

Interseedings in vegetable production

by Chantal Foulds

Almost all of the research concerning interseeding has been done in cereals and corn. Interseeding systems that work for grain crops may not necessarily work for vegetable crops since there are differences in the methods of crop production. First of all, compared to grain crops, vegetable crops vary greatly in plant canopy, length of time they are in the field and distance between plants. For example, onions and carrots are long season crops, closely spaced with very little plant canopy. On the other hand, broccoli is a very short season crop with a dense canopy and medium plant spacing.

Secondly, some vegetable crops are harvested several times during the season: is. peppers, tomatoes and broccoli. Interseedings would have to be tolerant of field traffic in these situations.

Review of Literature

Living Mulch Systems

Recently, scientific investigations into the use of cover crops has focused on their use as living mulches. By this we mean that the cover crop is already established when the main crop is planted. Turfgrass species (fescues, bluegrasses, etc.) as well as common forage species have been tried in these systems.

At planting, competition is reduced by strip tillage and/or herbicides applied on the crop row. In general, the more productive a cover crop is, the more it reduces the main crop's yield.

Living mulch systems are interesting in themselves but would require considerable equipment modification to enable strip tillage and mowing operations (when necessary).

On the other hand, interseeding a cover crop at or after the main crop is planted would not require much in the way of equipment modification.

Interseeding Systems

Interseedings of grasses and legumes were commonly grown in corn before the use of herbicides. Red clover, crimson clover, hairy vetch, sweet clover and rye were used. By 1935 ryegrass was the interseeding of choice as it was easy to establish and had a high

biomass production. Undersowing in cereals with red clover has been a long established practice.

The use of interseedings in vegetable production is not as well documented. An overview of the older literature reveals the following systems:

Recent Literature

Time of Establishment

In corn, it has been demonstrated that interseeding is best done at last cultivation when the corn is 15 to 30 cm tall. This is five weeks after corn planting. Eliot Coleman (who will be publishing a book on organic vegetable production this year) states approximately the same rule of thumb. His work is based on many years of experimentation and observation on his farm. This is a book I would recommend to any vegetable producer looking for information on a systematic approach to rotations of vegetable crops and green manures. (Write to Eliot Coleman, Box 123 F. Vershire, Vt, USA for more information)

Species used as Interseedings

Coleman lists which cover crops can be used with each vegetable crop. The following are examples of combinations he recommends:

Main crop	Interseeding
Root crop	White clover
Brassicas	White clover
	Sweet clover
	Red clover
Cucurbits	Red clover
	Sweet clover
Potatoes	Vetch
	Rye after harvest

In a Woods End Agricultural Institute Publication, Otto Schmid recommends the same species for use in a wider range of vegetable crops but suggests the use of these in mixtures (with grasses such as timothy and ryegrass) to increase success of

establishment, tolerance to wheel traffic, weed suppression, ground cover and fall growth after harvest especially of white clover.

Grass as an interseeding can be used as a means to lower nitrogen levels in the soil after harvest and to prevent weeds from fallowing. They would fit well in rotation to a bean crop that could fix its own nitrogen.

Technique of Establishment

Coleman strongly recommends drilling in the cover crop. Success of establishment is thus increased. He uses small portable seeder units that can be attached together to cover as wide an area as one wishes between the rows of the main crops. This is fine on a small scale, but not very practical on a large scale with the equipment presently available on the market.

In REAP trials, interseedings have been broadcast into corn by means of a grass seeder box mounted to the rear of the cultivator. Drag chains hang down from the grass seed box and serve to incorporate the seeds.

Harrowing has been used in cereals to incorporate interseedings at cereal germination. This is not feasible in vegetables that are transplanted. However, the "finger" weeder which works on a similar principal as the harrow, can be used. The adjustable tines placed above the crop row can be "flipped up" out of the way. Tension on the tines can be adjusted so that they only the surface crust or dig deeper.

REAP TRIALS ON INTERSEEDINGS SYSTEMS IN VEGETABLES

The vegetable production areas of Quebec are plagued with compaction problems. One only has to count the numbers of trips that are made on the field and look at the heavy equipment that is use to understand why. In addition the lack of green manure crops to open and loosen the soil, make for a serious problem.

Several test plots were set up this year on two vegetable farms south of Montreal. At Victor Bonvouloir's farm of Ste. Brigide d'Iberville, interseedings were made in an early and late planting of broccoli. Victor plants his broccoli on ridges 60 inches apart, two rows of broccoli on each ridge. In the short term this helps to overcome the compaction problems. It also allows earlier planting in the spring. No herbicides are used; two cultivations and hand weeding are Bonvouloir's weed control methods on 300 acres of broccoli.

A second set of plots have been set up at Marcel Desgroseillier's of Ste. Isidore La Prairie using a late planted cauliflower as the main crop.

White clover, red clover, sweet clover, hairy vetch, crimson clover and ryegrass were interseeded at last cultivation. This occurs 4 to 5 weeks after transplanting or seeding of the main crop.

Preliminary observations suggest that white clover does not do as well as it does in a living mulch system. Hairy vetch, especially where it was well covered, is already 10 cm tall, 3 weeks before broccoli harvest.

In the next issue we hope to have the results from these trials.

REFERENCES

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