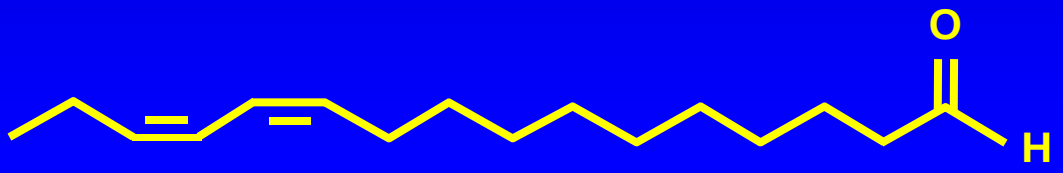
L.P.S. (Bas) Kuenen
USDA, ARS, SJVASC
Crop Protection & Quality
Parlier, CA 93648

Navel Orangeworm

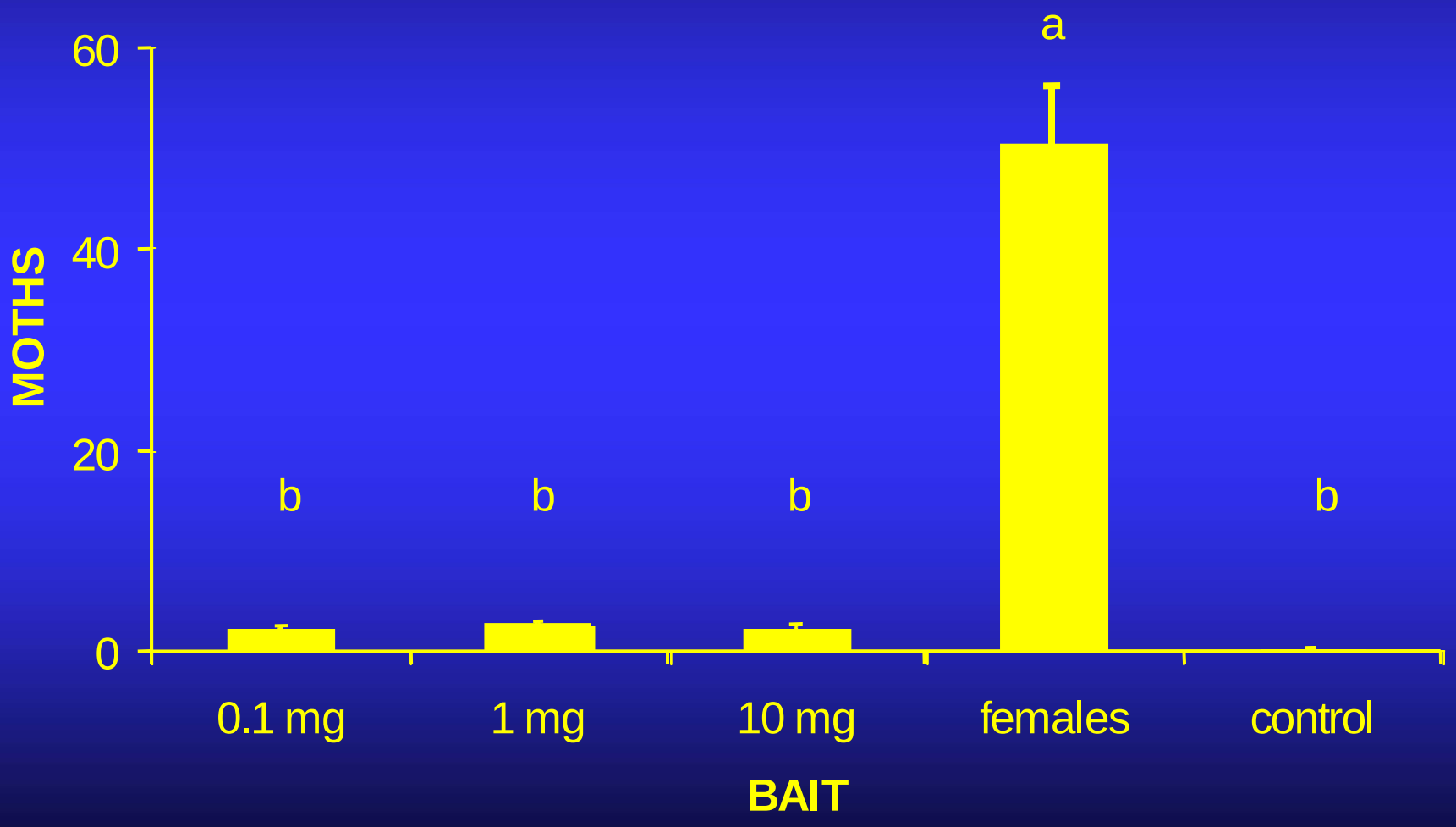
Sex Pheromone

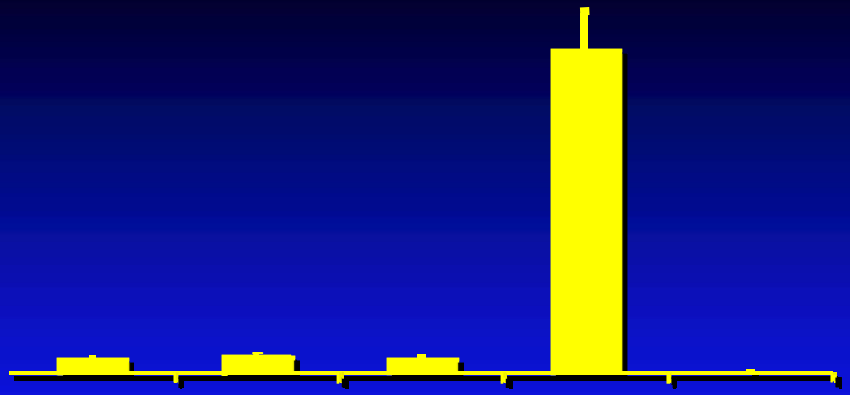
Z,Z-(11,13)-hexadecadienal; Z,Z-11,13:16Ald
(Coffelt et al., 1979)



Commercially available for 2001 field season (Bedoukian)

Moths captured in pheromone-baited sticky traps 28 MARCH--2 MAY 2001





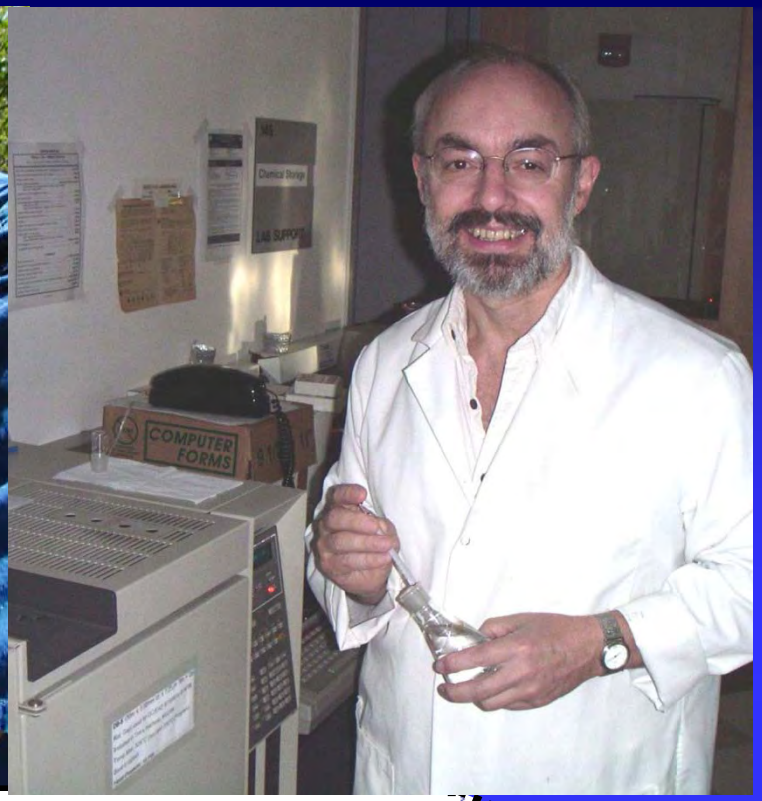
Poor activity as an attractant.

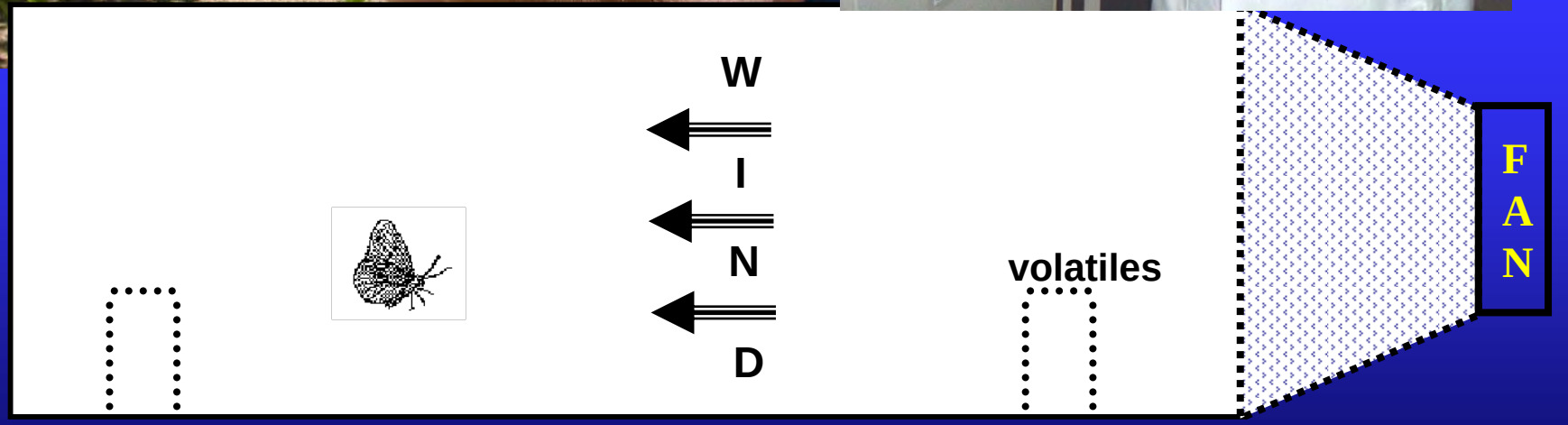
Suggests:

Missing components

Problems with chemistry

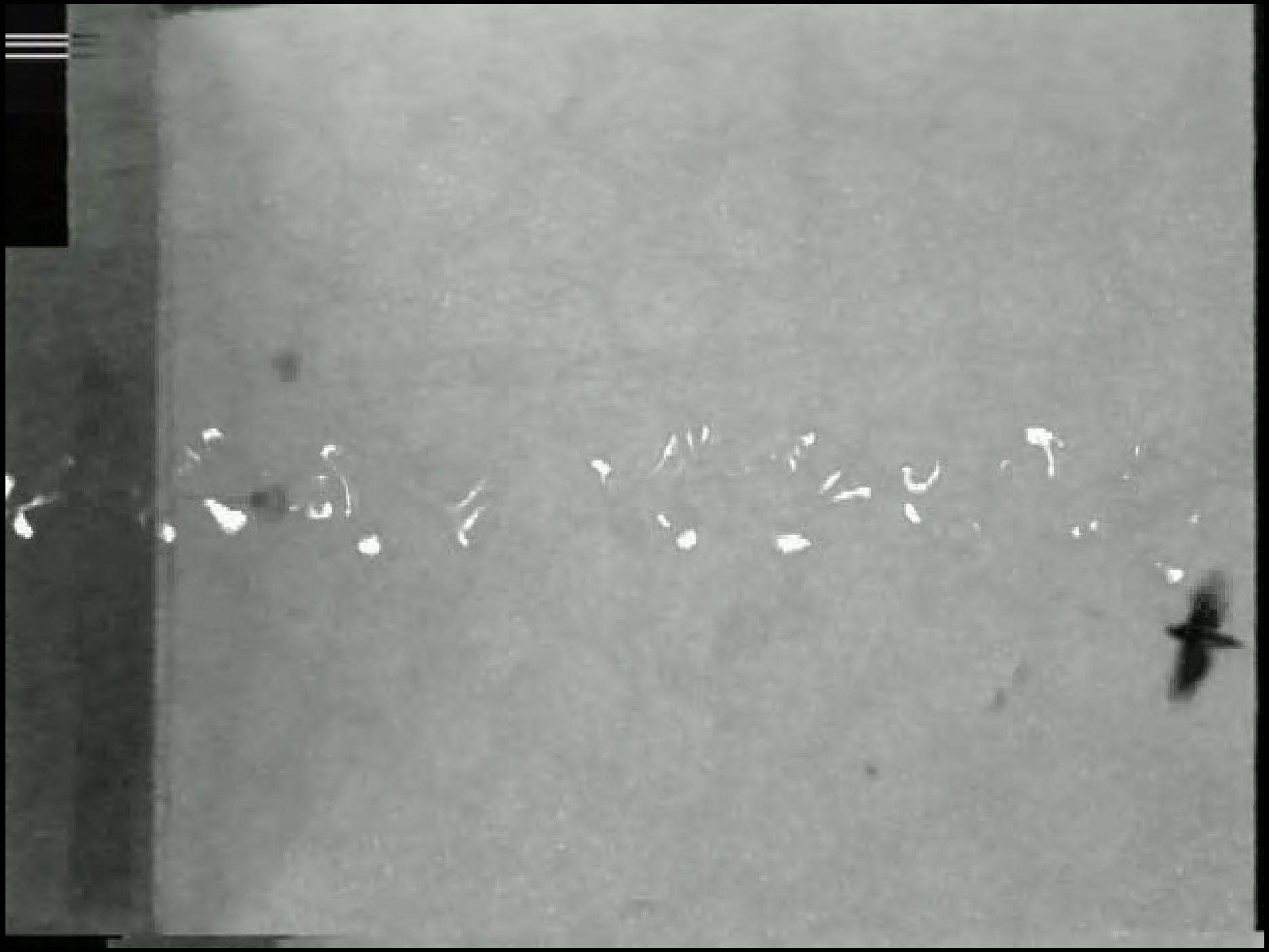
Problems with stability

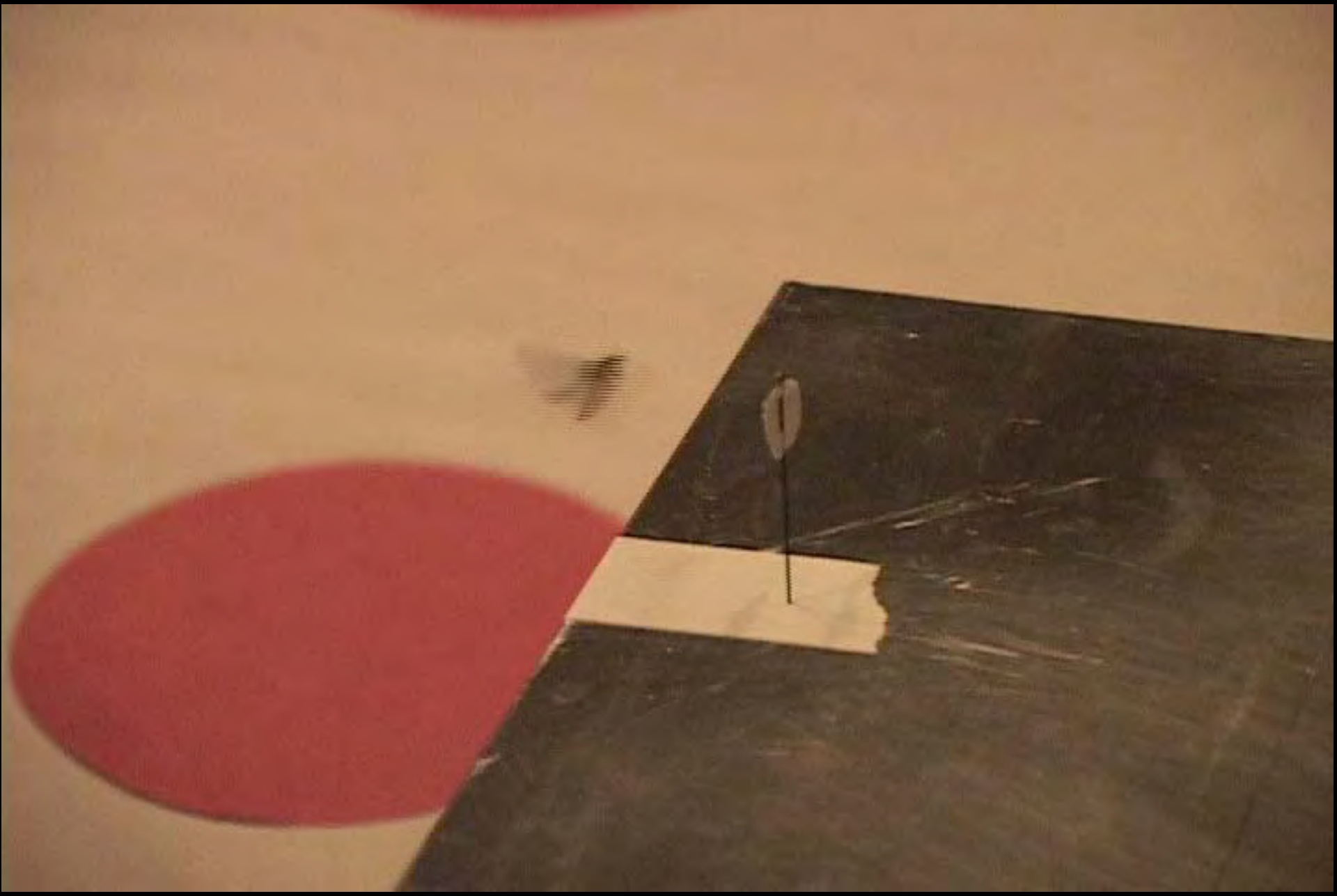


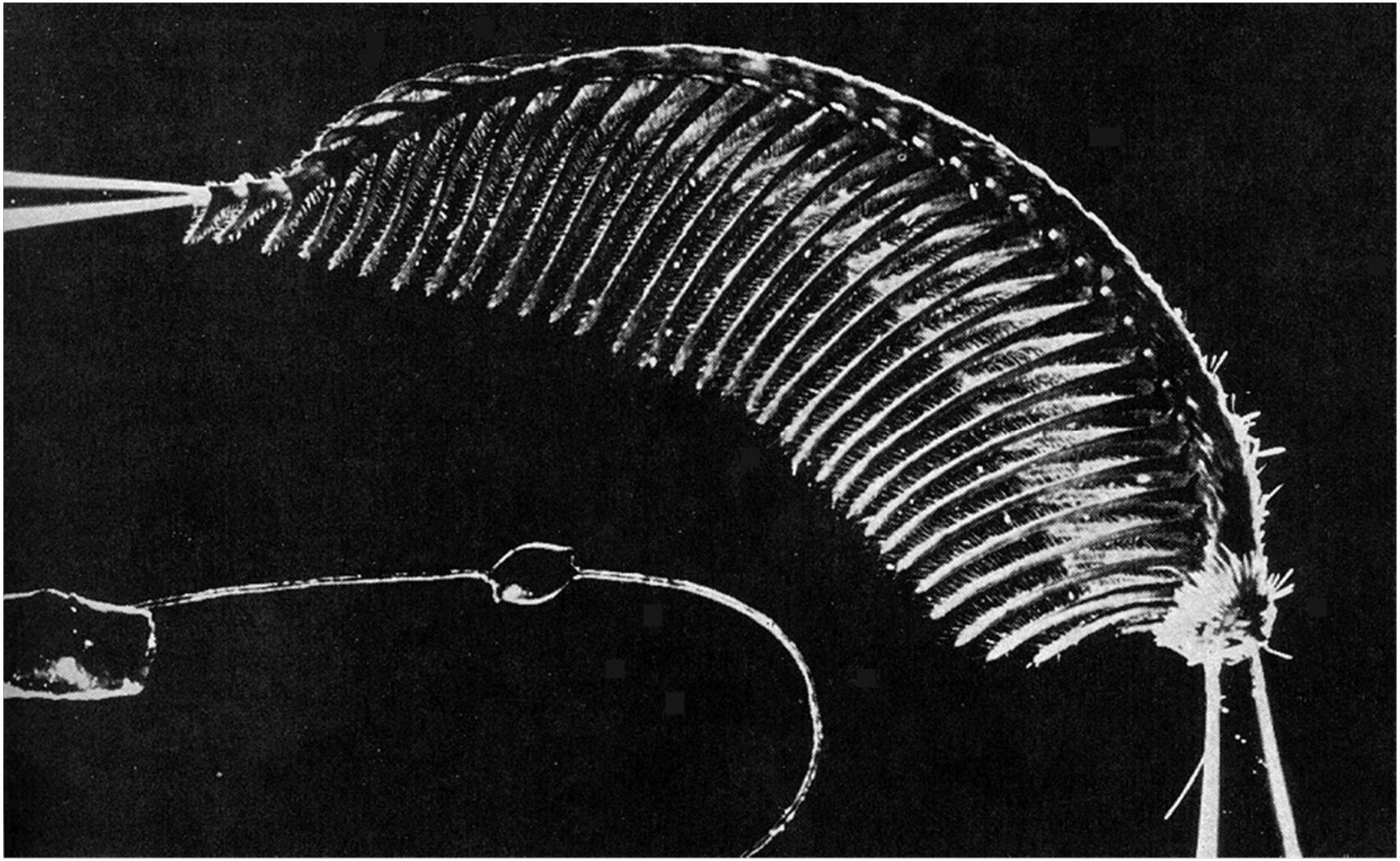


insect release platform

chemical dispenser platform







Close up view of an actual antenna setup for recording EAG responses.

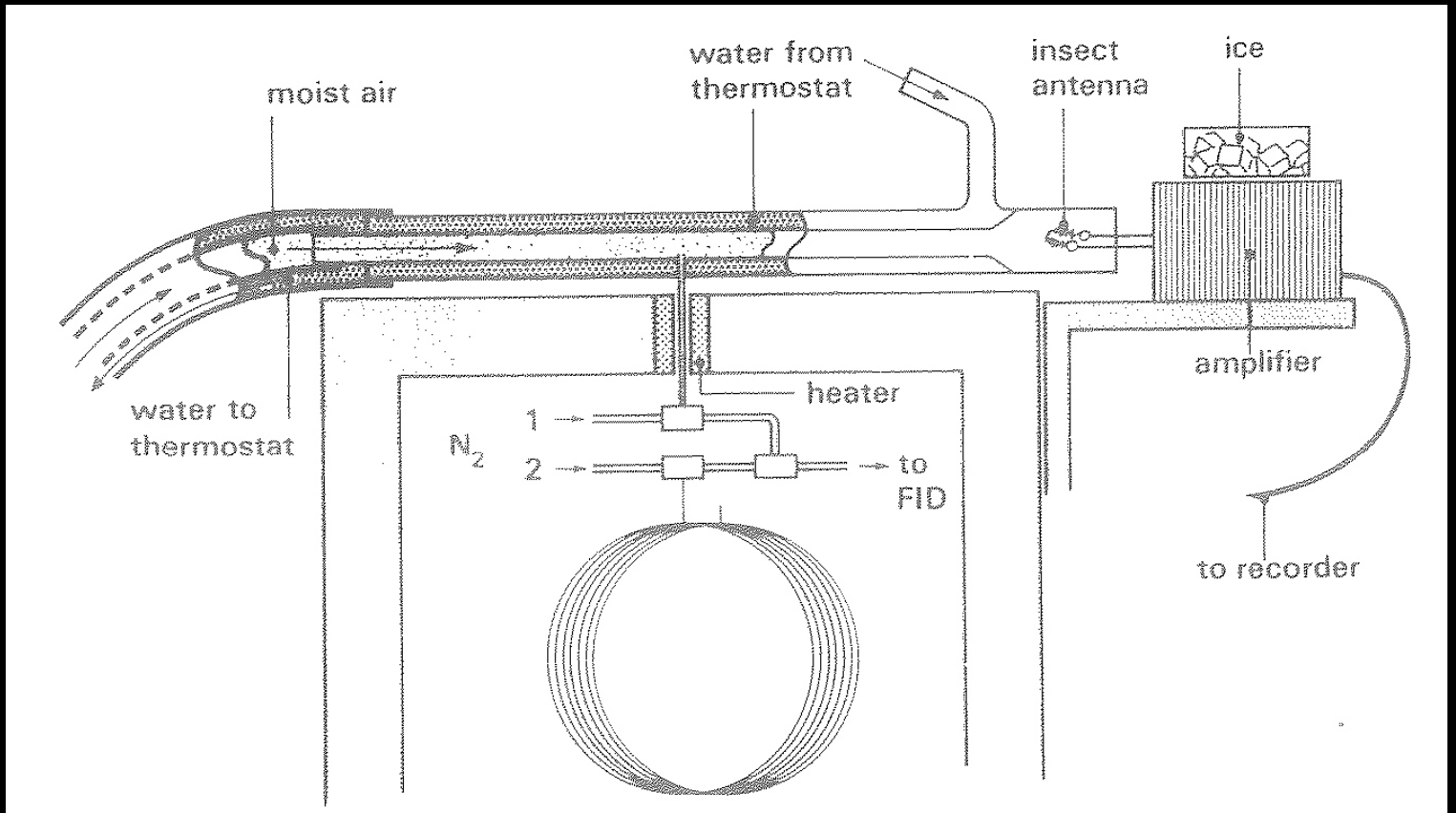
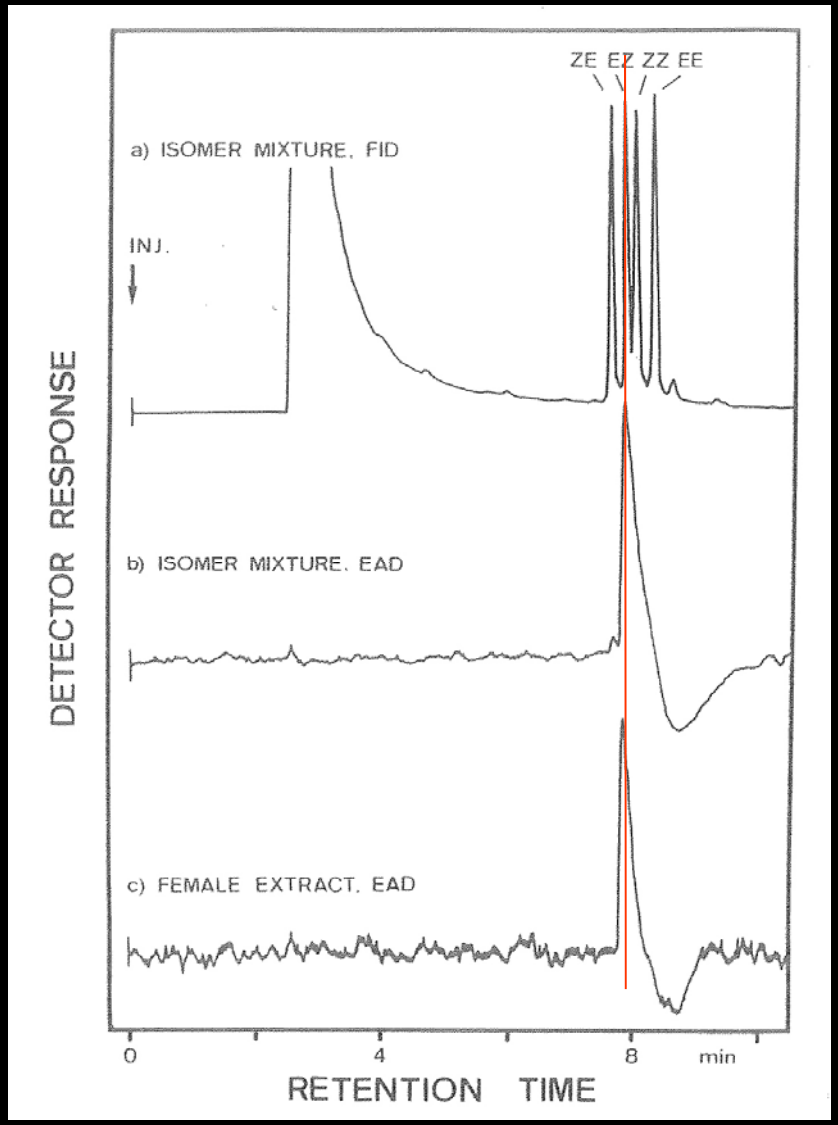
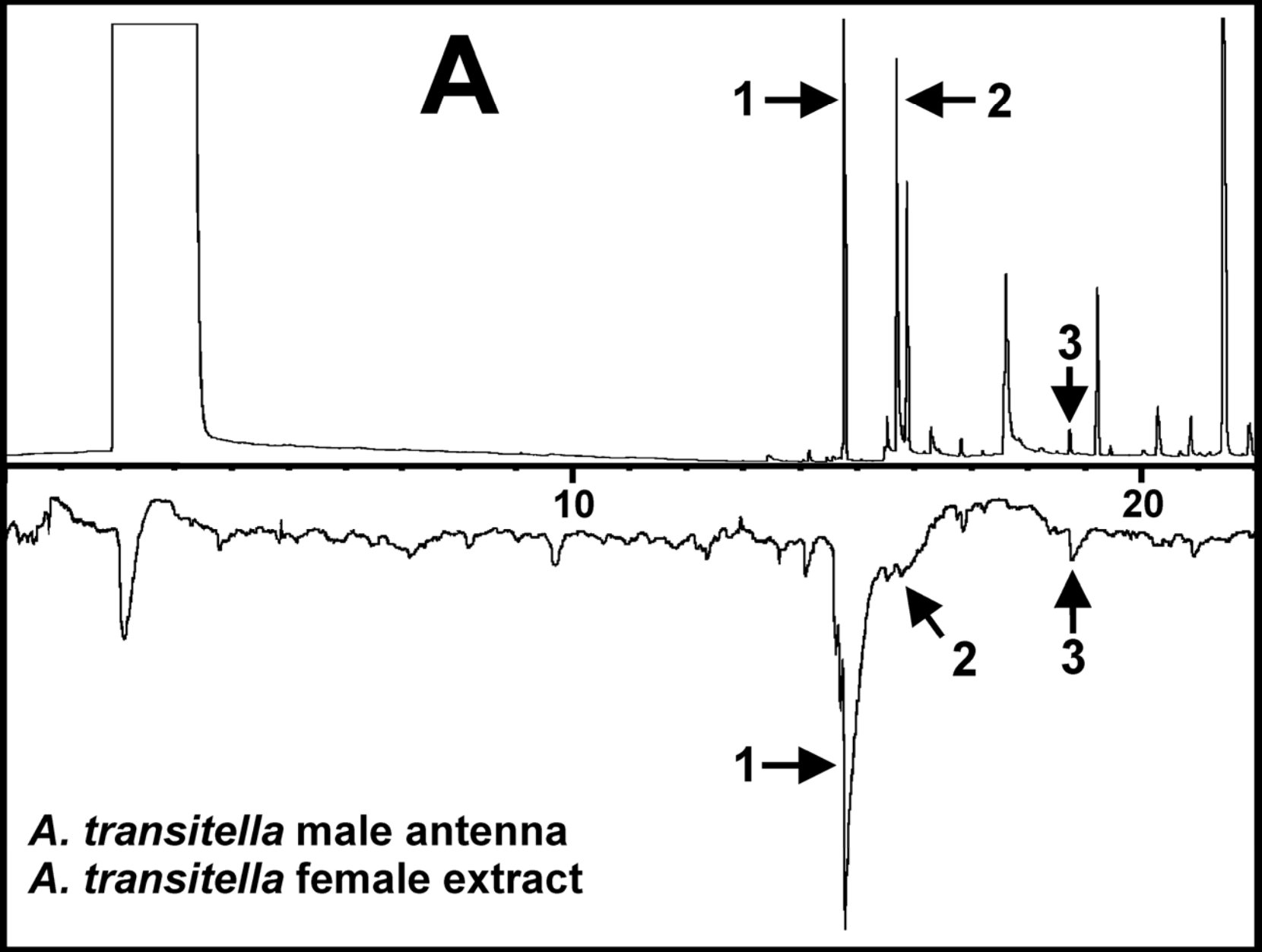


Figure 3. Drawing of a GC effluent splitter and glass transfer system.

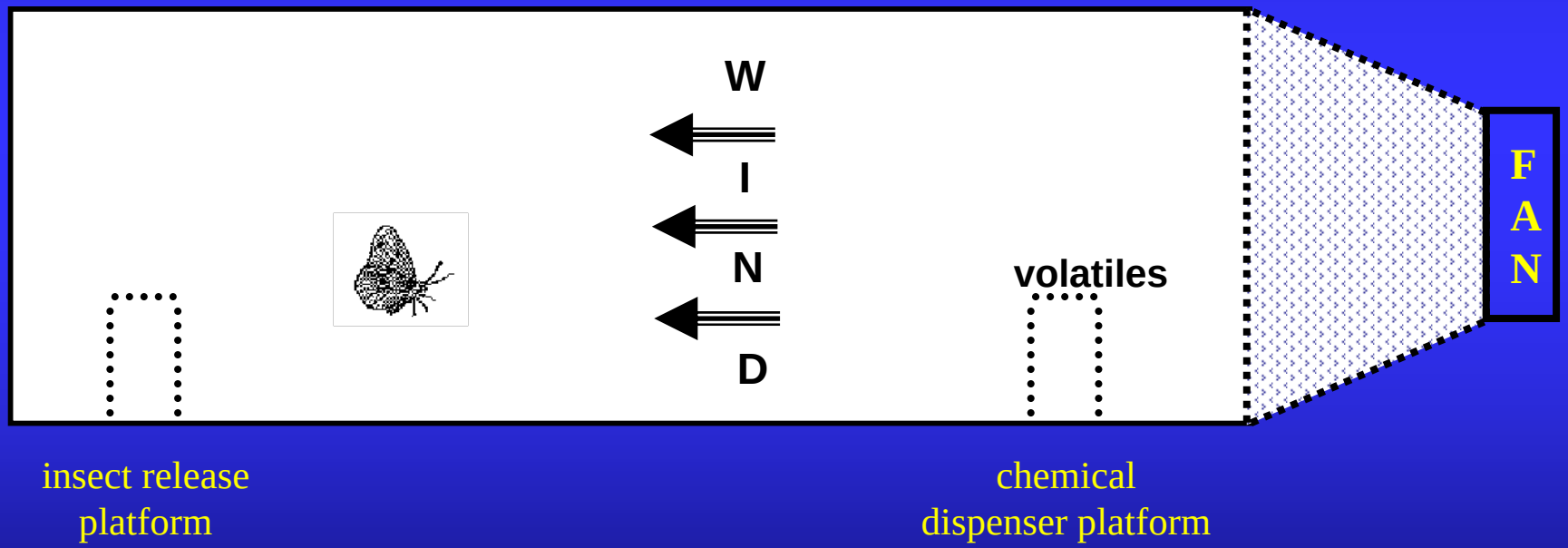
Diagrammatic view of an EAG preparation set up as a detector for effluent from a gas chromatograph.



Selected FID and EAD responses


A
1
2
3
10
20
2
3
1
A. transitella male antenna
A. transitella female extract

observe male responses to pheromone blends



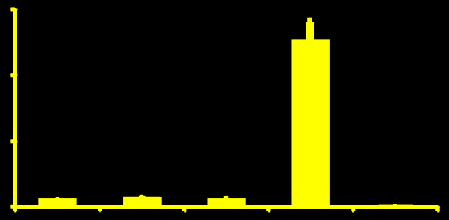
Compounds in NOW pheromone gland extracts

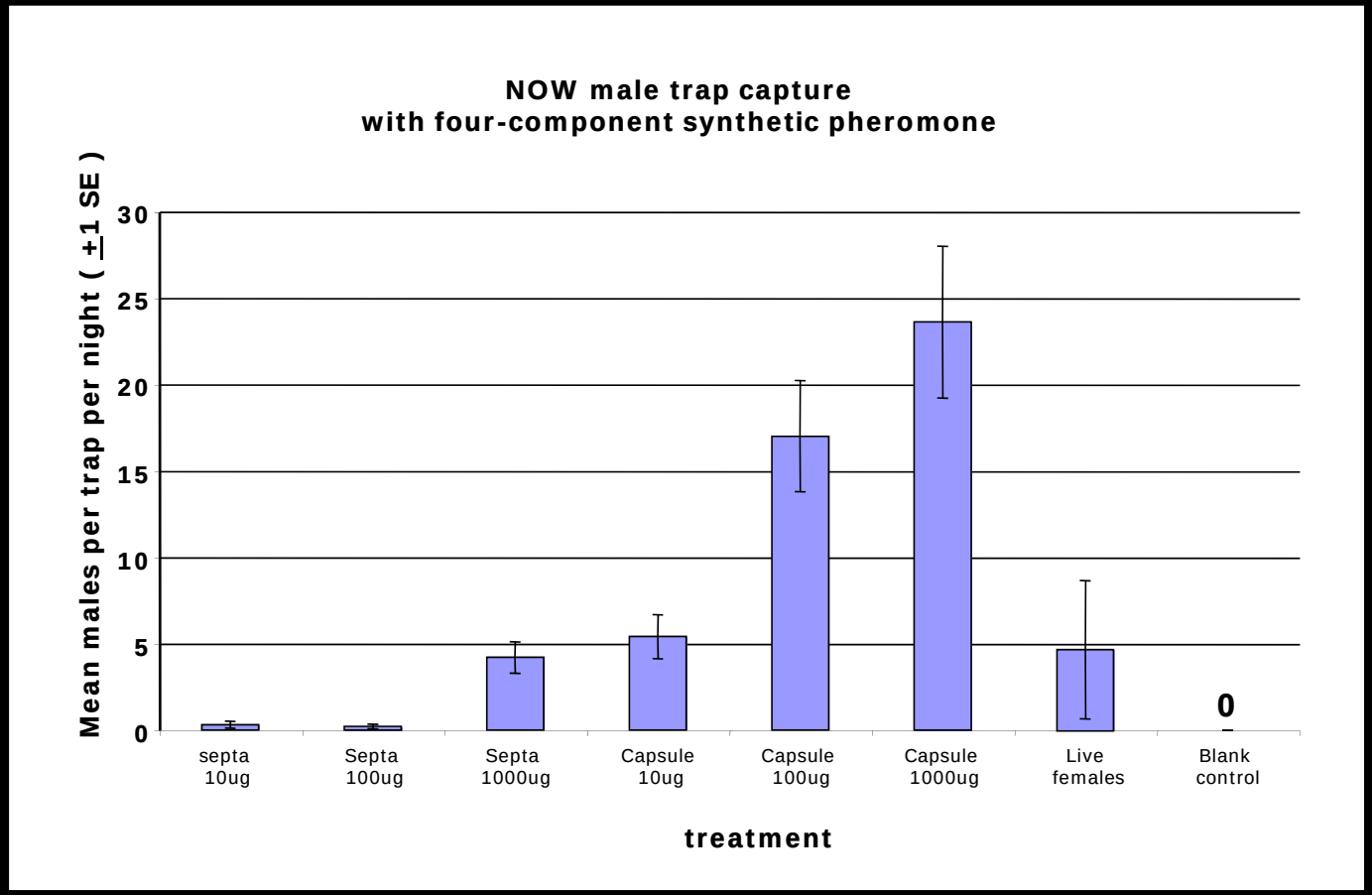
Kuenen et al. *in press*

- Z11,Z13-16:Ald ←
- Z11,E13-16:Ald
- E11,Z13-16:Ald
- Z11,Z13-16:OH ←
- Z11,Z13-16:Ac
- C23 pentaene ←
- C25 pentaene
- Z11,Z13-16:COOEt
- 16:Ald
- 16:Ac
- Z11-16:Ald
- 18:Ac
- 16:COOMe
- Delta-18:COOMe
- Carboxylic acids
- Hydrocarbons
- ……

Leal et al., 2005

- Z11,Z13-16:Ald
- Z11,E13-16:Ald
- E11,Z13-16:Ald
- Z11,Z13-16:OH
- Z11,Z13-16:Ac
- C23 pentaene
- C25 pentaene
- Z11,Z13-16:COOEt
- 16:COOEt




NOW male trap capture
with four-component synthetic pheromone
Mean males per trap per night (±1 SE)
30
25
20
15
10
5
0
0
septa 10ug
Septa 100ug
Septa 1000ug
Capsule 10ug
Capsule 100ug
Capsule 1000ug
Live females
Blank control
treatment

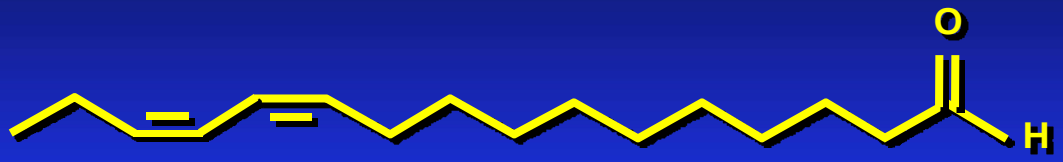
? ? ?

? ? ?

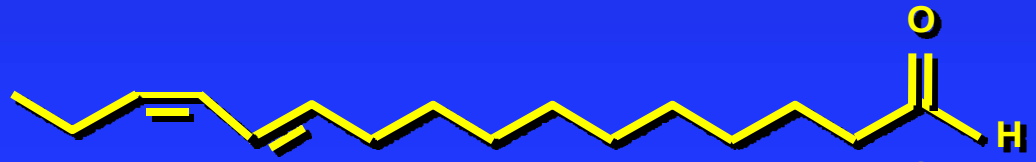
! ! !
? ? ?

? ? ?

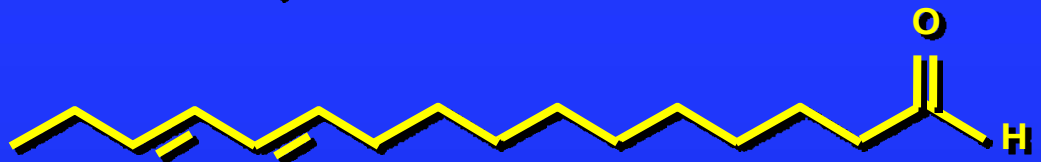
Z,Z



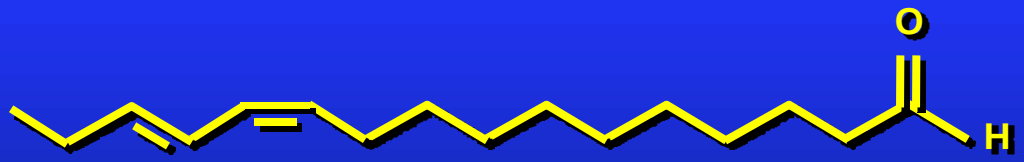
Z,E

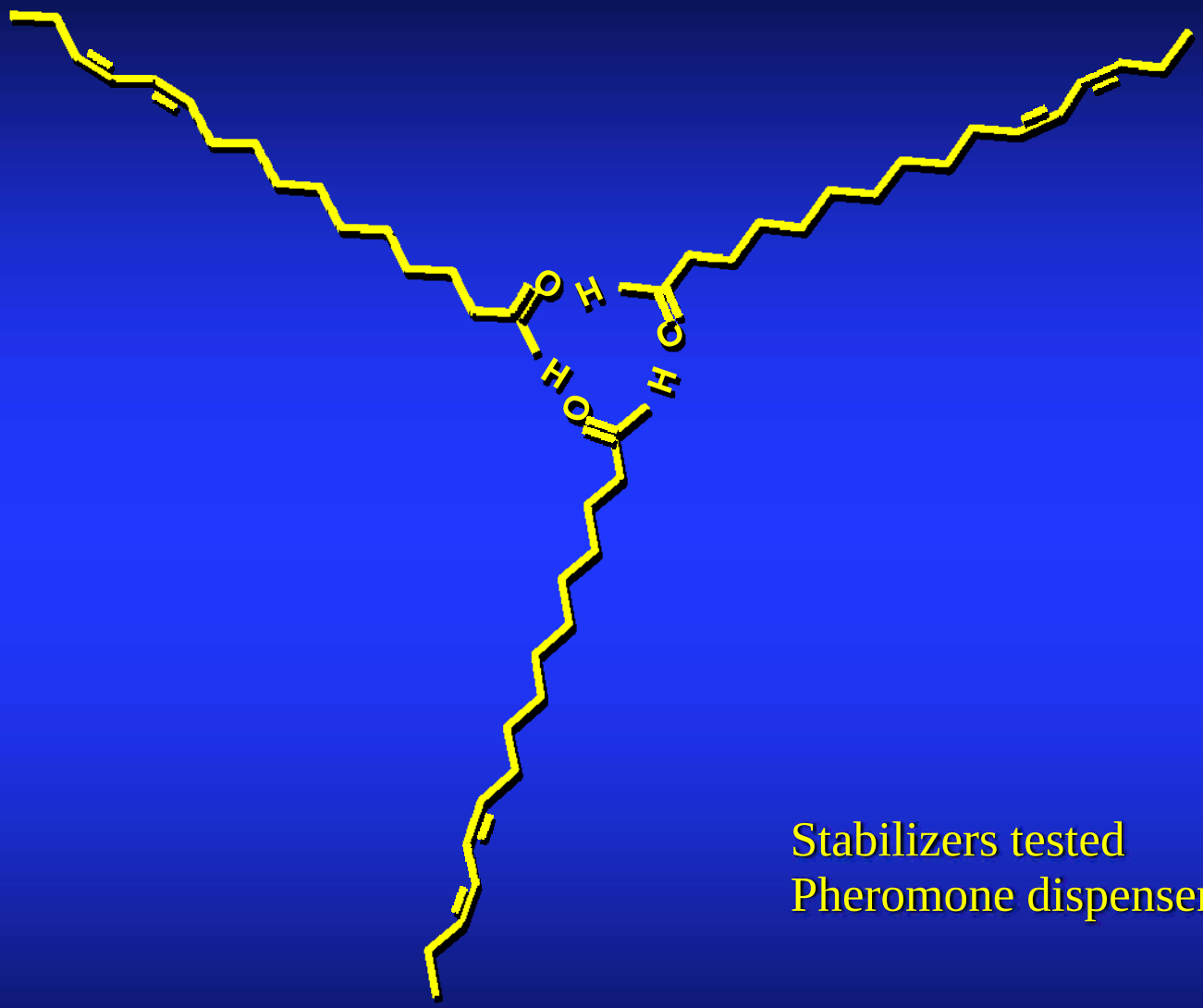


E,E***



E,Z





Stabilizers tested
Pheromone dispensers tested

Acknowledgments:
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Richard Gill
Matt Hicks
Sarah Hofer
Heather Rowe

California Pistachio Commission /
Associated Committee for Pistachios
Suterra, LLC
The Resnick Foundation

Agriworld
Kettleman Pistachio Growers
S&J Ranch