

Consumer Issues - Which Ready to Use Should One Use?



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Insecticidal solutions for home gardeners

- **Assumptions**

- Home gardeners will want to treat vegetables and stink bugs with “Ready to Use” (RTU) products commonly found in retail outlets
- Stink bugs will be exposed to dry residues on surfaces and to direct sprays



Insecticidal solutions for home gardeners

- Objectives
 - Evaluate efficacy of “Ready to Use” (RTU) products commonly found in retail outlets
 - Survival of adults, nymphs (early instar, 2nd), and eggs
 - Test efficacy of dry residues and direct sprays
 - Investigate recovery from exposure to synthetic pyrethroid (permethrin) and neonicotinoid (acetamiprid)
 - Test efficacy of growth regulator (azadirachtin)

Materials and Methods

- Stink bugs obtained from field (adults) and colonies (nymphs, eggs)
- Products formulated as RTUs
- Applications
 - Dry residues - bioassay arenas sprayed, allowed to dry 48 hours
 - Direct sprays - stink bugs placed in bioassay arenas, sprayed with insecticides

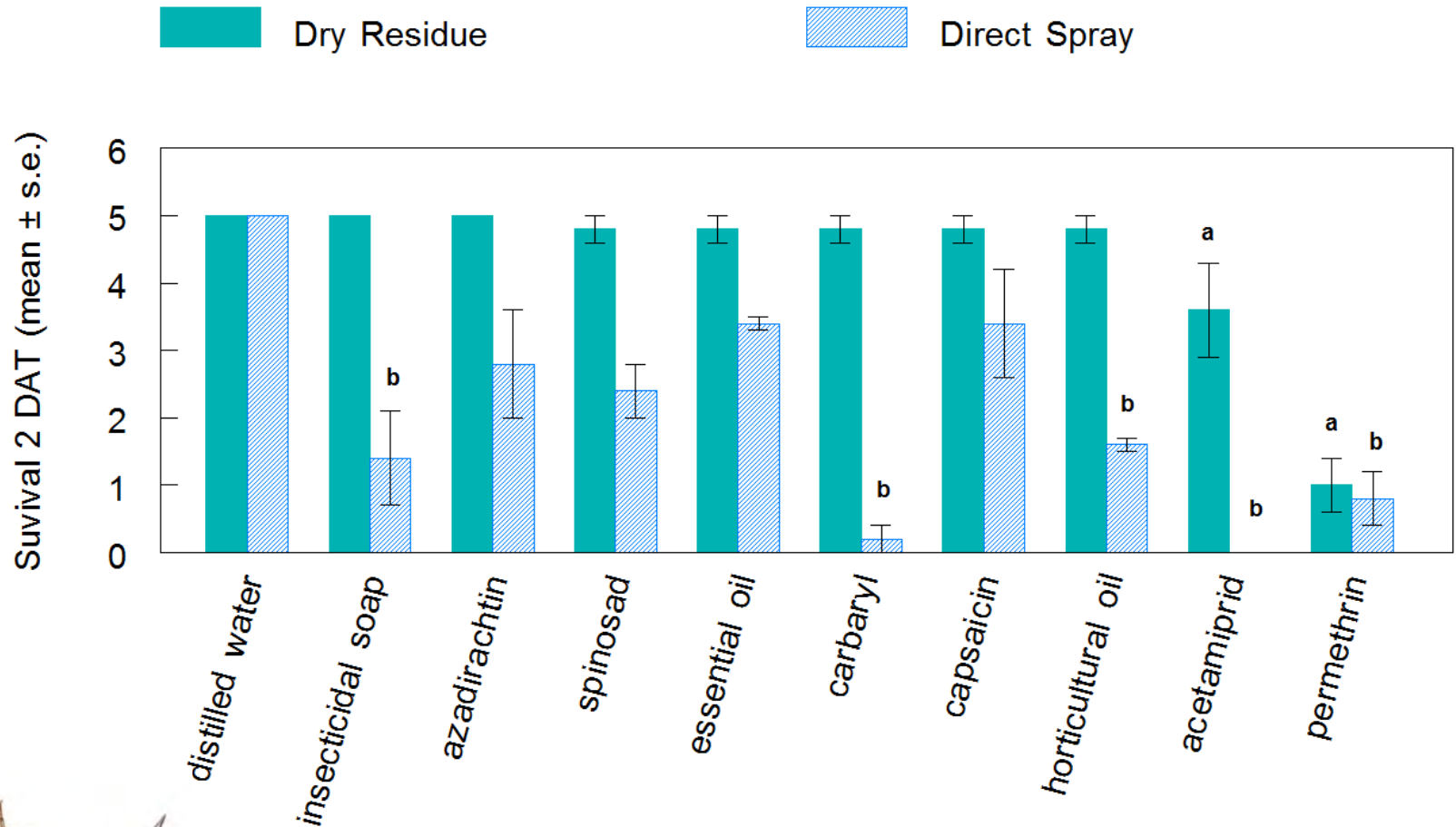


Manufacturers, Products, AIs, Rates - all labeled for use on vegetables, ornamentals, fruits

- Bonide, Eight, permethrin, 0.02%
- Bonide, All seasons hort. spray oil, pet. oil. 2%
- Bonide, Hot pepper wax, capsaicin, 0.00001125%
- Bonide, Insecticidal soap, pot. salts f.a., 1%
- Bonide, Capt. Jack's dead bug, spinosyn A&D, 0.001%
- Shultz, Garden safe fungicide 3, neem oil, 0.9%
- Ecosmart, Garden insect killer, rosemary oil 0.25%, peppermint oil 0.25%, thyme oil 0.25%, clove oil 0.25%
- Ortho, Fruit, flower, and vegetable, acetamiprid, 0.006%
- Garden tech, Sevin, carbaryl, 0.126%
- Distilled water control

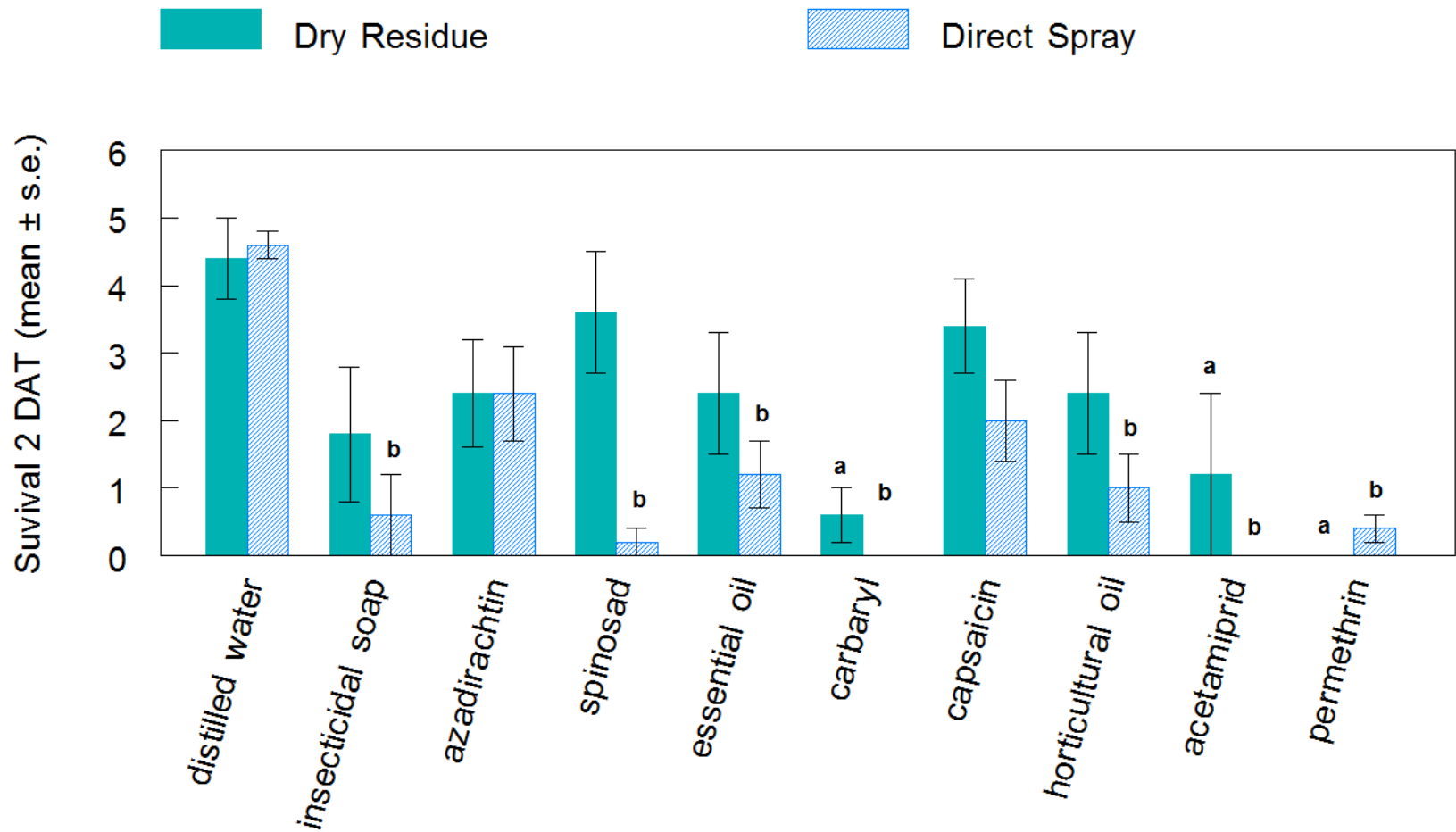


Effect of insecticides on adult survival



a = different from control in residue study ($p < 0.05$)
b = different from control in direct spray study ($p < 0.05$)

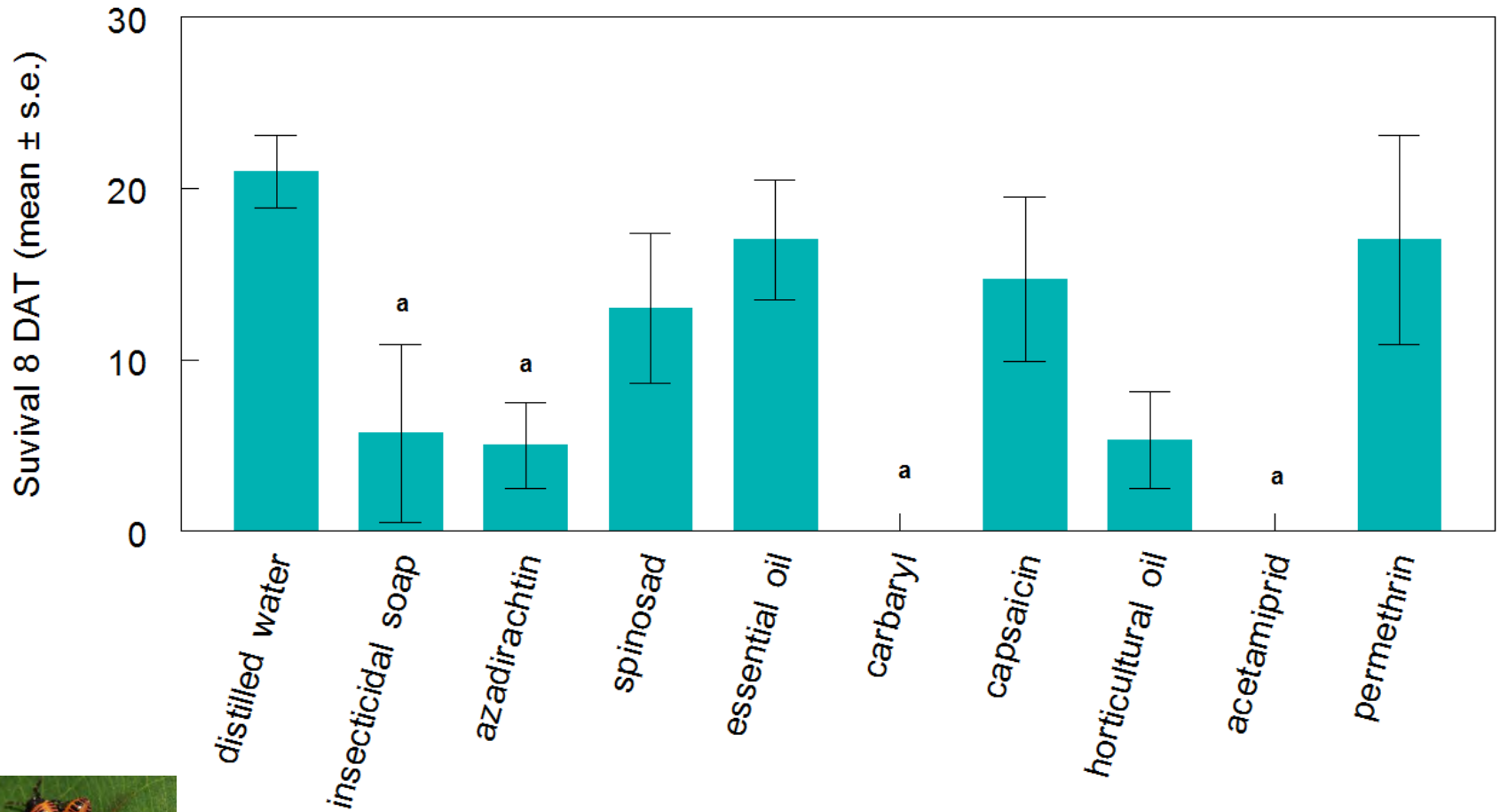
Effect of insecticides on nymphal survival



a = different from control in residue study ($p < 0.05$)

b = different from control in direct spray study ($p < 0.05$)

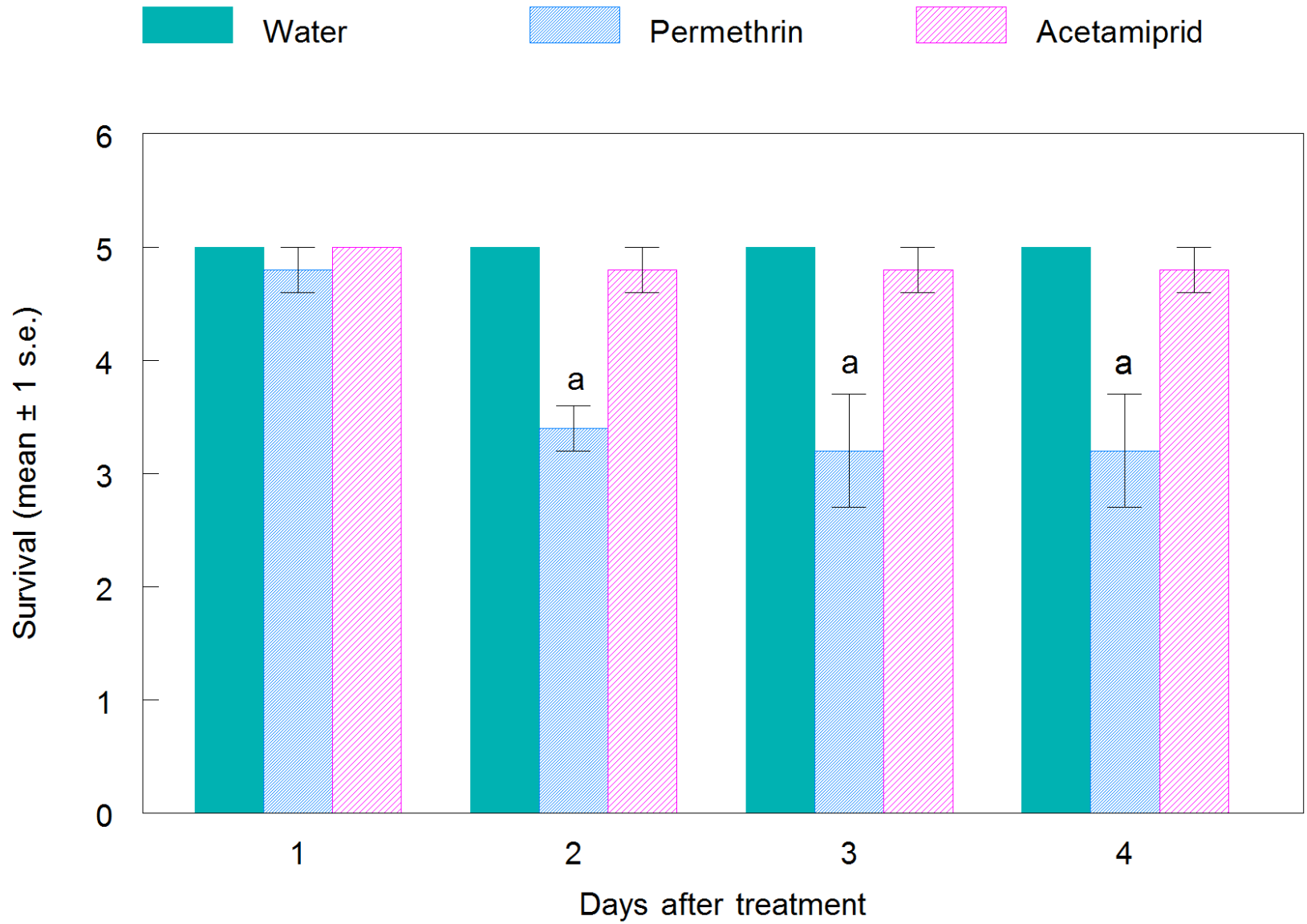
Effect of insecticides on egg survival



a = different from control ($p < 0.05$)

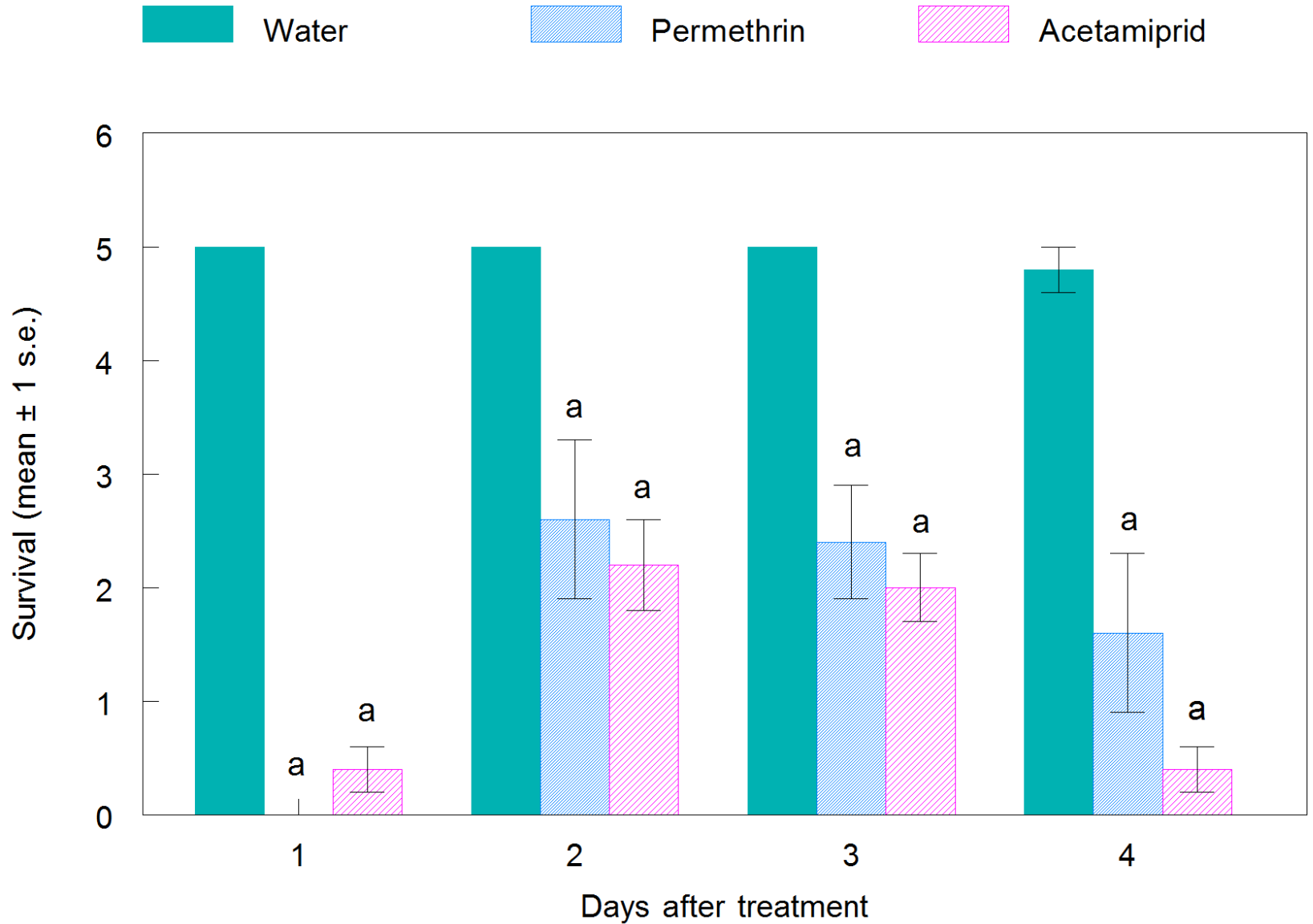


Effects of dry residues on adults



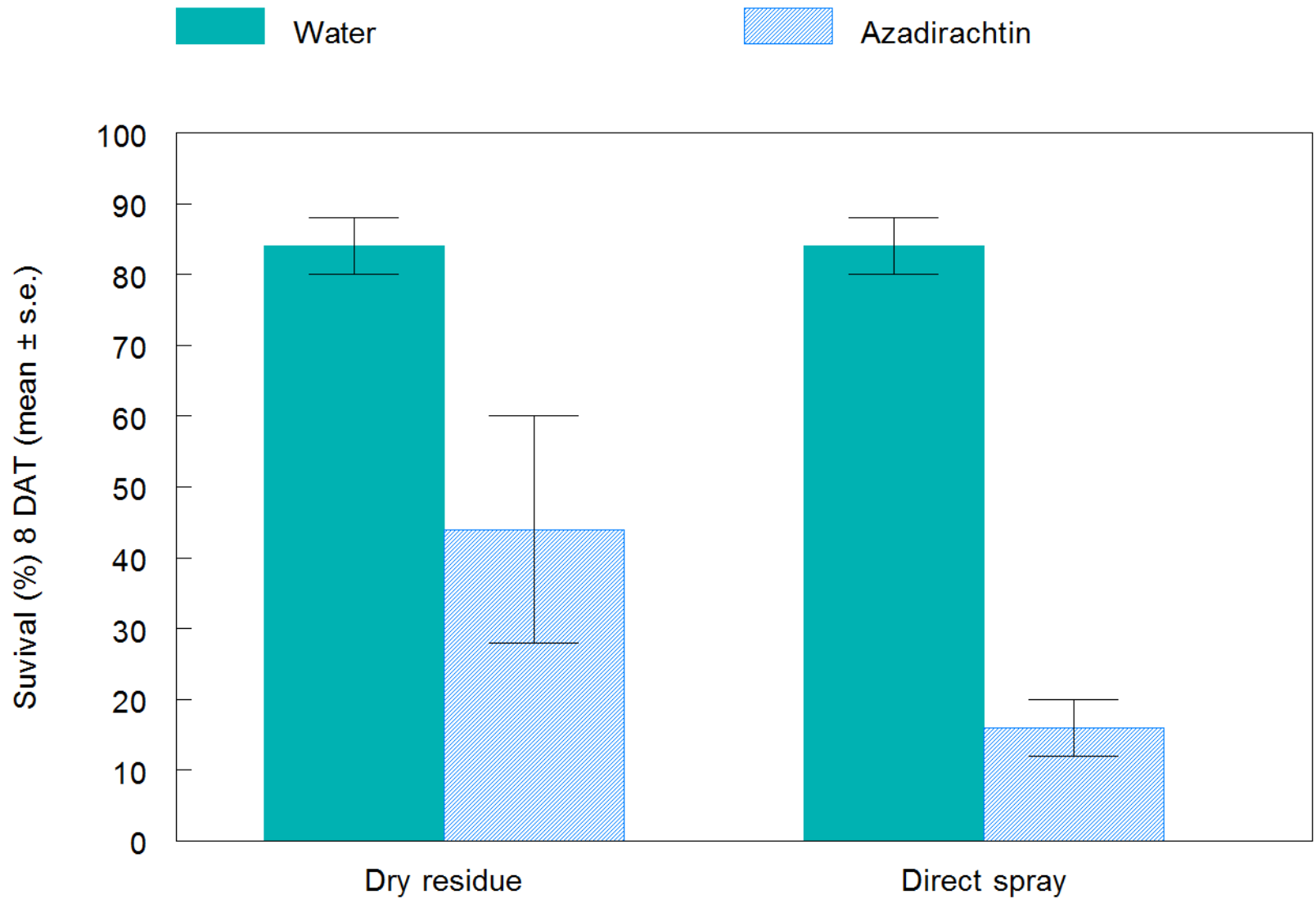
a = different from control ($p < 0.05$)

Effects of direct sprays on adults



a = different from control ($p < 0.05$)

Effect of azadirachtin on nymphal survival



Summary

- Carbaryl, permethrin, insecticidal soap, horticultural oil, spinosad, azadirachtin, and acetamiprid were active as direct sprays, dry residues, or both
- Mixtures of essential oils and the active ingredient capsaicin exhibited little or no activity
- Potential recovery of *H. halys* following applications of permethrin and acetamiprid deserve further attention
- Before RTU insecticides can be confidently recommended, efficacy of these products as crop protectants should be evaluated in bioassays conducted under greenhouse and field conditions



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