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## Plantportation

Carl W. Bollwinkel  
*University of Northern Iowa*

Joann Silka  
*Christ the King School*

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# PLANTPORTATION

Carl W. Bollwinkel  
Assoc. Prof. of Teaching and Science Education  
Price Laboratory School  
University of Northern Iowa  
Cedar Falls, Iowa 50613

Joann Silka  
Teacher  
Christ the King School  
Des Moines, Iowa 50315

The question "How do plants get to the places where they are growing?" leads to a study of plant anatomy and the interaction of plants, people and the environment. The topic as presented here is appropriate for study in the intermediate and middle school grades but can be adapted for both lower grades and high school study. It is suggested that the activity be taught as a learning cycle. "Plantportation" is best taught in the autumn when an abundance of seeds is available.

## Objectives

Students will:

1. observe the varied structure of seeds and the means of distribution of seeds which are effected by these structures.
2. gain an understanding of the interaction of the varied anatomical structures of seeds and their distribution by environmental factors such as wind, water, animals such as birds, insects, and mammals, and human desire.
3. gain an appreciation for the determination of plant populations as may be effected by plants themselves, other varied environmental factors and the decisions of people.

## Exploration

Walking field trips to several different types of habitats will provide an opportunity to collect a great variety of seed types and the experience necessary for later comparison of habitats. A roadside which has been moderately disturbed from time to time by road improvements or occasional spraying will provide varied plant seeds and fruits from weedy invading species. If a small remnant of native prairie can be found along a railroad, roadside, cemetery or nature preserve, this will provide a sample of seeds and fruits from native species.

A walk through a wooded area will provide fruits and seeds such as acorns, hickory nuts and walnuts which are distributed by animals using them for food. By searching the ground, fruits from trees which produced earlier in the season may also be found. Maple, ash, basswood, elm and sycamore provide interesting fruits.



TALL GAYFEATHER  
(*Liatris pycnostachya* Michx.)



BASSWOOD  
(*Tilia americana* L.)

Collections from local crop lands, orchards, vegetable and flower gardens will provide a wide variety of fruits and seeds which have been distributed by humans and often have origins in distant places. Although a trip through the produce department of the local grocery store does not provide first hand evidence of the locale of growth for each species, it still provides additional varieties of fruit and seed materials for derivation investigation. A search through seed and garden catalogs can also be productive.

### Invention

Generalizations about the movement of plants from one place to another may be developed from class discussions of fruit and seed structure, the suspected environmental factors involved in their distribution and the influence of people upon the distribution of plants. The generalizations developed will serve as the basis for grouping fruits and seeds into more specific categories based on their means of distribution.

Poster boards may be devoted to such categories as "Plants Transported by Wind." Specimens of collected seeds and fruits, and pictures of other fruits and seeds transported by wind may be attached to the same poster. Space should be left beside each specimen or picture so that pictures of the entire plant and its name may be added to as many as can be identified.

The category "Plants Transported by People" presents an interesting investigation of the origin of crop and flower garden plants. Standard library reference books and various horticulture books will provide the information required. The development of student-made maps showing the areas of origin, current crop production regions and the climate of each area will integrate broad based environmental factors. Historical and cultural factors influencing plant distribution may also be developed.



NODDING WILD RYE  
(*Elymus canadensis* L.)

Posters may be developed by students individually, but the activity provides an excellent opportunity for team work and learning through group interaction. The teacher should provide assistance in determining the means of distribution of various fruits and seeds by suggesting searches for information about such topics as "What do song-birds eat?"



SILVER MAPLE  
*Acer saccharinum* L.

### Application

Students can apply what they have learned by posing the question of what plants could be expected to be found growing in plots of previously cultivated ground in various locations with differing environmental conditions. Plots to be suggested would include an

area within a forest, prairie, backyard garden, cropland in various states, median strips along interstate highways, an area near the school playground and a plot near the entrance to the school. Student discussion would determine that some of these plots would be primarily influenced by people, others by distribution of

fruits and seeds by environment factors other than people, and still others by a combination of the above. Students should establish and cultivate a number of the mentioned plots and determine or observe the results of plant migration into



those areas. Plots influenced by people may change rapidly. Plots effected by other environmental factors will probably require one or more growing seasons to show interesting changes.

### Extension

Extensions of the above activities may lead into more detailed studies of primary and secondary succession in varied environments and the influence people have on these environmental phenomena. This topic in turn may lead to an investigation of land use management.



The illustrations were done by Miriam Wysong Meyer and Fredda J. Burton for *Forest Trees of Illinois* by Robert H. Mohlenbrock and *Prairie Plants of Illinois* by John W. Voigt and Robert H. Mohlenbrock of the Botany Dept. of Southern Illinois University, Carbondale, IL 62901. Both books are available from the Illinois Department of Conservation, Suite 2, 600 North Grand Avenue West, Springfield, IL 62701.