16th SYMPOSIUM

Samsun 2013

24-27 June, 2013



EWRS

European Weed Research Society

PROCEEDINGS

Program Commitee

Chairman:	Paolo Barberi (President of the EWRS)
Members:	Josef Soukup (Scientific Secretary of the EWRS)
	László Radics (Vice President of the EWRS)

Session Organizers

H. Kraehmer	Bayer CropScience, AG Industriepark Hoechst Frankfurt am Main Germany
H. Darmency	INRA, UMR1347, Agroécologie, BP86510, 21065 Dijon, France
M. Vurro	Istituto di Scienze delle Produzioni Alimentari CNR, via Amendola, Bari, Italy
L. Bastiaans	Crop and Weed Ecology Group, Dept. of Plant Sciences, Wageningen University, Wageningen, The Netherlands
G. Economou	Faculty of Crop Production Science, Agricultural University of Athens, Iera Odos Str., Athens
E. Pannacci	Department of Agricultural and Environmental Sciences, University of Perugia, Borgo XX Giugno 7 Perugia
B. Melander	Department of Integrated Pest Management, University of Aarhus, Forsøgsvej Slagelse
P. Hatcher	School of Biological Sciences, Plant Science Laboratories, University of Reading, Gb -Reading
P. Kudsk	Department of Integrated Pest Management, University of Aarhus Forsøgsvej 1, Slagelse
N. Uygur	Department of Plant Protection, University of Cukurova, Adana, Turkey
P. Neve	School of Life Sciences, University of Warwick, CV4 7AL, Coventry, United Kingdom
B. Rubin	Faculty of Agricultural, Food and Environmental Sciences, Hebrew University of Jerusalem, RH Smith Inst. Plant Sci. & Genetics, Rehovot
S. Christensen	University of Copenhagen, Faculty of Life Sciences Department of Agriculture and Ecology, Højbakkegård Alle, Taastrup
B. Gerowitt	Insitute for Land Use, University of Rostock, Satower Str. Rostock

Local Organizing Committee

Dr. Hüsrev MENNAN	Ondokuz Mayis University (Co-Chairman)
Dr. Masum BURAK	Ministry of Food, Agriculture and Livestock (Co-Chairman)
Dr. Birol AKBAS	Ministry of Food, Agriculture and Livestock
Dr. M. Selçuk BASARAN	Ministry of Food, Agriculture and Livestock
Dr. Nevzat BIRISIK	Ministry of Food, Agriculture and Livestock
Dr. Dogan ISIK	Erciyes University
Dr. Emine KAYA-ALTOP	Ondokuz Mayis University
Dr. Mathieu NGOUAJIO	Michigan State University

SPONSORS

Ondokuz Mayis University

EWRS

Ondokuz Mayis University, Agriculture Faculty

Ministry of Food, Agriculture and Livestock

Turkish Weed Science Society

General Directorate of Agricultural Research and Policy

Syngenta

Dow AgroSciences

ENTOSAV

BAYER

BASF

Agrobest

ORSAM

KUTSAN

TÜBİTAK

Flame weeding effects on some weed species

Y. E. Kitiş, Y. E. Gök
Süleyman Demirel University, Faculty of Agriculture, Plant Protection Department, 32260 Isparta, Turkey
emrekitis@sdu.edu.tr

Flame weeding is one of the important alternative weed control method to herbicides. Because, flaming provides rapid weed control and does not leave residue. In organic farming, flame weeding is also important alternative when mechanical methods are less effective. In this study, experiments were conducted to determine the influence of weed developmental stage and time of exposure to heat on weed control efficacy in comparison with herbicide (glyphosate). For this purpose, response to flaming was evaluated on six common weed species: common lambsquarters (*Chenopodium album*), redroot pigweed (*Amaranthus retroflexus*), black nightshade (*Solanum nigrum*), common cocklebur (*Xanthium strumarium*), prickly lettuce (*Lactuca serriola*) and swallow wort (*Cynanchum acutum*). Weed species were marked at two different developmental stages (to be different for each species) in fields. The growth stages of each weed species were based on number of leaves. Flame treatments were performed using a hand-held, unshielded 63 mm diameter single burner system. The burner positioned 20 cm above weed surface and angled horizontally at 30º. The application speeds (conducted by walking) were 1,5 and 3,0 km h^{-1}. Flame was applied with two bar pressure (200 kPa) on weed species at two different stages of development. The fuel consumption of burner with two bar pressure is 8,9 kg/h. In the herbicide group, glyphosate was applied at the recommended dose depending on the weed species (300 ml/da for annual weeds, 600 ml/da for perennial weed) simultaneously with the application of flame. Weed species were observed on 1^{st}, 3^{rd}, 7^{th} and 14^{th} days after treatment (DAT) and visually evaluated according to a scale from 0 to 100%, where 0 represented no plant injury and 100 represented plant death. End of the visual observation (at 14 DAT), weeds were harvested from fields and dried for 72 hours in 65 °C to determine dry weight. The experimental design was a completely randomized with ten replications. Weed response to broadcast flaming varied dependent upon weed species, developmental stage and duration of flaming. According to the data of dry weight; flaming of both application speeds controlled by 100% in both growth stages of common lambsquarters (2-4 / 6-8 leaves stage), redroot pigweed (2-4 / 6-8 leaves stage), black nightshade (4-6 / 8-10 leaves stage) and common cocklebur (0-2 / 4-5 leaves stage). Swallow wort was controlled by flaming in both application speeds approximately 80% and 90%, respectively in both developmental stages (4-6 / 8-10 leaves stage). Prickly lettuce at first growth stage (2-4 leaves) was controlled by flaming at 100%, but at second growth stage (6-8 leaves) this proportion reduced by up to 48%. Therefore, it is understood that, growth stage is very important for prickly lettuce control by flaming. There were no differences in terms of efficiency between application speeds of flaming in all weed species. Herbicide gave good result as much as flaming for all species except common cocklebur and swallow wort. These results show that flaming has an excellent potential for weed control, especially for annual weed species.