

## VIII. CONCLUSIONS

To make conclusions about a project, and a subject, as diverse as urban rooftop gardening is a difficult task. We have decided to present our conclusions in response to four questions:

### a) Can you garden on a roof?

Our work has indicated that the answer is a firm yes. The experiences with both community and individual gardens on low-level roofs, as regards gardening practice, has been comparable to ground level gardens. It should be understood however that the use of containers has limitations on the extent of the garden; although larger containers give a greater yield, they are usually harder to build and less flexible than smaller boxes. Common sense should be exercised in choosing vegetables which require little root space.

Hydroponic gardening requires less strenuous work to start up but just as much time, if not more, is needed to start up. Hydroponic gardening increases crop yields, but it should be pointed out that the beginning gardener is discouraged by what he sees as a complex and unfamiliar process, and prefers traditional soil gardening.

### b) Are there any technical problems associated with rooftop utilization?

The main problem encountered with the utilization of individual rooftops is convenient access. Lack of access usually precludes use, as the cost of construction is relatively high, and, particularly to the tenant, unattractive. Difficult access inevitably leads to neglected and abandoned gardens. This is one factor which may discourage the widespread use of individual rooftops for gardening.

The project has shown that large structures are not feasible on rooftops due to the loads imposed by drifting snow. Individual gardeners can however build small green-houses and cold-frames. There is also the possibility of entirely covering the roof, which is feasible only for large commercial growers.

Intensive use of roofs is limited by the strength of existing structures; it is obvious that the optimal use of roofs occurs when the latter is specifically designed for soil loads, access, etc.

### c) What are the economics of rooftop gardening?

The project has shown that complete self-sufficiency is not a realistic goal, however, a well-planned urban garden could provide a family with summer vegetables and salad. The restrictions imposed by containerized urban gardens limit the quantity of food produced, and the money savings to the urban gardener are marginal, if any. However, a comprehensive cost-benefit analysis would have to take into account both the amenity value of the garden, the satisfaction of the gardener, and, not the least, the improved quality of organically grown produce.

### d) Are people interested in urban rooftop gardening?

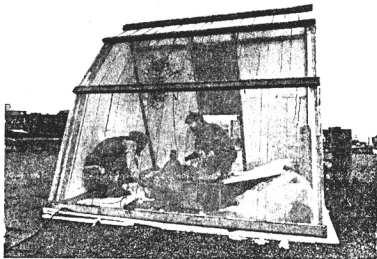
The answer to this is exhibited in the strong community response to the rooftop project, and is emphatically yes. More than just interest, there is an expressed need for this kind of activity in the city centre, and the project indicated that the main motivation was firstly personal gratification and learning, and only secondarily food production.

However, information and expertise is often lacking with respect to gardening and leads to a lack of self-confidence, which can be overcome by action oriented courses and teaching.

The investment of time and energy in setting up a rooftop garden, even a small one, should not be underestimated. It is this effort above all that will limit the size of the garden, and it is at this point that the gardener needs the most encouragement.

It is our opinion that the provision of rooftop gardens, at the time of construction of new buildings, would go far in developing rooftop gardening as accepted Canadian practice.





Richard White

## Hot tomatoes on the Main

Seven McGill architecture students decided to tackle the design and construction of two greenhouses as part of a course on design problems last year. Four of the seven students set themselves the task of using new materials as efficiently as possible and built a plastic greenhouse, which unfortunately served as an effective illustration of design problems when it collapsed under the pressure of snow.

The other group of three decided to make use of scrap materials for a low-cost, ecology-minded greenhouse. Their scrap-glass greenhouse, as pictured, has enjoyed a longer life and its creators, Richard Morrison, Colin Munro and Richard White have since been able to harvest a variety of vegetables - tomatoes, peppers, lettuce, and green beans. Both greenhouses cost about \$50 each, but plastic needs to be replaced each year whereas glass is permanent.

Glass for the greenhouse -  $\frac{1}{4}$ -inch leftover strips of plate glass - was obtained free from a glass dealer. The group decided to use a solid north wall instead of the traditional greenhouse glazing so that the sun's rays would be reflected onto the plants rather than passing through the glass. Styrofoam was used as an insulation against radiative and convective heat losses.

"Lobster trap" is the students' apt description of the shape of their structure. The three-planed front wall offered several advantages. By cutting strips of glass two feet, three feet and four feet in length from longer strips, wastage was kept to a minimum. The placement of the planes conformed to the different positions of the sun through the year. Since the sun's rays are strongest at a perpendicular angle, the long four-foot plane was placed lowest to catch the weak winter sun; the three foot plane was aimed at the sun in spring and fall; and the short two-foot strips of glass would lessen the effect of the strong summer sun.

The greenhouse was cosy in Montreal's winter chill, but the insulation apparently worked too well this summer. Temperatures occasionally reaching 120 degrees made for some pretty withered lettuce. One of the group's "second thoughts" is that the glazed sections should have been built so that the greenhouse could be opened up in summer. But flaws aside, at least one St. Lawrence rooftop has probably never been put to better use.

- McGill Reporter, Sept. 3, 1974

The first do-it-yourself rooftop greenhouse was designed and built by Richard Morrison, Colin Munro and Richard White under Prof. Witold Rybczynski, in October 1973.

