CZECH ACADEMY OF AGRICULTURAL SCIENCES

Open Access CAAS Agricultural Journals

Soil and Water Res

Point irrigation design for experimental field in northern part of Gobi desert in Mongolia

P. Spitz, J. Filip, M. Šťastná

https://doi.org/10.17221/15/2009-SWR

Citation: Spitz P., Filip J., Šťastná M. (2011): Point irrigation design for experimental field in northern part of Gobi desert in Mongolia. Soil & Water Res., 6: 1-9.

download PDF

The present paper focuses on the point irrigation design for crops and growing vegetables on an experimental area 2432 m^2 at Buchel locality, Northern part of Gobi desert in Mongolia. An underground water source (drill hole – well capacity 2 l/s with water temperature 10°C) and electricity were available in the locality of the selected area of 1 ha and 0.2% grade of slope (no map was available). The design of the surface and subsurface point irrigation for an area of 128 m^2 is shown together with a brief description of the hydraulic materials used for the development of the original HYBOZAM program, which was programmed in Microsoft Excel editor, especially to design the pipe dimensions of the point irrigation. A combination of two plastic pipes (with diameters 35.4/40 mm and 28.2/32 mm and 20 m lengths each) was used to provide suitable irrigation uniformity from the orifices on the laterals. HYBOZAM program provides a visual evaluation of the discharge distribution uniformity from the orifices on the laterals by its graphical output. An example of Z1 lateral for surface point irrigation (variant 2) is presented. The final result of the design calculation is given in the table presenting the most important outputs, including statistic evaluation of the discharge distribution uniformity. A table is presented for surface point irrigation – variant 2. From the table is it clear that hydraulic requirements as well as discharge distribution uniformity from the orifices on the laterals have been fulfilled.

Keywords:

bilateral project; desert; discharge distribution uniformity; Excel; HYBOZAM; hydraulics; PC program; subsurface point irrigation; surface point irrigation; underground water

download PDF

Impact factor (Web of Sc Thomson Reuters)

2017: 0.882

5-Year Impact Factor: 1.11

SJR (SCImago Journal Ra SCOPUS)

2017: 0.379 – Q3 (Aquatic Q3 (Aquatic Science)

Share

New Issue Alert

Join the journal on Faceb

Similarity Check

All the submitted manus checked by the CrossRef Check.

Abstracted/indexed in

AGRIS/FAO database
Biological Abstracts
BIOSIS Previews
CAB Abstracts
CNKI
Czech Agricultural and Fo Bibliography
DOAJ (Directory of Open Journals)
EBSCO – Academic Searc Ultimate
Google Scholar
J-GATE
Journal Citation Reports/ Edition, Current Contents®/Agriculture, B and Environmental Scien Science Citation Index Ex
SCOPUS
Web of Science®

Licence terms

All content is made freely for non-commercial purp users are allowed to copy redistribute the material, transform, and build upo material as long as they c source.

Open Access Policy

This journal provides imm open access to its conten principle that making res freely available to the pub supports a greater global exchange of knowledge.

Contact

Ing. Markéta Knížková
Executive Editor
phone: + 420 227 010 373
e-mail: swr@cazv.cz

Address

Soil and Water Research
Czech Academy of Agricu
Sciences
Slezská 7, 120 00 Praha 2,
Republic

© 2018 Czech Academy of Agricultural Sciences