

9. SUMMARY

popular or promising commercial South African sunflower cultivars were evaluated regarding sector quality. Problems with hollow seededness experienced in the Springbok Flats resulted in preliminary investigations into the role of honeybees in commercial sunflower. This was followed by the present more comprehensive study of sunflower pollination ecology.

to short-tongued Halictidae. Floral pigmentation amongst the seventeen cultivars, was not a Activity, abundance and diversity of all anthophilous insects on sunflowers were recorded. These revealed honeybees, supplied by migratory beekeepers, to be the most important pollinators of commercial sunflower in South Africa. Adequate honeybee numbers were determined to be at hive densities of 1 colony / ha.

the collected pollen. *Eucalyptus* species were found to be Daily and seasonal honeybee activity in commercial sunflower fields is discussed in more detail. Factors influencing activity are identified and include temperature, rain, pesticides and competitive vegetation.

The pollination efficiencies of various insects were determined in controlled cage studies. 72% Seed set was achieved with honeybees, 76% with spotted maize beetle, 38% with flies, 44% with American bollworm larvae, whereas seed set with no pollinating insects was 44%. A seed set of 72% was achieved in open control plots.

Seventeen popular or promising commercial South African sunflower cultivars were evaluated regarding nectar quality and quantity under similar glasshouse conditions. The tested cultivars differed significantly. Nectar accessibility was determined by measuring corollar tube length. Nectar was generally accessible to honeybees and long-tongued bees, while inaccessible to short-tongued Halictidae. Floral pigmentation amongst the seventeen cultivars, was not a discriminating factor.

Hardly any of the vegetation surrounding sunflower fields can be regarded as competitive. Maize, grasses, Xanthium and Clematis are the most important pollen sources other than sunflower, with the latter comprising between 70 - 99% of the collected pollen. Eucalyptus species were found to be the most important nectar source, excluding sunflower.

10. OPSOMMING

Probleme met betrekking tot holsadigheid in die Springbokvlakte het aanleiding gegee tot 'n voorlopige ondersoek na die rol van heuningbye as bestuiwers in kommersiële sonneblomlande. Dié ondersoek is gevolg deur die huidige, meer uitgebreide studie van sonneblom bestuiwings-ekologie.

Aktiwiteit, getalle en verskeidenheid van alle blombesoekers op sonneblom is aangeteken. Hieruit blyk dat heuningbye wat voorsien word deur migrerende byeboere die mees belangrike bestuiwers van kommersiële sonneblom in Suid-Afrika is. Voldoende bestuiwing is waargeneem by 'n korfdigtheid van 1 kolonie per hektaar sonneblom.

Heuningbye se aktiwiteit en seisoenale verandering in kommersiële sonneblomlande word in meer besonderhede bespreek. Faktore wat aktiwiteit beïnvloed sluit temperatuur, reën, gistowwe en kompiterende plantegroei in.

Uitsluitings-eksperimente is gedoen om die bestuiwings-effektiwiteit van verskillende insekte te bepaal. 72% Saadset is verkry met heuningbye, 76% met bont mieliekewers, 38% met vlieë, 44% met Amerikaanse bolwurmlarwes, terwyl saadset met geen insekbestuiwers 44% was. 'n Saadset van 72% is ook behaal in kontrole-persede uit die res van die land.

Sewentien gewilde of belowende kommersiële Suid-Afrikaanse sonneblom kultivars is geëvalueer om nektar kwaliteit en kwantiteit onder dieselfde glashuistoestande te bepaal. Die ondersoekte kultivars het betekenisvol van mekaar verskil. Nektar toeganklikheid was bepaal deur die blombuis-lengte te meet. Nektar was oor die algemeen toeganklik vir heuningbye en ander lang-tong bye, maar ontoeganklik vir kort-tong bye (Halictidae). Blom pigmentasie van die sewentien ondersoekte kultivars was nie 'n diskriminerende faktor nie.

stages of the study.

Weinig van die normale plantegroei rondom sonneblomlande kan as kompetierend vir bestuiwing beskou word. Mielies, grasse, Xanthium en Clematis is die belangrikste stuifmeelbronne buiten sonneblom, waar laasgenoemde tussen 70 - 99% van die versamelde stuifmeel kan uitmaak. Eucalyptus species is die belangrikste nektarbron buiten sonneblom.

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11. ACKNOWLEDGEMENTS

I wish to express my sincere appreciation to Professor E. Holm, Head of the Department of Entomology, University of Pretoria under whose guidance this project was carried out. Mr. M.F. Johannsmeier and Dr. R.H. Anderson both of the Plant Protection Research Institute and Mr. B. Birch formerly of the Grain Crops Research Institute are also thanked for their guidance and comments during various stages of the study.

I would furthermore like to thank the following persons for information, assistance and services rendered:

1. Technical assistance: R. Botha, D. Swart, S. Banne, R. Mashala, S. Monyamane and J. Modau.
2. Identification of insects: C.D. Eardley, Dr. M.W. Mansell, R.G. Oberprieler, Dr. G.L. Prinsloo, Mrs. V. Uys.
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12. LITERATURE

Dr. I.H. Wiese (Director) and Dr. D.P. Keetch (Deputy-director) of the Plant Protection Research Institute are thanked for approving the study and for their continued interest during the project.

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