



THE GARLIC NEWS

Connecting the Canadian Garlic Network!

Issue 41 Autumn 2014

Garlic of the Year: The Artichoke Group

The Artichoke garlic cultivars have done it again! Clearly the best performing garlic in a very difficult growing year, their yield was amazing to say the least.

The bulb sizes were outstanding ranging from an average size of Jumbo for Endurance to Extra Jumbo for the average of the Transylvanians. Losses ranged from zero to +2.85% (a gain due to some doubled cloves planted).

We grew 24 different Artichoke cultivars in the trials plots this past year and compared the six best of these for performance and yield.

For the much more popular Porcelains, we grew 29 cultivars and compared the seven best of these.

That proved to be a revealing comparison.

Yield

A quick glance at the 2014 Performance and Yield chart on page 17 tells the tale. In the comparison trial, the least performing of the Artichokes produced a higher yield than the best of the Porcelain Group, an average bulb size of 48.7 grams for Endurance, as compared with the best of the Porcelains, Miller at 42.1 grams.

In total estimated yield per acre, Transylvanian, with bulb size of 77.2 grams gave a yield of 14, 821 lbs. per acre. Millar, the biggest and best of the tall and majestic Porcelains yielded a mere 7971 lbs.

Profitability

What does that mean in dollar return?

Pricing it at a conservative \$10.00 per lb. for local garlic, here's what an acre of each of the top three would gain the grower if sold:

Artichoke Transylvanian: \$148, 210.00 per acre.

Artichoke Wettergren: \$132,110.00 per acre.

Artichoke Simonetti: \$105,000.00 per acre.

Porcelain Millar: \$79,710.00 per acre.

Porcelain Chiloe: \$75,040.00 per acre.

Porcelain Musical: \$74,270.00 per acre.

Now, admittedly, the Small Plot Organic Garlic Variety Trials are grown at a very high planting density, over 87,000 plants per acre, while most market gardeners grow a much lower density, between 20,000 and 30,000 plants per acre. But, even dividing the above figures by 4 still represents a big gap between profit.

Adaptable and tough

Artichokes are a very vigorous soft neck garlic producing large bulbs, making them one of the most productive group of cultivars. They are grown in regions all around the world, likely due to their adaptability to soils and climates.

The 2014 growing season was one of the most difficult in many years and this versatile group of garlics proved their adaptability once again in the tough Canadian weather.

Other Advantages

Aside from their high yields and adaptability to difficult growing conditions, the Artichokes have many other advantages.

They store much longer than cultivars from all other Groups, except for the Silver skins.

They can be plaited to make pigtail braids. The bulb wrappers generally have attractive purple or reddish stripes or blotches, making for lovely kitchen decorations.

The Artichokes are very adaptable to spring planting. The stem bulbils that often appear on a portion of the plants grow into seed size bulbs in two to three years, a shorter time than most others.

Contrary to popular misconceptions, not all cultivars in the group have "all those tiny cloves". Some typically grow 6-9, the same as the hardneck Rocamboles.

These "Italian Reds" are an all-round, versatile garlic.

Garlic of the year

The Artichoke Group is well deserving of the title, "Garlic of the Year 2014", having outperformed all others in a very difficult growing year.

Growers and gardeners would be well advised to grow a few different cultivars from the Artichoke Group.



Notes from our garlic patch

Thanks you for your generosity

Who would have believed it? This issue starts our 11th year of putting out the Garlic News. And, it amazes me that after all this time, members continue to send in news items about garlic, news that goes to show that garlic is the strangest and most mysterious plant in your garden, full of surprises.

A very special thanks to the following members for adding extra \$\$\$ with your renewal towards costs of producing the Garlic News. Your generosity is very much appreciated.

Cec Andrus

Harvey Carver

Mark Liznick



Thursday, August 14, 2014, 7:59 PM – from the weather channel news -

Folks across the eastern half of the country are asking: “Where is summer?”

And rightfully so. Summer has been plagued with cold snaps, mainly for the eastern half of the country, attributed to an amplified jet stream. The big cold snap from earlier this summer during July was first attributed with Typhoon Neoguri. As the typhoon curved northward it interacted with the jet stream causing it to amplify, inducing a deep trough in the east resulting in the cold spell.

This latest cold snap could be attributed to the active western Pacific in terms of typhoon activity. More jet stream action.

Editor: OK, you weather people. Can't you get a grip on this here misbehaving jet stream?



So what was the crop like in 2014?

- From the Small-Plot Organic Garlic Variety Trials

Over the spring and summer, we did a lot of agonizing and wringing of the hands, wondering what this delayed and cool growing season would do to our precious garlic. 2014 was a challenging year; a long winter; a very late spring; and a wet, cool spring and summer.

Emergence was late by three weeks. There was sporadic winterkill throughout the garlic plots. Plants were shorter; leaf count was ridiculously low, with hard necks having 5-7 leaves rather than the more usual 10-11 leaves; and indicators pointed to a crop failure. Harvest was late, spread out over 20 days due to the colder than usual July temperatures. All Porcelains showed a strange reaction, that of high number of 2 and 3 clove bulbs.

However, the harvest turned out to be the best in many years. On the positive side, leek moth damage was much lower than expected, in part due to the cold affecting mating and laying of eggs. Fusarium damage was minimal and there was no sign of re-emergence of the Bulb & Stem Nematode.

The Artichoke cultivars performed the best of all under these adverse conditions, having the largest bulbs and biggest yields (see the Performance Comparison Chart on page 17). Thank goodness, none of our concerns came to fruition and we enjoyed the harvesting of a great garlic crop.

Good farm practice pays off

We're pleased with the success of what I consider “good farming practices”. Here are the ones that get great results:

Buckwheat: Our favourite cover crop to use as a green manure to keep our heavy clay soil friable with organic matter. Ready in 30 days to turn under, compatible to grow together with mustard and we can get 3-4 plantings in a growing season. The earthworms just love it.

Bulb & Stem Nematode: Our management strategy is working! Nine years now, and no sign of their return.

Leek Moth: Damage from the leek moth at scaping and harvest this could be counted on less than both hands, and the lowest since it first arrived. We practice what we preach. In managing the leek moth, we follow our own guidelines (see “Living with the leek moth” article in Issue 23, Spring 2014). Keeping populations down from first hatch dramatically reduces damage later in the year. Proper disposal of harvest waste kills off eggs and pupae. Thorough cleaning (see page 7) virtually eliminates bringing any into the curing room, thus, no damaged bulbs.



Dispersal of garlic collection

Well, we found a “home” for nearly all the cultivars that we were dropping this year from our collection so we can cut back. Our fall 2014 planting plan calls for:

- 25 main crop cultivars for seed packs
- 22 for both “seed savers” and bulbil production
- 14 for bulbil production only
- 6 for true seed trials
- Possibly some new cultivars

That's a total of about 70 cultivars, still a hefty number, but a lot less than the 200 that we grew before!

Then, of course, the Bulbil Project will be expanded to about 30 cultivars for a 2014 start plus replanting the rounds from previous years. These all take a space and a lot of recording. A great thank you to the growers who responded for our call to take on some of our precious collection.



The search for “Fish Lake brand” cultivars

Ted Maczka's passing has brought about a grower interest in locating the cultivars that Ted used to grow and ship out as seed garlic. Ted had numbered his cultivars starting at F1 and I believe that he was up to 70 or 80 in his sequencing, although some were just a new number for the bulbil grown version, (e.g., F32 was grown from F3 bulbils), many were ones he obtained from other growers.

In my remaining collection, I grow the following, most of them in seed saver quantity only:

F1, F3, F4, F7, F21, F23, F30 and F40.

If you grow any of Ted's garlic or know of someone that does, let us know at the Garlic News. Some growers are interested in collecting Ted's Fish Lake brand.



“Beware of fools that mistake cooperation for weakness.”

A clove here and there

2014 Eastern Ontario Garlic Awards

Held at the *Verona Lions Garlic Festival*, Verona, Ontario, Saturday August 30, 2014.

2014 Champion Grower:

: Bill Kirby, Colebrook, Ontario.
: 2 x 1st, 2 x 2nd, total 10 points.

2014 Reserve Champion:

: Ali Ross, Perth, Ontario.
: 1 x 1st, 1 x 2nd, 1 x 3rd, 6 points.

3rd place:

: Wayne Davey, New Liskeard, Ontario.
: 1 x 1st, 1 x 3rd, 4 points.

Honourable mention:

: Catherine Cheff, Renfrew, Ontario.
: Dave Cornell, Ashton Station, Ontario.

Best new grower:

: Joshua Brennan, Kingston, Ontario.

Julie Drucker, reporter for the Frontenac News, in her article, *Trophies, cash and bragging rights at the 2014 Eastern Ontario Garlic Awards*, said:

“---it is the bragging rights that accompany the trophies and cash awards that the winners should celebrate most. While both overall champions this year seemed ever humble as the awards were handed out, the certificates and ribbons that now identify them as the best cultivators of the beloved stinky rose will no doubt bring some well deserved extra attention to their efforts.

This year seven competitors entered the annual competition, now in its 18th year, where judges assess growers in a number of different categories including best single bulb; best display of 12 from a single cultivar; best collection of five different cultivars; and best braid.”
(see page 2 for picture of the winners)

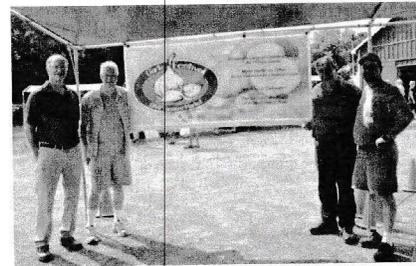
Editor: Want to buy garlic from the Champion? Bill Kirby lives at 625 Colebrook Rd, Colebrook, near Kingston. Call him at (613) 377-6462.

Garlic Festival notes and reports

Garlic festivals bring thousands of people, a lot of fun, silly ideas, serious selling, and, lots and lots of garlic. They remain the best place for growers to sell their garlic, and for buyers, likely the only place to get a wide choice of many varieties of locally grown garlic.

The **Verona Lions Garlic Festival**, in its 8th year, drew a record crowd looking for local garlic. Attendees were well rewarded with 27 of the 42 vendor stalls dedicated to garlic and not a single junk jewelry dealer selling cheap imports! Vendors were well pleased with sales. Having it on Labour Day weekend enabled local growers enough time to cure their garlic properly and present it in an attractive manner.

The two big festivals, **Perth and Carp**, continued their annual battle for customers over the same, too-early weekend of August 9-10, forcing local growers to bring improperly cured and in some cases, garlic just pulled from the ground, to sell. Both relied on increased advertising rather than on good quality garlic, to bring the buyers.



*Carp unveiled a huge new festival sign--
--while Perth kept their old highway sign--*



-- but flooded the town with little signs on every corner.

Spotted on the Internet:

"After dispute in North Plains, two groups to hold garlic festivals in Washington County this summer."

In March, the **North Plains Chamber of Commerce**, which usually runs the city's "Elephant Garlic Festival," asked the city to assume control of the 2013 event. But in November, the group decided it wanted the festival back. By then, the not-for-profit **North Plains Events Association** had been formed to plan and stage the festival. The *ensuing battle for control of the festival* has included everything from intellectual property disputes to conflict-of-interest accusations to claims that the chamber pays the city's electric bill at the community events center. The Chamber of Commerce has hired an intellectual property lawyer, Banks-based Robert Ireland. Both groups showed up at a November city council meeting requesting the city waive fees for the garlic festival on the same August weekend at the Jessie Mays Community Center. The outcome is not so much a clear victor, but a bizarre draw: The Events Association will host a renamed garlic festival the second weekend of August and the Chamber of Commerce will hold the "Elephant Garlic Festival" near North Plains, says Chamber President Dennis Brown.

Editor: Seems that Canadians don't hold a monopoly over dumb conflicts. Other places have stinky festival battles, too!

We get calls and letters

A strange year, delayed harvest and surprise crops

Editor. Garlic harvest 2014 will haunt the memories for years to come. First, the spring thaw was late, delaying the emergence of garlic. Then, heavy rains over spring and early summer delayed growth and even flooded many gardens. As July arrived, it looked like the garlic would catch up. Alas, no! Mother Nature had other plans. A few seasonable days would be followed by stretches of cool weather, slowing down the growth.

With garlic festival season fast approaching, some growers panicked and pulled their garlic prematurely, with disappointing results. I received many concerned calls from growers for advice on when to harvest. My crystal ball cracked into slivers as the weather forecasts kept changing, sometimes several times a day. It was quite a difficult and late harvest for most growers.

Jack Fraser, longtime volunteer for the Garlic Project at Silver Spring Farm called on July 19 with an update on their harvesting decision. The committee had decided to postpone their planned harvest start by over a week till July 28. The continuing cool July weather was the cause as the garlic just wasn't coming to maturity.

Thank you for all the time and effort you spend on the Garlic News. **Jane Wilson, Toronto, Ontario.**

We've had another "wet" year, a sad time to give up garden. Thank you for your information in the Garlic News. **Steve & Adeline Parcey, Pine River, Manitoba.**

Paul, I went with raised beds this year. A positive difference in harvesting and quality. **Don Wah, Windermere, BC.**

Great crop and few diseases

Hi Paul, I hope your 2014 crop has turned out well. Mine is my best ever. 26,000 bulbs total, and the majority are large and medium. The varieties I got from you a couple of years ago (Argentine #4, Sakura, Romanian, Siberian) are coming along nicely.

I've been very blessed to have few disease issues. Getting seed from reliable sources, like you, is what it's all about! However, I have noticed that in a few of the larger bulbs of Sicilian Gold, a single clove has rotted. Any explanation for this? Thanks for your guidance as always, Paul!

Daniel Hoffmann, the Cutting Veg.

Editor: Hi Daniel. Yes, harvest was one of the best. Soft necks were outstanding. There were some problems with Porcelains. A lot of growers reported a higher than normal proportion of 2 and 3 clove bulbs, not specific to any cultivar but right across the spectrum of Porcelains. Harvest was protracted over a longer period likely due to the cool days and rain. Single decayed clove?

1) Did you check for leek moth entry? Sometimes, they enter one clove only rather than the space between two cloves.

2) The nematode will generally affect the whole basal plate so that's a low likelihood. But, if you suspect you may have introduced it into your soil some time in the past, get samples to the labs, both soil and garlic, to be sure.

3) The old standby, fusarium, is the most likely culprit. You have to peel all the cloves in that bulb to check. If most or all of them have dark blotches, chances are that it is fusarium. See sample photo below. If so, there is no effective treatment although some growers have used fungicide dips with limited success. Good practice - crop rotation, cover crops like buckwheat to cleanse the soil and good organic soil to produce healthy plants will help to reduce the incidence. Trust this helps. Paul

Best garlic ever

What a great surprise delivery an hour ago. I opened up one box and immediately removed a clove. The super fantastic garlic just arrived as I speak and I am in the midst of chomping on half a raw clove with a couple chunks of raw cucumber and tomato and onion and pepper.

You have the best garlic ever.

I hope you appreciate it as much as I do. I wonder if you know how superior your stuff is compared to what is out there. Everyone should know how fantastic your garlic crop is. I would rate it the best.

Diana Hahn Borst, Belleville, Ontario.

Editor: Although most of the garlic from our trials gets shipped out as planting stock, I have saved 80 to 90 huge bulbs for Diana every year, because she is so appreciative of good organic garlic. With praise like that, wouldn't you do the same?

Marino results in the Small-Plot Garlic Variety Trials

A thank you to Ali Ross:

Ali, last year, you generously gave me two bulbs of the Rocambole, Marino, to try. They were size Giant, about 40 grams per bulb. I planted the cloves in the trials plots. Today, July 29, we harvested 14 bulbs from the 13 cloves planted (One was a doubled bulb). Marino was the last of about 130 cultivars to come out of the ground. It was not quite ready, still 9 green leaves of the 11 left, but with rain forecast, we decided to pull it rather than risk having it rot in the ground.

The results? Just amazing.

2 Colossal, cured weight estimated at approx. 222 grams;
6 Super Jumbo, cured weight estimated at approx. 600 grams;
5 Extra Jumbo, cured weight estimated at approx. 385 grams;
1 Jumbo, cured weight estimated at approx. 50 grams. Nothing smaller.

Average bulb weight = 86.6 grams, between Extra and Super Jumbo. Those yields from the smaller 40 gram bulbs. Yield: 1212 grams/ 80 grams planted = 15 to 1. Amazing! Thank you, Ali. Paul.

Note: Ali got her Marino planting stock from Al Picketts. Her enthusiasm for this cultivar is well founded.

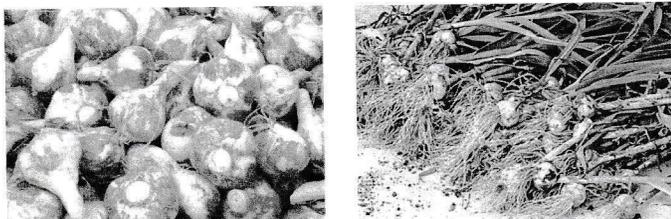
(More letters continued on page 8, 13, 18 and 19)

Some interesting observations and experiments

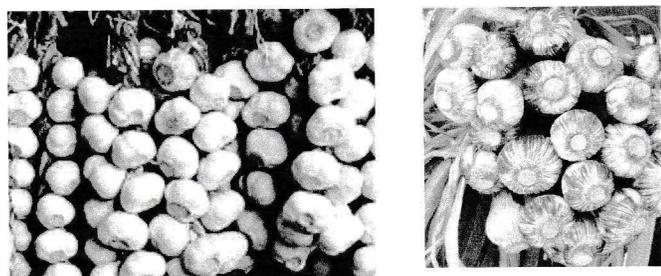
Editor's Note: Liz Tobola's Tales of the Stinking Rose column usually on this page is not available this month due to harvest workload. Fear not. Liz promised to be back next issue. We have included some garlic observations for your interest in its place.

Dirty and diseased garlic

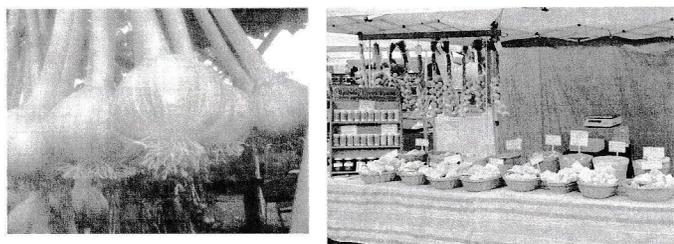
I constantly preach the gospel against dirty garlic being sold for seed because of the spread of diseases that are carried in the soil. Growers who take pride in their crop just take that little extra care. These pictures speak for themselves:



Dirty garlic for sale, both cured and freshly pulled



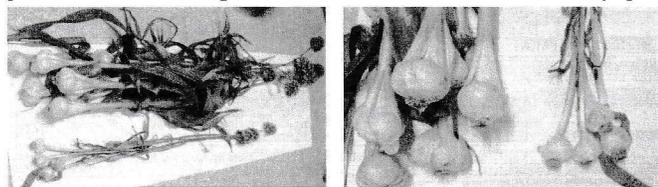
Diseased? Hiding root decay by cutting away all the roots.



Well-cleaned, short roots washed to remove dirt. Sold with pride

Elephant Garlic and Mary Miller's Mystery Garlic

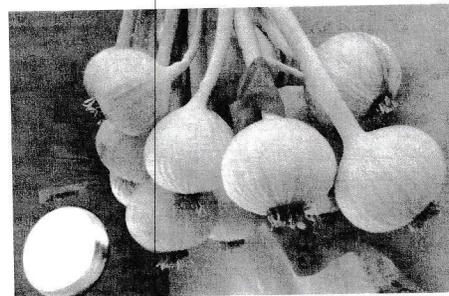
Milan Konecny gave me a bulb of Mary Miller's Mystery Garlic to plant in the trials. Since it looked like Elephant, I planted them alongside each other. Here's how they grew:



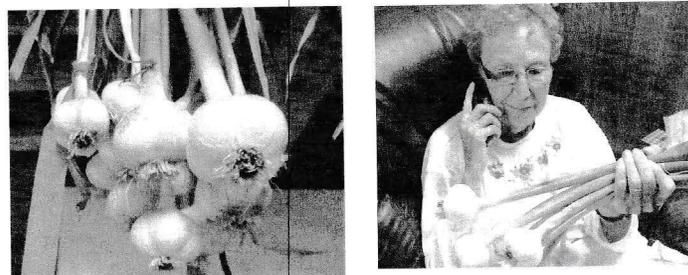
Mary Miller's, on bottom and on right, is a much smaller plant than Elephant although having the same characteristics of a Giant-Headed Leek, i.e. seed head and large rough bulb.

I couldn't find any reference to a smaller version of Elephant in any previous research. Has anyone come across this one before? *Editor:*

Spring planting garlic quirks



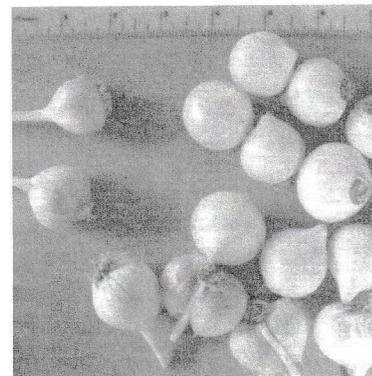
The **Artichoke Wettergren** when spring planted produced all large rounds. These make excellent planting stock for the fall and will produce the largest bulbs next summer. Hole at bottom left is the grading template, Jumbo size.



The **Turban Argentine #4**, grown from rounds, produced the largest bulbs. Of 11 rounds planted, the crop was 3 Colossal, 2 Super Jumbo, 4 Extra Jumbo and 2 Jumbo. Not bad, eh? Mary Lou tells the world about it!

Majestic

We also spring planted some tiny cloves (upper left, bulbs less than 3/4") from our pride and joy, **Majestic**, on April 21 and harvested it on September 2. Left it too long as the clove wrappers were broken down. It produced mostly 1" rounds and a few 2-clove bulbs. We'll repeat that experiment next spring (and make sure that we harvest it on time) to see if Porcelain rounds also make excellent planting stock.



Finally, colour is only wrapper deep



Right: Beaver Pond Estates Majestic, nearly pure white.

Left: Majestic grown 3 km away shows vividly coloured striping.

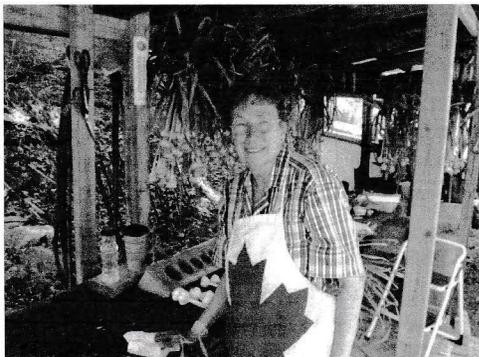
A Sound Method for Preparing & Selecting Seed Garlic

One of the major considerations in selecting and preparing harvested garlic for use as planting stock is the care needed to prevent the spread of pests and diseases. Over the years, here at Beaver Pond Estates, we have given this matter considerable thought in order to develop a sound system for quality seed. The following pictures walk show the main steps in the process.

Step 1: The garlic is carefully lifted by hand and brought to the cleaning station --



-- where it is laid on outdoor carpet to protect it from bruising. Mary Lou does the cleaning, inspection and grading.



Step 2: Paul washes the heavy dirt from the bulbs with a spray from the hose—

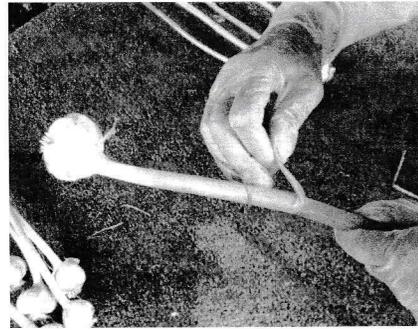


Step 3: -- and trims the roots to ¼”.

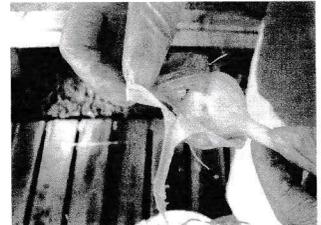
Step 4: Then, a thorough cleaning to get all of the dirt from the roots. This not only removes soil-borne diseases but also enables close inspection of the basal area for possible problems.



Step 5: Over to Mary Lou to peel off the dead leaves - -



-- and the bulb gets a thorough peeling and examination for insect or harvest damage. Storage garlic needs at least four unbroken leaves. Seed garlic can have fewer. If needed, a final spray from the garden hose cleans any remaining soil.



Step 6: The cleaned garlic is now ready for selection and separation by size using a template- -



-- the perfect garlic in sizes Large Tube to Jumbo is selected out for seed, larger sizes go for table garlic or braids, smaller ones for processing, and any damaged ones for home use.

Step 7: The selected and sized garlic is then hung in bunches, in the cleaning station, 10 garlic per bunch.



Step 8: The garlic is now ready to cure. With climate change, humidity is too high to cure outdoors so we've had to bring it indoors to cure with the help of dehumidifiers. Curing takes 2 weeks or more. Once cured, another inspection is done to ensure only perfect seed bulbs.

Seed garlic is the best of the crop. Not the biggest, only the best. Next year's crop depends on the best quality.

More Letters

(Continued from page 5)

Crop Report from Centreville, Ontario

Dorothy and Viren Oogarah sent this crop report:
Here are the rest of my harvest figures.

Majestic size averaged large tube to extra jumbo.

229 bulbs had only 2 cloves (88%)

32 bulbs had 3 cloves (12%)

Millar size averaged med. tube to extra jumbo.

75 bulbs had 2 cloves (70%)

31 bulbs had 3 cloves (29%)

1 bulb had 4 cloves (1%)

Chiloe size averaged med tube to extra jumbo.

70 bulbs had 2 cloves (72%)

27 bulbs had 3 cloves (28%)

What could be the problem for a majority of only 2 cloves per bulb for my Porcelains? The 2 cloves are quite large.

Siberian size averaged large tube to extra jumbo.

87 bulbs had 4 cloves (58%)

37 bulbs had 5 cloves (25%)

26 bulbs had 6 cloves (17%)

Bulbils

Last fall, we planted 44 Endurance. 43 came up this spring and we harvested 40 this July. To my amazement I dug 30 BULBS averaging 5 cloves each, and 10 rounds.

Also planted 54 Russian Red, 27 Spanish Antoloni, and 43 French Rocamboles bulbils. In July, dug all rounds: 18 Russian Red, 6 Spanish Antoloni, 6 French. I think most were drowned out by our spring floods.

Editor: I have no explanation for the erratic behaviour of the Porcelains. A few bulbs with 2 or 3 cloves is normal but that high percentage is an aberration. It was just part of the strange reaction to the 2014 weather.

Hottest July in Newfoundland

Hi, Paul, We have had the hottest July I can remember -- not that I remember everything I should. I hope Kathy is watering my garlic. She brought me in a lot of scapes a while ago. We had a very wet cold spring but that didn't seem to hurt most growing things. Our trees and shrubs are blooming and healthy looking here on our grounds. Here's hoping we all have good crops of garlic.

Amelia Hodder, St John's, Newfoundland.

Later Harvest in Quebec?

Paul, we are moving right when I usually harvest the garlic. Could you please tell me that you think it will be a later harvest this year?

Anne Janssen, Aylmer, Quebec on July 8.

Editor: Hi Anne. I don't think so, despite the later spring. We'll be starting Turbans and some soft necks by this weekend and expect the Porcelains to be ready next week. Now, it could be different in your area as the Gatineau area has been somewhat later. If you can spare the time during the panic of moving, check a few and see. Maybe you'll get lucky! Paul.

Addendum: Wow! When the garlic guru makes a blunder, it's a real doozy. My forecasting skills just thundered in. Cool weather continued through July and the Porcelains weren't ready till near end month!

Strange crop in Hamilton, Ontario

Hello Paul. Here is my update of my crop of garlic.

I harvested my garlic late this year, July 27 and a few in early August. In Hamilton, Ontario we had a very cold winter and spring arrived late. Then the summer was very wet and cool. Every Porcelain, Rocamboles, Purple Stripe and Marbled all grew oddly this year. Most turned out to be "rounds". One single bulb.

These were not started from bulbils other than Majestic. This one I did expect rounds...but the others???? What caused this?

Almost all of my Creoles did not make it over winter. I have managed to save a few survivors and they are very small this year. They did grow normal bulbs just very small.

Thank you for the package of new Creoles. They arrived safe and sound. I hope we will have a better year in 2015

Happy growing. **Annelies Davis, Hamilton, Ontario.**

Editor: We noticed that nearly all the Porcelains had 2 or 3 cloves this year but not too many rounds. The Rocamboles and Purple Stripes did not appear to be affected at all. Rounds usually occur in garlic from;

1) Spring planting,

2) Planting very small cloves, like the inner slivers from the soft necks,

3) Occasionally, from severe stress during the growing season, and,

4) When you plant bulbils.

None of these seem to apply so I, too, am puzzled.

Creoles, being a warm climate garlic, are not necessarily fully acclimatized or cold hardy, so they winterkill easier than most others, especially if not well mulched.

2014 was the season for soft necks. The Artichokes thrived, producing huge bulbs, during this short, wet and cool summer.

Thank you for your report. Paul.

Small garlic in Newfoundland

I have just harvested this year's garlic crop. I have two varieties of hard necked garlic, one purple and one white. I get 96-98% germination rates, but despite heavy application of compost and general purpose fertilizer the garlic is never greater than 1 inch in size. Can you suggest what I might do to increase the size?

Graham Worrall, Glovertown, Newfoundland.

Editor: Hi Graham. Like any other vegetable, garlic needs good soil, full sunshine, regular watering (if its a dry summer, deep water it twice a week). Look at your location from that aspect. A good criterion is that if you can grow great tomatoes, you can grow great garlic. St John's generally gets lots of rain during the growing season so you can eliminate that. A basic soil test could reveal a problem, especially if your pH is above 7.0 or below 6.0. There is also the possibility that the two cultivars are taking longer to adapt to your garden than normal. Some take 3 years or more while some adapt the first year. You could try something completely different, like a Turban or an Artichoke. Both of these groups adapt to almost any conditions.

(Letters continued on page 13)

HCGGA – Haliburton County Garlic Growers Association

The "Kickin" 7th Annual Garlic Fest

Our 2014 Garlic Fest was just that. Our new forever home proved its merit every step of the way.

The relaxed atmosphere was gently serenaded by the saxophone



accompanying our brilliant face painter.

Fresh, ripe, taste-bursting vegetables.

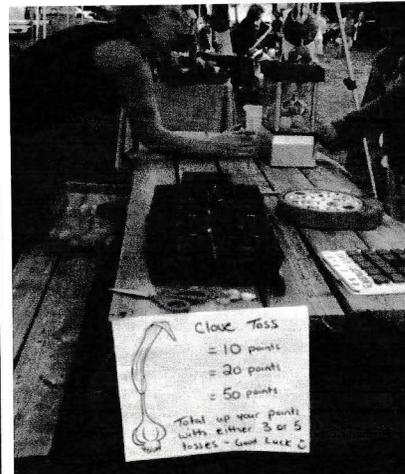
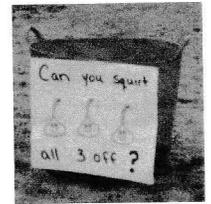


and of course garlic!

By the scape, bulb, braid and poundage. Garlic flakes & powders, pickled and paired and combined with lentils, chickpeas, berries and peppers. Rubs, marinades, sauces, & spreads.



Kids + Garlic = Family Fest Fun

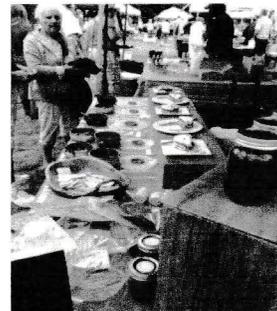


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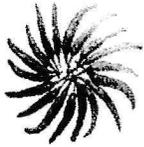
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To contact the Haliburton County Garlic Growers Association, Visit website: www.haliburtongarlic.ca or phone Sheila Robb, president, 705-489-4201, Email robbsheila@gmail.com

THE GARLIC DIRECTORY

Listings of garlic for sale, garlic wanted and anything that garlic growers might want.

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Denise O'Reilly, founder



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gardenofeden2010.wordpress.com
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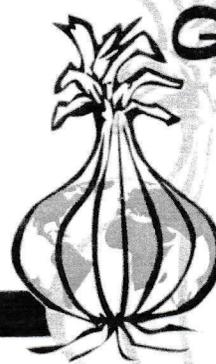
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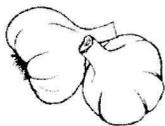
The Garlic News doesn't have its own website but you can find out about it and get membership forms on these member's websites:

www.garlicfarm.ca

www.saltspringseeds.com

www.rasacreekfarm.com/resources/the-garlic-news

http://www.garlicnews.ca



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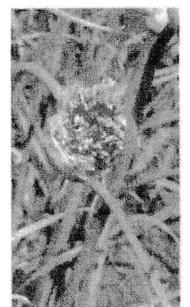
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Plant Bulbils in the Spring!



Planning on organizing a garlic festival in your area?
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garlicnews@kingston.net

MORE GARLIC DIRECTORY

Directory Listings, Garlic or Garlic Products for sale, Want Ads, Boxed Ads, Grower Information

The Garlic Garden. Fresh garlic and garlic products. Darrel & Anna Schaab, Box 1727, Yorkton, SK, S3N 3L3.
Ph. 306-786-3377, Email thegarlicgarden@imagewireless.ca.

Certified Organic Garlic from the 2013 Eastern Ontario Garlic Champions: Russian Red, French Rocambole, Georgia Fire, Georgia Crystal, German Red, F4 Italian Red. Certified organic by Pro-Cert Canada. David & Miguel Hahn, Forest Farm, Godfrey, ON. Ph. 613-273-5545.
Email dhahn@rideau.net. Website, <http://forestfarm.wordpress.com>.

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The Garlic News 2014 Advertising Rates

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Directory listing, For Sale or Wanted: 5 lines \$30.00 per year

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Full Page Ad or flyer insert:

\$100.00 per Issue,
\$175.00 for 2 Issues

\$300.00 for 1 year of 4 Issues.

Contact the editor for group and other rates.

garlicnews@kingston.net

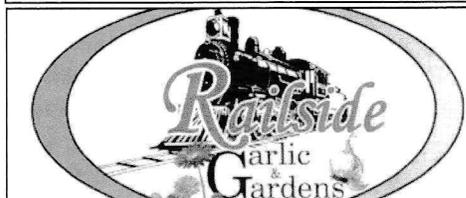
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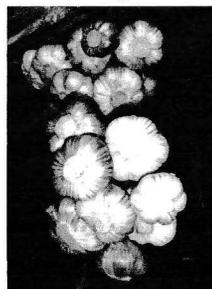
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Railside Gardens Garlic: Music garlic and garlic products. Check our website or call. Laura & Tyler Duchek, 4 miles north & 1/2 mile east of Esterhazy, SK. Ph.306-745-3515.
Email: 1t@sasktel.net
Website: www.railsidegarlic.com.



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Garlic for Sale: Featuring 'the original Big Ass Pickled Garlic' & assorted garlic products, will ship. Music garlic in season. See facing page. Ph. 705-766-2748.
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Salt Spring Seeds on Salt Spring Island carry a great line of heirloom & heritage seeds including garlic. Dan Jason, 250-537-5269,
or email dan@saltspringseeds.com.
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New Oxley Garlic, Naturally! - good, clean, fair local garlic. Jackie Chalmers, Claresholm, AB. www.newoxley.com.

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THE GARLIC PRESS

Newsletter of the Garlic Seed Foundation
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Go to website:

www.garlicseedfoundation.com
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Do you really believe that you can harvest a good crop from poor seed?

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The best garlic recipes and ideas

From the Garlic Guru's kitchen

Colcannon

-garlicky, of course

Colcannon is a traditional Irish dish made from cabbage and mashed potato. It is often made with leftovers but we love it made with freshly boiled and mashed potatoes, lightly cooked cabbage and barely fried onions. Adding roasted garlic when mashing the potatoes makes it especially tasty. Here's a simple recipe.

Ingredients:

3 or 4 large baking potatoes, scrubbed clean
1-pound white or Savoy cabbage
1-cup milk
4 tbsps. butter, plus extra to serve
1 large cooking onion
1 large, whole bulb of garlic, more for garlic lovers
2 tbsps. Extra virgin olive oil
Salt and ground black pepper
Herbs, to your taste (optional)

Method:

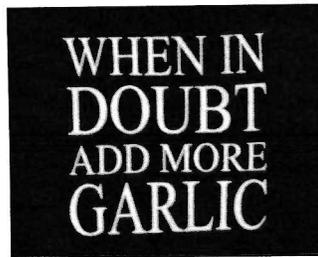
Put the whole potatoes in a large saucepan and cover with cold water. Cover and bring to a boil. After 10 minutes, strain off two-thirds of the water, put the lid back on the pan, and cook over a gentle heat so that the potatoes steam for 30 minutes or until tender.

Prepare the remaining ingredients while potatoes cook. Cut the cabbage into ¼ inch thick slices. Place in another large saucepan, add the milk, and simmer until tender. Peel and chop onion into small pieces. Place in fry pan and cook lightly, so it still retains a bit of crunch. Set aside. Cut the tips off the garlic bulb to expose the cloves, place in a small ovenproof dish, drizzle with the olive oil, season with salt and microwave for about a minute until it is soft and squeezes out (or, bake in oven for about 30 minutes).

When potatoes are done, peel them while still warm and immediately mash them with the butter, a bit of milk and some salt and pepper to taste. Squeeze out the roasted garlic and beat into the potatoes with enough boiling milk from the cabbage to make a fluffy purée. Add the cooked cabbage and fried onions and stir the mixture together. Voilà! Your Colcannon is ready. Serve hot as a main dish by itself for a hearty autumn meal.

Variations

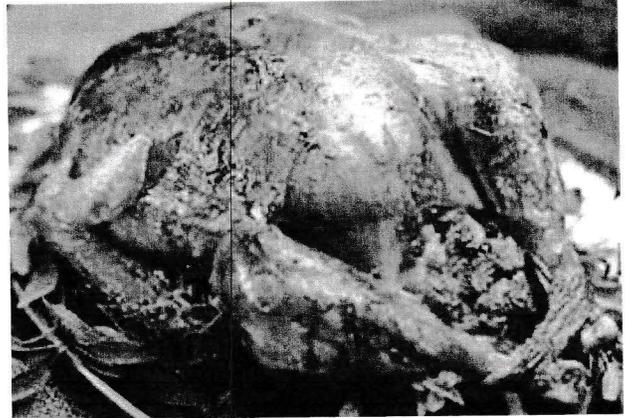
If you make extra, make it into patties and fry it in a bed of onions until browned and crisp on the outside. For a more pungent taste, replace the cabbage with kale.



Seven simple steps on how to cook a turkey

Thanksgiving is coming soon. This fall celebration of the harvest wouldn't be complete without a golden brown roast turkey to grace the centre of the table when the family gathers for this annual feast.

Turkey recipes abound but many of them skip the essential steps of how to do it right. In our house, it is my duty to thaw, wash and prepare the bird while Mary Lou prepares the dressing, stuffs the turkey and presides over the oven.



We both agree that the turkey must come out of the oven, thoroughly cooked, the meat almost falling from the bones with the skin a crisp, golden brown.

Follow these seven steps for a perfect roast turkey.

Step 1: Thaw it. If using a frozen turkey, thaw in its original plastic wrapper in the fridge, allowing about five hours per pound. So, start a couple of days before. A quicker method is to put it in the sink, cover the turkey with cold water, changing with fresh water frequently. If you buy a fresh turkey, you can omit this step.

Step 2: Wash it. Remove turkey from its plastic bag, open cavity and remove giblets and neck. Rinse cavity and wash outside of turkey with cool, running water. Pat dry.

Step 3: Season it. Sprinkle salt and pepper inside and out.

Step 4: Stuff it. Fill neck and body cavity with stuffing. Don't pack it or stuffing won't come out fluffy. Use skewers to fasten skin over the cavities. Bake extra stuffing in a separate glass baking dish. Oh, yes, use garlic both in the stuffing and lots of cloves in the body cavity!

Step 5: Roast it. Place turkey, breast side up, on rack in roasting pan. Brush with melted butter or oil. Tent loosely with foil. Roast in 325°F oven for about 20 minutes per pound or until juices run clear when turkey is pierced. A thermometer inserted into thickest part of thigh reads 180°F for a stuffed turkey or 170°F for an unstuffed turkey. A quick check is to see if the leg joint has separated from the body and moves easily. Remove foil for last hour and baste frequently with juices to get that golden brown skin.

Step 6: Leave it. When turkey is done, transfer to warm platter. Cover loosely with foil and let stand for 20 to 30 minutes. This allows time for juices at the surface of the bird to distribute evenly throughout the meat.

Step 7: Carve it and serve. Eat and enjoy this feast!

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REPORT # P-02b-2014: Performance & Yield Comparison of Proven Strains 2014 Garlic Main Crop

Purpose: To determine relative yield and performance of 32 proven cultivars from all Horticultural Groups plus two of the most promising of the new evaluations grown in the 2013/2014 Small-Plot Organic Garlic Variety Trials. New strains under evaluation, Seed Saver cultivars and spring-planted garlic are not included.

Method: Garlic was grown using standard organic methods. Beds were fall-planted Oct 15-22, 2013 and hand-harvested July 10-29, 2014. Raised beds had double staggered rows, density 3 plants/foot of row (corresponding to 87,120 plants per acre).

Yield* Calculation: Extrapolated Yield = Avg. Bulb Wt (grs.) / 1000 x 87,120 x 2.20462 x (100 % less % Loss) = lbs/acre. An estimation based on using the GGAO Grade Sizing chart to determine Harvest Weight**. The actual yield per acre can be much different if all bulbs were weighed. B-Grade garlic (<1.5") is included in harvest. % Loss column includes all losses including winterkill, non-emergence, insect, disease & animal losses and harvest damage. Losses reduce yield. Some cultivars produce doubled cloves resulting in more bulbs harvested than planted.

H: S Ratio (Harvest to Seed Ratio): is calculated by dividing Column 5 (Harvest Weight) by Column 2 (Planted Weight).

CULTIVAR	Cloves Planted / wt grs.	Harvest Date	Bulb Harvest	Harvest Wt grs.**	Av Bulb Wt grs.	% Loss	Yield * lbs/acre	H: S Ratio	Relative Standing
Porcelain - 7 cultivars evaluated									
Millar	138/876	26 Jul	136	5725	42.1	1.4%	7971	6.5:1	1 of 7
Chiloe	92/696	27 Jul	88	3593	40.8	4.3%	7504	5.2:1	2 of 7
Musical	145/1013	26 Jul	143	5608	39.2	1.4%	7427	5.5:1	3 of 7
Majestic	114/ 877	26 Jul	100	4355	43.55	12.3%	7336	5:1	4 of 7
Northern Quebec	45/ 247	27 Jul	43	1485	34.5	4.4%	6341	6:1	5 of 7
Georgia Fire	54/257	23 Jul	53	1708	32.2	1.85%	6075	6.6:1	6 of 7
Romanian Red	70/495	25 Jul	66	2080	31.5	5.7%	5708	4.2:1	7 of 7
Purple Stripe – 5 cultivars evaluated (1 Glazed, 4 Marbled)									
Purple Glazer (G)	75/ 269	21 Jul	73	2574	35.2	2.7%	6589	9.6:1	1 of 1
Kostiuk's Russ. Giant	50/ 312	27 Jul	60	3339	55.7	+20	12,826	10.7:1	1 of 4
Czech Broadleaf (M)	150/712	29 Jul	154	8192	53.2	+2.7%	10,493	11.5:1	2 of 4
N. Siberian (M)	100/ 655	29 Jul	102	5292	51.9	+2%	10,164	8.1:1	3 of 4
Robust (M)	45/ 166	27 Jul	43	1666	38.7	4.4%	7114	10:1	4 of 4
Turban – 4 cultivars evaluated									
Argentine #4	22/248	10 Jul	22	1419	64.5	0	12,388	5.7:1	1 of 4
TTSV	29/153	14 Jul	30	1114	37.1	+3.4%	7375	7.3:1	2 of 4
Luciano's Sicilian	51/286	12 Jul	49	1584	32.3	3.9%	6451	5.5:1	3 of 4
Thai	65/202	14 Jul	65	1744	26.8	0	5153	8.6:1	4 of 4
Asiatic – 1 cultivar evaluated									
Pyong Vang	33/ 225	14 Jul	23	568	24.7	30%	3320	2.5:1	Poor
Artichoke – 6 cultivars evaluated									
Transylvanian	30/ 218	17 Jul	30	2315	77.2	0	14,821	10.6:1	1 of 6
Wettergren	120/935	18 Jul	123	8254	67.1	+2.5%	13,211	8.8:1	2 of 6
Simonetti	12/ 206	17 Jul	12	656	54.7	0	10,500	3.2:1	3 of 6
Russian Red Toch	12/ 151	15 Jul	12	655	54.6	0	10,484	4.3:1	4 of 6
Sicilian Gold	80/353	18 Jul	81	4048	50.0	+1.25%	9719	11.5:1	5 of 6
Endurance	70/ 262	18 Jul	72	3506	48.7	+2.85%	9619	13.4:1	6 of 6
Silverskin – 2 cultivars evaluated									
F40 Sovereign	50/ 170	27 Jul	52	1524	29.3	+4%	5854	9:1	1 of 2
Silver Rose	46/145	29 Jul	45	1365	30.3	2%	5709	9.4:1	2 of 2
Rocambole – 5 cultivars evaluated									
Israeli	40/ 150	25 Jul	44	1946	44.2	+10%	9344	13:1	1 of 5
Italian Purple	70/ 269	25 Jul	63	3037	48.2	10%	8333	11.3:1	2 of 5
Yugoslavian	40/ 167	25 Jul	41	1633	39.8	+2.5%	7841	9.8:1	3 of 5
Arg. Red Stripe	40/ 150	29 Jul	37	1492	40.3	7.5%	7164	9.9:1	4 of 5
Reliable	62/ 254	25 Jul	67	2069	30.9	+8.1%	6411	8.1:1	5 of 5
Creoles-2 cultivars evaluated									
Rose de Lautrec #2	40/227	15 Jul	46	2436	53.0	+15%	11,697	10.7:1	1 of 2
Burgundy	17/96	14 Jul	17	539	31.7	0	6090	5.6:1	2 of 2

Comments: 2014 was a challenging year; a long winter; a very late spring; and a wet, cool spring and summer. Emergence was late by three weeks. There was sporadic winterkill throughout the garlic plots. Leek moth damage was lower than expected, likely due to the cold affecting mating and laying of eggs. Fusarium damage was minimal and there was no sign of re-emergence of the Bulb & Stem Nematode. Leaf count in all Groups was much lower, with hard necks having 5-7 leaves rather than the more usual 10-11 leaves. Harvest was late, spread out over a 20-day period, due to the colder than usual July temperatures. The Artichoke cultivars performed the best of all under adverse conditions, having the largest bulbs, while the Porcelains showed a strange reaction, that of a preponderance of 2 and 3 clove bulbs. Overall, the harvest was the best in many years.

Report P/02a/2014: BEAVER POND ESTATES: SMALL-PLOT GARLIC VARIETY TRIALS

GARLIC MATURITY CHART: 2014 HARVEST

20 day harvest period July 10 - July 29, 2014

Very Early	Early		Mid Season		Late		Very Late
July 10-13	July 14 -17		July 18 - 21		July 22 - 25		July 26 - 29
Turbans (8) Argentine #4 L's Sicilian Chinese Purple Thai, Rodrigo	TT5V Red Janice Xian Thai, balance						
Asiatics (4)	Pyong Vang)	Genki			Sakura		Asian Tempest
Artichokes (25) Susanville	Red Toch Transylvanian Simonetti Formidable F4 Italian Inchelium Piedmonte Festival, Lorz	Portugeorge Kettle River Gi Baba's Chesnek Philippino Korean Purple Acropolis Greek F7, Early S' Skin Mexican #5	Endurance Sicilian Gold Wettergren Chinook			F3V	
Porcelains (31)				Melody Mammoth Leningrad Ukrainian Mavniv Zemo TT5	Musical Mennonite Magnifico Prussian White Kostiuk's Yugo	Georgia Fire Magnificent Romanian Red Rosewood F3 Ted's Pride F30 Georgia Crystal	Majestic Millar, Chiloe N. Quebec Music, Oma's German White Polish Jenn German Stiff Yugoslavian Yugo Giant Pink Garlic Vampire
Purple Stripe (2)			Chesnok Red				Persian Star
Marbled Purple Stripes (9)			Metechi Siberian Russian Giant Jovak		F21 Polish Khabar Robust		N. Siberian Cz. Broadleaf
Glazed Purple Stripe (2)					Purple Glazer Red Rezan		
Rocamboles (34)			Hungarian		Italian Purple BP Roja Carpathian Chuck, MHR Denman Endurance M Frank Sowa French, Nina's German White German Red Guatemalen Spanish Roja Kostiuk's Ger. Spicy Korean	Reliable Israeli Yugoslavian F1, F23 Korean Purple Prairie Purple Czech Red Russian Red Salt Spring Tear Drop Ukrainian Wild Niagara Spanish Antolini	Argentine Red Stripe Tibet Tibetan
Silverskins (9)							Silver Rose F40 Sovereign BPSS 95 Chilean Silver Luchka's Moth of Pearl Silver White Solent Wight Zolton's Hung.
Creoles (10) Burgundy select Spanish Morado Cuban Purple	Mex.Red Silver Native Creole Burgundy	Mex Red #4 R.de Lautrec #1 R.de Lautrec #2	Cuban				
Very Early	Early		Mid Season		Late		Very Late

Still more calls and letters

(Continued from page 18)

Attention, garlic growers in La Belle Province!

Ail Québec, the Québec Garlic Producers' Association is now up and running. Its purpose is to explode the Quebec production by uniting forces and providing its members with a wide range of tools to help them complete their project. Some of the topics being developed are: Communication, education, information, promotion, marketing techniques, equipment & machinery production methods, disease prevention, quality control of seed and more.

Membership is \$50.00 per year.

For membership information, go to their website:

<http://ailquebec.org>

Curing versus drying trial

Jean Lafontaine, treasurer of Ail Québec, in gathering information for their website, asked: "This curing versus drying trial looks very interesting. But I'm not sure if I understand what it implies. Could you tell me more about it? Another good story for our website?"

Editor: Hi Jean. This was one of the many "question-specific" trials that I do. It was done to compare bulbs weights when you cut the stems from the green garlic and then dry them with or without heat (a shortcut method used by many commercial growers) with the time-proven technique of curing the bulbs with stems attached. The complete report, P/05/2009 is in Issue # 21 of the Garlic News. As you know, I try to publish as many of the trials reports in the Garlic News as space permits.

Centre for research into true seed in Israel

Colin Boswell of The Garlic Farm on the Isle of Wight

wrote: Hi Paul. Firstly, an apology for not getting you a report on the World Garlic Congress in Madrid. As a result of the meeting in Madrid, I am actually visiting Professor **Rina Kamenetsky** at the Volcani Center in Israel this week. This is the centre of research into true seed. They tell me they are close to achieving a viable production program. Of course I remember very well visiting Basic's labs in California twenty years ago and they said the same thing but this time it sounds like the Israelis have done it. This has implications for all of us in garlic, amateur and professional. After this I will be in Canada and the States for a week and am also catching up with Ted Jordan Meredith in Seattle and growers in California. Colin.

Editor: For our members, Dr. Rina, while on exchange at Guelph University here in Ontario, kindly did an article for me, summarizing her work at that time on true seed. I published it in the Garlic Newsletter, March 2004 Issue and have repeated it for your information on the next page.

3D's that destroy your garlic crop: Dirty, damaged, or diseased seed.

More on origin of the name Northern Quebec

Jean Lafontaine, Ail Québec added more to the discussion: In the Garlic News last issue (#39) when I asked about the origin of a strain known as Northern Quebec hoping to find out if there is any truth about the strain being the one grown by the first settlers at the time of the French Canadian colony, thus its recent renaming Nouvelle France by a few Quebec producers, *Paul wrote: So what's in the name? Marketing of course! The garlic market in Quebec is excellent and being able to sell «Quebec» garlic gives it even greater appeal. «Nouvelle France» is even better.*

Hmmm, marketing is great, Paul, and I agree that Nouvelle France would make a much better name than Northern Quebec, but there must be more in a name than just the eager to sell at all price. One could expect that a name like Leningrad does refer to some Russian origin, no? Now, if we were to call Leningrad a strain that we got from a Yugoslavian producer in Kragujevac, simply because it also grows well in Russia and the market is good over there, I'd rather call that plain cheating and lying. Next thing we'll know there will be people growing and selling Nouvelle France *and* Northern Quebec!

Editor: Good point, Jean. Naming of garlic cultivars has been a bone of contention with me ever since I started the trials. I very soon recognized that many Porcelains were duplicates using different names. The problem lies simply in the fact that we have no registry of garlic cultivars in Canada. My efforts to find garlic a "home" have fallen mostly on deaf ears. Only Seeds of Diversity Canada took up the challenge and started the "Great Canadian Garlic Collection" but even that falls short of the mark. It only records information that growers provide and much of that has errors. U.S. researchers assigned many of the names in use during the great rush to the Soviet Republics after the fall of Communism and the break up of the Soviet Empire in the late '80s. This is why many of the cultivars have Slavic names, usually given to identify the location where the garlic was obtained. This most likely accounts for Leningrad but I can't say for sure. One exception to this is "Russian Red", brought to Canada over a century ago by the Doukhobours fleeing persecution over there.

Cheating and lying? Of course. Many people cheat, lie and manipulate for personal gain as a matter of course. It's the nature of the animal. Why, we even have two occupations dedicated to the art of cheating and lying, sales and politics!!!! I'll keep up the search for how Northern Quebec got its name.

And Jean's final word

Growing good garlic is a great thing to do, it gives a man self-satisfaction and pride. Plus it pays well. Why spoil this good feeling with greed? I trust most producers are satisfied with the honest growing of a few genuine cultivars and they don't feel the need for a multiplication of the strains - though they often fall victims of it. Next thing, they propagate the fraud too, consciously or not, willingly or not. Isn't that a pity, Paul, isn't it a shame?

More Calls and Letters

(Continued from page 13)

Champion Garlic Grower praises the Mac

Bill Kirby, a retired professor of behavioural psychology and the **2014 Champion Garlic Grower**, sent these words on computers: "Thanks Paul for the email receipt. Doesn't the Internet make some things much simpler once someone shows us how?"

I just changed from IBM to Apple iMac - still learning - but the change was necessary given IBN's cutting support to Windows XP to generate sales for their 7 and 8 versions. The Mac is far beyond my rather ancient, 10 year old IBN - it truly is amazing! I started with Apple in the early 80's in a consultant role for a Special Ed program at Saint Lawrence College and it continues to be the easiest system to operate, but, having been on the 'dark side' (IBM) for a few decades, I have some catching up to do.... Also want to share that if you or your typist has an old keyboard, you/they may want to check out the new ones - just \$70 - 80 with a number pad on the right. We bought one - solar powered recharged - the main advantage is the flatness of the keyboard - it certainly has increased my four finger typing by a lot and reduced stress on my 60+old fingers. As Red Green used to say on his sign off on his TV program, "We are all in this together". *Thank you for being a leader in Canada for the growing of garlic.*"

Editor: Amen.

The Power of the Internet

To see some scary numbers, you might check this website. It's enough to make you run and hide from the world:
<http://www.internetlivestats>

A useful calculator from Barbolian Fields

Blythe Barbo has posted a useful Excel Garlic Planting Planner that growers can use for planning their garlic plantings. He says: "*Our Garlic Planting Planner provides a quick answer to how to cram more garlic in less space. Or maybe less garlic in more space. Or - wow- look at all this space! How much garlic can we plant here? Or maybe, Yikes! Look at all this garlic! Where can we plant it?*"

Free download can be found on his blog:

(http://gallery.mailchimp.com/a6d5e431063396cbf0af6f58c/files/Garlic_planning.xls).

Editor: *My manual version for figuring how much seed garlic you need was published in Garlic News Issue 2. Just goes to show you how us dinosaurs just aren't keeping up with technology!*

Frank Finneran of Pawtucket, RI, said: I like the new Email version of the Garlic News. It works just fine. Keep up the good work and may all your garlic be Jumbo.

More 2014 crop and harvest reports

Saskatchewan

Anna Schaab from **Yorkton** on July 23 reported: "Scape season has quickly finished with all eyes now looking towards harvest! The crops around the prairies have all reported to be in great condition. The floods on July long weekend (averaged 5-12") of rain throughout our area saturated fields but with good drainage the garlic fields dried quickly. Losses due to fusarium were very low (about 2%). Overall, this crop appears to be one of the healthiest we have seen. I will let you know how the crop turns out when everything is safely curing. Soft necks are approaching harvest by the weekend."

Eastern Ontario

Debbie DeCooman of Chesterville wrote: Wanted to let you know this has been the best year for garlic in my location. Planted Urbekstan and Ivan. Both doing superb. I planted it just before the November snow, then it hit. No mulch or ground cover, just 4 feet of snow all winter. Thaw started gradually and lo and behold great success. No damage, little weed competition and now just keep it going. Needed to tell someone. Not bragging, just very pleased.

Bernie Karschau of Garlic Fields sent this good news story: "I've been meaning to write a small article for the newsletter but as always so busy. What I can tell you is that I have gone back to the tried and true methods of growing garlic, namely planting and harvesting all by hand. My garlic planter was of moderate use and success, however I found that it did not provide adequate soil coverage for the cloves, hence poor rooting before the winter. I can report that this spring I had near perfect germination and the stalks look healthy and robust. So far there is minimal leek moth damage but we will see when the scapes appear. As always, weeding is an issue but I mulched a good portion and the rest is weeded by hand. After a disastrous nematode problem a few years ago due to dubious seed garlic purchased, (I won't name names) I went out of province and purchased wonderful seed garlic from **Darryl and Anna Schaab** from Yorkton Saskatchewan, people you had recommended. It really is true, start with quality seed, don't try to expand beyond your capacity and the rest will take care of itself. Thanks again, Bernie."

Nova Scotia

Madonna Levesque of Tatamagouche on July 7 wrote: Here it's the usual after a very late cold spring. The scapes are just starting to appear on the Porcelains and no signs of scaping on our other 4 varieties...different. Have not had this happen in the 18 years growing here nor prior to that. The mulch was still frozen in early May. Expect our harvest will be late also.

True seeds in garlic

Article by Rina Kamenetsky written for the *Garlic Newsletter* during her year at University of Guelph. Republished with permission of the editor of *The Garlic Newsletter*.

Dr. Rina Kamenetsky was born and educated in Kazakhstan (Central Asia). She works at the Department of Ornamental Horticulture of the Volcani Centre, Israel where in 1998, she started the project of garlic fertility. Today, in 2014, she continues this important research and many of her papers can be found by searching the Internet.



Garlic Research

Published Quarterly
March 2004 Edition

Although today garlic is known only as a cultivated plant, scientists believe that its wild relatives were widely dispersed in Central Asia about 10,000 years ago. At that time, wild garlic formed small bulbs and flowers, and was probably propagated by seeds. Semi-nomadic tribes cultivated this plant as food condiment and medicinal plants. From Central Asia garlic was introduced to the Mediterranean basin, India and China.

There is evidence that garlic has been in use in China and India for more than 5,000 years and in Egypt since before 2,000 BCE. European traders facilitated its further distribution, and, from the Mediterranean region, garlic was introduced to sub-Saharan Africa and to the Americas by explorers and colonists.

During its cultivation history, garlic was adapted to various climates and selected for cold resistance, bigger bulbs, or higher pungency. In order to obtain a larger bulb, flower stalks were often removed or clones with reduced flowering potential were selected. Thus, the thousands of years of active selection by man resulted in the loss of garlic fertility, and today garlic varieties are completely sterile and are propagated only vegetatively. In modern garlic varieties, the presence of vegetative top sets (bulblets), which develop in garlic inflorescence, is one of the major causes of the inability of this plant to develop normal flowers and true seeds.

The sexual sterility of garlic markedly reduces its potential for the improvement of its economically important traits, including pest resistance, yield, and quality. Restoring fertility in this crop would provide new genetic combinations for breeding purposes or genetic studies. This consideration has stimulated attempts by many researchers to restore fertility to garlic.

In the early 1980s, Japanese researcher T. Etoh made several expeditions to Soviet Central Asia, and collected a number of garlic bulbs.

The collected clones were then grown in Kagoshima, Japan, and following top set removal, 17 clones developed fertile flowers with over 3,000 viable seeds. Later, fertile garlic clones were also found in Armenia, Georgia and Sin-Kiang in China. However, seed germination rates were low, ranging between 10 and 12%. Later, in the 1990's, M. Jenderek from a private company in California obtained a large amount of garlic seeds from the plants originated in Central Asia. Removal of top sets was necessary only in the early generations, as the strong selection pressure for blooming and seed production resulted in improved seed set. Recently, 36 fertile accessions were also identified in two USA garlic collections.

In 1998, a special project for restoring the fertility of garlic was initiated in Israel. This project is a part of a large European Community program called "Garlic and Health", which is aimed at the development of high quality garlic and to study its influence on human diseases. In the framework of this project, our collection missions to Central Asia have gathered over 300 garlic genotypes from locally cultivated or natural populations in Uzbekistan, Tajikistan, Kirgizstan, and Kazakhstan.

This region is recognized as the primary centre of origin of garlic and the main and richest source for genetic diversity, worldwide. The collected clones were evaluated in Israel for their potential fertility and other useful traits. It was found that following stalk elongation, flower differentiation, pollination, and fertilization, true garlic seeds might be obtained in more than 30 clones. In seven of the most fertile accessions, about 400-500 seeds were produced per umbel, without the removal of top sets. Germination rates reached about 90%, and the seedlings developed into young plants with two to five leaves. At the end of the season, single-clove bulbs with white, purple, grey and brown skins, differing in bulbing ability and ripening, were obtained. These plants vary widely in their physiological and horticultural characteristics, and probably contain most of the worldwide variability of the garlic gene pool.

Physiological studies of the flowering process in garlic show that storage and growth temperatures play the most important role in garlic flower development, and provide environmental tools for flowering regulation and fertility restoration. Short days during the garlic's growth result in flower development, while long days facilitate bulb and top set formation. In bolting garlic genotypes, manipulation of the environment, both before and after planting, can regulate the development of flowers and regain fertility.

Seed propagation of garlic on a massive scale may become a feasible option in the future. Sexual reproduction can be exploited in plant breeding, for improvements to yield, disease resistance, tolerance to stresses, and quality. In addition, in established varieties, seeds (which normally do not transmit viruses) may be used for the production of virus-free propagation material.