



## PRECISION SEEDING FOR VEGETABLE CROPS

Douglas C. Sanders, Extension Horticultural Specialist

Precision seeding is defined as the placing of desired numbers of seeds at a precise depth and spacing. Precision seeding has many advantages for the vegetable grower over conventional dribble (Planet Jr.) or multiseed drop-plate seeding systems (most corn planters). However, the seeding accuracy is not a substitute for proper land preparation, irrigation, and other crop management practices necessary to obtain a good stand of a vegetable crop. Precision seeding simply allows the vegetable grower to reduce cost and increase reliability of his crop production. Some of the **advantages** of precision seeding are:

1. Reduced seed costs, because only seed that is needed is sown.
2. Greater crop uniformity, because seed is equally spaced. This often leads to uniform and high quality produce, fewer harvests, and greater yield. Uniformity is particularly important when once-over harvest is practiced.
3. Improved yields of 20 to 50% because each plant has optimum space for growth and development.
4. More uniform planting depth and less scatter because seeds are dropped shorter distances.
5. Reduced or eliminated thinning.

Precision seeding also has **limitations**:

1. Seedbed preparation is critical.
2. Seed must be more vigorous because each seed must emerge and does not have the benefit of many seedlings pushing upward to break soil.
3. More management is required.
4. Equipment (seeders) costs are increased.
5. Equipment parts may not be readily available.

### Types of Precision Seeders

There are 6 types of precision seeders. Each has advantages and disadvantages.

1. **Belt type** – Represented by the Stan-Hay seeder. Circular holes are punched in a belt to accommodate the seed size and holes are spaced along the belt at specified intervals. Usually coated seed improves the uniformity of this type of seeder. Seeds that are not round are difficult to singulate. Spacing is not as uniform as with a vacuum seeder. This planter is used with seeds of tomato to watermelon seed size.
2. **Plate type** – Represented by the John Deere 33. Seeds drop into a notch in the

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plate and are transported to the drop point. Most spacing is achieved by gearing the rate of the turn of the plate. Seeds that are not round are difficult to singulate. The plate type is used with seed sizes of lettuce to snap beans. The long drop from hopper to soil results in a fair amount of seed scatter.

3. **Vacuum type** – Represented by the Gaspardo, Heath, Monosem, Stan-Hay and several other seeders. Seed is drawn against holes in a vertical plate and is agitated to remove excess seed. Through a combination of gears and hole number per plate, various spacings are achieved. Coated seed should not be used in these planters. There are models of Gaspardo seeders that plant small (up to watermelon) or large seed (cucumber to snap beans.) Stan-Hay and Monosem have seeders that can seed both large and small seed (lettuce to beans). Heath has a wide range of seed sizes but does not singulate well.
4. **Spoon type** – Represented by the Nibex. Seed is scooped up out of a reservoir by small spoons (sized for the seed) and then carried to a drop shoot where the spoon turns and drops the seed. Spacing is achieved by spoon number and gearing. Spoons are available for a wide variety of seed sizes.
5. **Pneumatic type** – Represented by the International Harvester cyclo planter. Seed is held in place against a drum until the air pressure is broken, then it drops in tubes and is blown into the soil. This planter is recommended only for large vegetable seed like sweet corn and snap beans.
6. **Grooved cylinder type** – Represented by the Gramore seeder. This seeder requires round seed or coated seed that is made round by coating. Seven seeds fall from a supply tube into a slot at the top of a metal case into a metal cylinder. The cylinder is turning slowly and as it reaches the bottom of the case, the seeds drop out of a diagonal slot. By combination of forward speed and turning rate, the seed is placed at

desired increments. This planter can be used with seeds no larger than pepper and works best with coated seed. This planter is used with small seed (lettuce to pepper).

Before buying a precision seeder, evaluate all other aspects of crop production to ensure that they are being managed to the fullest. Precision seeding requires good seedbed preparation to provide a uniform environment for the seed to swell, germinate and emerge. Bed shaping is generally considered essential for precision seeding. Irrigation is also important because lack of moisture may stall or stop seedling emergence and reduce uniformity. **Note:** Stan-Hay belt, Nibex, Planet Jr., Earthway and Gramore make hand push models.

Good, quality seed should be purchased. Precision seeding is no substitute for good, uniform germination.

Weed and other pest management is more critical with precision seeding because vegetable crops are seeded at exact populations for maximum yields. Deviations from this population, as when pests kill crop plants, result in reduced yields.

Speed of planting will depend on the seeder, but operation of a seeder above recommended speeds results in reduced uniformity, seed scatter, and poor stands. See instructions for respective seeds for information about speed. Regardless of the seeder, check seeder frequently (every ½ to 1 acre) to ensure proper seeding.

Precision seeding results in:

- Better yields
- Reduced thinning
- Reduced seed cost
- Less crop injury during thinning
- More uniform crop plants and harvest
- More efficient harvest and packing
- Improved weed control (less vacant spots for weeds to grow)
- Higher income per acre