

The Abstract

Represents a crucial section of the paper.

An abstract has two typical uses:

- 1. Printed at the beginning of a scientific paper, it can be used to determine if the remainder of the paper is worth reading.**
- 2. Often published in the absence of the full text (e.g. databases, conference proceedings).**

Two important premises to keep in mind:

1. More people will read the abstract than the full text.

Might be read by **50-100-times** more people than the full text.

2. Nobody will read the full text without first reading the abstract.

Therefore;

Everything that is important in the paper must be reflected in the abstract.

Write the abstract in order to call attention to new techniques or data.

Be specific.

Therefore, take advantage of the short duration of attention that your abstract will attract.

Abstract structure

Represents a miniaturized version of the paper that contains:

1. Introductory statement of the rationale or hypothesis.

One short sentence.

2. Materials and methods.

Be brief

Does not have to be detailed

3. Results.

Be specific, this is what the reader is really looking for.
Include numbers, but no interpretation.

4. Discussion/conclusion.

One (maybe two) short sentences.
What does it all mean?

Dryland Grain Sorghum Water Use, Light Interception, and Growth Responses to Planting Geometry

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ABSTRACT (From *Agron. J.* 78:720–726 [1986])

Rationale Crop yields are primarily water-limited under dryland production systems in semiarid regions.

Objectives or hypothesis This study was conducted to determine whether the growing-season water balance could be manipulated through planting geometry.

Methods The effects of row spacing, row direction, and plant population on the water use, light interception, and growth of grain sorghum [*Sorghum bicolor* (L.) Moench] were investigated at Bushland, TX, on a Pullman clay loam (fine, mixed, superactivethermic Torrertic Paleustoll).

Results In 1983, which had a dry growing season, narrow-row spacing and higher population increased seasonal evapotranspiration (ET) by 7 and 9%, respectively, and shifted the partitioning of ET to the vegetative period. Medium population crops yielded 6.2 and 2.3 Mg ha⁻¹ of dry matter and grain, respectively. High population resulted in high dry matter (6.1 Mg ha⁻¹) and low grain yield (1.6 Mg ha⁻¹), whereas low population resulted in low dry matter (5.4 Mg ha⁻¹) and high grain yield (2.3 Mg ha⁻¹). Row direction did not affect water use or yield. In 1984, dry matter production for a given amount of ET and light interception was higher in the narrow-row crops. Evapotranspiration was less for a given amount of light interception in the narrow-row crops and in the north-south row crops.

Conclusions Narrow-row planting geometry appears to increase the partitioning of ET to the transpiration component and may improve the efficiency of dryland cropping systems.

Example abstract (250 words)

Due to the widespread use of fungicides on highly managed agronomic sites, we investigated the impact of the fungicide chlorothalonil on microbial populations following application to a turfgrass, forest, and agricultural soil. Chlorothalonil was applied to each soil at three rates, representing 0.2x, 1x, and 5x the recommended label rate for turfgrass and incubated for a two-week period. Changes to the microbial community caused by the chlorothalonil application were assessed following DNA extraction, PCR-amplification with *Bacteria* domain- and fungi-specific primers, and denaturing gradient gel electrophoresis (DGGE). Digitized DGGE images were used to determine two parameters: the number of bands per lane (S) and the Shannon-Wiener index of diversity (H'), both of which were used only for comparison of the different treatments, and not as true diversity measurements. Bands appearing to be either enhanced or inhibited as a result of the chlorothalonil treatment were excised and DNA was sequenced. Increased rates of chlorothalonil impacted eight bacteria populations (two inhibitions, four enhancements, and two non-specific responses) and four fungi populations (all inhibitions). S and H' indicated an altered but not significantly different ($P < 0.05$) bacteria and fungi population structure following chlorothalonil application. Sequencing of excised DGGE band DNA indicated an impact to several groups of bacteria (Cytophaga-Flavobacterium-Bacteroides, α -, β -, γ -, and δ - proteobacteria) and two fungi taxa (zygomycota and ascomycota). Although changes to the overall population structure of dominant species was nonsignificant, we conclude that following a single chlorothalonil application and a short incubation period, both enhancement and inhibition of a variety of organisms can occur.

The same abstract broken down:

Introductory statement/rationale

Due to the widespread use of fungicides on highly managed agronomic sites, we investigated the impact of the fungicide chlorothalonil on microbial populations following application to a turfgrass, forest, and agricultural soil.

Methods description

Chlorothalonil was applied to each soil at three rates, representing 0.2x, 1x, and 5x the recommended label rate for turfgrass and incubated for a two-week period. Changes to the microbial community caused by the chlorothalonil application were assessed following DNA extraction, PCR-amplification with *Bacteria* domain- and fungi-specific primers, and denaturing gradient gel electrophoresis (DGGE). Digitized DGGE images were used to determine two parameters: the number of bands per lane (S) and the Shannon-Wiener index of diversity (H'), both of which were used only for comparison of the different treatments, and not as true diversity measurements. Bands appearing to be either enhanced or inhibited as a result of the chlorothalonil treatment were excised and DNA was sequenced.

Results

Increased rates of chlorothalonil impacted eight bacteria populations (two inhibitions, four enhancements, and two non-specific responses) and four fungi populations (all inhibitions). S and H' indicated an altered but not significantly

different ($P < 0.05$) bacteria and fungi population structure following chlorothalonil application. Sequencing of excised DGGE band DNA indicated an impact to several groups of bacteria (Cytophaga-Flavobacterium-Bacteroides, α -, β -, γ -, and δ -proteobacteria) and two fungi taxa (zygomycota and ascomycota).

Discussion/conclusion

Although changes to the overall population structure of dominant species was nonsignificant, we conclude that following a single chlorothalonil application and a short incubation period, both enhancement and inhibition of a variety of organisms can occur.

Some other rules:

Never include statements that direct the reader to the paper.

“will be discussed”

“will be explained”

These statements are worthless to somebody reading the abstract in a secondary publication.

Often, there is a word limit.

250 words for full papers

150 words for notes (**50** word abstracts are not uncommon).

An abstract should never contain footnotes, tables, figures, or citations/references, equations, formulae, or obscure acronyms.

At first mention in the abstract, give the complete scientific names, the full name of chemicals, and description of soils.

After first mention, such names or descriptions from the abstract do not have to be repeated in the text.