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COMMON WEED SPECIES IN WHEAT FIELDS IN HENAN PROVINCE, CHINA

Henan Province is China's largest agricultural province and a major food production province. In recent years, with the continuous increase of wheat planting area, the planting area reached 5.667 million hectares and the total area exceeded 35 million tons, accounting for 1/4 of China's total wheat output, has as a pivotal position in China's food security and food supply and demand (Wang Xinyuan, Li Haohai, 2020; Zhu Fengrong, Chen Wanqiu, 2019; Wang Xigang et al., 2014; Han Yunjing, Zhang Yong, 2020; Shen Changchao, Tang Wenwei, 2017). Henan Province is located in the transitional zone between the northern subtropical zone and the southern temperate zone, the climate is interlaced between the north and the south, there are many types of weeds, wheat field weeds inhibit wheat growth by competing with wheat for water, nutrients, light and growth space, reducing wheat yield, deteriorating wheat quality, and it will also reduce field permeability and aggravate the occurrence of wheat field diseases, insect pests and weeds, not only reducing wheat yield, but also reducing wheat grain weight. According to statistics, the annual reduction of wheat production due to weed damage in my country is as high as 4 million tons (Wu Mingrong et al., 2013; Xinxingxiang, Li Mei, Fang Feng, 2016; Zhang Xiaolong et al., 2017). In order to find out the occurrence of weeds in wheat fields in different regions of Henan Province, the species and occurrence density of weeds in wheat fields in some regions of Henan Province were investigated and analyzed, in order to provide basis for formulating the control measures of weeds in wheat fields in Henan Province.

In order to clarify the species composition of weeds in wheat field in Henan Province, the weeds in wheat field in ten districts of Henan Province were investigated (Puyang, Hebi, Xinxiang, Shangqiu, Pingdingshan, Zhumadian, Kaifeng, Nanyang, Xinyang and Zhoukou), 5 -10 pieces of small wheat fields with an area of 2.0 hm² ~ 3.3 hm² were randomly selected in each investigation area. Density is the number of plants of a certain weed per unit area, $D = N / S$, where D is the density (plant / m²); N is the number of weeds; S is the survey area (m²), wheat varieties are the main local

varieties. The inverted "W" 9-point sampling method was used to investigate the weeds in each wheat field, with each point of 0.25 m² (Han Yunjing, Zhang Yong, 2020; Gao xinju, Wang Hengliang, 2016). The species, quantity and growth of weeds were recorded in detail to determine the species of weeds in wheat field in Henan Province (Zhang Yuju, 2010; Institute for pesticide control, Ministry of agriculture of the people's Republic of China, 2000).

The results showed that there were 77 species of weeds in wheat field in Henan Province, belonging to 20 families and 65 genera. Among them, there are the most species of Gramineae, Compositae and Cruciferae, and there are 16 species of gramineous weeds, including wild oats, jiejiemai, hard grass, bromegrass, kanmai Niang, kanmai Niang, Kentucky bluegrass dog tooth with you, white grass, lollipop grass, ryegrass, grass, poisonous wheat, Geng's hard grass and Dogtail grass, accounting for 20.78% of all species; there are 15 species of Compositae, which are Erigeron, Euphorbia, Artemisia annua, Bidens bipinnata, Feilian, artichoke, ophiocephalus Argus, Capricorn, sonny, Xanthium sibiricum, dandelion, Artemisia argyi and artichoke, accounting for 19.48% of all species; there are 9 species of Cruciferae, including Artemisia annua, shepherd's purse, shepherd's purse, salt mustard, solitary vegetable, wind flower, sugar mustard, ionic grass and blue cabbage, accounting for 11.70% of all species; there are 5 species of Caryophyllaceae, which are wheat bottle grass, cattle Zoysia, Zoysia, Wang buliuxing and fleas, accounting for 6.49% of all species; there are 5 species of Leguminosae, including big nest vegetable, small nest vegetable, narrow leaf pea, rice pocket and sky blue alfalfa, accounting for 6.49% of all species; there are 5 species of Chenopodiaceae, which are Xiaoli, gray green Chenopodiaceae, flat storage, rehmannia and Salsola, accounting for 6.49% of all species; there are 22 species in 14 families, including Scrophulariaceae, sycamore and mulberry, accounting for 28.57% of the whole weed species.

The investigation on the occurrence of weeds in wheat fields in 10 cities of Henan Province shows that there are great differences in grass facies in different regions of Henan Province, the occurrence and regional differentiation of weeds mainly show the following characteristics: (1) the weed community with broad-leaved weeds such as shepherd's purse, pig's plague and sown Artemisia as the dominant species mainly occurs in Puyang, Shangqiu and Nanyang; (2) the mixed weed community with broad-leaved weeds such as shepherd's purse, pig's plague and Artemisia

annua as the dominant species and both jiejiemai and wild oats is mainly distributed in Hebi, Zhoukou and Pingdingshan; (3) gramineous weeds such as KanMaiNiang were the dominant species. The mixed weed community with both *Zoysia* and pig plague was mainly distributed in the south of Zhumadian and Xinyang (4) in the weed community with gramineous weeds as the dominant species, the gramineous weeds are mainly hard grass and KanMaiNiang, which are distributed in the rice wheat rotation area along the Yellow River and the rice wheat rotation area in southern Henan Province.

Gramineous weeds and broad-leaved weeds are the main types of weeds in wheat fields in Henan Province, dominant weeds such as *Triticum aestivum*, wild oats, and sage weeds will become the main harmful weeds in wheat fields in Henan Province. Time will continue to seriously affect wheat production (Xie Wenfang, Wang Dan, 2015; Qiao Li et. al., 2012). In addition, with the large-scale use of herbicides, Jiejie wheat, wild oats and pig stalks have also developed strong resistance to herbicides. As a result, herbicides cannot effectively control these weeds, and further aggravate the risk of these weeds. At present, there is still a lack of medicines that are safe for wheat and can specifically control the weeds. Prevention effect, it is an urgent problem to develop safe medicines that have ideal control effect on dominant weeds in wheat fields. It is particularly important to formulate reasonable weed control techniques according to the actual occurrence of weeds in different locations to improve the weed control effect and reduce the amount of herbicides (Wang Yanbing et. al., 2015).

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**MAIN FACTORS OF OUTBREAK DAMAGE
OF ORIENTAL FRUIT MOTH**

Oriental fruit moth, *Grapholita molesta* (Busck, 1916) (Lepidoptera: Tortricidae), is an important pest of tree fruits and widely distributed in many fruit-growing regions of the world. The larvae feed on the shoots and

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