



Where needs take us

# 'Sustainable' Fairway Management

Andy Owen, International Technical Manager

Twan van Wijk, Segment Sales Coordinator Turf & Landscape Benelux



# Is this sustainable fairway management?



# What about this?



# What about this?



# What about this?





What is sustainable management of a fairway ?



## UK Golf Player Survey

Enhancing the playing experience

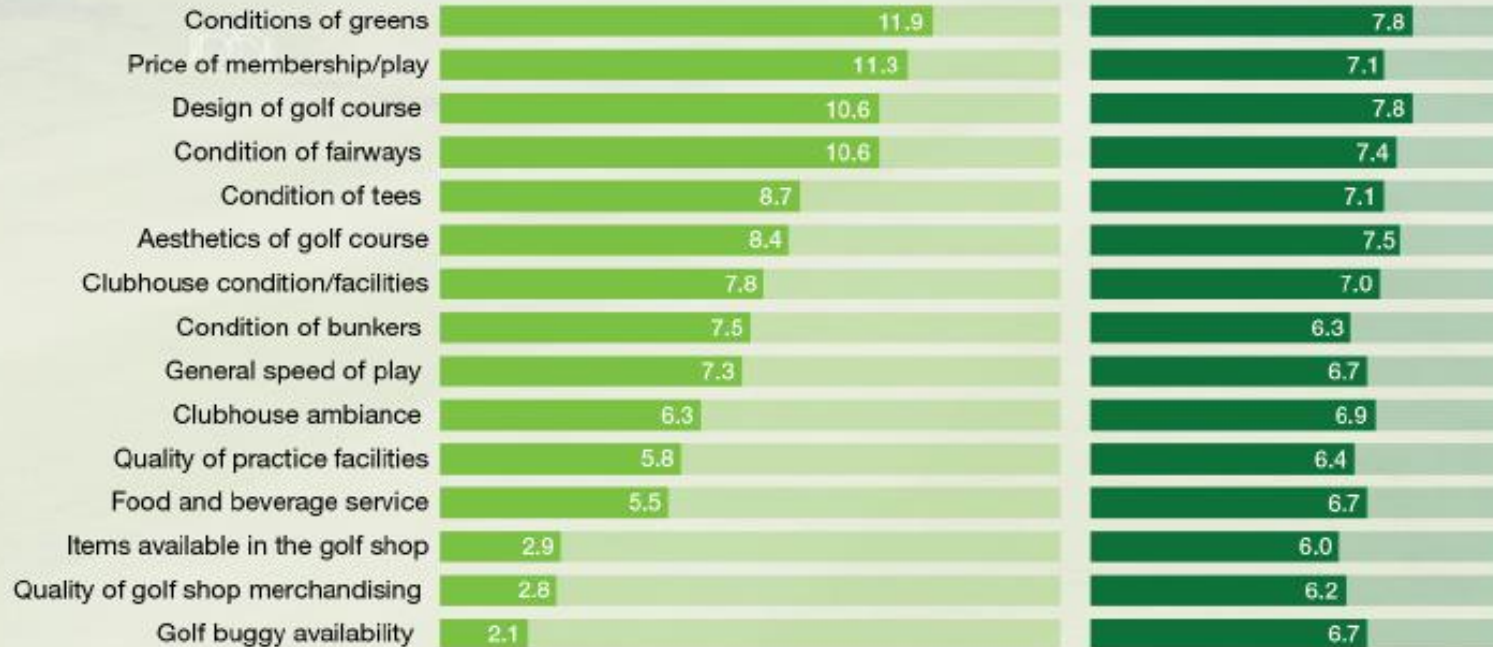
# How important are fairways?

## IMPORTANCE

Mean ranking score 1-15.  
Scores inverted so that highest number = highest importance

## SATISFACTION

Mean score from 1 to 10 where 1 = not at all satisfied and 10 = highly satisfied





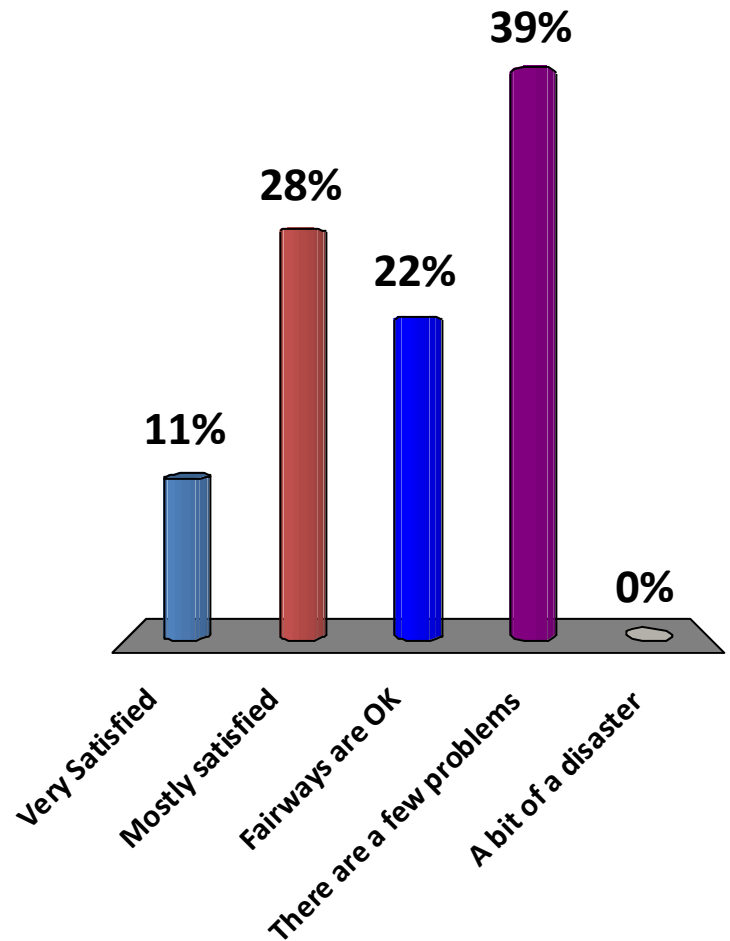
# How important?



Fairways ranked as 4<sup>th</sup> most important golf course factor

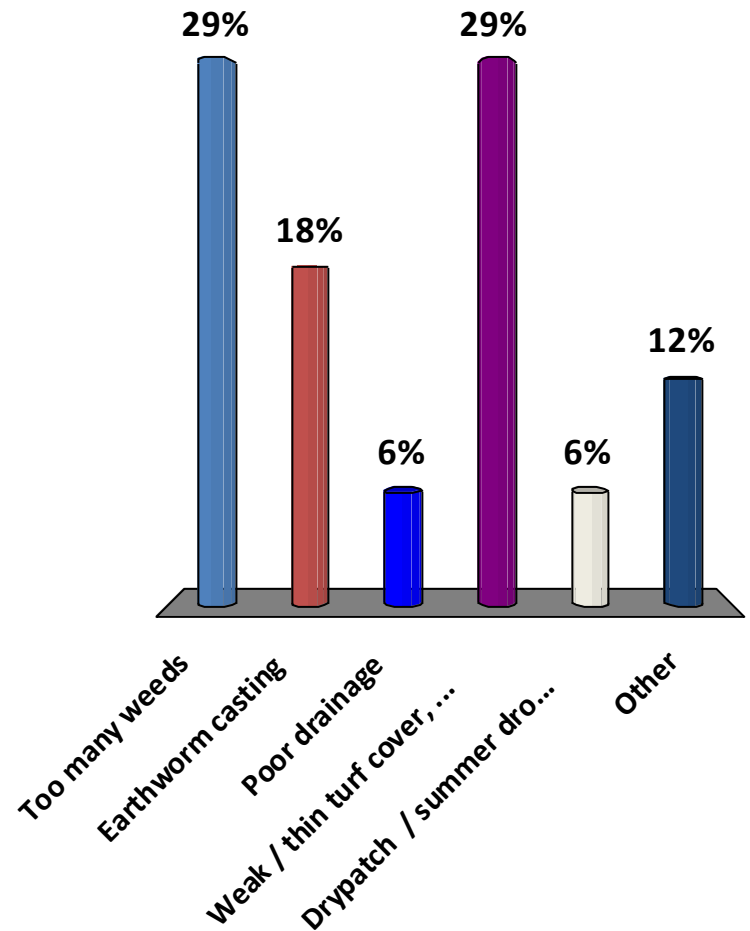
# How satisfied are you with the surface quality of your golf course fairways?

- A. Very Satisfied
- B. Mostly satisfied
- C. Fairways are OK
- D. There are a few problems
- E. A bit of a disaster



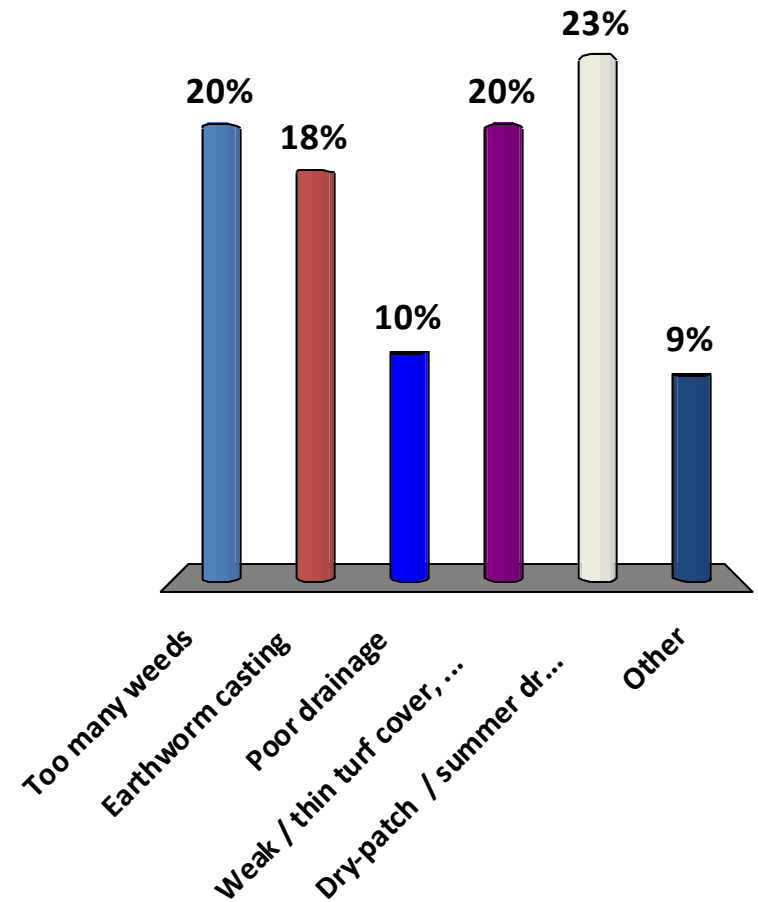
# What is the **single biggest** problem with your fairways?

- A. Too many weeds
- B. Earthworm casting
- C. Poor drainage
- D. Weak / thin turf cover, poor density
- E. Drypatch / summer drought stress
- F. Other



# Rank these problems for your fairways? Biggest problem first.

- A. Too many weeds
- B. Earthworm casting
- C. Poor drainage
- D. Weak / thin turf cover, poor density
- E. Dry-patch / summer drought stress
- F. Other



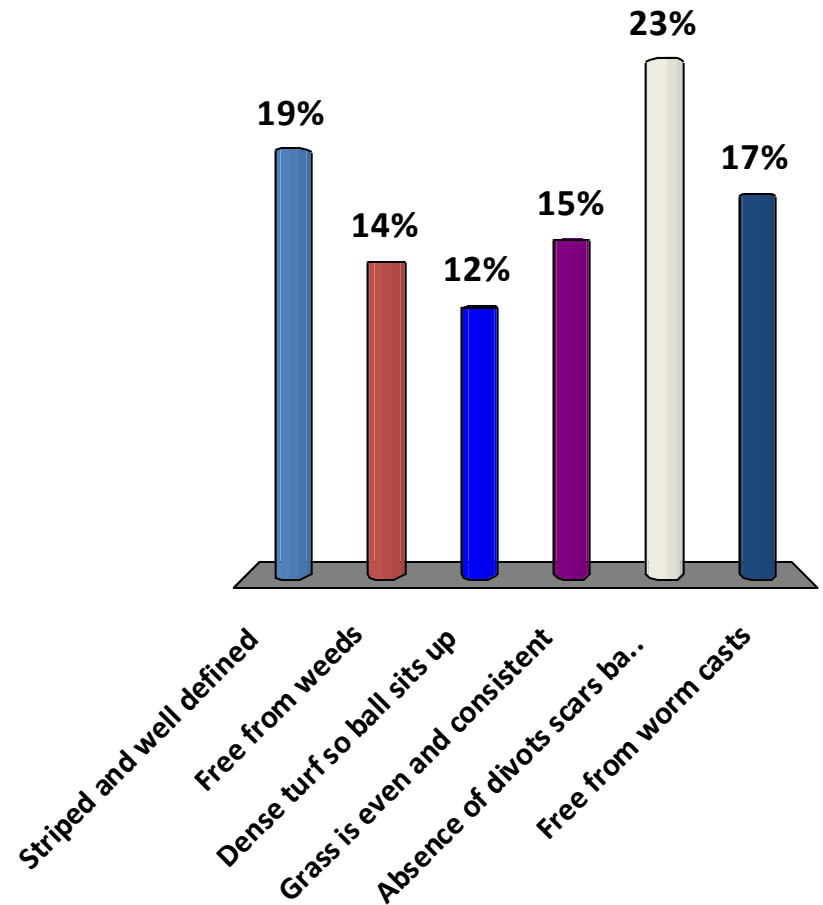
Is this level of presentation important to the golfer?

What specifically are they looking for?



# Please **rank** these factors for fairways in importance to your members

- A. Striped and well defined
- B. Free from weeds
- C. Dense turf so ball sits up
- D. Grass is even and consistent
- E. Absence of divots scars bare patches
- F. Free from worm casts



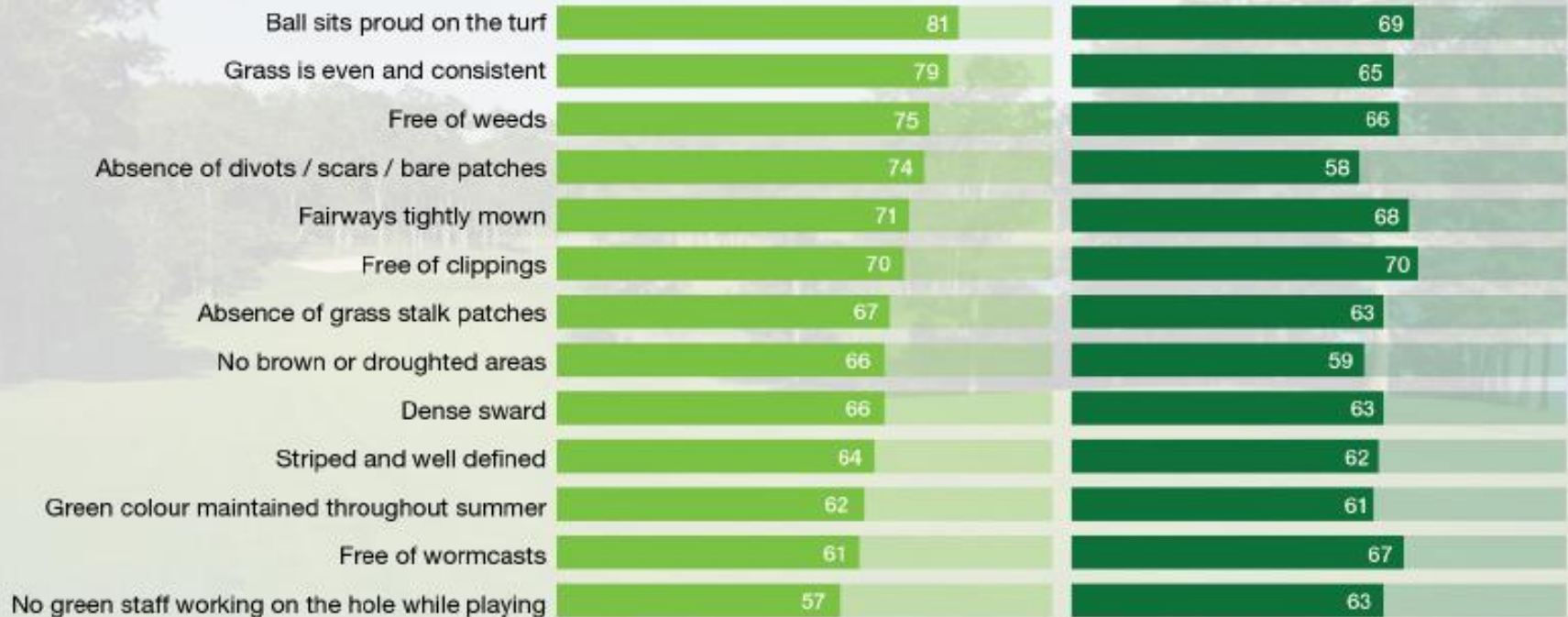
# Fairways - importance and satisfaction

## IMPORTANCE

% scoring 7 or more

## SATISFACTION

% scoring 7 or more



Turf quality is more important than presentation / definition









# How to achieve turf quality on the fairways?



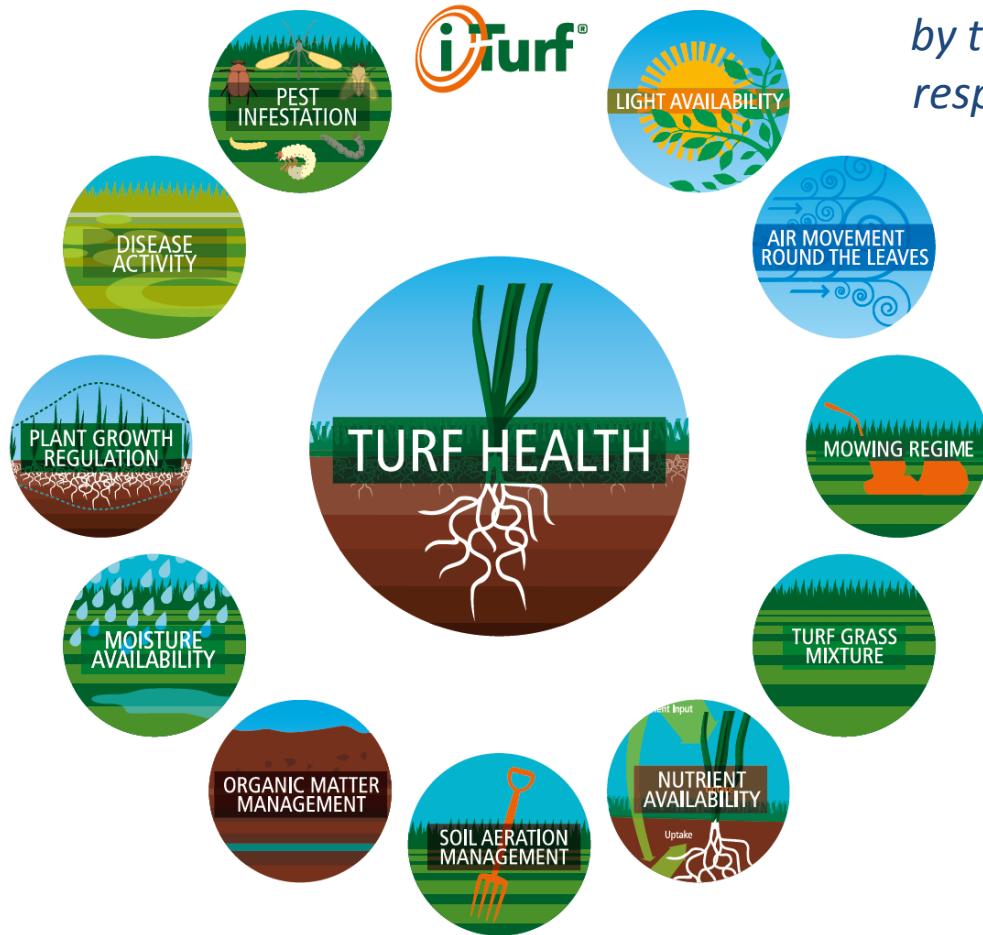
In a sustainable way?

# How to achieve turf quality on the fairways?



Reduce weeds  
 Improve turf density  
 Efficient water use  
 Improved growth habit  
 Resilient turf  
 Spread wear

*“We believe that the best turf is created by taking a holistic approach, and that responsible turf management requires consideration, understanding and forward planning”*



## Overseeding of fairways

Anne Mette Dahl Jensen<sup>1</sup>, Oliver Bühler<sup>1a</sup>, Trygve Aamlid<sup>2</sup>, Agnar Kvalbein<sup>2</sup>

<sup>1</sup> Principal investigator

University of Copenhagen, Department of Geosciences and Natural Resource Management  
Rolighedsvej 23, DK-1958 Frederiksberg C, Denmark

E-mail: [amdj@ign.ku.dk](mailto:amdj@ign.ku.dk)

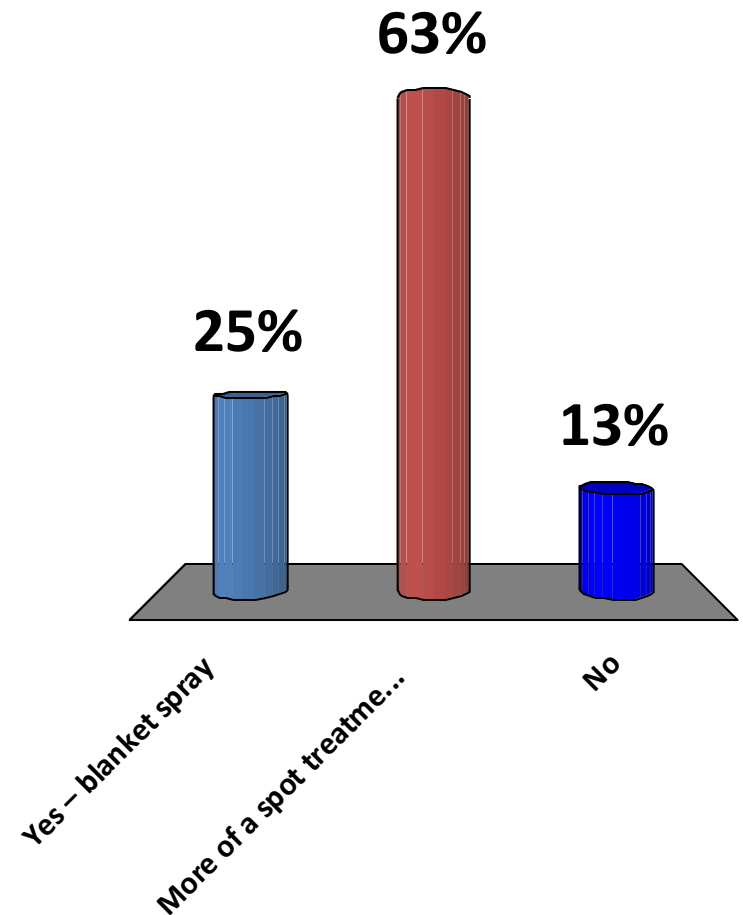
<sup>1a</sup> University of Copenhagen, Department of Geosciences and Natural Resource Management

<sup>2</sup> Norwegian Institute for Bio economy Research, Section for Urban Greening and Environmental  
Technology NIBIO, Norway

Final report – December 2015

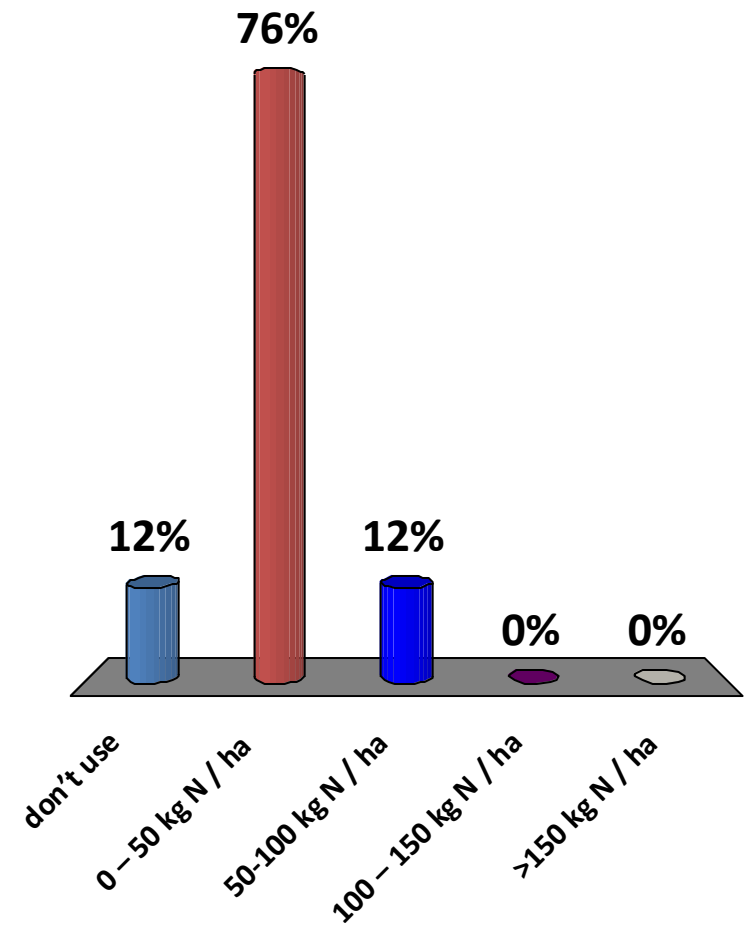
# Do you use a herbicide on your fairways to control broadleaved weeds?

- A. Yes – blanket spray
- B. More of a spot treatment, worst areas
- C. No



# What rate of Nitrogen do you apply to your fairways in a year?

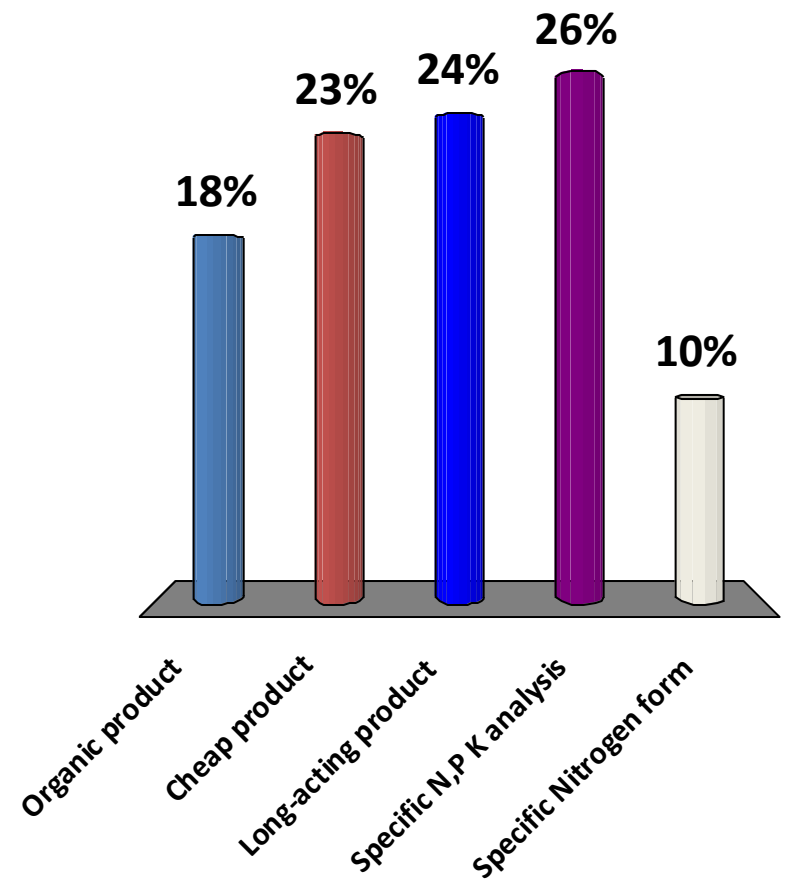
- A. don't use
- B. 0 – 50 kg N / ha
- C. 50-100 kg N / ha
- D. 100 – 150 kg N / ha
- E. >150 kg N / ha





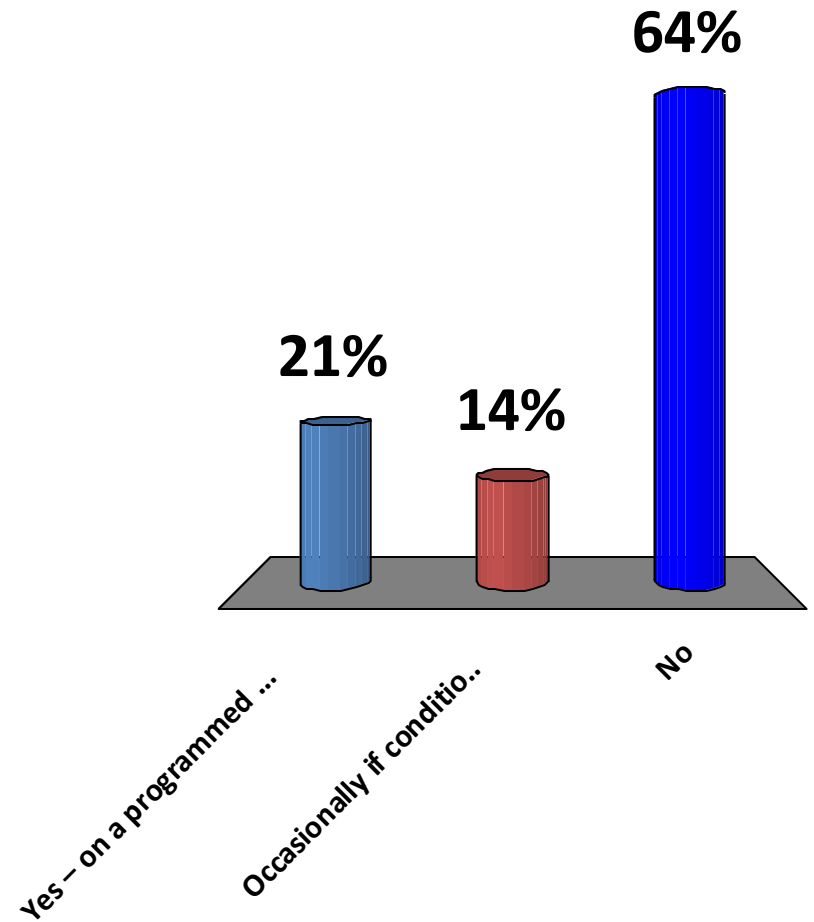
# Rank the factors which influence your choice of fairway fertiliser?

- A. Organic product
- B. Cheap product
- C. Long-acting product
- D. Specific N,P K analysis
- E. Specific Nitrogen form



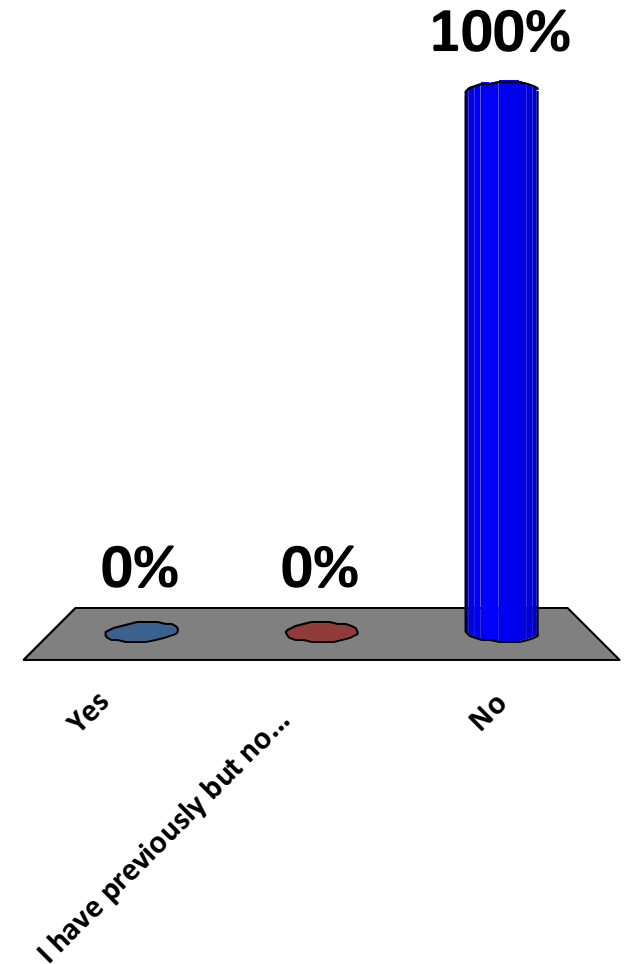
# Do you use a fairway wetting agent?

- A. Yes – on a programmed approach
- B. Occasionally if conditions merit
- C. No



# Do you use growth regulator (Primo Maxx) on your fairways

- A. Yes
- B. I have previously but not anymore
- C. No

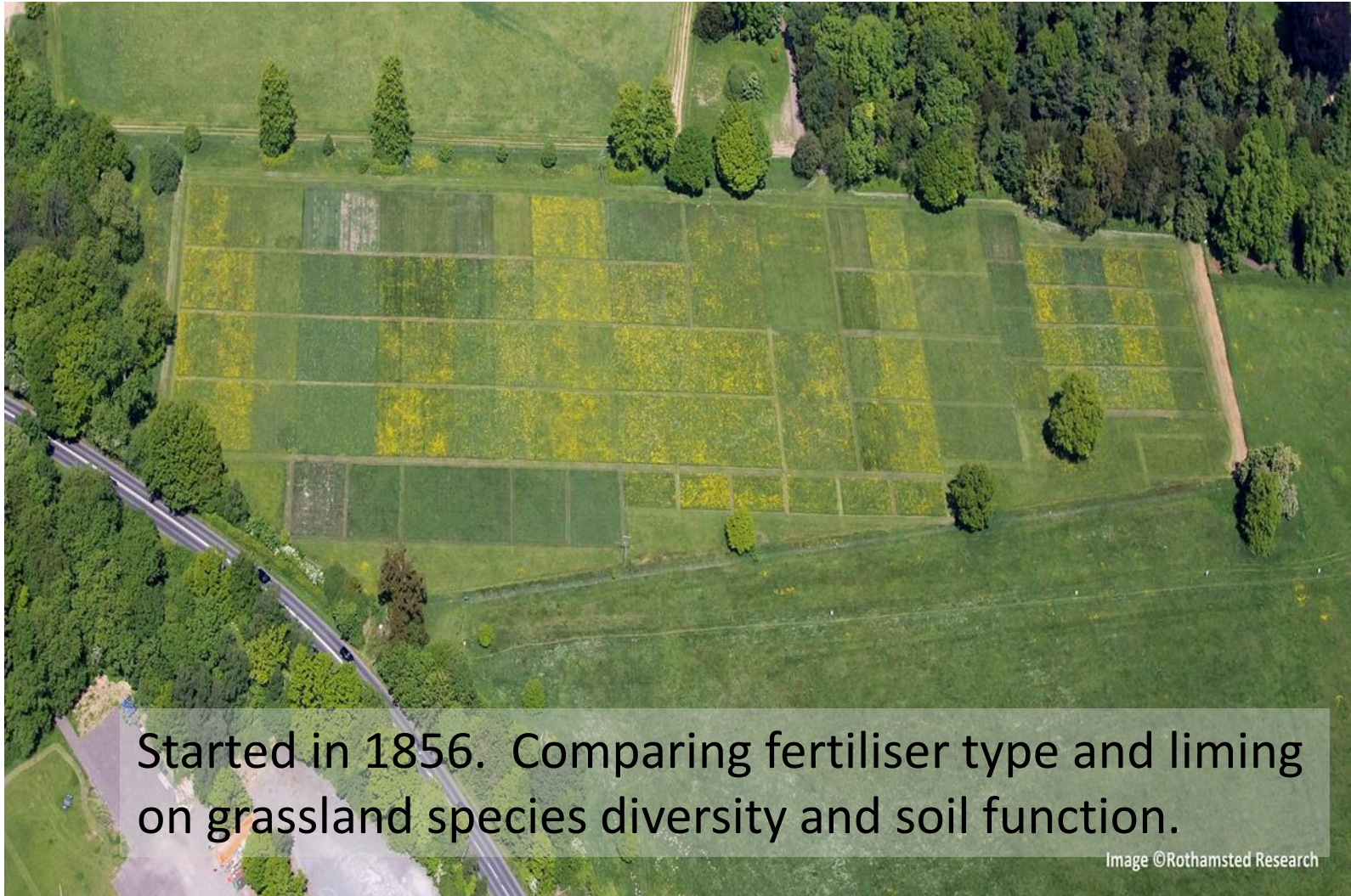


# How important is nutrition?



Image ©Rothamsted Research

# Park grass experiment, Rothamsted



Started in 1856. Comparing fertiliser type and liming on grassland species diversity and soil function.

Image ©Rothamsted Research



Nitrogen applications reduce species diversity and favours the growth of grasses

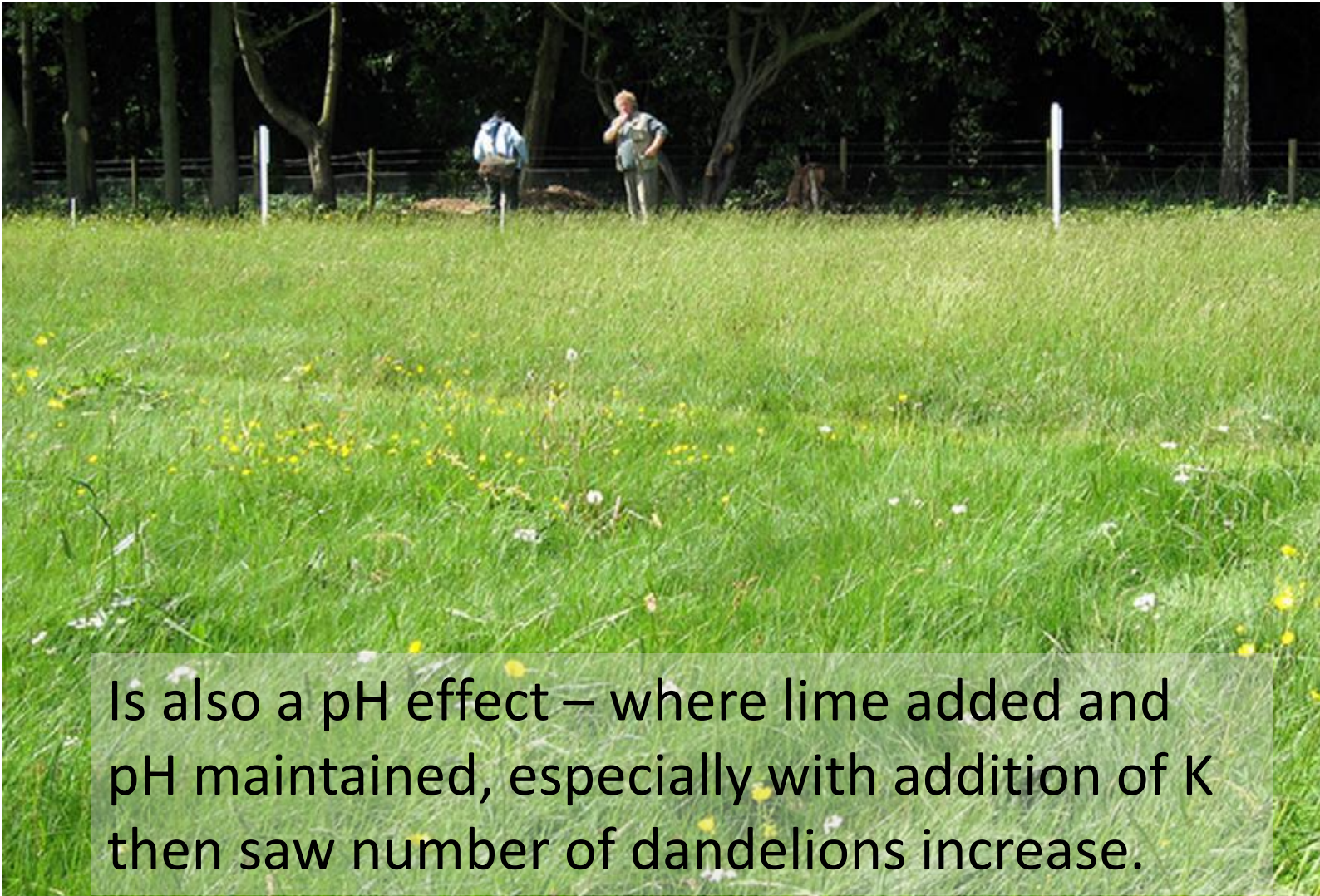


Ecological model of competitive exclusion:  
ie.. biomass has a negative effect upon  
species richness.



From approx.. 40 species present per plot to 2 species. Yearly applications of 50 kg / ha N (over 50 years)





Is also a pH effect – where lime added and pH maintained, especially with addition of K then saw number of dandelions increase.



Dandelion has a higher resource requirement for potassium than grasses (potassium free fertiliser may decrease dandelion populations) .

**Anaerobic digestate : an alternative fertiliser for the turf grass industry.**

Owen, A.G., Weir, I., Pawlett, M. and Tibbett, M.



Outfield: Ryegrass / Poa Turf  
Indigenous Soil

# Nitrogen applications to Turf

See clear effect on clover populations



Control plot – No Nitrogen

# Nitrogen applications to Turf

See clear effect on clover populations

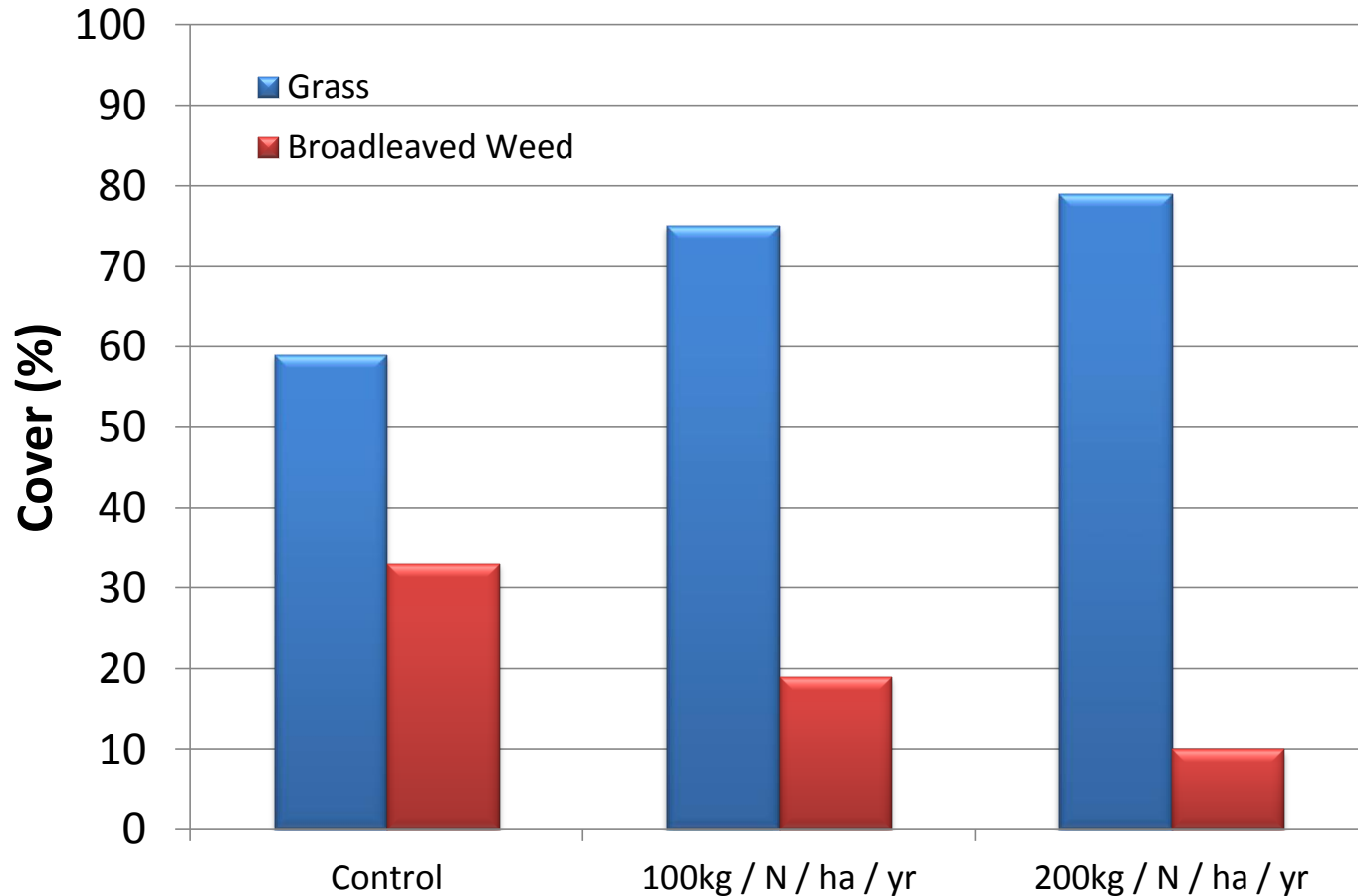


# Nitrogen applications to Turf

See clear effect on clover populations



200kg N / ha / yr









# No short term solutions...



There is a need for long-term research



Manipulation of soil pH to manage earthworm populations rarely show success in short term trials – however long term should work..



Little to no benefit in the first three years of a study but positive results after eight to ten years – can demonstrate long-term commitment to a practice.

*Journal of Turfgrass and Sports Surface Science Vol. 80 (2004)*

## **THE EFFECT OF SOIL ACIDIFICATION ON CASTING BY EARTH- WORMS. II. EXTENDED TRIALS ON GOLF COURSE FAIRWAYS WITH VARYING SOIL CONDITIONS**

By S.W. BAKER & A.G. OWEN

The Sports Turf Research Institute, Bingley, West Yorkshire, BD16 1AU

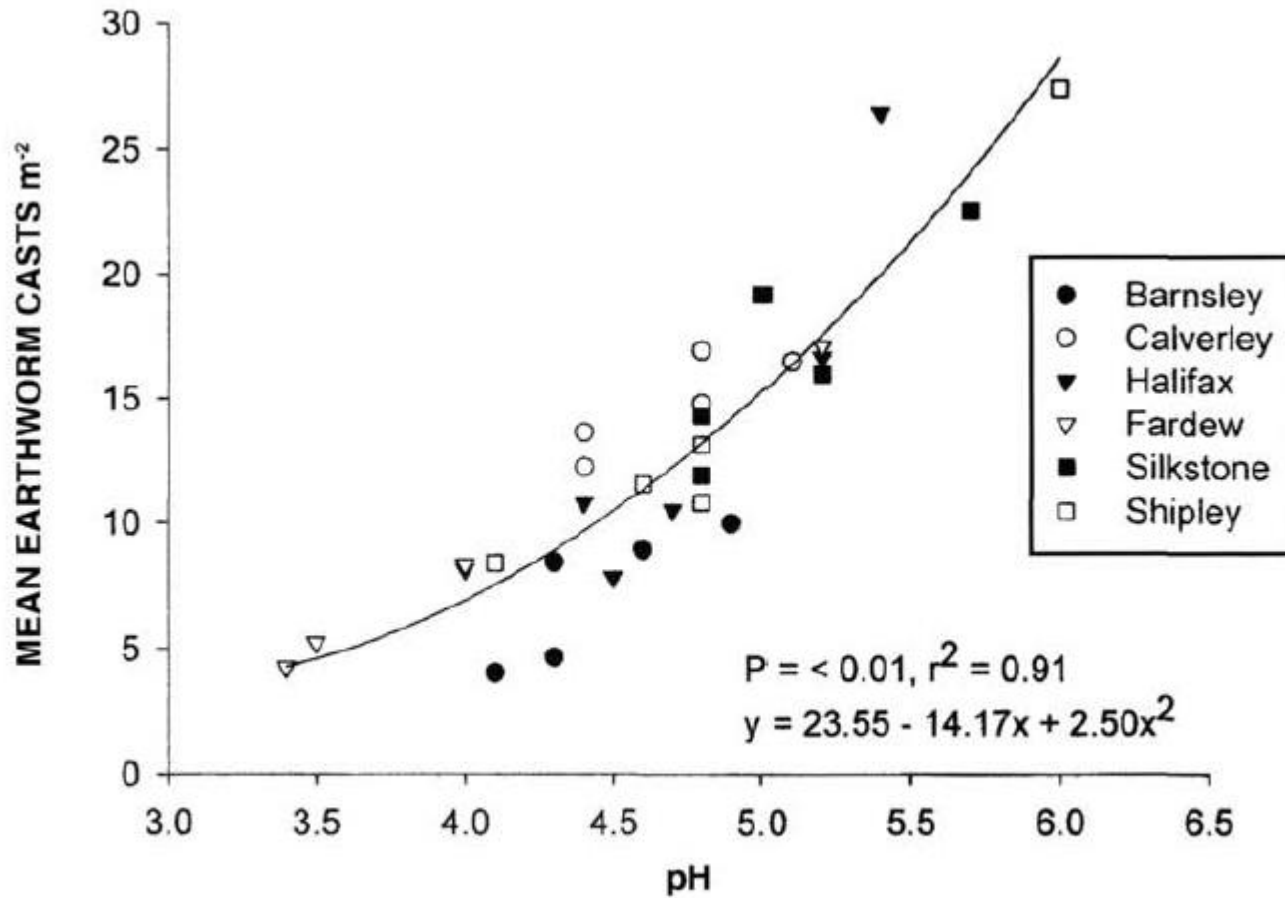
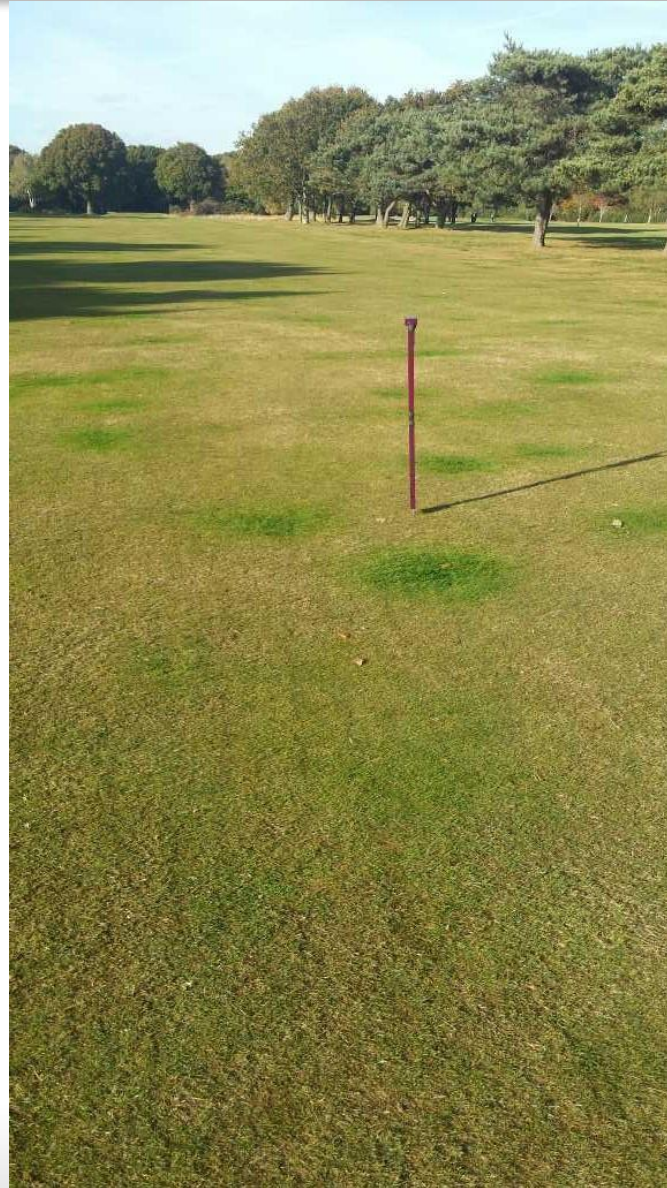


FIGURE 7. The average number of earthworm casts recorded for each monitoring occasion during 2000-2001 in relation to the pH of the upper 25 mm of soil.

Use of a wetting agent can improve fairway consistency..





**Any Questions?**

Please contact: [andy.owen@icl-group.com](mailto:andy.owen@icl-group.com)