

Where does all that seed go?

Autumn

For the New Zealand vegetable seed Grower, all their crops are now harvested and delivered to the seed-cleaning store – for most, that's probably the last they'll see of them.

Ever wonder where your container of *Brassica*, with enough seed to produce perhaps 10 million Chinese cabbages, ends up? There's a good chance some of it will end up in one of the 3 million hectares producing Chinese cabbage in China.

Asia

It's the destination for much of the Brassica vegetable seed grown in Canterbury, heading to countries as far east as Japan, and west to Pakistan. Although China is in the news at present with its appetite for steel – high demand there doubling the world price for scrap steel; this massive country also has a large appetite for Brassica seed.

China

With its 1.3 billion population, China requires fresh vegetable production on the biggest scale of any country in the world. A *lot* of seed is required for the 20 million hectares used – see Fig. 1 below. The range of latitudes allows year round production of crops from the varying regions. Also close to the major urban centres, are large glass-house areas (>300,000 ha nationally) that allow winter supply, without large transport costs.

Chinese authorities estimate US\$25–50 million worth of vegetable seed is imported, with the main supply countries being Australia and New Zealand, Denmark, Korea, Japan, Netherlands, Thailand and USA. Japan and USA are the biggest suppliers.

This quantity of seed equates to around 10% of the national requirement. Obviously there is a big domestic industry, rapidly becoming more mechanised, producing the other 90% of requirements.

Fig 1. Estimated total amount of seeds required for main vegetables

Species	Amt reqd (t)
Flowering cabbage	7200
White cabbage (pak choy)	10,900
Cauliflower	140
Mustard	150
Radish	4,900
Carrots	3,300
Onions	920
Spinach	15,500
Celery	200

Taking radish as an example, the Chinese annual requirement would fill 250 standard 20' freight containers.



Production

Southern Hemisphere producers/exporters in particular retain some advantages over Chinese local production:

- timing of seed delivery to Chinese markets coincides with sowing time, so low inventory holding costs.

- germplasm, and therefore the intellectual property are safe in New Zealand and Australia due to low local demand for the seed – no-one is going to steal the seed from out of the paddock.
- seed quality is high and consistent over large quantities. One Grower, rather than many, supply the seed for one container load.

China itself is also exporting vegetable seed, mainly hybrid seed to the US and Mexico, and also Japan and Korea. Production costs in China are low for labour intensive hand pollination, so these types of hybrids are the dominant export by value.

Growth

Both Chinese imports and exports of vegetable seed are expected to rise. There are several reasons for this:

- With the economy growing at 9.9%, China is becoming more and more urbanised as workers flock to new car and appliance factories. This requires a more formalised fresh vegetable supply chain by larger scale producers, rather than the previous small scale operators. High quality branded seed is therefore required to ensure high yield and consistency.
- Domestic private sector seed companies are developing rapidly in China. The often young aggressive entrepreneurs involved are free to contract globally to meet their requirements. They are already working with, eg Australasian

continued on page 4 ►

In this issue...

- Where does all that seed go?
- Pre-winter fungicides on brassica and carrots
- The cabbage aphid
- Establishment of autumn crops
- Grower snapshot: D. P. & L. S. McEvedy Partnership
- Autumn weed and pest management on Brassica and carrot crops
- Colleague Lost: Peter J. S. Elvy
- An Indian Snack: Kurkure with Hari Chutney

Did you know . . . ?

- that payment of 50% of an AB ANNAND Grower's contract is made upon delivery of field seed?;
- that the balance is paid on shipment to the Customer – or October 1 – whichever is first?;
- that AB ANNAND pays a bonus for irrigated paddocks?;
- that AB ANNAND holds stock seed, seeding – and any other charges – on credit all season?;
- that AB ANNAND pays for seed dressing?;
- that AB ANNAND can provide Grower services – precision seeding, transplanting, inter-row cultivation; inter-row spraying and large area bird net placement?;
- that yield trials and practical grower research goes on at ANNAND's Osterley Trial Farm?;
- that ANNAND's stated company *Values* set includes "Profits in partnership with our Growers."?

Bet you didn't know that one.

Pre-winter fungicides on brassica and carrots

Brassicas

Over the next few months be on the lookout for Downy mildew and *Alternaria* leaf spot in your Brassica crops.

Downy mildew (*Peronospora parasitica*)

Conditions that favour the pathogen include heavy fogs, light rains, prolonged dews and night temperatures between 8–16°C with mild day temperatures.

Control – Eradicate cruciferous weeds and practice crop rotation to allow the complete breakdown of crop debris. Chemical control available include chlorothalonil, copper based fungicides, mancozeb, mancozeb + metalaxyl

Alternaria leaf spot (*Alternaria brassicae*)

Again the cruciferous crop residues are commonly the primary source of inoculum. *Alternaria spp.* may also be seed borne. *Alternaria* fungi produce leaf spots in crucifers and cause damping off in seedlings. The leaf spots generally appear on older tissue. The spots often begin as small circular lesions that expand and coalesce into concentric rings often surrounded by yellow halos. Dead tan coloured centers may drop out, producing a shot hole appearance or, if conditions are favourable, become covered with a sooty black mass of spores – charring. *Alternaria* spores are wind and water transmitted. Water on the plant surface, and warm conditions favour this disease.

Control – there are several chemicals available on the market, some of which include Alto 100 SL, chlorothalonil, copper based fungicides and difenoconazole (Score 250 EC).

Carrots

Cercospora and Alternaria leaf blight of carrot are two pathogens to be also on the lookout for.

Cercospora Leaf Blight of carrot (*Cercospora carotae*) is an important foliar disease of carrot and often affects the young tissue. *Cercospora* leaf blight typically precedes that of *Alternaria* leaf blight, which is more common on older tissue. Lesions initially appear as small flecks, which soon develop a chlorotic halo and enlarge into brownish tan spots. As the lesions multiply and increase in size, they coalesce, causing leaflets to wither, curl and die. Infected seed, host debris or wild carrot hosts can serve as a primary source of inoculum. The disease can be spread with the wind, dispersed by splashing rain and irrigation, and is also spread by disease laden farm equipment and staff.

Control – captan, mancozeb (Manex 11), difenoconazole (Score 250 EC). Don't use that stuff on the staff!

Alternaria Leaf Blight (*Alternaria dauci*) is also a common foliar disease of carrot showing as greenish brown water soaked lesions. As the lesions enlarge, the tissue becomes dark brown to black and maybe surrounded by yellow halos.

Warm damp conditions favour buildup of this disease. If the autumn remains cool it should not be a problem. Keep an eye out for it – a preventative now can delay spring infection.

Control – difenoconazole (Score 250 EC).

– Chris Franks

Pest of the moment – The cabbage aphid (*Brevicoryne brassicae*)



Economic Importance

Direct feeding of this aphid causes yellowing, wilting, distortion and stunting of Brassica plants and its presence on feed crops may make it not so tasty to stock. The cabbage aphid is a vector of around 20 plant viruses including the cauliflower and turnip mosaic virus. These viruses can cause significant yield reductions. The virus is carried on the surface of the stylet or mouthparts, of the aphid, which acts as a probe into an infected plant and then into a healthy host. Large flights of cabbage aphid from rape crops, which act as a source of the virus, occur in March and attack seedling plants of other Brassica crops.

Life History

The cabbage aphid produces parthenogenic, viviparous females, (give birth to live young nymphs or larvae without the need to be fertilized – bliss!) throughout the year. Females over-winter on horticultural Brassica and forage crops of rape, swede, turnip and kale. In spring these females may give rise to winged forms which fly to seedling brassicas and produce wingless forms. Through spring and summer successive generations of the wingless forms build up in numbers. This is the crop damaging stage. As autumn approaches, more winged forms are produced which then return to cruciferous forage and seed crops to over-winter.

There are at least 15 generations per year, each lasting 10–15 days in summer and about 60 days in winter.

The adults are greyish green and covered with a fine, powdery, greyish substance. It is the most prolific aphid in Canterbury with peaks of activity during October-December and March-April, corresponding to spring and autumn flights.

Control

Biological – parasitic

The Eleven-spotted ladybird (*Coccinella undecimpunctata*) adults are 4–5mm long and migrate from pasture crops, lay eggs in the soil beneath the aphid infested plants. The larvae feed on the aphids that fall from the plants above.

A parasitic wasp (*Diaeretiella rapae*) is commonly found among colonies of cabbage aphid on brassicas. The swollen brown aphid mummies are conspicuous among healthy aphids. This wasp also suffers from parasitism from other parasitic wasps.

Neem-based insecticides – derived from the Neem tree, is a slow acting anti feeding insecticide. It is effective against the cabbage aphid and is also favorable to the natural enemies compared to conventional insecticides.

Cultural

Mulching has been shown to reduce pest incidence as well as contributing to weed control.

Remove alternate hosts such as wild turnip.

Chemical

Horticultural Brassica crops emerging during aphid migration periods should be sprayed with a systemic insecticide as soon as the plants appear through the soil to ensure migrating aphids are killed. On an established crop, spray on appearance and repeat as necessary. It is important to alternate your chemical spray groups when controlling aphids to prevent pest resistance buildup. There are many products available to control aphids such as acephate (Orthene), pymetrozine (Chess WG), diazinon (Dew 500), and dimethoate (Perfekthion). Good luck!

– Chris Franks

Establishment of autumn crops

We have been very busy this past March and April getting our biennial crops in the ground. A major project for Christine Franks has been organising the logistics of transplanting over 25 different paddocks.

The process starts in October and November when our marketing team, Jay and James, make the contacts and write the orders from our overseas Customers. It is essential for the production team to know how many different paddocks are needed, and the size of each one. By early January we have all the orders in place, the stock-seed is readied and sent in for testing so we can assure a good stand in every paddock. We have determined which crops can be direct sown and which need to be transplanted, due to limited stock-seed. During this same time frame we are contacting Growers and signing contracts for the different crops and paddock sizes. We are

also working with the new Agri-Quality/FAR/MAF computer based “Seed Crop Isolation Distances” mapping system to assure our isolation distances from other seed crops that may cross pollinate during the flowering season.

The direct seeded crops are sown at their appropriate times and we coordinate a strict sowing schedule for the transplanted crops tying in with the greenhouse operation. We have the logistics of getting Growers lined up to have their paddocks soil tested, sprayed off, fertilizer added and cultivated ready to transplant within our schedule. We also had to line up a good reliable crew of casuals to operate the transplanter over the next transplanting period. We used a four row Lannen transplanter set up so that we can inter-row cultivate, with the blocks of rows set up for netting at post bloom if required. With all this in place and a few extra days added into the schedule for rain delays, we were able to keep close to our transplanting schedule.



Transplanting cauliflower - 2 ha per day

Shawn has brought a few new ideas about weed control and herbicides from Oregon to use on the transplanted crops. We will let you know the results in a later *Seed Report*.

GROWER SNAPSHOT

D. P. & L. S. McEvedy Partnership

Pat and Lynley are partners on their Southbridge farm. Their son Matt, who is attending University in Dunedin, and their daughter Tessa, an Ellesmere College student, also help out on the farm when they can. The farm has been in the family for several generations. The 220 ha they farm is fully cropped with grass and clover seed, wheat, processed beans and peas for Watties, running several hundred ewes, and of course vegetable seed crops.

Pat has been growing small seeds for over 15 years. He prefers to grow Chinese Kale since he usually gets good yields and has less isolation problems. The key to growing Chinese Kale is to get it in early and get a good plant frame before it

bolts. Another major consideration for Pat, with the farm being adjacent to town, is deciding which crops to grow since he cannot be growing crops that require bird bangers.

He has grown peas and Chinese cabbage seed for ANNAND and is interested in growing Coriander seed next season. With the water demands during last season's drought, he is thinking Coriander, with its less demanding inputs, will be a good crop to include in his rotation.

ANNAND is looking to increase its Coriander production again this coming season. For further information contact us for details.

– Shawn Downs.



Pat McEvedy grows Chinese Kale seed for AB ANNAND.

FROM THE TECH FILE

Autumn weed and pest management on Brassica and carrot crops

Brassica crops

We have been using oxyfluofen (Goal 40 WP) on transplanted brassica crops this season. A selective herbicide for the control of a wide range of broadleaf weeds. Key weeds controlled – black nightshade, cleavers, fumitory, groundsel, redroot, seedling docks, sowthistle, speedwells, wild turnip and wireweed.

500g – 1.0 kg/ha over vegetable brassicas after transplanting on weed free soil. One application should be made per crop.

Goal 40 WP should be used alone and not mixed with a surfactant or any other pesticide. Rain or irrigation is required within seven days of application to activate this product. So far the results have been looking great.

Carrot crops

Once the carrots have at least two true leaves a combination of linuron 50 DF and prometryn (Gesaguard) at 750mls – 1L / ha is a commonly used mix.

The rate depends on the severity and size of weeds present. This combination controls a wide range of annual and broadleaf weeds for both pre and post emergence weed control.

- Pendamethalin (Stomp Xtra) a pre-emergent selective herbicide for the control of annual grasses and some broadleaf weeds. Use 2.2–3.6L in 150–400L water/ha.

- Metribuzin (Sencor) a selective herbicide for pre-or post emergence weed control. Apply 500g of metribuzin in a minimum 3-500L of water/ha when the carrots have reached the two true leaf stage and before the majority of the weeds have reached the 4-leaf stage. Metribuzin is particularly good on Brassica volunteers that may emerge from a previous crop.

Any other weed control needs, just call us.

– Chris Franks

Peter J. S. Elvy

He had so many friends and colleagues, he was so involved with so many Canterbury businesses, that few people don't already know: Peter JS Elvy was lost to a fast-moving cancer in January, at age 62. Here's a very brief description and salute to Peter.

Peter Elvy joined ANNAND Co as a part-time Development Director in 1998. In 1999 I asked him to chair our little Board – which he did with great skill, applying his no-nonsense style through a tough time, when ANNAND Co. sold or closed subsidiaries and put our focus squarely on vegetable seed production.

In the ANNAND business Peter worked with us to earn new Customers. Never fatigued, never discouraged by set backs, Peter inspired us to try new markets. And he led

there from the front: we traveled together to India and Bangladesh, to Bangkok and Hong Kong, and more. We shared hotel rooms, dodgy road meals, shaky telephone lines and swapped observations and ideas. Back in New Zealand, Peter helped us shape ANNAND's values and means of improving outcomes for our Growers, helped us to set in place ANNAND's systems and our values-based business practices. Peter JS Elvy played a pivotal role in shaping what is the current AB ANNAND Company.

In short, we miss Peter's enthusiasm, his knowledge and his general wise counsel. His was a senior advisor and a mentor. But we were also mates. His life was cut short unjustly and abruptly. We miss you, Pete.

– Jay Scanlon



► continued from page 1

Where does all that seed go?

companies for seed supply. The private sector will dominate the industry in the next decade if they continue to develop at the present rate. Competition encourages higher quality specifications – this benefits the supplying countries, such as New Zealand, where access to high quality cleaning and packaging is more prevalent. Chinese seed cleaning and handling technology is rapidly developing however.

- Chinese State owned seed companies have not kept pace with breeding and development of their varieties, as compared to private companies. Their typically wide marketing network loses its value when the varieties they hold are not competitive, hence their industry dominance is waning. They may retain a role as breeders for private companies, independent assessors of new varieties, and maintainers of public varieties.
- Sixty foreign seed companies have offices and are active in China, both importing and exporting – all looking to grow their businesses. This augurs well for the companies such as ANNAND already supplying them in other markets. These companies have established international networks.
- Chinese seed laws were tightened up five years ago, as part of the process of signing up to the global UPOV convention (protection of intellectual property or plant variety rights – PVR). This has given Chinese seed importers more hoops to jump through prior to distribution, but in the end should allow a fairer PVR environment for all parties to work in, and greater seed quality assurance for the Chinese farmer.
- There are over 50 registered plant varieties in China now, giving breeding companies the security to produce new varieties, knowing they will be better protected from piracy.

Outlook

The vegetable seed industry in China is rapidly developing. ANNAND has its relationships in place with key players to capitalise on the growth taking place in that market. This will be reflected in increased tonnages of high quality vegetable orders for New Zealand vegetable seed Growers.

– James Dixon

RECIPE

An Indian Snack: *Kurkure with Hari Chutney*



Now I like recipes with ingredients that can be purchased at the local shop, and involve only a few easy steps to turn out. When you come to exotic dishes, this format isn't too common. However, these crispy bread roll-ups with a peanut & coriander dip is my kind of recipe – Easy, Exotic and Delicious all at the same time. And ANNAND's favourite herb is involved: Coriander – which along with the ginger and the green chillies – is used in both items here.

In India, these crispy rolls would be known as Kurkure and the chutney-like dip as Hari Daniya ki Chatni. Let's just call this easy snack Kurkure with Hari Chutney.

Kurkure Rolls

1. Put these ingredients in a bowl and mix 'em up:
 - Coriander fresh leaves – 2 tblspns, finely chopped
 - Ginger – teaspoon fresh, finely chopped
 - Chilli peppers – 2 green hot ones, finely chopped
 - Onion – one small one, very finely chopped
 - Cheese regular cheddar or Colby – 3 tablespoons
 - Salt – 1/2 teaspoon
 - Milk – 1/4 cup
2. Cut off the edges of 10 slices of regular bread – white or wheat – and spoon some of the mixture onto each bread slice, then roll up tightly. Pin with a toothpick if these are handy.
3. Place into about 1cm very hot canola or soy oil and fry, flipping over to brown – one to two minutes a side – then drain on a paper towel.

Serving

Put the Kurkure rolls onto a serving plate with a dish of your 1-step Hari Chutney. Crispy on the outside, tart from the lemon, ginger and chillies, and savoury from the peanuts and coriander – fantastic. Plain bread was never put to better use!

AB ANNAND's Seed Growers produce hundreds of tonnes of coriander seed – used throughout Asia and the World. Almost all of this seed is used to grow the distinctive fresh coriander leaf.

– Jay Scanlon

Hari Chutney

1. Put these ingredients into a food processor or blender:
 - Coriander fresh leaves – a bunch – about 1/2 cup loose
 - Ginger – tablespoon fresh
 - Chilli pepper – a hot green one
 - Garlic – one clove
 - Peanuts – 2 tablespoons
 - Lemon juice – from 1/2 lemon
 - Salt – 1/2 teaspoon
 - Optional: grated coconut, cumin seed, mustard seed
- Pulse the machine, stopping to push the bits down (turn off then, of course) until you've got it all smooth. Cut this slurry with a little water (I used dry white wine) to make it "dippable".