BIOLOGICAL AND ECONOMIC ASPECTS OF SUNFLOWER PROTECTION

Dr. M.Marković, viši naučni saradnik, Tehnološko poljoprivredni institut, Zrenjanin, Jugoslavija.

A stabile and high sunflower productionin Vojvodina is based on the biological fertility of domestic hybrids, choise of diseases hybrids and chemical crop protection for diseases, pests and weed control. Phomopsis helianthi, Sclerotinia scl. and Plasmopara helianthi are diseases which influence the crop yield every year. Chemical protectionis considered a complementary and vital part of the present sunflower hybrids and regular farmoing measures. Righ now the main wish of sunflower producers is a reasonable, efficient and financially positive sunflower production.
The stady of biological and ecomomic aspects of disease, pests and weed control was performed from 1980-1987. Special attention was paid to harmfull threshold and some critical moments of the protectioof succeptible genotypes NS-H-33 RM against Phomopsis helianthi, NS-H-62 RM against Sclerotinia scl. and Vnimk 8931 against downy mildew.
The corelatio between biological agents and financial industrions was estabiliched by statistical analysis of reprezentative samples.
Consequently, average sunflower and oil yield were as a basis to relative indicators. Critical period were based upon evaluation of harmfull thre shold, yield, and o efficiency coefficiend of used pesticides.
Reliable Phomopsis control is achived by two or three fungicides application at button till flowering time. Fungicides based on benomyl, carbendazime, tiophanat metil, nuarimol and biloxazol combined with mancozeb, folpet and zineb give good control.
Sclerotinia scl., Phomopsis spp., Phoma spp., and Botrytis cinearea on sunflower head are cont rolled with systemic fungicides benomil and carbendazime tank mixed with vinclozoline, prosimidon and iprodion.
New hybrids NS-H-45 RM must be protected against Sclerotinia scl. at generative stage od of development with systemic products carbendazime + vinclozoline, prosimidone and iprodione. New premixes of these combinations (Sportak PF, Rovral TS and Konker) are very handy and convient for use.
Significant demages to sunflower can cose soil insects (Acheta deserta, Tanymecus dilaticolis, Agrotis segetum, Euxoa temera, Opatrum sabulosum) birds and rodents.

Plant aphids (Aphis spp, Brachycaudis spp.) apperfrom time to time and their role as disease vector has not be cirified. Crickets, corn vievels and hamsted are most harmfull at sunflower emerging time.
Weed control in sunflower production provide sufiicint weed decrease and compete absence of human labor from cultivation. Competition between crops and weeds normaly occurs at cotyledon up to 2-3 leaves stage. Combination of herbicides provide good weed control on don ant weed species and avoid phytotx effect to the treated crop.
The introduction of trifluralin in to semiarid areas prior to planting and alahlor, metolahlor and pendimetaline following planting in areas with regular rainfalls has provided total weed control of annual grasses and other dicotiledon weeds. When applied as tank mix with linuron, prometrin and cianazine rest of annual broadleaved species can be controled. The introduction of fluorohloridone enables Cirsium arvense to be controled. Herbicide Modown 4E (bifenox) have been applied to control dicotiledon weeds and fusilade super (flusiafopbutil) is used for annuyl and perenial grasses post emergence.

Fifteen fungicides base on 10 active ingredints have been used in sunflower protection at use rates od 5,8 kg/ha. The share of fungicides of total pesticides in Vojvodina amounts to 42,2 % and 309,7 % of area covered with sunflower. Main product used in sunflower protection are based on prosimidion 32,1 %, Benomil 25,0 %, cineb 14,6 %, mancozeb 13,0 %, iprodione 4,7%, vinclozoline 3,8 %, fosetil AL with folpet 2,7 % carbendazim+iprodion 2,0%, tiofanatmetil 1,5 % and carbendazime 0,6 %.
Cuantity of insecticides used to control soil insects includes forat 4 %, lindan 1,2 % fenitrotion+malatione 10,1 %, hlormefos 9,9%, fonofos 6,3 %, karbofurane 5 %, terbofosa 1,3 %, foxima o,6 % and karbofurane 0,1 %.
If the use of insecticides is showen through the treated area the percentage is quite different. There lindan is 10,4 %, forat 7,1 %,hlormefos 4,3 %, fenitrotion+malation 1,7%, and fonofos 1,0% are used in sunflower against soil sinsects. Acheta deserta and T.dilaticolis is feasible at cotiledon to 2-3 leaves stage with insecticides. In pesticide use insecticides take up 23,5% of pesticides with 47,2 % treated area at use rate of 3,2 kg/ha.Twenty sever o insecticides are based on 20 active ingredients.
Twenty thee herbicudes based on 16 active ingredients were used in Vojvodina a in 1986. Herbicides share in pesticidal protection of sunflower in total is 34,3 %. Sixty five products based on 44 active ingredients at use rate of 13,7 kg/ha are being used to treat 528,6 % of total area with sunflower.