

## Of Management Zones and Classes A brief note

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You say potatoe, I say potato; You say zone, I say class. In precision agriculture (PA) where does a zone stop and a class begin and is there a need for both management zones and management classes? A quick search of the ISI Web of Science database indicates that there is not. The Boolean search *agriculture AND "management zone" OR "management zones"* returned 51 results. Switching the terms 'zone' and 'zones' to 'class' and 'classes' respectively yielded 0 results. This forms a very simple conclusion: Agricultural scientists do not publish using the term 'management class(es)'. However the absence of something does not necessarily infer that it is redundant – remember when we used to live without mobile phones, e-mail, television...

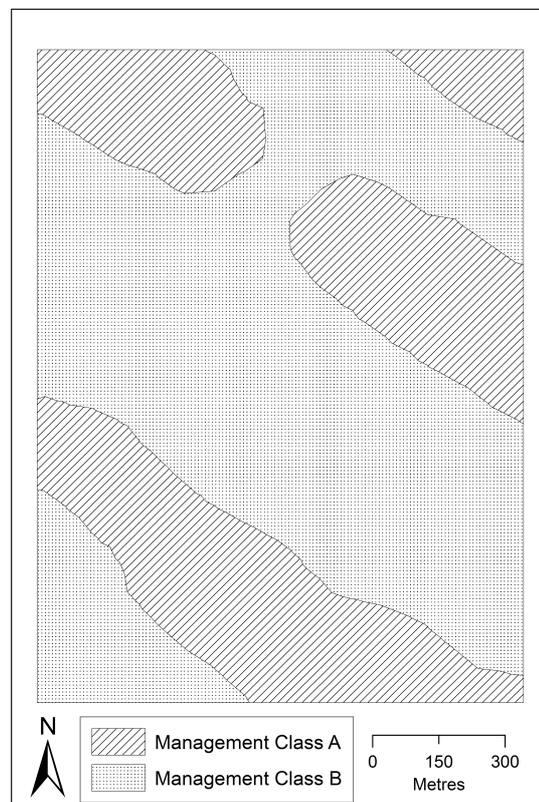
The term 'management zone(s)' has been poorly defined in the PA literature and is used ubiquitously for any partitioning of a field into smaller, fenceless sub-fields. As a result management zones may be interpreted in different contexts. With 50+ publications in the agricultural journal literature and many more papers in conference proceedings using management zones, a clarification of what actually constitutes a management zone is needed. As scientists, and practical agriculturists, ubiquitous terms will inevitable induce misunderstandings.

The primary rationale for the need for both terms is the lack of terminology, and effort in the literature, to define between:

- i) a discrete, contiguous area to which a treatment is applied, and
- ii) all the locations in a field that receive a particular treatment (that may be sited in several disparate areas)

Figure 1 illustrates these two concepts using a hypothetical field with 6 discrete areas that have

been attributed to 1 of 2 treatments. In Fig. 1, are there 6 management zones or only 2? Likewise, are there 6 or 2 management classes? According to Johnson et al (2003) there are only 2 management zones, while the approach used by Roudier et al (2007) would classify the field into 6 management zones. A potentially confusing situation.



**Figure 1:** A hypothetical agricultural field that has been delineated into 2 management classes, which combined have 6 discrete management zones, to illustrate the difference between management classes and management zones.

The definition of the words 'zone' and 'class' helps to clarify the situation. The online Oxford English dictionary ([www.oed.com](http://www.oed.com)) defines zone (in a technical sense) as;

*'a definite region or area of the earth, or of any place or space, distinguished from adjacent regions by some special quality or condition'*

while class is defined as;

*'a number of individuals (persons or things) possessing common attributes, and grouped together under a general or 'class' name'.*

Applying these definitions, a 'zone' has a spatial constraint (i.e. is distinguished from adjacent regions) while a 'class' is a grouping of like individuals with no spatial constraints. Therefore, Fig. 1 has 2 management classes and 6 management zones, with Management Class A having 2 management zones and Management Class B having 4 management zones.

To formally define the two terms;

A *management class* is the area to which a particular treatment may be applied.

A *management zone* is a spatially contiguous area to which a particular treatment may be applied.

Thus a management class may consist of numerous zones whereas, a management zone can contain only one management class. Given that the majority of PA literature uses the term management zone in the context of a management class, there needs to be a major shift in the use of these terms in future publications.

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#### **References**

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