WRITTEN FINDINGS OF THE
WASHINGTON STATE NOXIOUS WEED CONTROL BOARD
(September 1995; updated December 1996)

Scientific Name: *Cyperus esculentus* L.

Common Name: Yellow nutsedge

Family: Cyperaceae

Legal Status: Class B:

(a) regions 1, 2, 3, 4, 5, 7, 8

(b) Region 6 except those areas lying between State Highway 26 and State Highway 28, and westerly of Dodson Road in Grant County, and except S 1/2, Sec. 2, T20N, R25E, W.M.

(c) region 9 except

(i) those areas lying within the following boundary description within Yakima County: Beginning at the intersection of Highway 12 and Parker Heights Road and continuing easterly to Konnowac Pass Road and Nightingale Road. The northern boundary shall be the Roza Canal, continuing from the established point at Nightingale Road. The boundaries will follow the Roza Canal easterly to the County Line Road. The east boundaries will be the Yakima/Benton County Line from a point beginning at the County Line and Highway 22 (near Byron) continuing westerly along Highway 22 (to near the city of Mabton) to the intersection of Highway 22 and the Reservation Boundary (Division Road) and continuing north to the Yakima River. Then it will follow the river northwest to the Wapato-Donald Road continuing north along said road to Highway 12 then Highway 12 to Parker Heights Road.

(ii) an area lying southerly of State Route 14 and within T2N, Ranges 13 and 14 E of Klickitat County.

(d) region 10 except Walla Walla county.

Description and Variation: A fibrous-rooted perennial, yellow nutsedge has erect, triangular, yellow-green stems that grow 12 to 32 inches tall. Yellow nutsedge grows from perennial tuber-bearing rootstocks; the tubers are approximately 2/5 to 4/5 of an inch long. The leaves are narrow and grass-like, growing in 3 vertical rows on the stem. Most of the leaves are clustered at the base of the stem. The small flowers are yellowish or yellowish-brown, and arranged in narrow spikelets on umbel-like inflorescences (groups of flowers originating from a single point). Located immediately below the inflorescence are 3 to 9 long leaf-like structures (bracts).

The flowers have 3 stamens and a 3-cleft style. The yellowish-brown seeds are about 1/16 inch long and three-angled (Muenscher 1955; Hitchcock et al. 1969; Torrell et al. 1993).

Economic Importance: *Negative* - Yellow nutsedge is considered one of the world's worst weeds (Bayer 1987; Holt 1987; Mulligan and Junkins 1976). Well-adapted to irrigated agriculture, yellow nutsedge is particularly problematic in row crops because it competes with crops for water, light, and nutrients, thereby reducing crop yield (Torrell et al. 1993; Mulligan and Junkins 1976). Yellow nutsedge has also been known to spoil the quality of some crops. In some areas, yellow nutsedge tubers have been known to grow into potato tubers causing them to be graded as culls. They may also pass through with shelled lima beans, requiring costly hand sorting (Mulligan and Junkins 1976). In addition, there has been some suggestion that this species may produce chemicals that are toxic to crops (Torrell et al. 1993).

Positive - Yellow nutsedge is closely related to chufa; some taxonomists treat them as the same species (Mulligan and Junkins 1976). In parts of Africa, Europe and Asia, chufa is grown for its edible tubers (Torrell et al. 1993). Chufa tubers are ground into flour, as well as being used to produce a cold drink (horchata de chufa), a coffee substitute, vegetable oil, and cellulose (Mulligan and Junkins 1976).

Geographic Distribution: Yellow nutsedge is found worldwide in warm and temperate zones (Holt 1987), occurring in southern Europe and Africa (including Madagascar). In the Western Hemisphere, it grows from southern Canada to northern Argentina. The plant is known from all 50 states (Mulligan and Junkins 1976).

Habitat: Yellow nutsedge generally occurs in disturbed habitats but can tolerate a wide range of soil types. In "natural" habitats, the species grows along margins of lakes, rivers, streams, and marshes. These habitats are usually flooded in the spring, giving nutsedge little competition from other plants early in the growing season. Yellow nutsedge also occurs as a weed in cultivated fields, where it is associated with a variety of other weeds. Although yellow nutsedge appears to compete poorly with other weeds, it is resistant to many herbicides. Therefore, it often increases rapidly when other weeds are controlled by herbicides (Mulligan and Junkins 1976).

History: There is some discussion as to yellow nutsedge's native range. It appears to be native in most of the contiguous United States, where it now occurs in both "natural" and weedy habitats (Rejmanek 1987). In Canada, it was found primarily in native habitats prior to 1950. Over the last 40 years, yellow nutsedge has become weedy in cultivated fields. The spread of yellow nutsedge may correspond to the increased use of selective herbicides (Mulligan and Junkins 1976).

Growth and Development: Yellow nutsedge is a fibrous-rooted perennial (Muenscher 1955). Under certain conditions, the plant forms tubers in the summer and autumn. The tubers, which are formed at the apical ends of indeterminate rhizomes, usually sprout the spring after they are formed. The tubers generally produce 1-3 sprouts (determinate rhizomes), which grow toward the soil surface and form a primary basal bulb just below the surface. Each primary basal bulb

produces a vegetative plant. The basal bulb produced by the original tuber many fibrous roots and indeterminate rhizomes; the indeterminate rhizomes may then develop into secondary basal bulbs and tubers. When a critical daylength or temperature is reached, plants stop growing vegetatively and start to flower. However, many populations do not produce viable seed. Tubers are the only part of the plant that overwinter. Winter conditions kill basal bulbs, rhizomes, fibrous roots and all aboveground parts. While tubers may be viable up to 3 1/2 years, most only survive one winter (Mulligan and Junkins (1976).

Reproduction: Yellow nutsedge does produce seed. However, reproduction by seed is of minimal importance in most areas in comparison to vegetative spread (Holt 1987; Lapham and Drennan 1990; Mulligan and Junkins 1976). The species spreads primarily by tubers, rhizomes, and corm-like basal bulbs (Torrell et al. 1993).

Response to Herbicides: Yellow nutsedge control with herbicides is difficult because herbicide translocation is complicated by source-sink relationships within and between dormant tubers and germinating tubers and the shoot or growing plant. Most herbicides used affect only the shoots and/or roots and do not kill the tubers (Bayer 1987).

Since tubers can have up to seven viable buds, if a control treatment kills one of them, the tuber can develop another. Therefore, effective herbicide treatments must outlast the tubers' ability to resprout - i.e. the chemical must remain active for 10 to 12 weeks (Lanini 1987).

Atrazine, bromacil, bentazon, amitrole, oxyfluorfen, glyphosate, EPTC, alachlor, metolachlor, terbacil, pebulate and MSMA have all been used with varying results on yellow nutsedge. These herbicides generally work best when used in conjunction with other yellow nutsedge control measures (Lanini 1987).

Manage®, a newly introduced product, may have potential for nutsedge control (Yoder, pers. comm.), but no detailed information is available at this time.

Response to Cultural Methods: Tillage at four week intervals will deplete the energy reserves of tubers. However, cultivation alone takes at least two years to eliminate yellow nutsedge (Lanini 1987). Cultivation should be carried out throughout the growing season, as long as tubers are sprouting. This strategy will ensure that no new tubers are formed. Fall cultivation, when tubers are dormant, is not an effective control method (Mulligan and Junkins 1976).

Crop competition can also be used effectively. Crops, such as small grains or alfalfa, outcompete yellow nutsedge by forming dense canopies before yellow nutsedge has a chance to get established. Use of fast growing crops, high planting densities, and closely spaced rows all help in control (Lanini 1987).

Biocontrol Potentials: The use of a biocontrol fungus is being investigated (Torrell et al. 1993).

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***References available** from the Washington State Noxious Weed Control Board office in Kent.*