**INSTRUCTIONS**

1. **Adhere to this format, font. margins, sections, references format, etc..**

**2. Prepare one-page abstract (no longer than 250 words) including presentation title, authors’ name and affiliation, corresponding author’s name and email address and keywords (up to 5 keywords). The abstract should be submitted via email (****DT15amman@gmail.com****) no later than 14 October 2022.**

**3. Prepare manuscript according to the detailed instruction highlighted yellow and should be submitted via email (****DT15amman@gmail.com****) no later than 5 May 2023. Maximum number of pages is 4 pages**

**DESERT TECHNOLOGY XV (DTXV)**

**INTERNATIONAL CONFERENCE ON ARID LAND, 2023**

**3-6 June 2023, Dead Sea, Jordan.**

Control of soil erosion of Agricultural Land in Jordan with polyacrylamide (17 points)

Majed ABU-ZREIG \*1), …. …...2), ….. …..3) (11.5 points)

**Abstract:** Abstract is to be clear and concise. Abstract must be no longer than 250 words, 9.5 point font, Times New Roman. The entire manuscript should be written using this format. If your manuscript does not conform to this format it will be rejected without further review. Corresponding author must be indicated by putting “\*” besides the author’s name. Authors’ affiliation should be indicated by numbers described next to authors’ names. Authors’ affiliations must be described at the bottom of the first page, but only the corresponding author needs detailed description; other authors only need to indicate a simple affiliation. Maximum length of the manuscript is restricted to 4 pages. If an author wants more than 4 pages of manuscript, they must first contact our editorial board and get permission for excess length, and pay 6,000 Japanese yen (about 70 US dollars) per excess page. When authors submit a manuscript longer than 4 pages without prior permission, the manuscript will be rejected without review.

**Keywords:** PAM, field plots, soil loss (please include no more than 5 keywords. (9.5 points))

1. Introduction (The section title should be 11 points.)

**1.1. Sub-Section title (10 points)**

The Main Body (10 points) should be prepared clearly and concisely. Basic structure of manuscript consists of “Introduction”, “Materials and Methods”, “Results”, “Discussion”, “Conclusions” and “References”, but authors can arrange their manuscript freely. Footnotes may not be used. Notes should appear at the end of the body as “APPENDIX”, if necessary. Authors can describe “Acknowledgement” before “Reference” section, if necessary.

**1.2. Figures and Tables**

1.2.1. General instruction (Sub-sub-section title (10 points))

Figures and Tables should be inserted into the body of the manuscript. The placement of the Tables and Figures can arranged by authors but figures and tables need 1 blank line between upper and lower part. Figures’ titles should be described just below the figures with 8.5 points font (bold). Photos must be included as figures. Tables’ title should be described just above the tables with 8.5 points font (bold).

\* Corresponding Author: majed@just.edu.jo (The email address of the corresponding author) (Received, mm, dd, yyyy; Accepted, mm, dd, yyyy)

The postal address of the corresponding author Tel:+xx-yy-zzz-www Fax.: +xx-yy-zzz-www

1) Professor of Water and Environmental Engineering, Jordan University of Science and Technology, Irbid, Jordan

2) Affiliation of Author 2

3) Affiliation of Author 3

1.2.2. Quality

Figures must be of high quality. Do not use poor quality photos or outlines. Tables must be arranged with sufficient size for readers (small letters will interfere with readers’ comprehension). For tables, vertical line must be reduced as much as possible (our recommendation is no use of vertical line), and lateral lines should be also reduced as much as possible.



Fig. 1. Figure title (8.5 points, bold).

Additional description of the figure (8.5 points).

Table 1. Table title (8.5 points, bold).

Additional description of the table (8.5 points).



**1.3. Literature Citations**

Literature is to be cited in the main body as Rognon (1994), or (Tucker et al., 1981, 1985; Grove, 1986a, 1986b; Lean and Warrilow, 1989). The words “et al.” should be used for three or more authors. Lowercase letters following year may be used if necessary to differentiate. Cited pages from books should be identified as FAO (1993: 15-17).

2. Materials and Method

Materials and methods should be described clearly, and all the materials and methods should be described in this section. Do not describe materials and methods in Results and Discussion section.

SI (The System International) units should be used wherever possible. Standard abbreviation may be used.

When presenting equations, please use mathematical expression editor of MS-WORD tool. Examples are shown below:

 (1)

Where *µ* is ..., *α*i is ..., (and so on)

3. Results and Discussion

“Results” section and “Discussion” section can be described separately, but to shorten your manuscript, the editorial board strongly recommends combining Results and Discussion. Authors can describe their ideas and proposals in this section. More than one referee will check your description and will judge whether this manuscript is suitable for publication. So the editorial board strongly recommends adherence to scientific standards.

3.1. Runoff and Infiltration

Application of PAM significantly decreased runoff at both treatment levels compared to control and compacted plots. Figure 1 shows runoff reduction in PAM treated plots compared to control.

The average runoff depth in the control and compacted plots were 53 mm and 72 mm, respectively compared to 45 mm for A870 (13.5% reduction) and 40 mm for A836 (23.5% reduction). However, runoff differences between the 10 and 30 kg/ha application rate were small and insignificant (only 1 mm) and therefore only average values were reported in Table 1.

Further analysis was performed to test the longevity of PAM during the winter season. The relative runoff coefficient of PAM treated plots seemed to remain constant or slightly decreased with time in the case of A870 suggesting PAM persistence along the season.

3.2. Effect of polyacrylamide on soil loss

The influence of PAM on soil loss is summarized in Figure 2.



Fig. 2. Soil loss reduction (%)

Table 2. Table title (8.5 points, bold).



Additional description of the table (8.5 points).

Soil loss from PAM treated plots was significantly lower than those in the control plots for each storm for both application rate (P<<0.05). The total soil loss from control plots were 2672 kg/ha and decreased by an average of 36% for PAM treated plots. PAM A836 had significantly higher soil loss reduction (48% compared to control) compared to A870 with 25% reduction. PAM A836 concentration had significant effect on soil loss causing a 41% and 54% reduction at 10 and 30 kg/ha, respectively (Figure 2). The corresponding soil loss decrease in the case of A-870 was lower at 25% and 26%. Unlike its influence on runoff PAM seemed to reduce sediment loss at higher degree. These results were in agreement with erosion studies involving PAM application found in literature.

The effectiveness of PAM under simulated rainfall condition seemed to be higher than that under natural rainfall conditions. Flanagan *et al.* (2002) found that PAM application under simulated rain reduced runoff and sediment yield by 52 and 91%, compared to about 30 and 49%, respectively under natural rainfall. In a previous study, Abu-Zreig (2006) found that application of PAM A836 and A870 at 10 kg/ha reduced soil loss by an average of 46% compared to 33% in the present study. This is because soil erosion under natural rainfall is dominated by interill erosion at which PAM is less effective while simulated rain caused more rill erosion at which PAM is more effective (Flanagan, 2002; Peterson *et al.*, 2002). In addition differences in the ionic composition between natural and simulated rainfall may contribute to these differences in soil loss (Smith *et al.* 1990; Sheinberg *et al.*, 1990).

4. Conclusion (or Recommendation)

Authors can include a “Conclusion” section as summary of their manuscript, but this is optional.

References

Abu-Zreig M. (2006): Erosion control with various types of polyacrylamide. *Journal of Soils and Sediments* **6**(3): 137-144. (Articles, proceedings and something pursuant)

SPSS Inc. (1998): *SYSTAT 8.0. Statistics.* SPSS Inc, Chicago, IL, 1086p.

Duke C. V. A., Williams C. D. (2008): *Chemistry for Environmental and Earth Sciences.* CRC Press, Boca Raton. (Books)

Middleton N., Thomas D. (1997): Saline soils in the drylands: Extent of the problem and prospects for utilization. *In* Middleton N., Thomas D. eds., *World Atlas of Desertification. Second edition*. UNEP. (Edited books and collected papers with editor)

Bjorneberg D. L., Aase J. K. (2000): Multiple polyacrylamide applications for controlling sprinkler irrigation runoff and erosion. *Applied Engineering in Agriculture* **16**: 501-504.

Flanagan D. C., Chaudhari K, Norton L. D. (2002): Polyacrylamide soil amendment effects on runoff and sediment yield on steep slopes: Part I. Simulated rainfall conditions. *Transactions of the American Society of Agricultural Engineers* **45**: 1327-1337.

Marsh M. H, Groenevelt P. H. (19929: Effect of surface application of polyvinyl alcohol on phosphorus losses in runoff and on corn growth. *Journal of Environmental Quality* **21**: 36-40.

Peterson J. R., Flanagan D. C., Tishmack J. K. (2002): PAM Application Method and Electrolyte Source Effects on Plot-Scale Runoff and Erosion. *Transactions of the ASAE* **45**: 1859-1867.

Seybold C A (1994): Polyacrylamide review: soil conditioning and environmental fate. *Communications in Soil Science and Plant Analysis* **25**: 2171-2185.

Shainberg I, Warrington D. N., Rengasamy P. (1990): Water quality and PAM interactions in reducing surface sealing. *Soil Science* **149**: 301-307.

Smith H. J. C., Levy G. J., Shainberg I. (1990): Water-droplet energy and soil amendments: effect on infiltration and erosion. *Soil Science Society of American Journal* **54**: 1084-1087.

Websites must not be used as references. If the author wants to refer to websites, please cite as “Note” before “Reference” section.