

MASS TRAPPING OF COCOA MIRIDS, *Distantiella theobroma* (Dist.) and *Sahlbergella singularis* Hagl (Heteroptera: Miridae) ON FARMERS' FARMS AND THE EFFECT OF PHEROMONE TRAP PLACEMENT ON CATCHES

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INTRODUCTION

- Mass trapping is being investigated as a possible method of controlling mirids in CRIG/CRUK/WCF mirid project.
- Cocoa mirids, *Sahlbergella singularis* and *Distantiella theobroma*; most important major insect pests in Ghana ; about 25-30% yield reduction





OBJECTIVES

- **To determine whether mass trapping will control mirids on farmers' farms**
- **To determine optimal height for trap placement**

MATERIALS AND METHODS

MASSTRAPPING

- **Treatments:** 150 traps/ ha; large water bottle trap with 1mg of the blend (diester: monoester)(μg) **1000:500** as lure. Control has one trap /0.4ha. Replicated 6-fold, from Nov. 2008 to Oct.2010.
- **Location:** Mfranor and Atiebu in Suhum District on farmers' organic cocoa farms.
- **Data analysis:** ANOVA

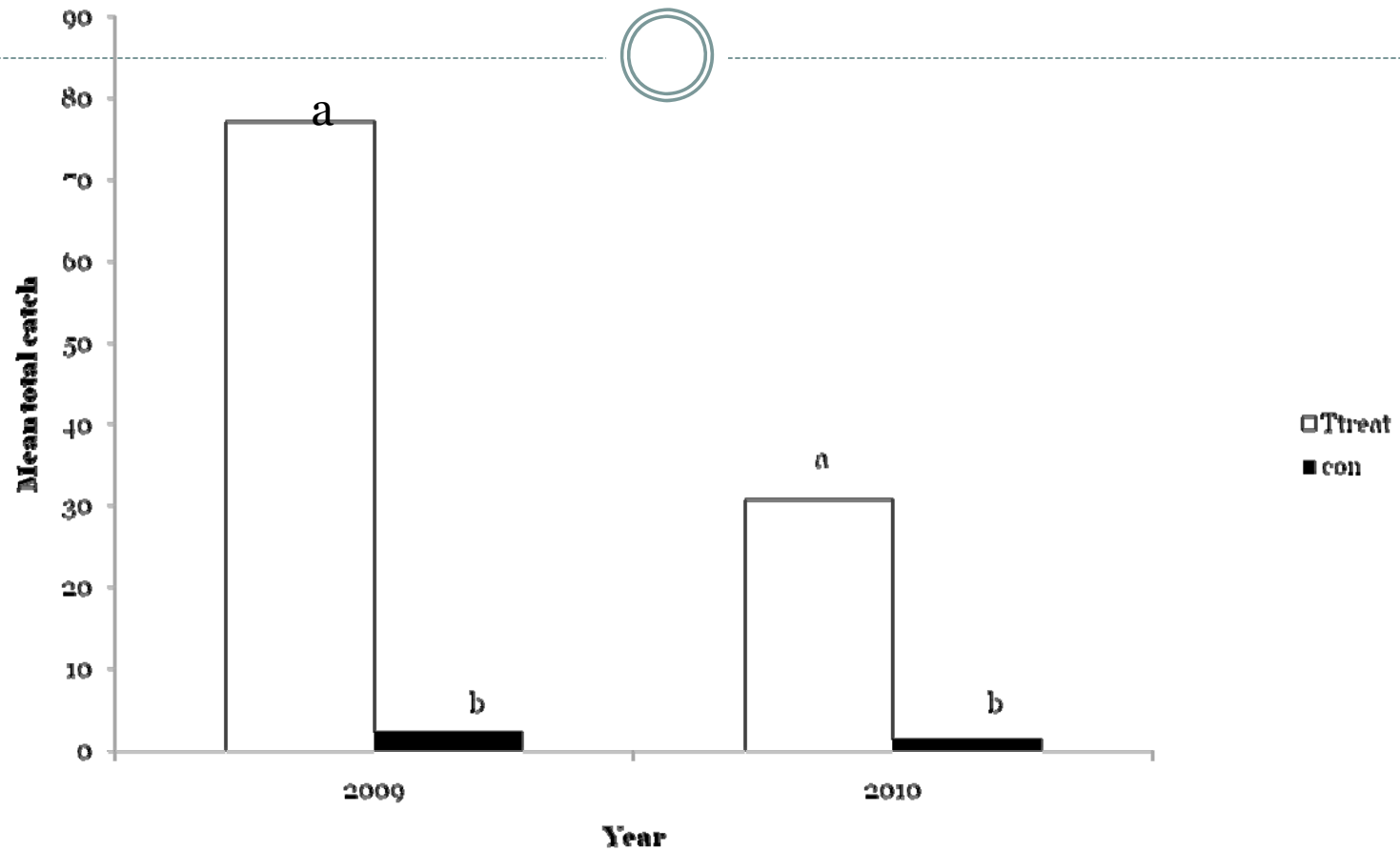


Fig. 1. Mean total catches of male *Sahlbergella singularis* in pheromone treated and untreated farmer's organic farms at Mfranor and Ateibu (6 replicates) Means with different letters are significantly different ($p < 0.05$) by LSD test after transformation of data to $\sqrt{x+0.5}$ and analysis of variance.

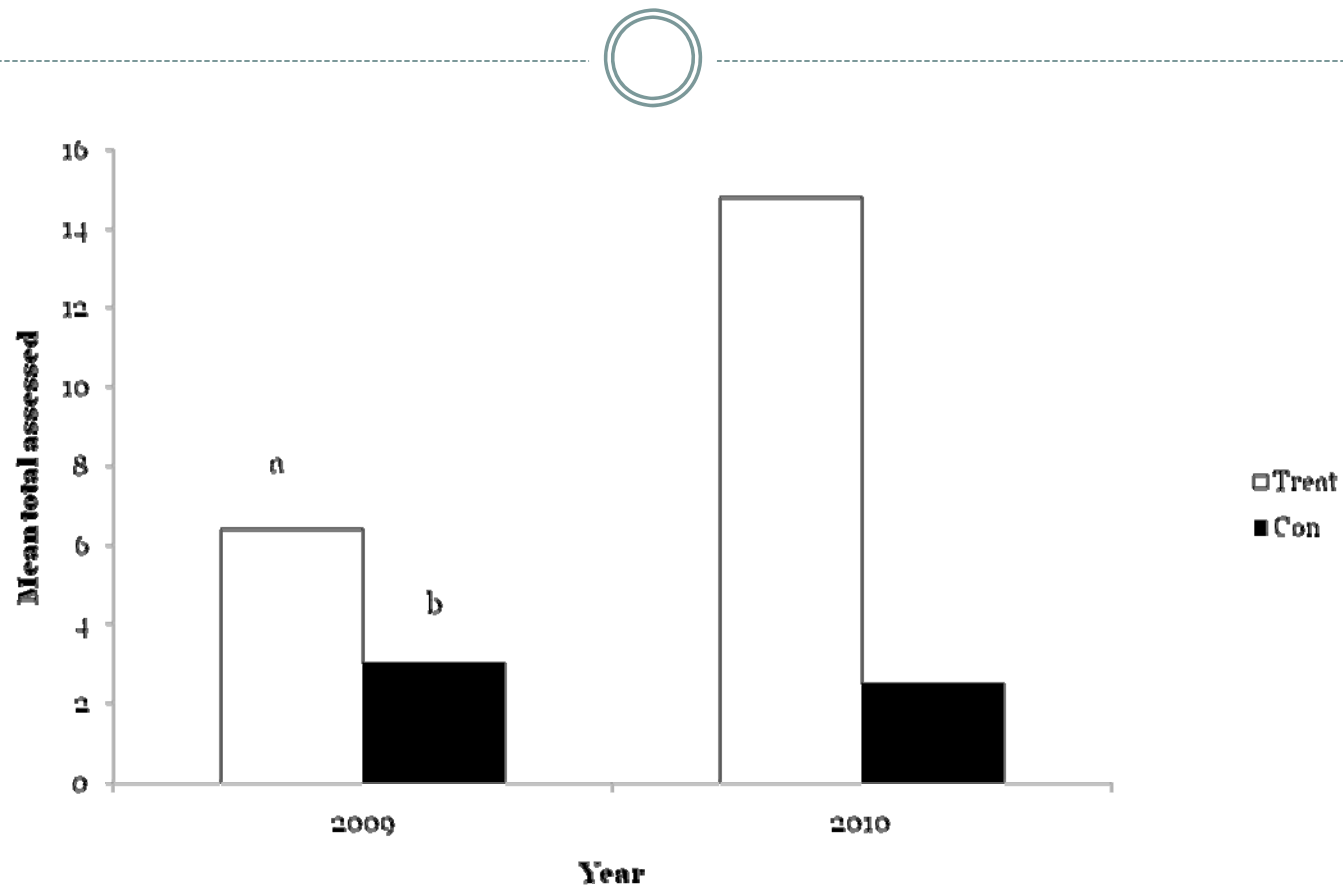


Fig 2. Mean total *Sahlbergella singularis* visually assessed in pheromone trapped in farmers organic farms and control at Mfranor and Ateibu (6 replicates). Means with different letters are significantly different ($p < 0.05$) by LSD test after transformation of data to $\sqrt{x+0.5}$ and analysis of variance.

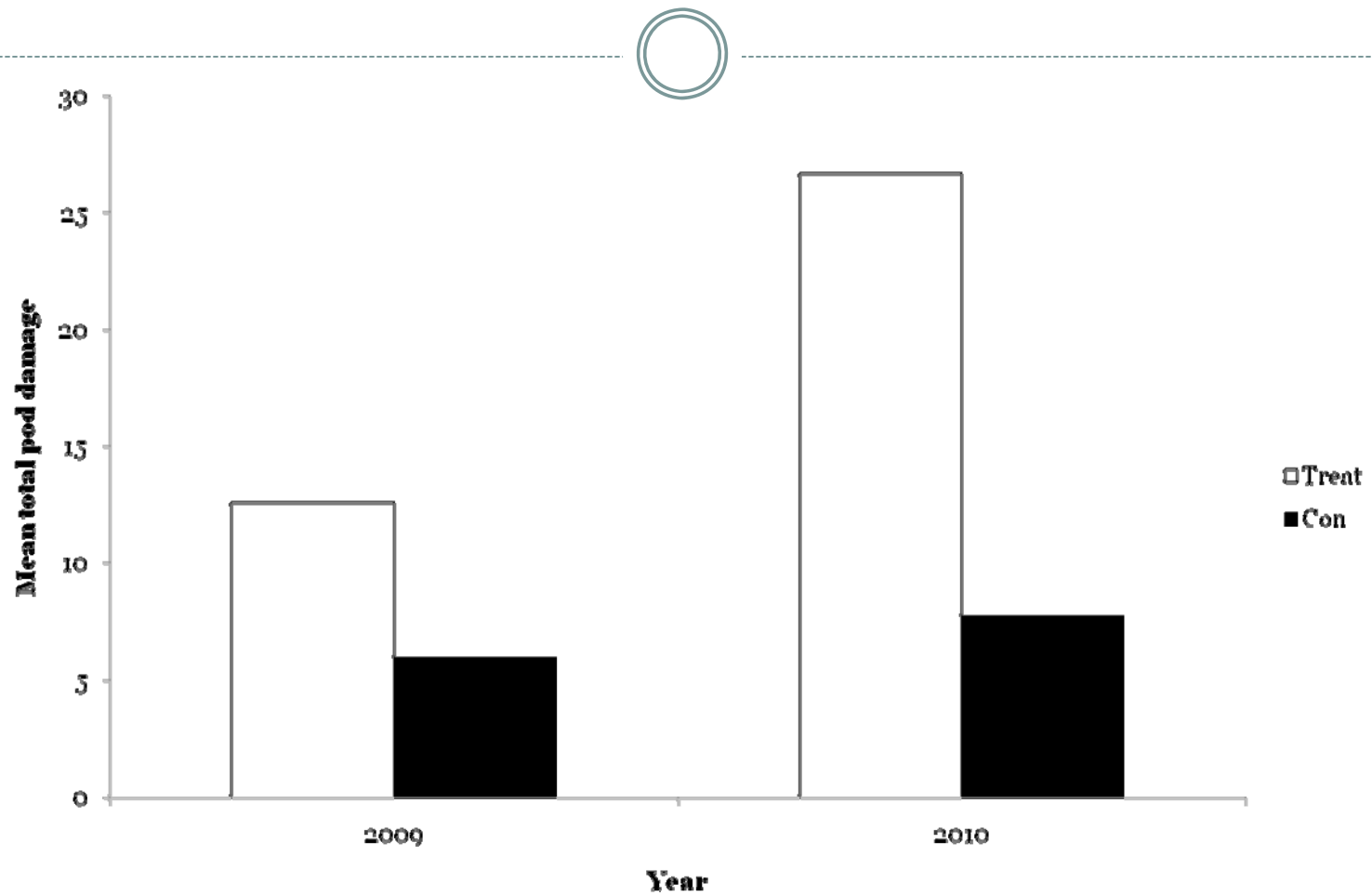


Fig.3. Mean total pod damage by *Sahlbergella singularis* and *Distantiella theobroma* in pheromone treated and untreated farmers' organic cocoa farms at Mfranor and Ateibu (6 replicates)

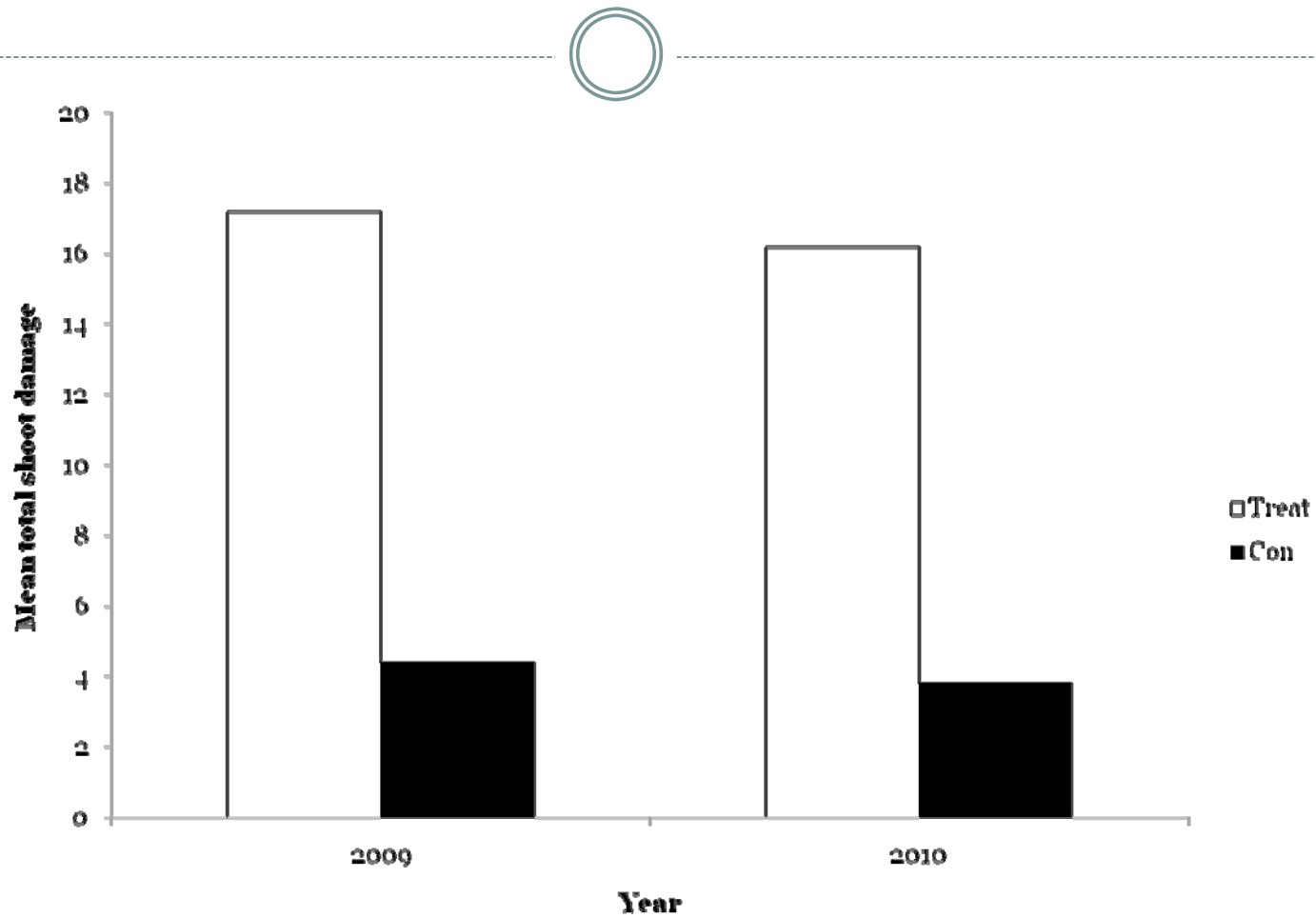


Fig. 4. Mean total shoot damage by *Sahlbergella singularis* and *Distantiella theobroma* in pheromone treated and untreated farmers' organic cocoa farms at Mfranor and Ateibu (6 replicates)

POSSIBLE REASONS FOR FAILURE



- Immigration of mirids trapped areas due to plots small sizes
- Lower trap density
- Unequal attractiveness of lure to mirids
- Differences in niches of mirids
- Traps not placed at optimum height

VERTICAL PLACEMENT



- **Treatments: i)** Four large water bottle traps with 1000:500 blend, placed at 4 heights ;1.8m, 2.7m, in canopy above 2.7m and above canopy on a single pole. Replicated 10-fold from March to August 2010 at Suhyen on farmer's farm.
- **ii)** Four traps placed one each in different trees as follows; below 1.8m in canopy, 1.8m,2.7m and above 2.7m in canopy. Fifth height is on a pole above canopy.
- Replicated 6-fold at on farmers' organic farms.
- **Data analysis:** ANOVA

Large water bottle



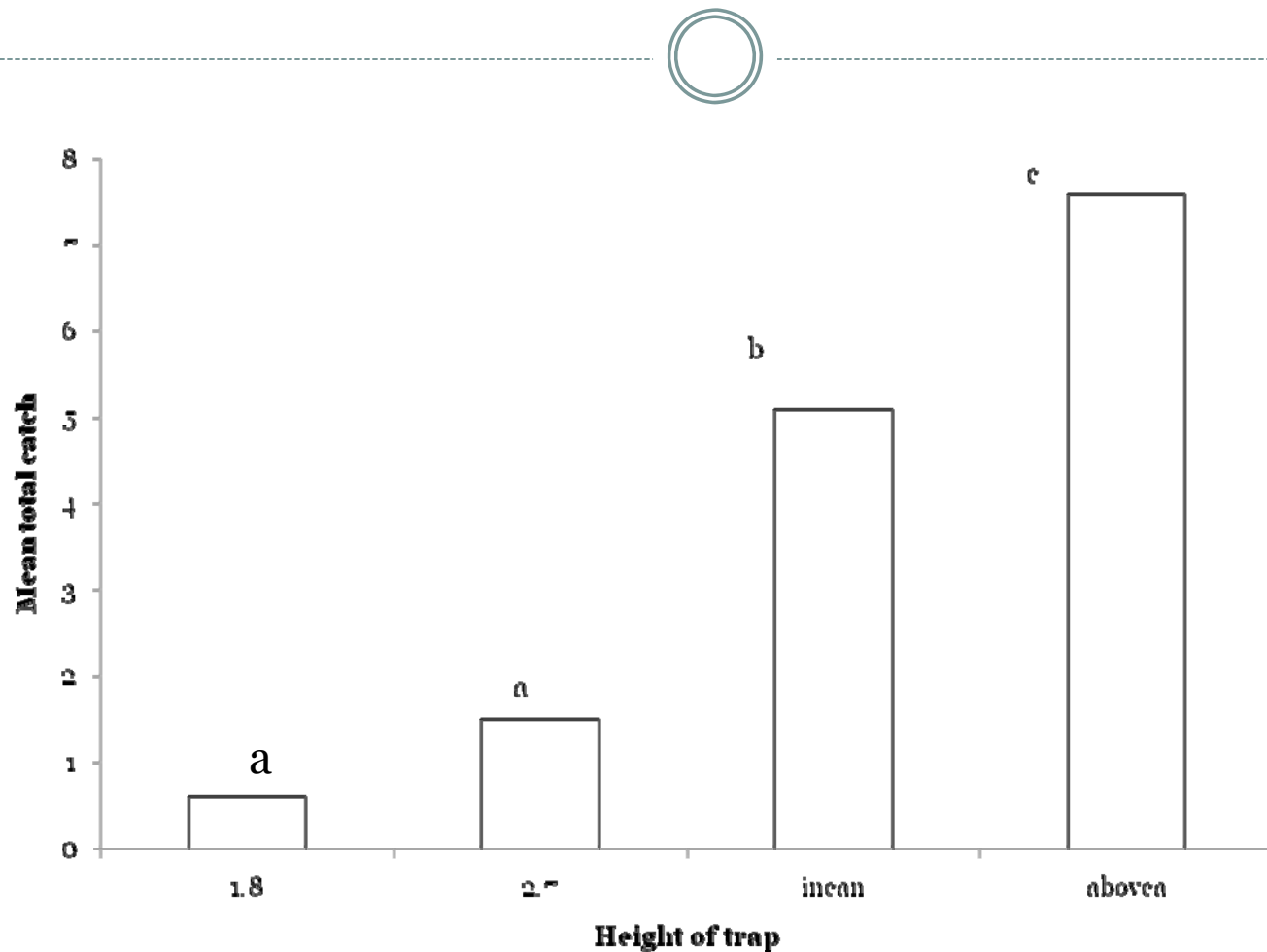


Fig. 5. Mean total trap catches of male *Sahlbergella singularis* in water bottle trap baited with synthetic pheromone at different heights on a single pole at Suhyen (March – August 2010, 10 replicates) . Means with different letters are significantly different ($p < 0.05$) by LSD test after analysis of variance.

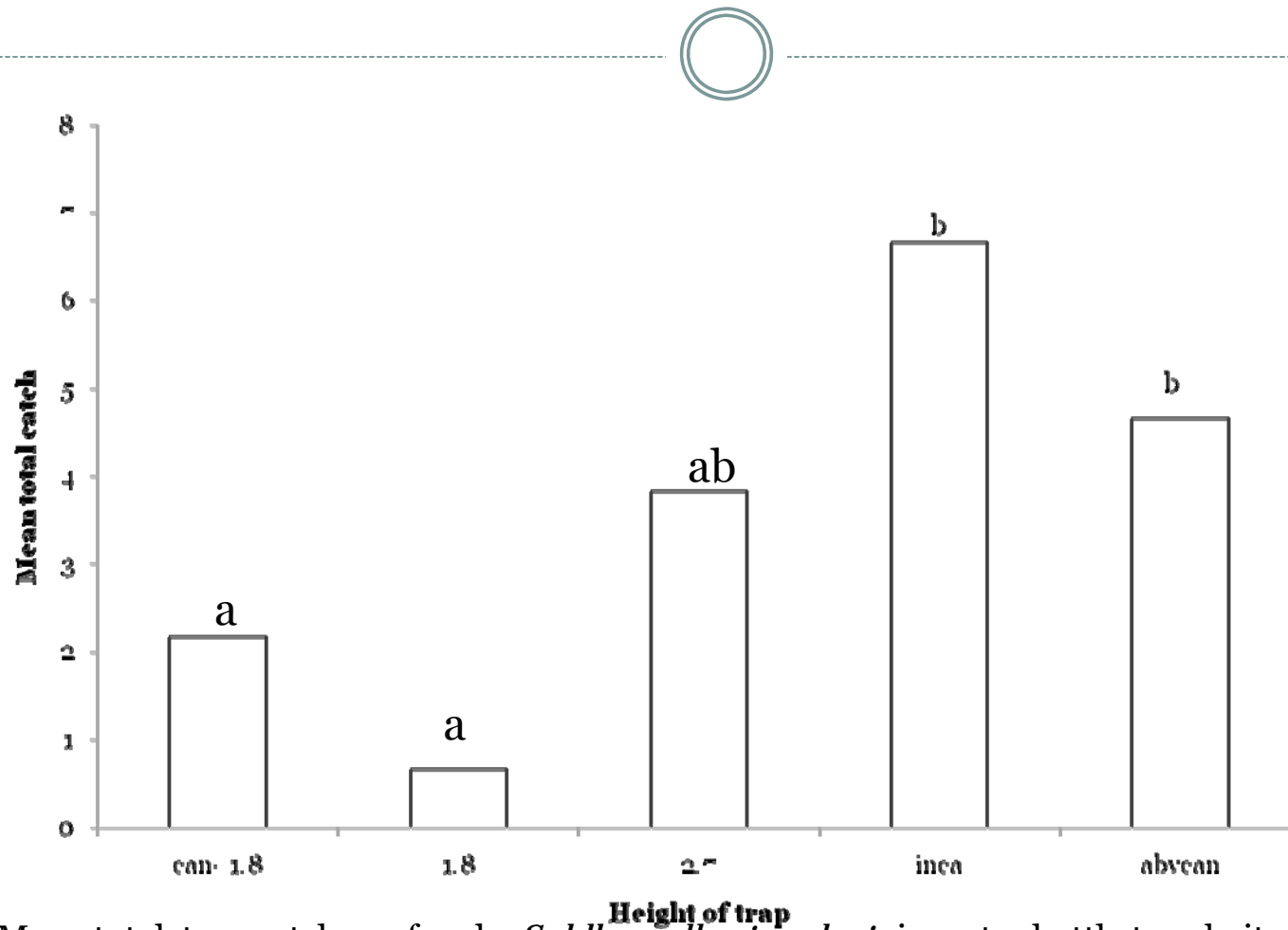


Fig.6. Mean total trap catches of male *Sahlbergella singularis* in water bottle trap baited with synthetic pheromone at different heights on different trees at Akwadum (March – August 2010, 10 replicates) . Means with different letters are significantly different ($p < 0.05$) by LSD test after analysis of variance.

CONCLUSIONS



- Mass trapping did not control mirids on farmers' organic farms at Mfranor and Ateibu in Suhum district.
- Placement of traps in canopy or as near to it as possible maximised trap catches of mirids.

FUTURE WORK



- Mass trapping in larger isolated plots at 230 traps/ha, placed in canopies or as near to them as possible.

ACKNOWLEDGEMENTS

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THANK YOU

