
Balancing the Budget

Activity Overview

Students balance their desired species list and seed quantity needs with the budget they have for the planting. They create a final seed order that is biologically and ecologically sound and fiscally realistic.

Objectives

Students will:

- Analyze and solve problems by calculation, estimation, and shifting to another point of view
- Learn to balance multiple variables in a non-linear problem
- Compare and consider ecological and fiscal trade-offs, make final decision
- Use reasoning abilities to justify strategies
- Create a balanced budget

Subjects Covered

Science and Math

Grades

3 through 12

Activity Time

1-3 hours, depending on student level

Season

Any

Materials

Species list for restoration, seed quantity calculations, prairie seed price list

State Standards

Math:

Use reasoning abilities (A.4.1, A.8.1, A.12.1)

Analyze non-routine problems & arrive at solutions (A.12.3)

Determine the number of things in a set (B.4.2)

Read, write, & order whole numbers, fractions, & decimals (B.4.3)

Identify & represent equivalent fractions (B.4.4)

Background

Once you know which species you wish to plant (see Earth Partnership for Schools activity, “Prairie Garden Species Selection,” and you have determined how much seed you need (see Earth Partnership for Schools activity, “How Much Seed Do I Need?”), it is time to put it together. As most projects do not have an unlimited budget, the final step is to balance desires (species selection) and needs (how much seed is needed) with how much money you have available. In other words, it is time to consider what you can afford.

Have students create a seed order based on needs and desires for their restoration plot and then calculate the total price. If the price tag exceeds the money available, consider how to make it cheaper. They can plant fewer seeds per foot, increase the grass to forb ratio (generally grasses are cheaper than forbs) or change the quantities of individual species chosen (some species are far more expensive than others). They can calculate their seed count to see if, while staying within the guidelines of .0073 ounces per square foot, they have exceeded the suggested count of 40-60 seeds per square foot. (Using small, light seeds could result in this imbalance.) Students will have to decide how to meet their budget based on what they consider to be the best trade-offs.

If, after calculating their seed order, they find that they have money left over, they still have decisions to make. Do they want to enhance their planting, and if so, how? Do they want to add more transplants, more seeds, different seeds or consider restoring a larger area?

While, in the purest sense, an ecological restoration should be undertaken with only the ecology in mind and without consideration of costs, in the real world other factors must be considered. Learning to critically think through the goals, desires and trade-offs to make the best choices possible, will give the students real world experience that extends beyond ecological restoration.

Activity Description

You now have a list of all the species you wish to include in your restoration. You have also determined how many ounces of grass seed and of forb seed you need. Now it is time to put it together into a master seed order. But one more factor needs to be considered—money. In this activity you will put together an order that balances what you want to have in the restoration (the species list) and the amount of seed you need (ounces of grass and forb seed) with what you can afford.

Based on your species selection list and grass and forbs weight targets, fill

Balancing the Budget (cont.)

Apply proportional thinking (B.8.5)

Create & critically evaluate numerical arguments (B.12.5)

Routinely assess the acceptable limits of error (B.12.6)

out the order columns on the Practice Seed Order Form. When determining quantities for each individual species, you might want to check the number of seeds per ounce as one ounce can contain as few as 400 or as many as 800,00 seeds. Keep in mind that you want to maintain a balance of different heights, flowering times and flower colors for the forbs. Referring to your seed price list, fill out the Cost column. Compare your total to the money you have available. If you have extra money available, consider if you want to enhance your planting, and if so, how? Do you want to add more transplants, change the quantities of certain species, add more seeds or add different species?

If the price tag of your draft order exceeds the money available, consider how to make it cheaper. Do you change the quantities of individual species chosen (some species are far more expensive than others) or do you have another idea? You might wish to calculate how many seeds you are proposing to plant. Sometimes, while staying within the guidelines of .0073 ounces per square foot, you can exceed the suggested count of 40-60 seeds per square foot. For instance, if you used many small, light seeds you could be within the weight recommendations but planting far more seeds per square foot than is necessary.

Rewrite your order and recalculate the costs such that the order matches the money you have available. On a separate sheet, briefly describe how you balanced the budget and then justify the decisions you made.

Extensions

- Create a planting mix comprised entirely of transplants. Practice order form included.
- Calculate how much your seed mix would cost if you were planting a large-scale restoration such as a 1-acre site.

Additional Resources

- Seed and plant price lists can be found in most native plant nursery catalogues. Some contain information about number of seeds per ounce, which may be helpful.

Assessments

- Create a seed mix and assess if the mix is ecologically sound (fits pre-determined criteria) and is with-in budget.
- List the three species that have the most seeds per ounce. List the three species that have the least number of seeds per ounce.

Balancing the Budget Handouts

PRACTICE SEED ORDER FORM

Common Name	Ounces	# Seed/Ounces	# Seeds	Cost/Unit	Final Cost
GRASSES and SEDGES					
FORBS or WILDFLOWERS					
TOTAL					

Balancing the Budget Handouts

PRACTICE PLANT ORDER FORM

Common Name	Quantity	Size	Cost/Unit	Final Cost
Shrubs and Trees				
Herbaceous Plants (e.g., wildflowers, grasses, sedges, and ferns)				
TOTAL				