

Airspora Sampling for the City of Cape Town in Table View

August 2009 – July 2010



Airspora Sampling 2009 - 2010

- Background to Pollen Monitoring
 - Sampling at Table View- Aims
 - Data Analysis
 - Recommendations
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What is the Purpose of Pollen and Fungal Spore Monitoring?

Health Risk

- ❖ Environmental assessment
- ❖ Patient treatment
- ❖ Air Quality Studies

Drug Trials

- ❖ Inhalant or eye preparations
- ❖ Immunotherapy
- ❖ Desensitization to grasses



Urban Environments/Industrial areas

Brown haze

Particulate matter



Pollen Monitoring in South Africa

Industrial Areas sampled

- Kwazulu Natal-Richard's Bay
 - Mpumalanga-Secunda
 - Western Cape- Table View
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Monitoring site airspora profile

Seasonality

Taxa

Levels



Seasonality

- ❑ Climate vs Weather
- ❑ Rain during spring
- ❑ Winter/summer rainfall?



Pollen Taxa

Grasses

flowering time: spring/summer

duration of season

start date

Trees

major season in spring

Weeds

no ragweed in SA

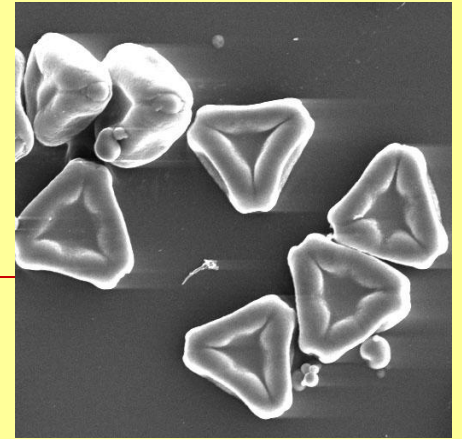
late summer/autumn

Allergenic Pollen

- ❖ Allergenic pollen is
- ❖ usually anemophilous
- ❖ or wind pollinated
- ❖ Indigenous plant species are usually insect or bird pollinated
- ❖ Small number fulfill
The Postulates of Thommen



Postulates of Thommen



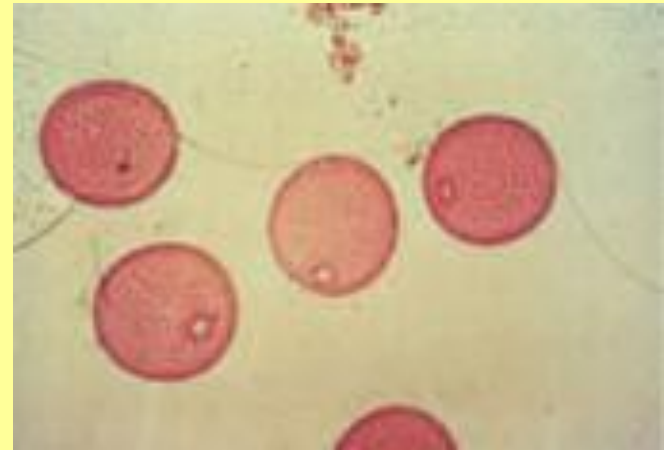
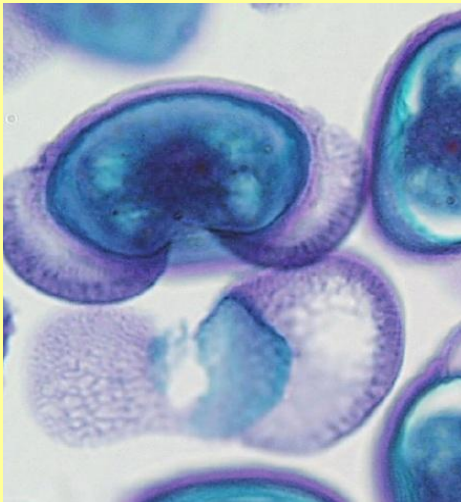
- ❖ Pollen must be light & windborne
 - ❖ Plant must produce large quantities of pollen
 - ❖ Pollen must be allergenic
 - ❖ The plant must be widely distributed
 - ❖ The plant must be seed-bearing
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Thunderstorms and grass pollen

- ❑ Knox (1993) Clinical & Experimental Allergy
 - ❑ Asthma admissions to Emergency Units following thunderstorms studied
 - ❑ High incidence of grass pollen sensitive patients
 - ❑ Thunderstorms affected the osmotic fragility of the grains; starch granules released
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Pine and grass pollen

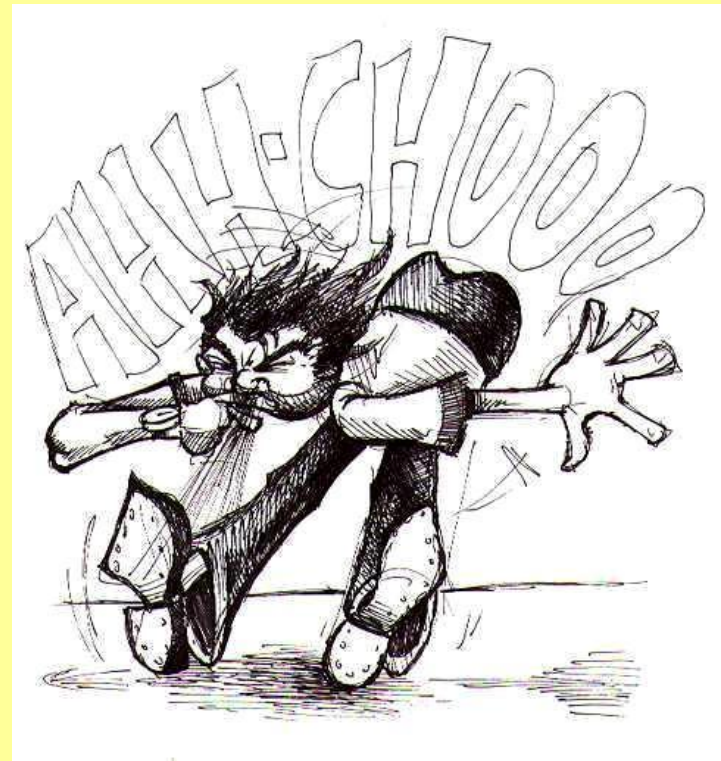
Pine pollen



Grass pollen

Symptoms caused by Pollen and Fungal Spores

- ❖ Allergic Rhinitis
- ❖ Hayfever
- ❖ Conjunctivitis
- ❖ Asthma usually in conjunction with
 - Housedust mite
 - Cat
 - Dog

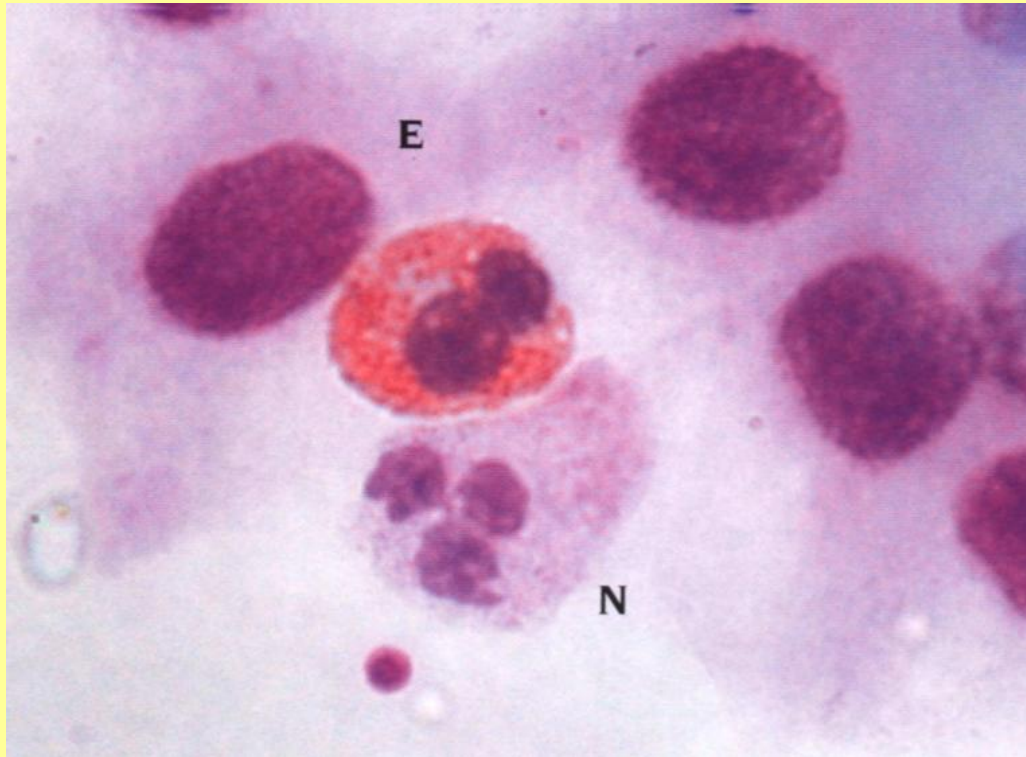


Allergenic Plants-Symptoms

- Allergic rhinitis
- Asthma
- Conjunctivitis
- Hay Fever
- Contact Dermatitis



Allergic Rhinitis



Eosinophils
showing
eosinophilic
granules

Allergenic Fungal Spores

- ❖ Found indoors and outdoors
- ❖ Use decaying plants as a substrate
- ❖ Allergenic not Pathogenic
- ❖ Not all fungal spores are allergenic



Fungal Spores

- *Epicoccum purpureascens*

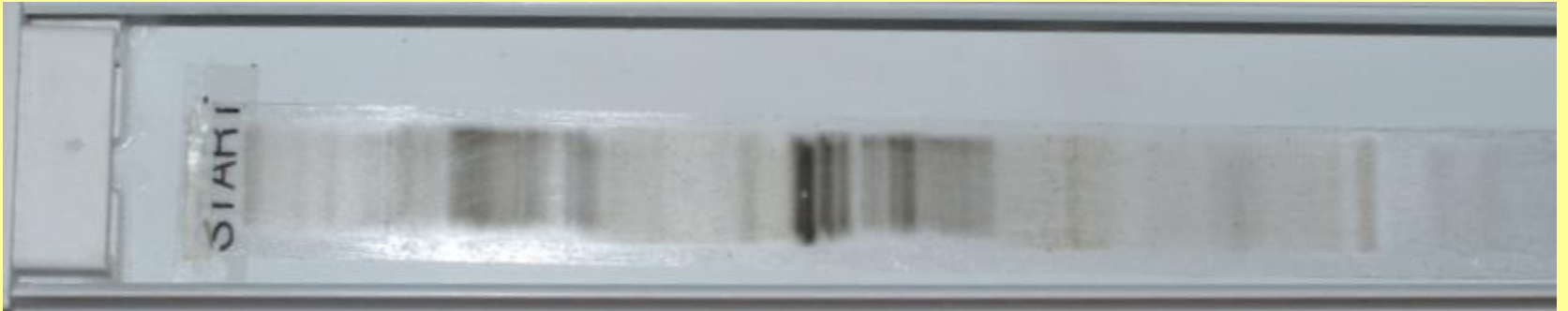


Fungal allergen identification

- ❖ Positive Skin prick or RAST testing
- ❖ Known fungal aeroallergens
- ❖ Anitigen-antibody testing



Deposit on the strip during the winter months at xxxx



Mounting strips

- ❑ Strip cut
- ❑ Glycerol mountant
- ❑ Coverslips added



Microscopy

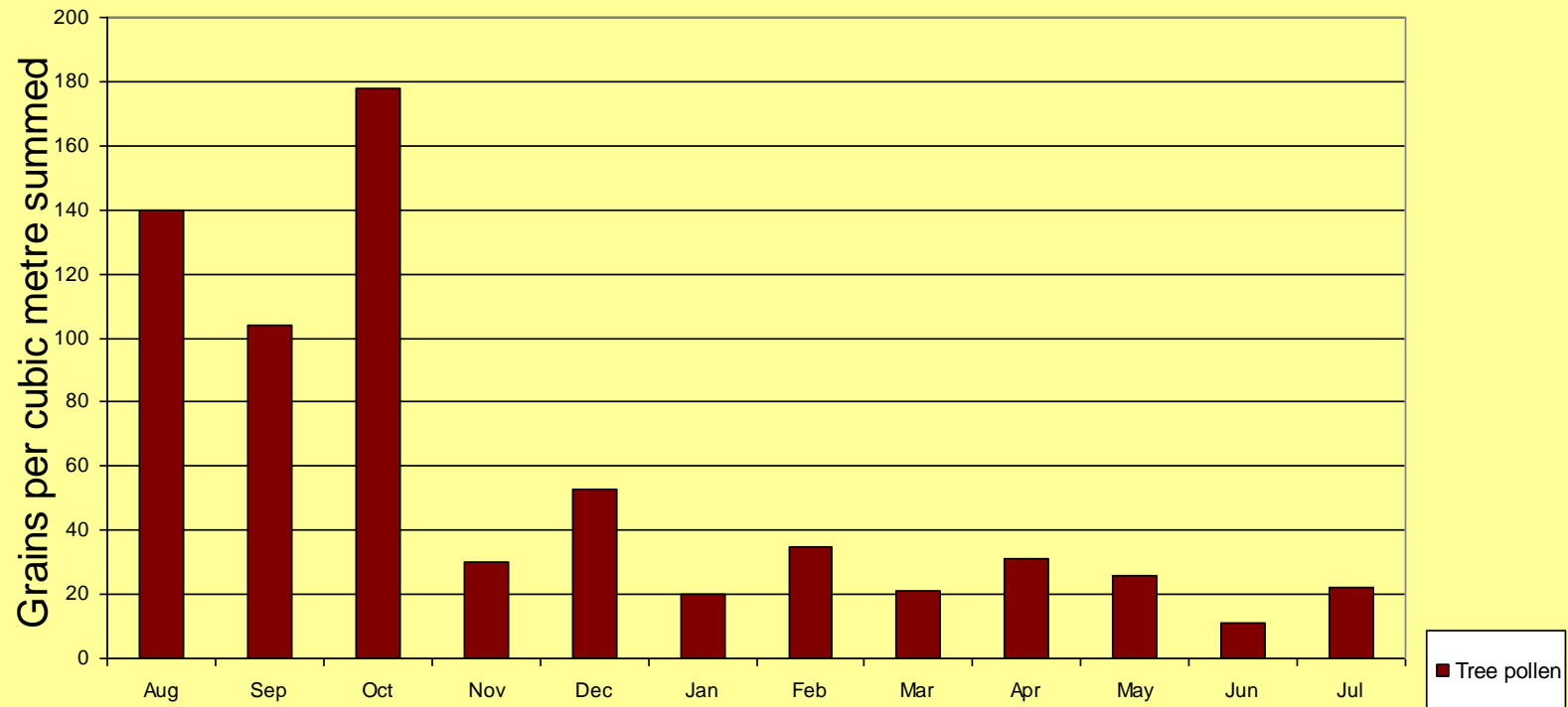
- ❑ Light microscope
- ❑ 400x magnification
- ❑ Aperture size



Ancient olive tree-Getshemane



Tree pollen levels at Table View 2009 - 2010



Allergenic tree pollen in Table View 2009-2010

- Acacia
 - Cupressaceae (cypress)
 - Myrtaceae (gum)
 - Oleaceae (olive)
 - Pinaceae (pine)
 - Platanaceae (plane)
 - Rhus (karee boom)
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Threshold Levels for outdoor aeroallergen sampling

- ❖ Different for pollen and fungal spores
 - ❖ Differ for trees, grasses, weeds
 - ❖ Differ for fungal spore taxa
 - ❖ Total pollen and fungal spore levels are not always a good indicator for Health Risk
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Burge Scale- Threshold level per cubic metre

	Low	Mod	High	V. High
Trees	0-15	16-90	91-1500	>1500
Grasses	0-5	6-20	21-200	>200
Weeds	0-10	10-50	51-500	>500
Fungi	0-900	900- 2500	2500- 25,000	25,000

Pollinating grass

□ Scientific name

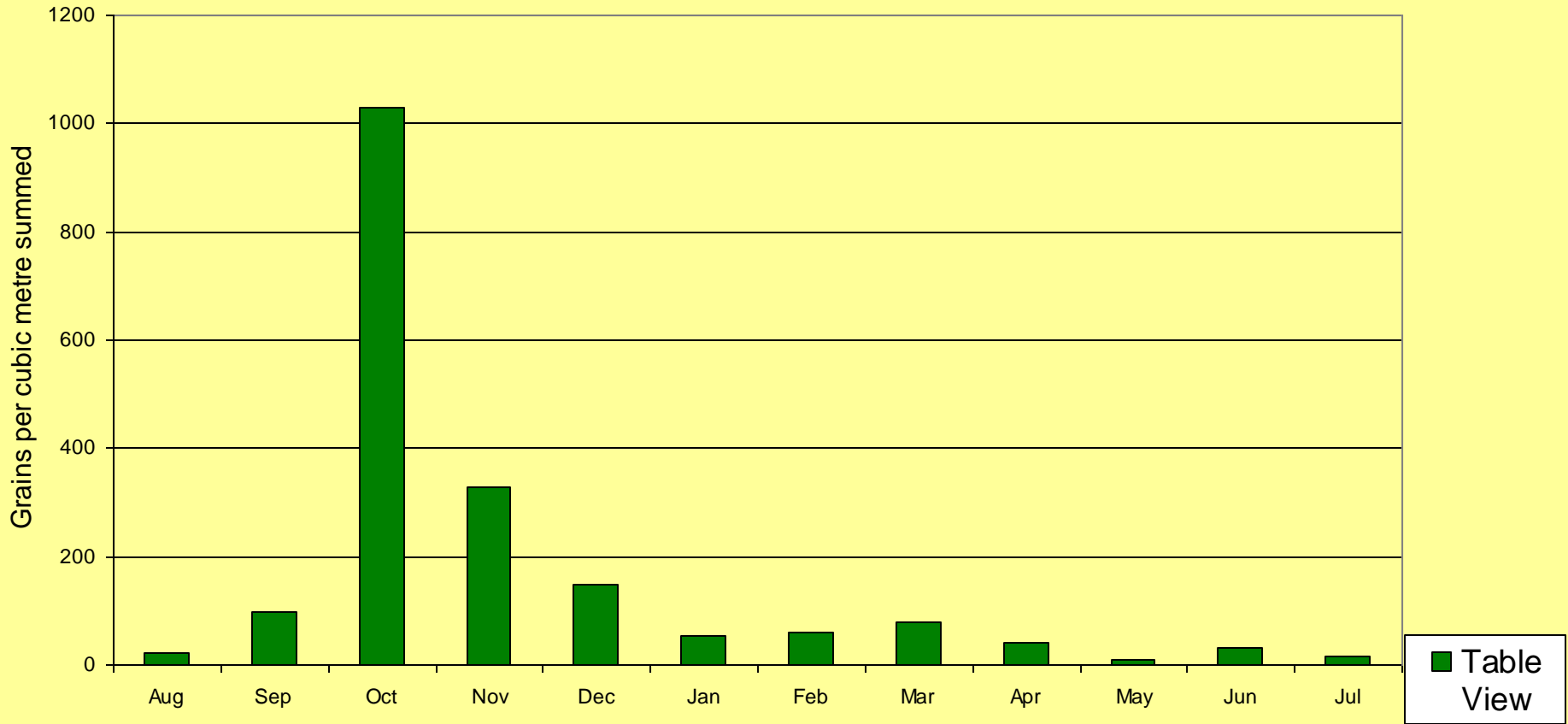
Lagurus ovatus

□ Common name

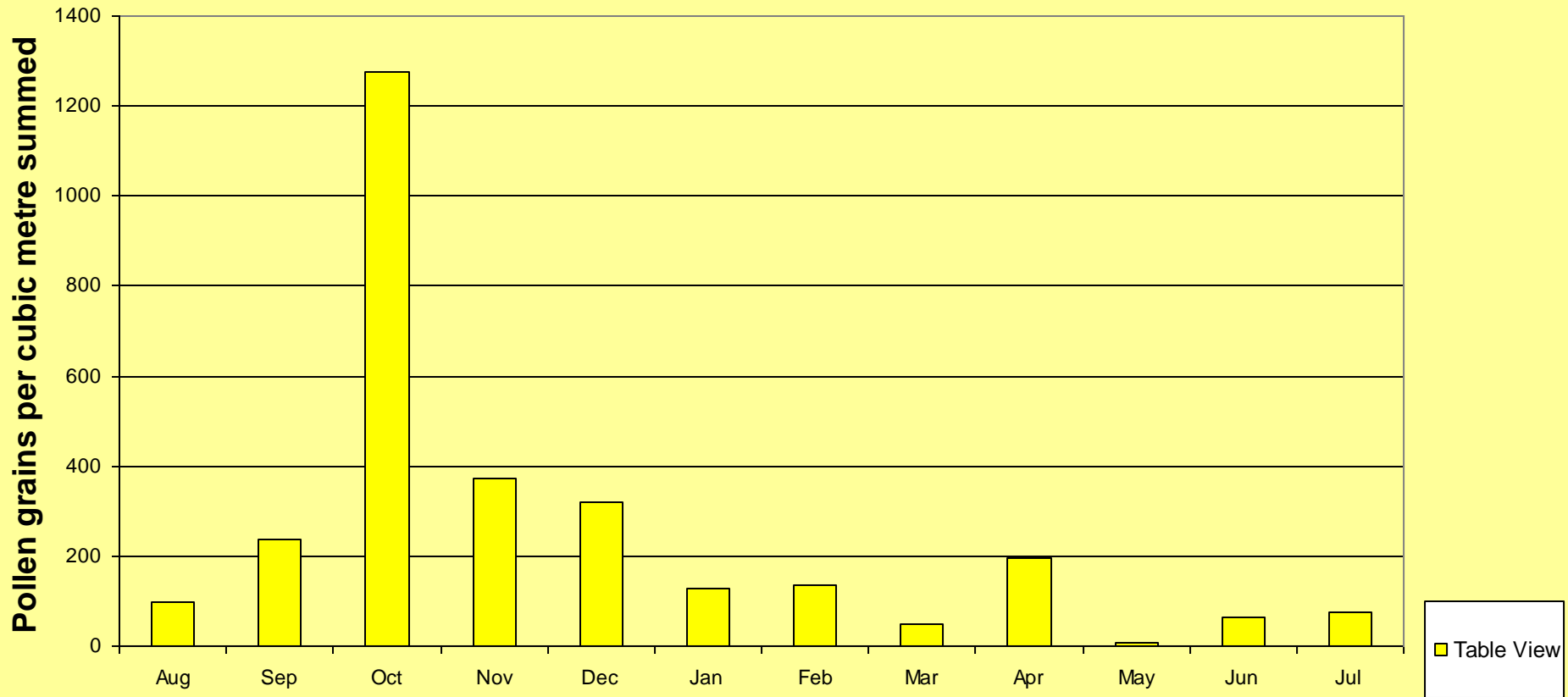
Bunny tail



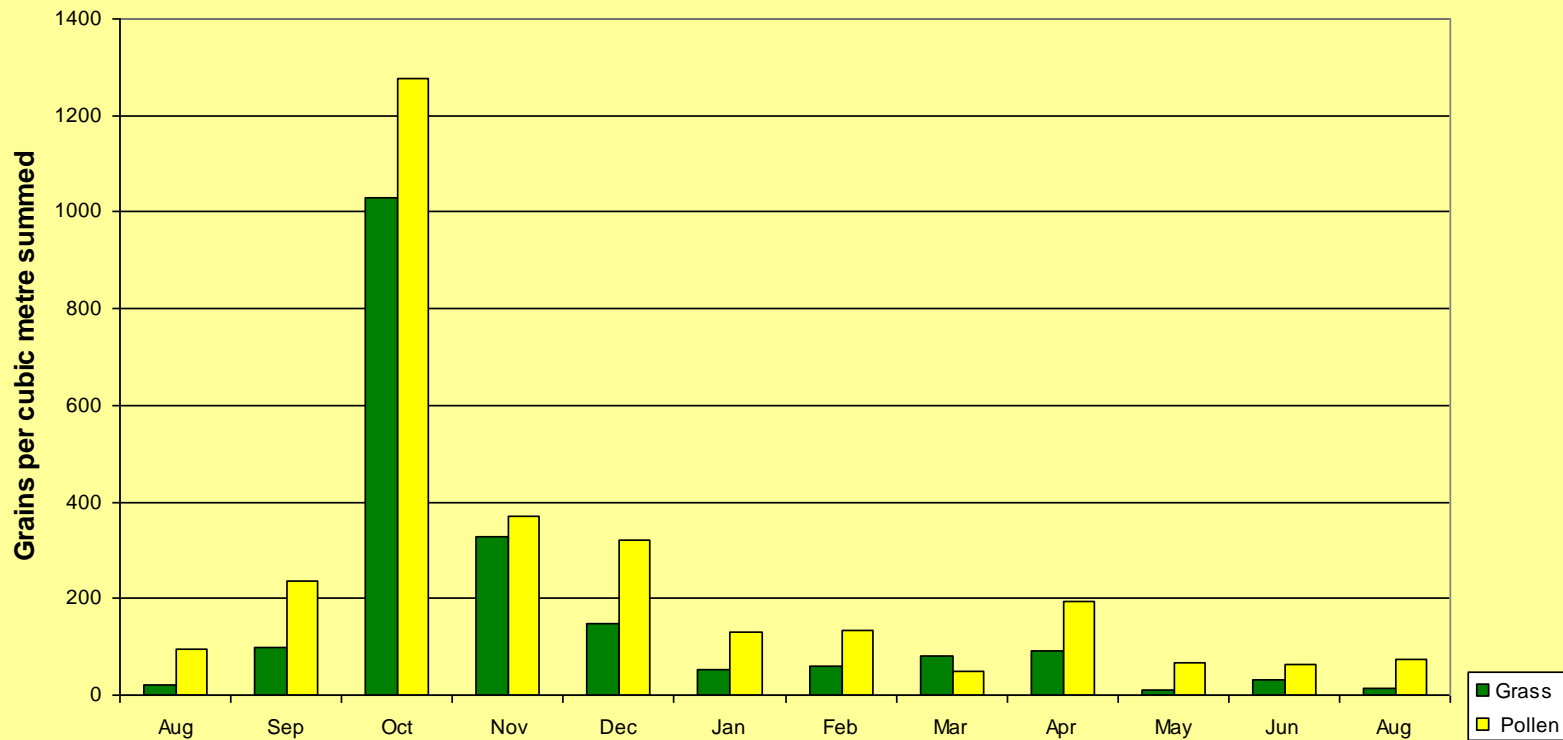
Grass levels at Table View 2009-2010



Total Pollen Levels at Table View 2009-2010

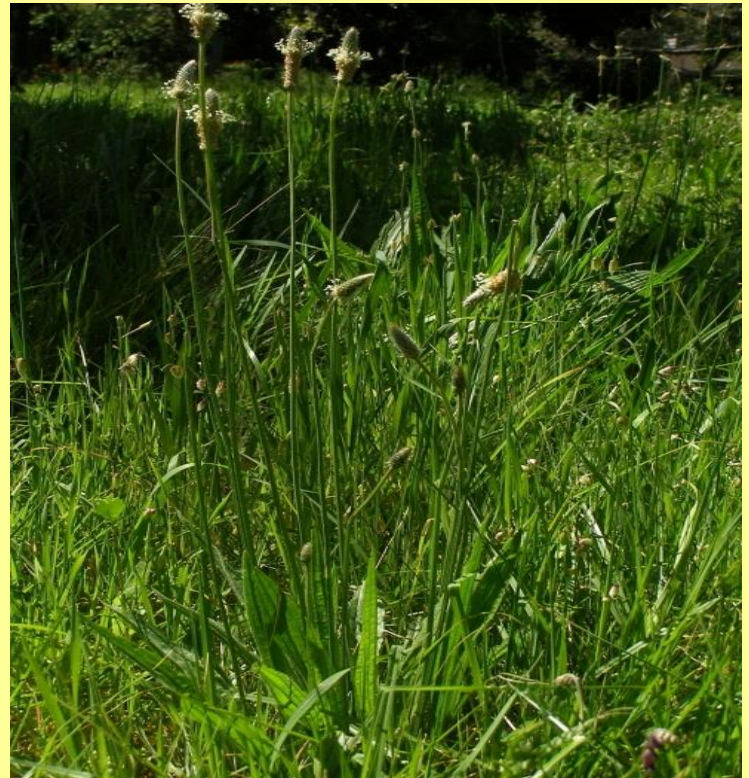


Grass and Total Pollen Levels at Table View 2009-2010

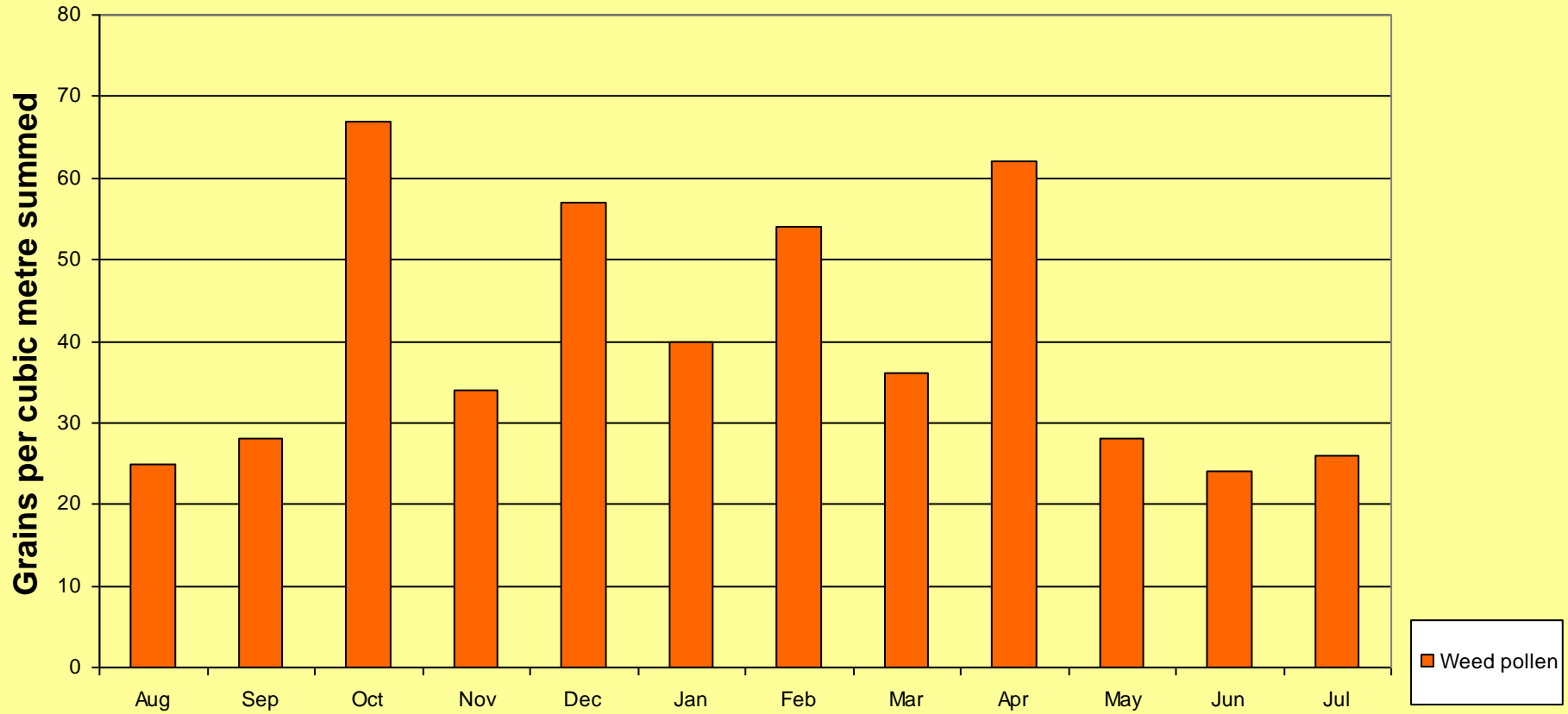


Weed Pollen in Table View

- English Plantain
Plantaginaceae
- Goosefoot /
Chenopodiaceae
- Taraxacum/
Dandelion
- Myricaceae/shrub



Weed pollen levels at Table View 2009 - 2010



Airspora Information circulated to Health Professionals

- ❑ Assistance with SPT/RAST testing panels
 - ❑ Pollination seasons for diagnostic purposes
 - ❑ Correct months for Immunotherapy to grass pollen
 - ❑ Season for Assessing the efficacy of new antihistamines/ nasal sprays
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Who should have access to pollen data?

- Residents of Milnerton and Table View**
- Doctors treating allergy for diagnostic and treatment purposes and Immunotherapy**
- Air Pollution officers**

By means of:

- Web sites**
 - Community newspapers**
 - Media-radio and Cape newspapers**
 - Notices in community centres**
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