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of the 2012-2013 “Garden Companion”
(BfR’s newsletter).*



The Garden Companion

Biointensive for Russia's newsletter

Fall 2012 - Winter 2013

UPDATE ON THE 2012 YEAR

PERESVET's Experiment: In last year's growing season, our friends at the Grassroots Alliance PERESVET in Bryansk, Russia, conducted an agricultural experiment testing the levels of lead uptake into vegetables from soils contaminated from car exhaust. Lead continues to be added to gasoline in many parts of Russia, including the Bryansk *oblast'*. They worked as volunteers and on a shoestring budget. PERESVET Director Igor Prokofyev's report begins on page 2.

Classes and workshop: Our friends at PERESVET report that 45 teachers in the Bryansk and Orel *oblasts* include GROW BIOINTENSIVE Sustainable Mini-farming (GB) in their school or university classes, each teaching 140 students for 60 hours every year. In addition, Natalya Koryagina taught 22 participants at a workshop based at Oxfam International's Russia headquarters in Moscow (see photo). A team from Oxfam will travel to Bryansk in the spring to shoot a short film on Natalya and her work in the village school in Domashovo.



Publications: Working with Natasha Demenkova in St. Petersburg, BfR prepared the Russian translation of the *Farmer's Handbook*, a concise online presentation on GROW BIOINTENSIVE Sustainable Mini-Farming by Margo Royer-Miller. It can be viewed in both English and Russian at http://www.growbiointensive.org/Self_Teaching.html. We have completed the translation and initial editing of a translation of the latest edition of *How To Grow More Vegetables* by John Jeavons, the stock of copies of the 1999 edition of its Russian translation being nearly exhausted. The translated book is now being edited by Igor Prokofyev, and laid out on the computer by Natasha. We are in touch with a potential publisher in Moscow, but it will likely be published initially as an e-book and in print-on-demand form.

Igor Prokofyev followed through on his promise to write a 12-page booklet:

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MESSAGE FROM THE DIRECTOR *by Carol Vesecky*

We accomplished the following eco-friendly tasks and fundraiser at Mulberry Haven during 2012: A workshop was held in early March on propagation of fruit trees by cuttings, taught by our resident orchardist Kody Ryan. We signed up for solar panels as part of the Ojai Valley Green Coalition's "Solarize Ojai" program. (The panels will be set up next month ... *after* we move our 6-line clothesline that now occupies the best spot!). At a delightful fundraiser in August, Doris Williams sang "Renaissance and Beyond" songs, accompanying herself on the lute, and we enjoyed a delicious Eurasian meal prepared by Irina Kim. We're in touch with Doris and are planning similar for our 20th anniversary this August. What a great time for YOU to visit!

You will be welcome then or any time for a visit to the Haven, especially if you have donated to BfR! Meantime, our BfR's Web master Berta Pires will try to make our Web site more interactive so I can easily post photos, experiment reports, and prospects for your perusal.

YOUR SUPPORT IS NEEDED, YET AGAIN!

As reported in the last *Companion*, we were promised a substantial grant that would have enabled us to hold two workshops in Russia, one to which our entire Eurasia network would have been invited, and another specially designed for teachers from the Chernobyl region. We also planned to expand the Grassroots Alliance PERESVET's experimental program to include the Chernobyl Center towns, and to begin publishing several translations of books on GROW BIOINTENSIVE Sustainable Mini-Farming. We were then, and still are, hoping that our *How to Grow More Vegetables* and *The Sustainable Vegetable Garden* translations can be well marketed, generating income for BfR, and the teaching manual, *Future Fertility*, and *Test Your Soil With Plants* can be distributed at low cost to teachers and researchers.

Sadly, the promised grant has not yet been made, due to the funds being tied up beyond the donor's control. Nevertheless, we have continued to work steadily with Natasha Demenkova in St. Petersburg toward completion of the updated translation of *How to Grow ...*; see Publications article on page 2. We have been paying out \$500/month for this work, but it is beyond our means to continue. We also plan to support another experiment to be conducted by the Grassroots Alliance PERESVET in Bryansk, costing about \$1000. Your financial help would be *deeply* appreciated!

Your donations will help us at least to continue our publishing efforts and experiments. Do come to Ojai to discuss the possibilities, or perhaps we could talk on Skype!

Report on GROW BIOINTENSIVE experiments in 2012: Effect of double-digging and composting on reduction of lead content in soil and vegetables

Grassroots Alliance PERESVET, Bryansk, Russia

In every Russian city, large and small, gardeners grow their own vegetables. Many of these gardeners assume that they obtain environmentally safe vegetables from their gardens. Unfortunately, people do not realize the impact the urban environment has on their garden plots. A huge problem in Russian cities lies in the contamination of soils with lead. The main source of pollution is automobile transport.

Unfortunately, many cities in Russia still use low-quality gasoline. This fuel contains lead compounds, which increase the octane rating of gasoline. Car exhaust is diffused several kilometers from the highway and contaminates the soil with lead. The soil accumulates lead and passes it on to plants; thus it enters the bodies of adults and children via the vegetables they consume. In humans, lead is the cause of many serious diseases. Because Russia's medical services are poor, many chronic diseases are not well diagnosed.

We can assume that people are aware that their gardens are contaminated by lead. Unfortunately, most gardeners do not have the opportunity to buy a new plot in a location remote from the city. Such land is expensive, and most people do not have money to purchase it. The garden is a source of food for them. Therefore, we need to offer urban people a gardening method that will prevent transmission of the lead contamination into the vegetables, and then into the human body.

Aim of experiment:

The experiment's goal was to test the effect of the GROW BIOINTENSIVE (GB) Sustainable Mini-Farming method on the accumulation of lead by vegetable crops. The experiment's hypothesis was that certain elements of the GB method – double digging and composting – will reduce the contamination of vegetables in soils that are contaminated by lead.

For the experiment, we chose three dacha garden plots that are very close to the highways of the cities of Bryansk, Karachev, and Orel. The traffic on their highways is dense, about 4,000-6,000 vehicles per day. One dacha plot was chosen in each city. The lead contamination of the soil was evaluated at the beginning of the experiment. For this purpose, three soil samples were taken from the top layer

(0-20 cm) of each plot. Analysis for the total concentration of lead in the samples was performed at the Soil Testing Laboratory of the Bryansk region. The soil type in all three areas was sod-podzolic, with humus content of about 2 percent. At all three sites the maximum permissible lead concentration in soil (MPC, 30 mg/kg) permitted by the sanitary-epidemiological norms in Russia was exceeded. (The MPC for plants is 0.5 mg/kg of dry weight.) The three plots differed in their lead soil contamination levels: Plot 1 (Orel) was 57 mg/kg, Plot 2 (Bryansk) was 81 mg/kg, and Plot 3 (Karachev) was 101 mg/kg.

Two types of beds were laid out at each site. The first type of bed was Biointensive. Certain elements of GB mini-farming were used in their preparation – double-digging and composting – were done while the soil was prepared. The compost had been prepared the previous year the Biointensive way. Compost was applied to the Biointensive beds at the rate of five 5-gallon buckets per 100 sq. ft. The second type was conventional beds. They were prepared by the methods used by most gardeners in Russia (single-digging, application of complex fertilizers in amounts recommended by the fertilizer manufacturer). The two types of beds were located close to each other to avoid major differences in the levels of lead contamination.

Both types of beds received equal sun hours and were given the same amount of water. The vegetables were harvested as they ripened. The crop samples were submitted to the Soil Testing Laboratory for analysis for lead content.

The total lead concentration in both soil and plants was determined by atomic adsorption spectroscopy.

Results and Discussion:

The table on page 3 contains the results of laboratory tests of the soil and of the vegetables grown in the experimental gardens.

The data presented in the table show that the vegetable crops vary in ability to accumulate lead in their edible parts. Radishes, lettuce, and onions accumulate lead the most, tomatoes the least. This can be explained by the physiological characteristics of plants. Based on these results, it is possible to make a list of vegetables that can be grown in the contaminated soil, and to develop recommendations regarding which plants should not be grown under these conditions. To do this, the experimental work must be continued.

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OUR PUBLISHING PLANS FOR 2013

We are continuing to work steadily on the updating of the *How to Grow More Vegetables...* translation; the new material has been translated by Natalya Demenkova and is being edited by Igor Prokofyev, so it is currently virtually ready to be computer typeset, with the hope of being available to gardeners for the 2013 growing season. We are seeking a publisher in Russia, and e-book and print-on-demand versions are also being considered. Our next step

will be to reprint the Russian translation of *The Sustainable Vegetable Garden*, which presents the method more concisely for those with less time or inclination for reading. Your financial assistance would be valuable in achieving these goals. But assuming we receive our grant at long last, we will pursue our other goals as described in the 2011 *Companion*, which is posted online at <http://biointensiveforrussia.igc.org/newsletters/2011CompanionWeb.pdf>.

Table 1: Lead content in soil and in vegetables grown in experimental plots (mg/kg), with percent reduction from Conventional to Double/dug, Composted ("GB") Beds

Crops	Plot 1 (57 mg/kg)			Plot 2 (81 mg/kg)			Plot 3 (107 mg/kg)		
	Conv.	GB	Diff.,%	Conv.	GB	Diff.,%	Conv.	GB	Diff.,%
Onions	1.9	0.87	54	1.44	1.26	13	1.63	1.57	4
Beets	0.86	0.76	12	0.67	0.45	33	0.77	0.73	5
Cabbage	0.38	0.31	13	0.4	0.27	33	2.44	2.13	13
Lettuce (leaves)	2.41	1.9	21	2.44	2.13	13	2.68	2.4	10
Radishes (roots)	2.31	2.08	10	4.8	4.1	15	5.1	4.3	16
Carrots	0.26	0.22	15	0.45	0.37	18	0.61	0.48	12
Tomatoes	0.14	0.11	21	0.18	0.13	28	0.27	0.21	22

Additionally, the data presented in the table clearly shows the positive effect of the GB mini-farming method.. In all three plots, a decline was recorded in the lead contamination of the edible plant parts. Double-digging and composting reduce contamination of vegetables by 4 to 54 percent. The reduction in vegetable contamination depends on two factors:

1. **The plant species.** For example, in soil contaminated with 57 mg/kg of lead, its concentrations in onions is reduced by 54 percent; in radishes only by 10 percent.
2. **The concentration of the contaminant in the soil.** For example, the concentration of the lead in onions in soil contaminated at 57 mg/kg is decreased by 54 percent, at 81 mg/kg it is reduced by 13 percent, and at 107 mg/kg by only 4 percent.

To explain the reduction of contamination of vegetables brought about by the GB method, we studied a number of articles in Russian and foreign scientific journals. On the basis of published data we can assume that two factors contribute to the reduction of contamination:

1. **Double-digging.** Use of the technique promotes the dispersal of lead compounds throughout the soil profile. Moving soil from one trench to another during double-digging helps to reduce the lead concentration around the roots, as some soil from the upper part of the first trench slides to the bottom of the next one and away from the main root mass. Also, the loose structure of the soil promotes leaching of lead into the deeper layers of the soil.
2. **Compost.** Scientific studies have shown that mature soil organic matter, or humus, can accumulate and bind soil lead. The humus particles in compost stick to lead and make it less available to plants. We can assume that with regular use of Biointensive farming and of compost, lead contamination of vegetables will decline.

The data elucidated above allows us to make the following recommendation to gardeners: *Use more compost on soil contaminated with lead.* Of course this is not the path to full sustainability, but it will help to reduce the contamination of soil with lead and to maintain health.

With increased concentration of lead in the soil comes its increased concentration in plants. However, it can be concluded that the accumulation of lead in plants is slow, that is, when the accumulation of lead in soil is rapid, its contamination of plants proceeds more slowly. For example, when lead's concentration in soil varies as greatly as 57 - 81 - 107 percent lead concentrations in the dry matter of plants vary only from 0.38 - 0.4 - 0.49 percent, or only about a 10 percent increase

in plant contamination compared with a 100 percent increase in soil contamination.

Conclusions

1. Lead contamination of soil is passed into the plants growing in that soil. Vegetables accumulate lead in their edible parts.
2. The greater the contamination of soil, the greater the contamination of vegetables.
3. Lead accumulation in plants proceeds more slowly than increase in concentration of contaminants in soil.
4. Vegetables accumulate lead in their edible parts in varying amounts. There are plants with a high capacity for accumulating lead (onions, radishes), and those that accumulate less of the contaminant (tomatoes).
5. Use of the GB double-digging and composting techniques reduces lead contamination of vegetables by from 4 to 54 percent. The extent of reduction of contamination in vegetables depends on the plant species and on the concentration of lead in the soil.
6. Double-digging and composting reduce the availability of lead to plants.
7. Gardeners who grow vegetables in soil contaminated with lead should be encouraged to use more compost and to practice double digging.

Author: Igor Prokofyev <igor.prokofev@gmail.com>

Experiment gardeners: Bryansk – Alexander Gorbachev, Karachev – Viktoriya Grib, Orel – Nina Vratskaya

Translator: Carol Vesecky cvesecky@igc.org

Note from Carol: Do get in touch if you would like to collaborate with PERESVET on this year's experiment, or in future years. I would be thrilled to facilitate!

Here's my tax-deductible contribution to Ecology Action for a membership in Biointensive for Russia:

- ☐ \$20 Regular Member ☐ \$50 Donor ☐ Other
☐ \$100 Contributor: ☐ \$ 250 Translation Supporter
Receive 3 days of hosting at Mulberry Haven
☐ \$1000 Experiment Sponsor

Name: _____

Address: _____

Phone: _____ E-mail _____

Mail to: BfR, 913 Oso Road, Ojai, CA 93023

Upcoming Events:

Ecology Action will offer tours of their research garden seven times this summer, from May through August. For tour dates and other offerings, click on Events & Opportunities at www.growbiointensive.org.

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Improve Your Soil with Biointensive, and it was translated by BfR. Its 11 sections include information on earthworms, heavy metals in soil, how to improve overly moist, sandy, and acid soils, and how to determine (by which plants are growing there) whether one's soil is acidic or alkaline. With any donation pledge, you may order the electronic version from us in Russian or English, or hardcopy for \$4 postpaid.

Also assisted by Natalya Demenkova, BfR prepared the Russian translation of the *Farmer's Handbook*, a concise online presentation on GROW BIOINTENSIVE by Margo Royer-Miller. It can be viewed in both English and Russian at http://www.growbiointensive.org/Self_Teaching.html.

Thus, progress has been made by BfR in 2012, but not exactly in all the ways we anticipated while expecting the grant. May we all continue to "keep on"!

A HAPPY EVENT IN 2013 AND OUR PLANS

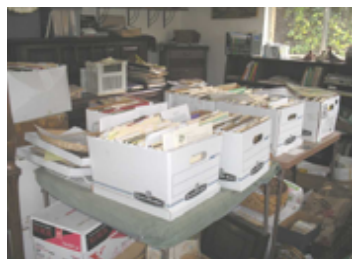
Before describing our plans, I must tell you about the delightful, but too brief, visit from Moscow to Ojai in January of Larissa and Aleksandr (Sasha) Sasha Avrorin, along with their son Dmitry (Dima), who now lives near San Diego with his Russian wife and small son. Beyond showing them the valley, we, our friends Mac and Franna McClelland, and Irina Kim (see photo at top of page 1) had the great pleasure of viewing two short videos that Dima, a documentary film producer, made on his parents' work. One presents the life of a coastal town in the Russian Far East which has benefited from grants from a community foundation that Larissa worked to set up, based at the Charities Aid Foundation in Moscow. It can be viewed at <http://vimeo.com/51892940>. The other video offers a glimpse into the lives of scientists doing cutting-edge research into the phenomenon of neutrinos, lowering telescopic sensors through the ice in the middle of Lake Baikal in the dead of winter; see <http://vimeo.com/52209451>. Sasha has been working on this project for several years, in the lab in Moscow and on the ice of Lake Baikal. Do check out the videos, and enjoy!

Biointensive for Russia is a non-profit project fiscally supported by Ecology Action, a California 501(c)(3) organization. Its mission is to share information between the US and Eurasia on ecological lifestyles, in particular GROW BIOINTENSIVE Sustainable Mini-Farming. Carol Vesecky is director and newsletter editor; our advisory board members are David Buckley, Sylvia Ehrhardt, Anya Kucharev, Larry Symonds, and Erin and Doug Wood. Our Web masters are Berta Pires, Tamara Kowalski, and Shoshana Billik. The mailing of this issue of *The Garden Companion* was made possible by member donations. Contributors, translators, and proofreaders include Igor Prokofyev, Barbara Brown, and Fran Adams. Do visit our Web site or write to Carol for more info!

Biointensive for Russia
913 Oso Rd
Ojai, CA 93023

What's next: Whether or not we receive the grant, we will continue as best we can with our translation work, and plan to support another PERESVET experiment. **Your donations at as high a level as you can muster** will empower us to move ahead much faster with the publications, and also strengthen the experimental program! This year, PERESVET plans to replicate their 2012 experiment on lead uptake, testing the remaining vegetable crops typically grown by Russian family gardeners.

For myself, I plan to continue working on the BfR archiving I've been doing in anticipation of sending many



file boxes to the Hoover Institute at Stanford to be added to the Citizen Diplomacy archive that Anya Kucharev set up. Some of my friends would see that as appropriate work for me, considering I experienced a cardiac arrest in 2012. But my doctor has cleared me for

travel, so if we get that grant, I'll help plan the workshops, and do my best to attend!

MORE NEWS FROM OUR NETWORK

• Our longtime friend **Volodya Loginov** wrote about a "Renaissance" festival near the Black Sea resort city of Gelendzhik. He lectured on "Putting in and organizing growing beds" and "How to grow a compost pile." He enjoyed meeting the gardeners, and remarked on the interest in organic growing shown by the participants, who have little liking for chemically grown vegetables. • **John Beeby**, an Ecology Action consultant now working and studying at Cornell University, is developing Harvest Planner to help gardeners globally to determine their dietary needs and plan their crops accordingly. To learn more, see <http://www.harvestplanner.org/>. • Our Web master **Berta Pires**, an inveterate traveler, reported on her recent trip to the Himalayan kingdoms of Nepal and Bhutan. Do visit <http://kelt.com/hippo/travels/> and click on the appropriate button. The photos of mountains, temples, and daily life are stunning!

For more info, visit: <http://biointensiveforrussia.igc.org> or write or phone Carol Vesecky 805 640-1897 • cvesecky@igc.org

