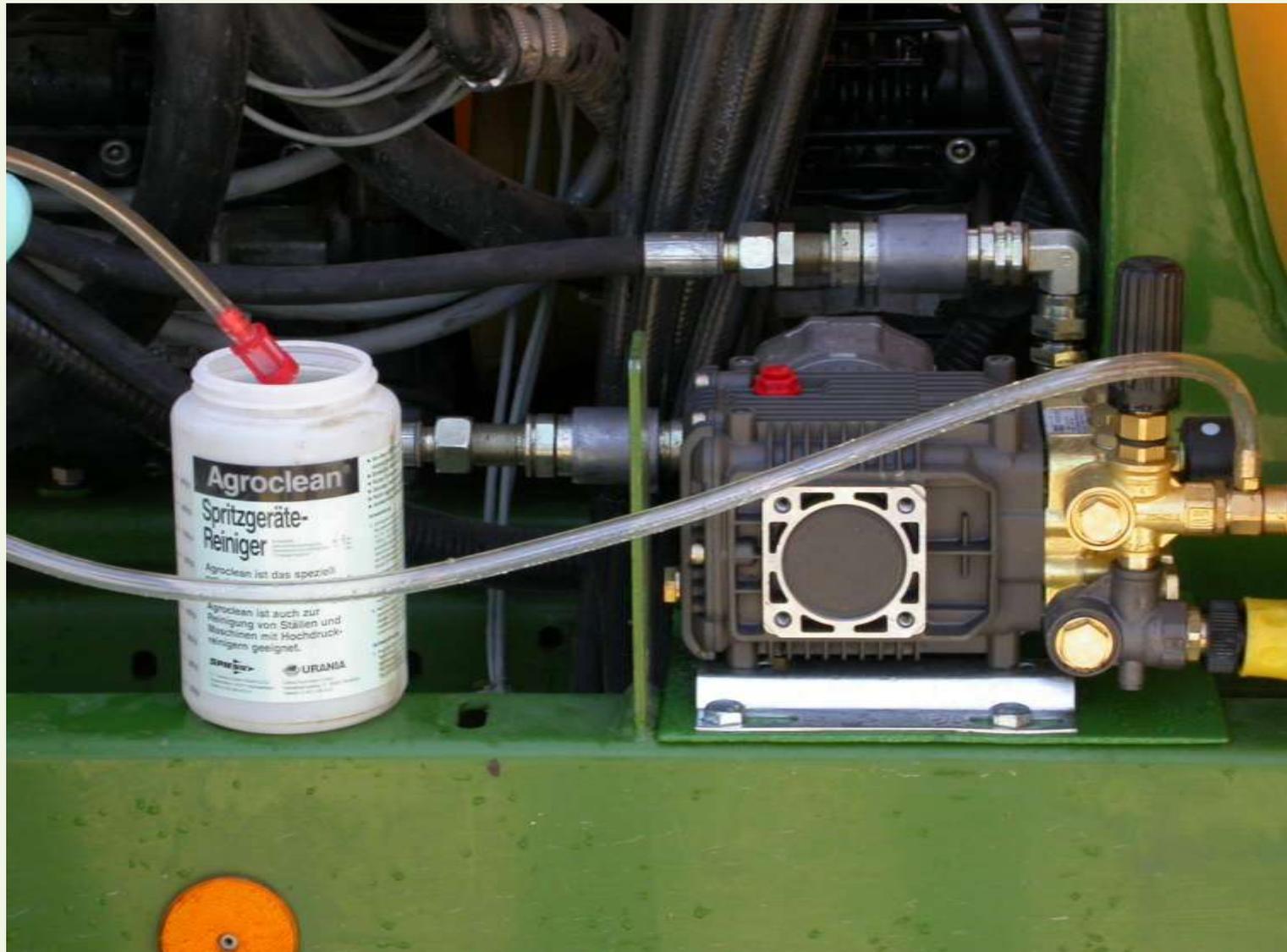




# Spraying tube with adjustable nozzle











equipment	time	Water consumption	cleaning efficacy
<b>brush (3 bar)</b>	15 min	150 l	64 %
Spraying tube (2,5 bar)	30 min	65 l	69 %
High pressure kit (15 bar)	20 min	65 l	76 %

source: Wehmann

# Older sprayer $\Rightarrow$ retrofit?





- Connection on free (retrofitted) valve
- High pressure hose
- Adjustable nozzle
- Water from the rinsing tank
- Low pressure system

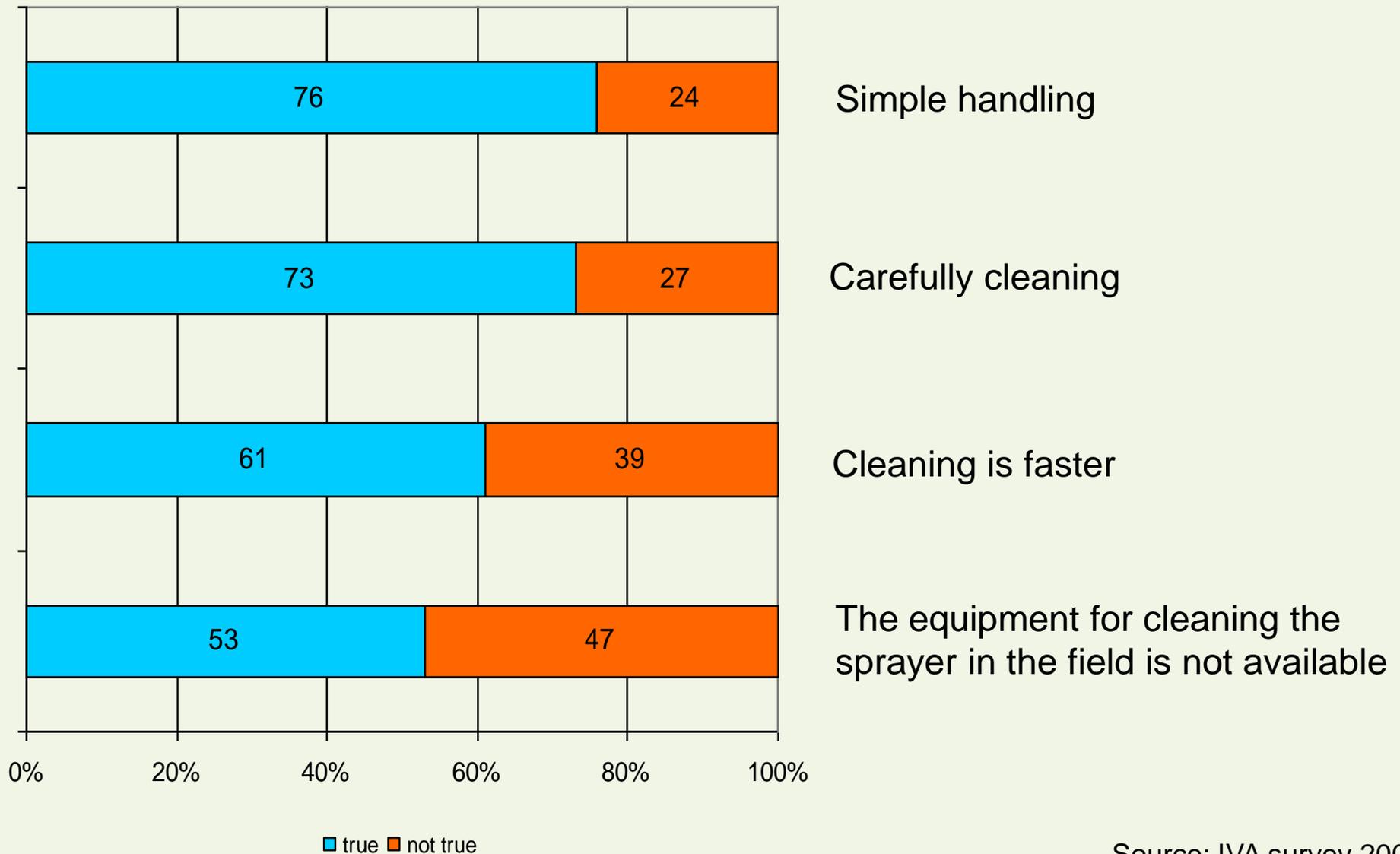
⇒ Working pressure from the sprayer pump





- 100 l - tank
  - Suction filter
  - 12 V – pump 10 bar
  - High pressure hose
  - Adjustable nozzle
  - Water from the rinsing tank
  - Low pressure system
- ⇒ Working pressure from the external pump

# Why do you clean on the farm yard?



Source: IVA survey 2002

- Small farmer (want to clean on the farm yard)
- Orchard sprayer (difficult to fix cleaning equipment on the mistblower, especially fresh water tanks)
- Farm communities (sharing one sprayer)
- .....



Source: HARDI

Thank you for your attention

