Effect of crop rotation on weed seed-bank in Potato fields

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Crop rotation can be used as an effective approach for weed management. In order to evaluate the effects of crop rotation on weed seed bank an experiment was conducted based on randomized complete block design with four replications at agricultural research station of Khorasan Razavi located in Jolgeh Rokh. Experimental treatments included (i) annual alfalfa-potato, (ii) vetch-potato, (iii) Bersim clover-potato, (iv) canola-potato, (v) barely-potato, (vi) fallow-potato with cattle manure, (vii) fallow-potato with chicken manure, (viii) fallow-potato with compost and (ix) fallow-potato as control. During the six years of the experiment each of the above rotation was repeated in three times. Soils samples were taken form all plots in the end of year 6. The results showed that the crop rotation had a significant effect on weed seed bank. The most effective rotation for decreasing weed seed bank was canola-potato rotation. Due to lack of weed control during the fallow period and poor establishment of annual alfalfa, the weed seed bank was higher in fallow and alfalfa than other rotations. The majority of weed seeds observed in experiment were spring annual weed seeds. High rate seed production and extensive adaptation rang of pigweed and lambsquarter caused them to be the dominant seeds in weed seed bank. Based on the results of this study crop rotation could be an effective non-chemical strategy for decreasing weed seed bank.