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Cyperus esculentus L. – A New Weed in Israel

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Cyperus esculentus L., a cosmopolitan noxious weed, has been recorded for the first time in an agricultural irrigated field in Israel. Hand-weeding, herbicides and soil disinfestation methods were only partially effective in controlling the weed. The distribution map of the weed is unknown, and it is unclear how the weed has been introduced into Israel. We estimate that *C. esculentus* has a high risk potential to spread further and cause damage to Israeli agriculture, and therefore its spread should be restricted.
KEY WORDS: *Cyperus esculentus*; *Cyperus rotundus*; yellow nutsedge; purple nutsedge; invasive weed.

Cyperus rotundus L. and *C. esculentus* L. are ranked number 1 and 16, respectively, among the world's worst weeds (2). Terry (5) points out five weediness characteristics that enable their high prosperity: vegetative reproduction, fast growth, environmental plasticity, highly competitive for light, water and nutrients, and resistance to control. Both species infest numerous crops and cause serious economic losses in the tropical and sub-tropical regions; *C. esculentus* is common also in temperate zones (3). Twenty species are known in Israel within the genus *Cyperus* (1), most of them grow in wet habitats, and of these only *C. rotundus* has been considered as a troublesome weed causing severe damage in irrigated summer crops. In June 2004 a new population of *Cyperus* was discovered in a cabbage field at the Tal-Or farm in the Negev, Israel, and was identified as *Cyperus esculentus* L. A search of the literature and of the herbarium collection at The Hebrew University of Jerusalem revealed that *C. esculentus* has never been recorded in Israel.

Cyperus esculentus and *C. rotundus* are perennial sedges that reproduce by underground tubers, have a triangular flowering stem and are well described in the literature (2-4,6). *C. esculentus* has a yellowish inflorescence composed of short spikelets ($\leq$1 cm) whereas *C. rotundus* bears a purplish inflorescence with spikelets longer than 1 cm. Tubers in *C. esculentus* appear as single, spherical ($\leq$1 cm) and brown-colored, whereas in *C. rotundus* tubers usually appear in a chain, ovulate in shape (1–3 cm) and black-colored. Unlike *C. rotundus,* which rarely has viable seeds, *C. esculentus* can reproduce readily by seeds (2,6).

To date, we know about the establishment of *C. esculentus* in a confined area (10–20 ha) at the Tal-Or farm. The local farmer's experience shows that hand-weeding, herbicides and soil disinfestation methods are only partially effective against the weed. It is still unclear how *C. esculentus* has been introduced into Israel and whether it has spread to neighboring farms. We also do not know the significance of its reproduction by seed under local conditions. However, it is obvious that movement of agricultural machinery over

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the infested fields can transfer *C. esculentus* to new locations rapidly. We estimate that *C. esculentus* has a high risk potential to spread further and cause damage to Israeli agriculture, and we hope that the authorities will take steps to prevent this noxious weed from spreading in Israel.

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REFERENCES

1. Feinbrun-Dothan, N. and Danin, A. (1991) Analytical Flora of Eretz-Israel. Cana Publishing House, Jerusalem, Israel.
2. Holm, L., Plucknett, D.L., Pancho, J.V. and Herberger, J.P. (1977) The World's Worst Weeds, Distribution and Biology. The University Press of Hawaii, Honolulu, Hawaii.
3. Keeley, P.E. (1987) Influences and interaction of purple and yellow nutsedges (*Cyperus rotundus* and *C. esculentus*) with crops. *Weed Technol.* 1:74-81.
4. Rubin, B. and Kigel, J. (1985) *Cyperus rotundus* and *C. esculentus*. *in:* Halevy, A.H. [Ed.] CRC Handbook of Flowering. CRC Press, Boca Raton, FL, USA. vol. II, pp. 402-406.
5. Terry, P.J. (2001) The Cyperaceae – still the world's worst weed? *Proc. BCPC Symp.* No. 77.
6. Wills, G.D. (1987) Description of purple and yellow nutsedge (*Cyperus rotundus* and *C. esculentus*). *Weed Technol.* 1:2-9.