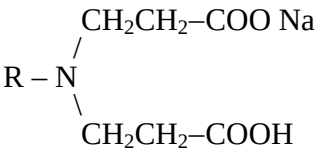
The glyphosate rates of the spray solutions were 186, 372, and 743 g ae/ha (gram acid equivalent per hectare). The glyphosate to surfactant ratio was fixed at 3:1 except for sample B (coco diamine trimethyl betaines) which had a ratio of 6.7. Higher ratio means lower surfactant concentration. A ratio of 6.7 means the sample, at the same glyphosate concentration, has 2.2 times less surfactant than a sample with a ratio of 3.

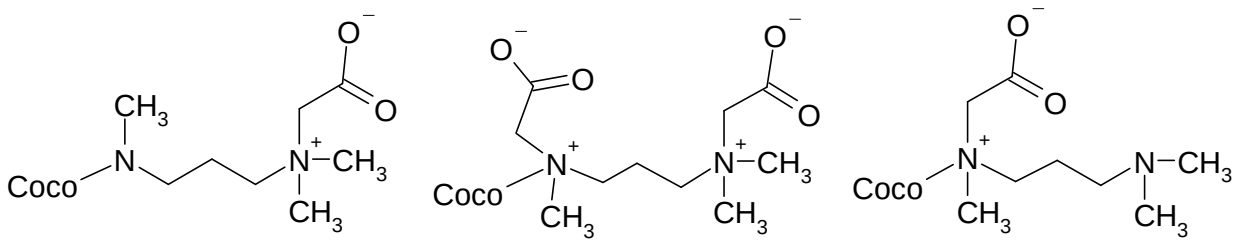
Sample E served as a negative control, since it contained only glyphosate without added surfactant. Sample C served as a positive control since it is well known that tallowamine-15EO is an excellent surfactant to enhance glyphosate efficacy.

% Control ratings were conducted by an experienced person at 7, 14, 21, and 29 days after treatment (DAT). Digital pictures were also taken at the time of rating. Each % Control value was an average of 4 replicas.

The Mono sodium lauryl iminodipropionate of Sample A has the following nominal structure which can be obtained by reacting alkylamine with acrylic acid then neutralized with a base (NaOH).



The Cocodiamine trimethyl betaines of Sample B has the following nominal structure which can be obtained by reacting N,N'N'-trimethyl cocodiamine with sodium monochloroacetate (SMCA):



(i) (ii) (iii)