

Herbicidal effect of vinegar as organic herbicide

B.M. Lee^{1*}, H.J. Jee, C.S. Kim, S.B. Lee, H.S. Nam, C.K. Kang, J.H. Lee and
M.K. Hong

¹Organic Agriculture Div., National Academy of Agricultural Science, RDA, Suwon City,
441-707, Republic of Korea

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Abstracts

Vinegar has been considered as a potential organic herbicide, but more knowledge is needed about acetic acid concentration, application volume and use of adjuvants on weed control. In this study, we determined optimum acetic acid concentration and spraying time on several weed species. Vinegar is more effective in broadleaf weeds than grasses. Vinegar is also effective in controlling younger weeds such as 3rd to 4th weeks after emergency. For example, 3rd weeks after emergency weeds were easily controlled at 2-3% of vinegar solution. But 4th weeks after emergency weeds were controlled at 4-5% of vinegar. Therefore vinegar concentration was recommended about 5%, and application time was when the weeds were young – within 3 leaf stage.

Introduction

Vinegar is a solution containing acetic acid. It can be organically produced by natural fermentation of plant. Vinegar has been considered as a potential organic herbicide, but more knowledge is needed about acetic acid concentration, application volume and use of adjuvants on weed control. In this study, we determined optimum acetic acid concentration and spraying time on several weed species.

Materials and methods

Vinegar concentration treatments were 1%, 2%, 3%, 4% and 5%. Each vinegar solution was sprayed on test plants with rotary sprayer. Test plants are troublesome weeds such as *Echinochloa crus-galli*, *Digitaria ciliaris*, *Portulaca oleracea*, *Abutilon theophrasti*, *Chenopodium serotinum* and *Amaranthus hybridus*. In order to investigate damage response according to plant growth stage, Growth stage of test plants was 1st weeks to 7th weeks after emergency. The damage symptoms of test plants were recorded by visual scoring as 0(no effect) to 9(dead).

Results and discussion

Vinegar is more effective in broadleaf weeds than grasses. Vinegar is also effective in controlling younger weeds such as 3rd to 4th weeks after emergency. For example, 3rd weeks after emergency weeds were easily controlled at 2-3% of vinegar solution. But 4th weeks after emergency weeds were controlled at 4-5% of vinegar. Therefore vinegar concentration was recommended about 5%, and application time was when the weeds were young – within 3 leaf stage.

Conclusion

Vinegar was shown as effective organic herbicide. When the weeds were young, within 3 leaf stage, 5% of vinegar could control weed in organic farmland.

References

Moran P.J. and S.M. Greenberg. 2008. Winter cover crops and vinegar for early-season weed control in sustainable cotton. *J. Sustainable Agriculture*. 32:483-506.

Johnson E., T. Wolf, B. Caldwell, R. Barbour, R. Holm, K.Sapsford. 2004. Efficacy of vinegar(Acetic acid) as an organic herbicide. ADF project (#20020202) final report.