

High School Spotted Knapweed Exponential Growth

- Time:** 1 hour to 1 ½ hours
Place: Classroom
Objective: To provide information and materials so high school students will be able to make informed decisions about the impact of noxious weeds and to calculate the exponential growth of spotted knapweed.
Goal: By the end of the lesson students will be able to describe noxious weeds and their impact on an area by graphing the exponential growth of spotted knapweed and creating a poster that will illustrate their findings.
Materials: Sample of spotted knapweed, pressed weeds if available, Weeds of the West, Noxious Weed Pocketbooks, Map of County infestations, Bio-control insects, pencils, Poster board, graph paper,
Wyoming State Standards Met:
Science:
Math:

Lesson:

- Start-15minutes:** *Quick pre-assessment, list all they know about weeds*
Begin with introductions and a short discussion about population growth. Looking for prior knowledge and examples already worked on in class. Discussion about spotted knapweed, habitat, and where noxious weeds originated. Begin the lesson by starting the population explosion activity for them and demonstrating the chart to help them sort through all of their data (see next page for example of chart).
- 15-60 minutes+:** Have students break into groups of 2 or 3 and begin working on the “Noxious Weed Population Explosion” activity provided by the Montana Weed Project. Pass out graph paper and poster materials.
- 60-80 minutes:** Put results on poster, use resources to illustrate their findings and show information about spotted knapweed and other noxious weeds. Use this time to view resources on a table (county map, pressed plants, bio-control insects).
- 80-End:** Closure and *post-assessment, list all they know about noxious weeds now that they have completed the lesson.*

***Leave a copy of Weeds of the West, “Weed Like you to Know” posters, and a teacher packet for the classroom teacher if you would like.

*The Noxious Weed Population Explosion activity came from the program the
Montana Weed Project.*

Contact the Missoula Conservation District for more lessons like this one. 406-829-3395

Chart to help students solve the population explosion activity

This can be very helpful to them when it comes to keeping their numbers and thoughts straight. These numbers can get very big!

Year	Seeds	Germinate	Mature Plants	Seeds Left
	Seed bank	4% of seeds germinate	25% of seedlings survive to become mature + last year's adult plants	96% of previous years seedbank + new seedbank
1	100	(4% of 100) 4	(25% of 4) 1	(96 seeds + 1,000 seeds produced from the one mature plant) 1,096
2	1,096	(4% of 1,096) 44	25% of 44 is 11 + previous year's mature plant = 12	(1,052 seeds are left after 44 germinate + 12,000 seeds produced by the 12 mature plants) 13,052
3	13,052	522	25% of 522 is 131 + previous year's 12 mature plants = 143	12,530 seeds are left after 522 germinate + 143,000 seeds produced from the 143 mature plants 155,530
4	155,530	6,221	(1,555 + 143) 1,698	(149,309 + 1,698,000) 1,847,309
5	1,847,309	73,892	(18,473 + 1,698) 20,171	(1,773,417 + 20,171,000) 21,944,417

Student Activity Sheet

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Year	Seeds	Germinate	Mature Plants	Seeds Left
	Seed bank	4% of seeds germinate	25% of seedlings survive to become mature + last year's adult plants	96% of previous years seedbank + new seedbank
1	100	(4% of 100)	(25% of 4)	(96 seeds + 1,000 seeds produced from the one mature plant)
2				
3				
4				
5				
6				
7				
8				
9				
10				