

**‘Rural civil contingency planning;
promoting food security and
resilience through effective
preparation and response.’- lessons
from Nova Scotia and New
Brunswick**



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The views expressed in this document are the authors own.

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1.0 Introduction

I have worked at Harper Adams University College since July 2000 and am currently a Senior Lecturer in the Land, Farm and Agri-Business Management department. As a rural geographer my teaching and research focus is firmly rooted in the interactions between people and places in particular those, which affect agricultural environments and productivity. In particular I have an interest in how agricultural systems can be made more resilient against external factors such as extreme weather, disease outbreaks and industrial and social unrest.

One of the key challenges of planning for the unexpected is just that – its unexpected - dealing with the unknown and as such human nature is naturally adverse to considering negative or threatening events. The geography of rural areas – small and dispersed populations, limits on communications, few roads etc further complicates planning for emergencies or unexpected catastrophe.

The perception of risk coupled with higher population densities has driven the development of an urban focussed emergency planning system over the years. For successive governments protecting large sectors of the population has made rational sense and emergency services and planners have developed and honed skills to deliver services as such.

Since the end of the Cold War the emphasis shifted from war related emergencies to those focussed on the natural environment and events like the 1986 Chernobyl incident – continental scale industrial accidents. The events of 9/11 changed emergency planning again and the focus shifted to terrorism and to urban areas, which are considered to be at higher risk with the result that successive governments have invested in equipment, resources and training to deal with terrorist incidents.

With the rise in terrorist threat, new words have also entered the lexicon, which include such things as 'critical infrastructure' and 'resilience'. The former relating to key elements of the economy such as transport, telecommunications, banking and indeed food systems. Whilst the latter indicates how much a system can be strained or reconfigured to function after an incident in order for the economic system to function.

The 1986 Chernobyl incident and the 2001 Foot and Mouth outbreak placed huge strain on rural communities and had effects on production, sales and markets and resultant farm incomes. More recently it has been extreme weather which has put British farms and production under strain with flooding in the Marches and Cumbria in 2007 and 2009 respectively and the snow and ice which affected much of the UK in the winter of 2009/2010.

The effects of these 'events' can be categorised into eight broad areas;

1. Direct damage to products eg flood
2. Indirect damage to products eg loss of milk due to inability to process it
3. Loss/ damage to means of production machinery, equipment etc
4. Loss of stock, seed, plants
5. Reduction in labour or labour capacity resulting in inefficient operation of the farm/ horticultural system
6. Damage to markets due to export restrictions
7. Long term damage to land through pollution
8. Impacts on farming families and communities resultant from trauma

At a time when food security for the nation is firmly on the agenda, the impact of such occurrences on the current and future supply of products cannot be discounted. Additionally the threat of avian flu, swine flu and emerging Zoonotic and non-Zoonotic diseases place agriculture and its resilience to these threats in somewhat of a grey area.

When considering the resilience of the UK's food system it should be apparent that it needs to be considered along side the wider issue of food security. Whilst short-term disruptions may affect particular product availability, they may have further damaging impacts on the country's future capability to produce food. Either directly by damaging the resource base or indirectly by disrupting markets resulting in UK farmers withdrawing from production. However, the UK looks at these issues separately, and indeed in terms of disruptions to food systems looks to the market – particularly imports to resolve supply issues.

It is with these issues in mind that this study has been developed to identify and promote good practice and resilience in agriculture.

2.0 Aims of the study

The aims of the study are to;

1. Investigate the operation of rural Canadian civil contingency planning, training and responses to rural focussed large-scale natural and man-made disasters within the Atlantic Canada region.
2. Review the planning of the provincial agricultural departments to deal with established and emerging animal disease threats and in particular to consider their approach to mass carcass disposal. Particular focus will be made as the Provincial department's promotion of the protection and resilience development of the agricultural sector in the interest of short and long term food security.
3. Evaluate the process of the promotion and embedding of farm business resilience, business continuity planning and first responders in the identified region through government and Farming Union policies and practice.

4. Produce a written report that identifies the major strengths and limitations of the main Atlantic Provinces of Canada approach to rural civil contingency planning, rural business resilience and the promotion of food security through the protection of the resource.

3.0 Methodology

In order to obtain the information required to achieve the aims of the study, three key objectives were established and a methodological approach developed. A Rapid Rural Appraisal (RRA) methodology was adopted as the most appropriate, efficient and flexible way of accessing and collating information. This approach is based upon utilising semi-structured interviews with key rural organisations, agricultural and emergency planning government departments at local, regional and national level and non-governmental associations. The RRA approach allows the respondents to develop their responses within a framework and is combined with snowball sampling of additional respondents, where individuals notify the researcher of other key informants in the same situation. Clearly bias may be an issue so in addition to identifying appropriate key informants, cross-referencing and triangulation is utilised in the questioning to mitigate this issue.

3.1 Objectives

Objective One: Develop familiarisation with Canadian emergency and civil contingency planning system, its structure, operation and development of planning and services for rural areas.

Information on the operation of the Federal and Provincial emergency planning system was collected prior to the visit, which enabled key informants and policies to be identified and used to influence discussions during the research. The majority of the information was derived from official websites and on-line publications.

Objective Two: Collate and evaluate information relating to the effectiveness of Federal and State rural emergency and civil contingency planning to deal with established and emerging animal disease.

Prior to visiting the area key informants within the Atlantic Provinces agricultural departments were identified. In particular contact was made with Dr Michael Maloney, Chief Provincial Veterinarian for the Province of New Brunswick. Dr Maloney also is one of the key Canadian Federal biosecurity and livestock disease advisors. Dr Maloney is also involved in research involving mass carcass disposal.

Objective Three: Evaluate the process of the promotion and embedding of farm business resilience and continuity planning.

This was to be facilitated through meetings with Regional Emergency Management Officer (REMOs), the head of Nova Scotia Emergency Planning, the Nova Scotia Disaster Animal Response Team. A number of EMO officers and were interviewed across the province of Nova Scotia to take in different agricultural practices and landforms.

In addition the core agricultural representative bodies including the Dairy Farmers of Nova Scotia, Nova Scotia Federation of Agriculture, Nova Scotia Food Policy Council and the New Brunswick Farming Alliance were all interviewed. Many of these meetings were group meetings, which enabled a wide range of views on the effectiveness of the system to aired and evaluated. To aid triangulation contact was made with the Nova Scotia Agricultural College who host the Province's biosecurity research and planning department and also engage in farm business research.

4.0 Study Locations

The importance of agriculture to these two Provinces (Figure One) both in terms of the economy and rural social structure and the similarity of many of the governmental structures make them an ideal area to identify good practice for the UK rural situation. Both Provinces, although their economies are much diversified, depend upon natural resource management for their core income and employment. For them food production and local specialisms reflect their geographical area and as such are important icons for the provinces. The Provinces also endure extreme weather conditions, Nova Scotia is a generally mild climate but its location makes it prone to storms (especially hurricanes) and high rainfall. New Brunswick is generally colder and can have snow on the ground for up to eight months of the year. Both provinces have a mixed agricultural economy but rely heavily upon the Dairy, poultry, hog and horticultural industries. As in the UK, all of these industries have been subjected to stresses resultant from the economic downturn, commercial pressures especially from supermarkets and the growth of cheaper imports from the US, making resilience planning sound business sense.

As in most Canadian Provinces both have agricultural colleges NSAC (Nova Scotia Agricultural College) and the University of New Brunswick which has a research facility in Lincoln, New Brunswick. Both these institutions have a practical and academic interest in resilience planning and management in relation to agriculture. The Provinces also have long-standing emergency planning systems geared to a dispersed rural community. These are operated at a Provincial level by the Government but cascade down to communities and businesses. Agriculture producer groups act as effective dissemination methods and have a practical approach to promoting business continuity. As a result of the weather systems in these areas there has been great investment

in planning, training and practice for events which has subsequently been developed over time to cover non natural disasters including the spread of animal and human disease. The study focussed on the NW and SW of Nova Scotia and the south of New Brunswick as these are the most intensely farmed areas.



Figure One – The Maritime Provinces of Nova Scotia and New Brunswick (geology.com 2007)

5.0 Emergency planning, resilience and business continuity

This study considers the role of various elements in relation to emergency planning and the rural sector - that is the promotion and establishment of advice and operations with the aim of limiting loss of life and assets. Linked to this is the concept of civil contingency – which are policies and legislation aimed at promoting effective response and developing resilience and business continuity– that is the capacity to maintain services under stress. Linked to this is the need for sectorial preparedness – efforts to mitigate against potential stressful events and recovery – the process of returning to normality post event.

Canada operates its emergency planning, resilience and business continuity planning at two levels - Federal and Provincial. The Federal level may be seen as more generic in its advice and policy and very much is the framework within which the Provincial government operates. This allows them to tailor their responses to their local community and industry characteristics. Nova Scotia operates an Emergency Management Office, based in Dartmouth, Nova Scotia, which promotes a Prepare, and Prevent programme aimed at a range of circumstances. New Brunswick has a similar organisation – the Emergency Measures Organisation based in Fredericton, which too has an emphasis on community resilience and the training of first responders. Both Provinces utilise the emergency services and volunteers and can call upon Federal agencies including the armed services if required. New Brunswick has a large Canadian Armed Forces base – Gagetown from which the military aid to civilian powers is co-ordinated from (including air –sea rescue). Gagetown covers the Maritime Provinces as well as large parts of Quebec and Ontario. The Canadian forces spend a good deal of time training alongside volunteers and Royal Canadian Mounted Police (RCMP) in the rural areas in order to familiarise themselves and the community with their working practices and enabling them to work around such things as helicopters safely.

5.1 Federal Efforts

The Federal Government of Canada has increased efforts to promote business resilience in the last few years. This has been in response to two major incidents, firstly the 1998 Ice Storms, which affected the eastern side of Canada (Quebec, Ontario, New Brunswick and Nova Scotia). This extended period of freezing conditions not only resulted in deaths and injuries but prolonged power outages to some 4m people and millions of dollars in lost production, including the loss of around one-quarter of the dairy cow herd and some 10 million litres of milk having to be disposed of. The total bill for three weeks of extreme weather was in the region of \$5billion Canadian, much of this cost was borne in the rural areas. The second incident in 2003 was a power blackout, which affected some 10million people in Ontario and some 45 million in the eastern states of the US. This total power outage caused a loss of water, breakdown in communication systems and refrigeration failure in many dairies. Air conditioning was also lost in housed systems affecting livestock. Given the temperature was in the region of 30 degrees centigrade a great deal of produce in store was lost and the effects were felt for many days as power was limited across the Province.

These two incidents prompted the Federal Government to consider firstly how best to protect critical infrastructure in order to maintain basic services, but also to consider how populations might help themselves more. This was considered critical as even with the full assistance of the Canadian armed forces many people had remained without services during the major incidents for up to three weeks. This clearly highlighted the vulnerabilities of rural populations heavily dependant upon urban based, and like the UK largely urban focussed emergency services.

The result of the review was the establishment of the federally supported 72 hours campaign. The 72 hours campaign sought to educate populations in regard to measures they good take to protect themselves before, during and after an event, with the aim of maintaining themselves for a period of 72 hours, after which they could expect some form of emergency assistance to reach them. The programme produced a number of leaflets under the auspices of Public Safety Canada and advice in various media formats and on topics including; storms, flood and power outages, (figure two).

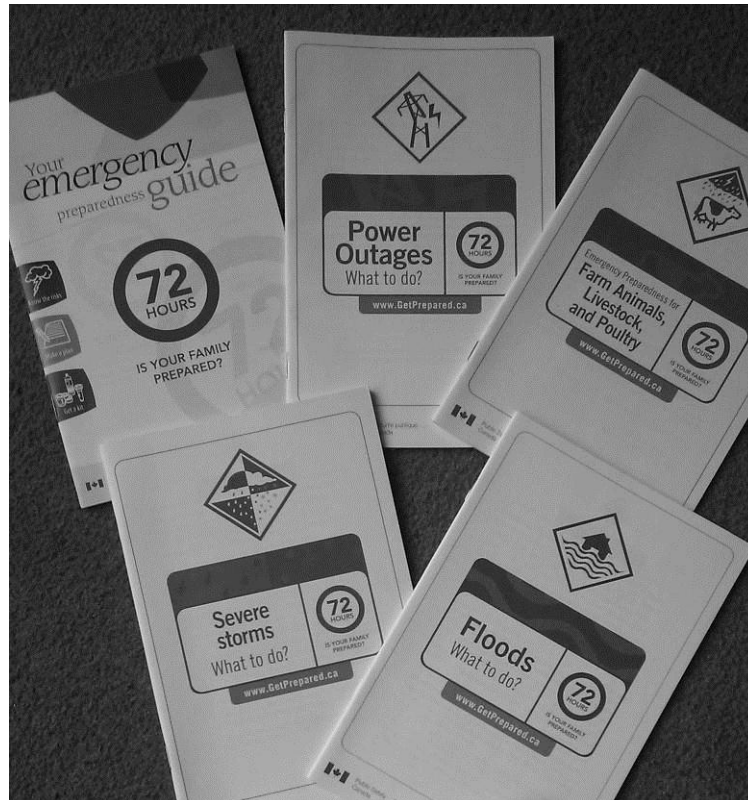


Figure Two: The 72 Hours campaign literature

The key difference with this campaign compared to ones seen in the UK was that the Federal government had a clear focus upon the rural population and in particular the farming community. The damage to the agricultural base had been great during the past incidents and the impact had been exacerbated by the sheer amounts of livestock that had been lost and spoiled commodities which needed to be disposed of. As a result the programme sought to educate farmers in regard to building 'resilience' into their farm management system to promote the ability to continue and recover production during an event. In terms of emergency management the production of the advice on 'Emergency Preparedness for Farm Animals, Livestock and Poultry' was truly ground breaking and was a clear recognition of the need to protect valuable agricultural infrastructure as much as communications and transport links. The advice contained in the literature, included farm preparedness advice; for example not planting non-native species of trees close to property as they

were less likely to survive storms, reducing the amount of barbed wire used – as this becomes a hazard under flood conditions and securing scrap, lumber and sheeting material to prevent it becoming airborne in high winds. The advice also went on to cover creating an emergency kit for the household – torches, food, medical kit, water and alongside this halter, supplies of animal feed and medicine etc. Its principal advice was to look for hazards around the farm and think how they may be exacerbated under extreme conditions.

The 72 hours campaign was built upon by the Federal agency Agriculture and Agri-Food Canada who produced a more detailed version of the planning process in conjunction with the Canadian Federation of Agriculture and the Canadian Farm Business Management Council, (Figure three).

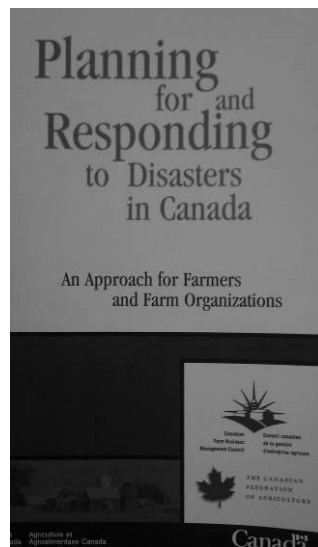


Figure Three: Front cover of the joint farm emergency planning handbook

First published in 2003, this publication has formed the basis of many Provincial and regional initiatives and was first to really consider business continuity. That is keeping a business running under extreme weather rather than suspending operations. The emphasis is clearly on preparation and maintenance of preparedness with the aim of continuing with agricultural operations rather than just shutting down. The aim of the text is to aid agriculturists in producing their own tailored emergency plan through a number of logical steps.

The handbook asks the agriculturist to consider a number of things including the welfare of the family and any employees, creation of inventories of farm assets, calculations for emergency livestock food and rations, dealing with slurry and manure and power. By working through the handbook the agriculturist can identify vulnerabilities and also create some concrete plans in terms of promoting business continuity (figure four).

Animals	Minimum Amount of Water Per Day	Minimum Amount of Feed Per Day
Dairy		
In Production	6.5 gal	20 lb. hay
Dry Cow	6.5 gal	20 lb. hay
Heifers	4.0 gal	10 lb. hay
Cow with Calf	7.0 gal	16 lb. legume hay
Calf (400 lb.)	4.0 gal	10 lb. legume hay
Beef		
Dry Cow	6.0 gal	12 lb. hay
Cow with Calf	6.5 gal	14 lb. hay
Calf	4.0 gal	10 lb. hay
Swine		
Brood Sow with Litter	3.2 gal	8 lb. grain
Brood Sow (pregnant)	2.4 gal	2 lb. grain
Gilt or Boar	0.8 gal	3 lb. grain

Figure Four: Extract from joint farm emergency planning handbook on livestock rations

Whilst the handbook provides sound advice, in particular in relation to water use and supply, it has one distinct drawback for the busy agriculturist. At 206 pages long it is a wordy read and in places may be considered overly concerned with defining events and terms rather than providing direct advice. However, as a starting point it clearly offers a great deal of opportunity in addition it is a very clear statement from the Federal government that farms and rural dwellers need to take on board the 72hours message and develop/maintain independence in ensuring their continuity.

In addition to the written and seminar guidance the Federal government also provides grants to assist in the installation of back up generators – particularly for the dairy industry. The disposal of spoiled milk is an expensive and environmentally hazardous undertaking and maintenance of storage and the promotion of increased storage capacity were seen as appropriate Federal responses after the ice storms. Back up generators and reserve fuel supplies are the most common resilience measures adopted by agriculturists. The principal drawback in this system is the ability to financially maintain a large reserve of fuel for emergency use. Similar efforts to promote crop and livestock insurance have also been affected by rising premiums and declining incomes. The declining state of the rural economy has also led to some reports of back up generators being sold off.

The Canadian Government has clearly stated that it cannot reach everyone in a large-scale emergency and expects its population to undertake their own preparations. Survey work undertaken by the Canadian Centre for Emergency Preparedness in 2008 looked at the effectiveness of the emergency planning and resilience literature and cast doubt on whether the message was getting through. In brief the survey found that most people (some 63%) regardless of education paid little attention to literature and few individuals and companies had prepared for extreme events. Many Canadians still felt that the Government and emergency services should be the primary responders in an emergency. The Atlantic Provinces though indicated a shift in this thinking and one of the few areas ready to adopt this independent contingency planning approach.

5.2 Provincial Emergency Planning

The Provinces of Nova Scotia operates its own emergency planning system, and in general has adopted a de-centralised, locally focussed approach within a robust command and information sharing system.

The Nova Scotia Emergency Management Office is headquartered in Halifax. Its dedicated Emergency Operations Centre (EOC) works alongside Federal authorities and has links to all the regions within Nova Scotia which have their own dedicated Regional Emergency Management Officer (REMO). The REMOs operate on the ground and liaise with local emergency planners within the towns and parishes. The REMO concept is unique to Nova Scotia and provides a very flexible and variable structure to meet the needs of populations and the limitations of geography. The full structure is tested 'for real' on average three times a year, usually during hurricane season, but is tested regularly on a regional basis with wildfires, extreme weather and other incidents. What makes the Nova Scotia experience so different is that much of the resilience planning is dependent upon communities and developed by them.

Canadian rural communities have a long established history of supporting volunteer institutions, in particular the volunteer fire department. It is very much from this base that the communities have developed their own local plans and preparedness. Whilst independent preparedness is encouraged and indeed a necessity away from the main highway the Provincial EOC is core to collating and maintaining a mapped data base of infrastructure and providing key weather information. Such mapping provide local information on areas subject to inundation, high tides, storm surges, etc as well as information on roads, bridges, power, water and properties such as schools, hospitals etc. This high quality mapping is regularly updated and available electronically and in paper format to all agencies involved in emergency and contingency planning. The role of the REMO is to act as a subject matter specialist, a link in the command chain and a facilitator for local planning an action. This means that distinct local issues can be addressed, such as areas with large numbers of vulnerable people or areas with high stock densities. Both

scenarios create resource issues if evacuation is needed due to a weather event.

Nova Scotia is currently expanding this community model, which it has named the Joint Emergency Management team (JEM). JEMs are designed primarily for rural areas where the 72 hour period may be the minimum before external assistance arrives. It utilises volunteers living and working in the community as its core and is normally focussed around the Volunteer Fire Department and the Canadian Red Cross. JEMs main role is to produce a Community Status Report – detailed information on power loss, flooding, trees down etc within a local area. As such the JEMs role is very much a humanitarian one – feeding information into the system, in effect the community monitoring its own situation and enabling the Volunteer Fire Department¹ to allocate resources for effective response. In addition to providing situational awareness, JEM teams also run the more traditional concept of community response – the comfort centre, which is a core necessity to maintain first responders. As the JEM programme develops a whole community planning system will be adopted which will identify potential shelters as well as key resources such as fuel, food and water.

Given the extreme weather Nova Scotia enjoys over the seasons the system get regularly used. However, training and practising is very much part of the development of these systems and self evaluation and recording of events to learn for the future is seen as a crucial undertaking.

6.0 Dealing with Animals

Whilst the human capital is catered for the animal and livestock areas have generally been overlooked by most emergency planning systems. Nova Scotia as a Province is seeking to tackle this. The Disaster Animal Response Team (DART) of Nova Scotia is a relatively new concept in Canada. DART is an all volunteer organisation which draws participants from across the Province. As a recognised asset of the EMO they have a clear remit to train for and can be called upon by the EMO at any time.

The DART training is based upon the programme of the American Humane Society and their experience during and after Hurricane Katrina, DART seeks to provide similar services to animals as currently provided to humans. The DART concept considers the care of animals not just for the animals' sake per se but recognises that they play an integral part in human life and the economy.

A focus on animals has different effects for various sectors of society. For the householder being able to be evacuated with their companion animal very often lessens stress and with the vulnerable and elderly such actions have

¹ Many volunteer fire fighters are drawn from agriculture, fishing and the lumber industries and have key skills such as ability to use chainsaws, off road driving etc

been shown to promote trauma recovery. In traditional emergency management systems all animals are left to fend for themselves. However, post Hurricane Katrina it was shown that this was not always a sound approach. Dogs in particular became a problem once abandoned for search teams and fallen stock became a health hazard. Furthermore people often place themselves in danger by staying with their animals rather than evacuating – this is particularly true with horses and livestock. In terms of resilience and business recovery the minimisation of livestock loss, the reduction of disease threat from fallen stock and the protection of valuable genetic stock is of primary concern.

DART seek to assist in animal recovery in a number of ways. For companion animals they have stores of equipment, food and cages to enable evacuated people to safely place their animal in a shelter thus removing them from the affected area. For larger animals they are trained and equipped to assist in animal movements whether they are equine or livestock. Although they are there to be deployed in emergencies, the requirements of biosecurity are fully recognised and hygiene is an integral part of their training as is animal handling, feeding and care. With the commercial animals the DART role is very much to support the agriculturist in extreme circumstances and assist if they are injured or cannot care for the livestock themselves. As such linking with other farmers and landowners is a core part of their role.

The volunteer culture is abundant in Nova Scotia, as is the sense of community and shared resilience. There are few written memorandums of understanding in regard to resource sharing and decisions appear to be made through necessity of the situation in order to promote community cohesiveness. Indeed the need, desire and opportunity to promote and protect the community appears to be the underpinning of the JEM, DART and volunteer model. The Nova Scotia rural communities appeared to revel in their ability to look to themselves for first response and the opportunity to resist outside (particularly Federal assistance) appeared a principal aim. Business resilience planning was accepted as being limited, the main focus still being on responding. However, a number of EMOs interviewed reported that more people were appearing to think about building extra capacity in their IT in particular – backing up on remote servers not just on the physical computer. This was particularly apparent with dairy and hog records.

7.0 New Brunswick - Planning for Animal Diseases

With a large hog and poultry industry the Maritime Provinces are rightly concerned about disease. The Province of New Brunswick operates a strict and comprehensive Foreign Animal Disease surveillance network. Farm biosecurity is generally industry led and has often exceeds Provincial and Federal requirements. Given the industry's own efforts the Province supports the high level of biosecurity by underpinning a network of large animal veterinarians. The Province's veterinarian coverage is supported through a levy on animal pharmaceuticals, which the department of agriculture sells.

There are very few private animal health outlets in the province, which means veterinarians, have a very good idea of the health of livestock on the ground. Although the Province is often accused of running a monopoly, the farmer's groups are generally happy with the level of service, the 24-hr diagnostic laboratory, and animal health training events and affordable medications. The principal weakness in the biosecurity network is the rapid growth of hobby farms. A recent trend has seen non agricultural people renting grazing land and bringing on small number of beef cattle, principally to make extra money as well as provide food. Lacking in animal husbandry training and experience these individuals are the main focus for awareness raising through a variety of means from road-shows to information leaflets. Similarly the poultry producers are seeing an increase in hobbyists in their sector and they are lobbying hard for compulsory registration.

The Provinces response to this potential threat from disease outbreak has been to proactively plan for such an event in particular avian flu. Core to this planning has been to create a GIS data base of all commercial agricultural premises while at the same time encouraging all non commercial producers to register. This would enable movement restrictions and culling to be better planned and considered in the event of a disease outbreak.

In the event of a disease outbreak the New Brunswick Department of Health is responsible for carcass disposal under Federal guidance ². Currently the disposable methods are burying (in engineered landfill) and burning. However, as the water table is very high in many parts of the Province, the authorities are actively looking at composting as a way of carcass disposal for all diseases including Foot and Mouth and Avian Flu with the exception of BSE. In terms of business continuity composting offers the best response as it limits pollution and environmental damage and is considered a better image for the Province's agriculture than the pyres employed during the UK's outbreak in 2003. Currently trials are taking place-composting poultry in situ within barns. The aim of this is to minimise disease transmission post culling through body liquor or vermin. With barn composting the birds are piled up with wood shavings and decompose heating up the pile to 145 degrees F for ten days. After which the virus is considered dead and inert and the material is then moved to another site for final composting or Above Ground Controlled Burial (AGCB). AGBC minimises the problems of local climate, which prevents decomposition at depth. Material from this process can then be put onto land for non food use as an organic compost, after a minimum of a year. It has been used on golf courses and amenity land up to now, and is not licensed for use on soil used for food production.

Composting is seen as a rational response to the need to promote industry recovery post disease outbreak, allowing disinfection to take place as quickly as possible prior to re-stocking. What New Brunswick doesn't want to see

² All Foreign Animal Diseases are Federally notifiable

occurring is the movement of people out of agriculture as seen in the UK post FMD. Planning for events and post event recovery is therefore widely bought into. Part of this strategy is that the New Brunswick recognises that agriculturists are really core to developing sound and practical resilience planning. To this end the Provincial government is providing 100% funding to commodity groups to develop their own emergency plans. Taking ownership is considered fundamental to making the system work as is practising responses, in particular testing alert and communication systems, practising enhanced biosecurity, eradication planning and raising awareness within the agricultural community and society in general.

New Brunswick has a very 'healthy' and open approach to disease planning. At the forefront is keeping disease out of the Province but being open about how it would be dealt which demonstrates sound resolve. Dialogue with the Commodity groups and in particular the main farming unions- the majority Agricultural Alliance and the minority NFU is important. Both these associations are committed to being proactive and see resilience an important step forward in farm management. As in the UK the pressures on all the farming sectors is growing through rising fuel prices and supermarket demands with the result that many of their members can not afford insurance and so prevention and mitigation of risk is paramount.

8.0 Developing Resilience at the Farm Level

It is apparent that within the Nova Scotia and New Brunswick rural communities there is a great deal of pride in their self reliance and as previously noted in their tradition of close community bonds. Rural communities appear not to expect much (if anything) from the Provincial or Federal governments and view such efforts as interference as much as anything. Indeed this may be the reason so many people don't register awareness of the Federal 72hours programme. However, through farmer interviews there was a general consensus that attitudes were changing. The reasons for change were not linked to government education programmes but to visual climatic indicators that the weather and seasons were becoming more erratic and unpredictable. Most interviewees cited variability in snowfall, heavy rain etc as a concern and something which made them look at their circumstances. Changes they had made were not just in regard to tyre choices but storing extra fuel and foodstuffs. Indeed a number of farmers cited that the elderly within their communities actually fared better in recent snowfalls as they came from a tradition of storing and preserving foods and therefore had supplies within their homes. Many saw that as a future trend and local food supply was a concern as most at some point had been cut off in recent years from the store or the store itself from suppliers. Additionally, there was an issue in regard to farm labour, which in general now lived off site and their ability to get to work in times of poor weather and their ability to gain access to food supplies.

Within Nova Scotia, the Provincial government lists farming as being part of the key infrastructure, alongside power, transport and communications. As such it is eligible for grants under the 'On farm investment fund' to promote (through cost sharing) resilience measures. The Provincial (EMO) with the commodity groups and Nova Scotia Federation of Agriculture are developing Business Continuity Plans. Agrapoint – a private consultant, undertakes this work and looks at the whole production and supplier chain to identify weaknesses,. These plans revolve around a number of key factors, which are recorded on a 'Production Template' – basically a list of linked inputs which are necessary to produce goods. These include such things as need to get workers into the farm, to the need to get supplies out to Critical Clients. The whole system is linked to the EMO who provides warnings direct to producers enabling them to react quicker than waiting for advice or warnings through public channels. The first completed plan has been produced by the dairy sector through the Dairy Farmers of Nova Scotia (DFNS) commodity group. This is the first dairy producer emergency plan in Canada and was prompted not by extreme weather conditions but by industrial action in Quebec, which blockaded dairies, resulting in lost income for Nova Scotia dairy farmers.

The dairy plan considers five key areas;

1. Infrastructure
2. Human intervention (strikes, human disease outbreaks)
3. Transport
4. Animal disease
5. Energy

The plan is currently being tested against a number of scenarios. These include changing milk-processing location due to bad weather. This has been accomplished by freeing up capacity in processors by diverting milk supply in other areas through establishing co-operative agreements. This can be accomplished as the DFNS is working under an EMO directive to ensure supply to Critical Clients (Hospitals, care homes, schools, military etc) and with the consent of the Canadian Food Inspection Agency (CFIA). Under CFAI legislation milk farms have to have 2.5 days of storage on farm in case tankers cant get in and within that time scale only whole loads can be accepted and no drop down is allowed. Having that extra capacity enables collection problems to be identified early with some ability to rectify eg alternative tankering arrangements to be made.

A large part of the plan is raising awareness amongst DFNS members of how they can co-operate in order to maintain Critical Clients as well as general supply. This is promoted through table top exercises which promotes ideas and generates solutions to problems. This has been further developed by the establishment of a DFNS emergency management team which co-ordinates efforts to maintain milking operations and mobilise resources to enable movement of liquid milk.

A further role of the plan is to promote biosecurity and issue alerts directly to members via blackberries. They also produce biosecurity guides for industries regularly going on farm eg insurance, engineers and encourage the use of DFNS inventory sheets which visitors fill in listing where they have previously been.

In addition to whole farm and industry planning NFDS promotes Consequence Management. This encompasses two main areas, which result from exposure to extreme events; stress management and economic support. This advice (which is collated and ready to be delivered) ensures immediate assistance is at hand for farmers affected by an event. It also serves to make them aware of and assist in accessing Federal and Provincial financial assistance such as Agri-disaster, a fund available to agriculturists after a major disaster.

The EMO recognises that as a Provincial agency if it is to promote greater resilience planning and preparedness it needs to access the rural community in a different way to that which it provides to the urban population. The Canadian Red Cross (like the UK's WRVS) are long established and trusted in the rural community and are contracted by the EMO to 'message' rural populations in regard to preparedness. The principle message is one of providing the basics for the household and there is some evidence that people are more prepared to listen to community members who actually do what they tell others rather than an impersonal road-show presentation. The EMO has also become a more obvious entity in villages and rural towns. They are raising awareness of their function through branded vehicles and their website. They are also concentrating on messaging to key community groups –schools, church groups and have currently some 1600 people in the Province trained in emergency management able to contribute to the JEM system.

9.0 Learning from the Maritimes

It is clear that that business continuity and resilience are firmly embedded in the mindset of the agricultural organisations. It is also clear that the methods of reaching out to the rural communities by government have in the past failed to effectively influence people's attitudes to emergency preparedness. Nova Scotia illustrates quite clearly that the greatest asset is the rural community themselves and by empowering them to make decisions and contribute to decision making they are building a robust system with wide coverage. This does, however, take a great deal of political will. Such a high level of reliance upon volunteers is a risky strategy, but in the absence of alternatives the creation of volunteer first responders and support for first responders would seem a rationale resource use.

What is interesting in terms of the motivation for continuity planning has not been extreme events but economic issues- industrial unrest and increased disease risk through people supplementing incomes with livestock and poultry keeping. There was also a very clear desire to learn from the UK's experience of FMD and the fuel protests as well as the failings of the US Federal System

with Hurricane Katrina. This really points to a lack of faith in central government to effectively deal with and understand dynamic rural issues. The *quid quo pro* for the government has been to stand back and let the industry work on systems itself within a framework. The result has been to promote real dialogue between producers and REMOs. Given that the EMO has the power to legally oblige any industry to have an emergency plan, it never has had to within the agricultural sector as the impetus has come from the industry itself. In terms of animal diseases there seems to be a desire to maintain heightened levels of awareness and plan to deal with any outbreak quickly. The decision to consider composting is a direct reaction to the UK's handling of FMD and resultant press coverage, damage to the industry and legacy pollution. Indeed the overwhelming viewpoint was that they didn't want to end up in the same situation as the UK. Returning to production was seen as an integral part of the plan.

From wider discussions with the Nova Scotia Food Policy Group and staff from the Nova Scotia Agricultural College, there was a clear steer that the protection of Nova Scotia agriculture was widely viewed as important. There was deep concern in regard to the food security of the Province and although it is clear food would be available anything which undermined local food production or damaged its capacity to produce adequate levels was seen as a real issue. Clearly from all those interviewed in the process of the study it was felt anything more than a short term dip in production or contract fulfil would be immediately filled by larger producers from Quebec and the US. Resilience was not just about ensuring production but ensuring the production from local and known sources. It was felt by many that the fragile relationships with buyers as well as changing weather patterns made emergency planning and resilience a priority to ensure competitive and continued production.

10.0 The UK and Promotion of Resilience in light of the Maritime experience

Within the UK business continuity and resilience is promoted through two key agencies – Local Authority Emergency Planners and the through the Centre for Protection of National Infrastructure. These organisations work to enact the Civil Contingencies Act of 2004 both for individuals and businesses. This Act recognises the role of key infrastructure in the UK economy including agriculture and food systems and as such should promote effective planning for it. The main conduit for information to public, business and practitioners is through the Cabinet Office's UK Resilience Programme, which hosts a web site (Figure 5) containing a myriad of documentation and policy notes. As products for public dissemination they lack readability and adaptability and in relation to the rural sector and agriculture there is no clear advice or recognition of the industry. The UK's approach is very top- down and operates through cascading policies from central government down to local authorities. Whilst this gives geographical coverage it does little to promote flexibility or regional variation and does less to promote actions at community or individual level. In short it is indirectly promoting a passive rather than a pro-active

response and provides little incentive or information to the rural sector on business resilience.



Figure 5: Cabinet Office UK Resilience website front-page

The key thing to note from the Maritime Provinces is their approach to community and rural industry involvement. They have very much set the framework into which a series of actions can be developed at grass roots level. The process is incremental and there has been no attempt to develop an immediate response plan to all eventualities. There is clear acceptance that the rural sector will have to rise to the 72 hour challenge and this appears to have come through self realisation rather than the effect of direct policy. The real turning point in adopting plans for business continuity and resilience has been economic awareness. For both the Dairy and now in 2011 the Hog sector (who have now begun a similar process) it was the need to maintain a client base and income which was the driving factor. The wider economic impact on abattoirs, transport, shops and ultimately the consumer (in rising food prices post event) empowers the EMO to listen to and work with the industry in creating plans. This holistic approach builds true capability where it is needed and allows the quick utilisation of key resources during an event where they are actually required rather than relying on central command to dispense and deploy resources to them.

The other crucial issue is how information is provided. Whilst leaflets are seen as still being useful the television and the internet in particular social media is seen to be the main focus of delivering targeted information. The advantage of social media such as Twitter and Facebook is that people opt into it, rather than mass leafleting. Building virtual information communities is seen as important as enhancing physical ones. Indeed in rural areas where isolation can be an issue the information provided by these feeds can be invaluable. It has also been seen that social media is generally used by younger people who act as informal educators within households, providing others with updates and information, in short they have become the trainers at a very local level.

It is through this system that the 72hour message is being driven home and people are taking on putting their own preparations into place. Within communities the Volunteer Fire Department and the REMOs further support this with practical advice and resources.

The EMO website (figure six) in contrast to the UK's utilises clear text and images to delivery information. The messaging changes seasonally and so asks people to prepare for possible issues they might encounter in the near future rather than everything. Crucially there is less focus on planning for disruption through terrorism. Again whilst this is important advice, the main focus, particularly for rural areas is weather and animal disease awareness.

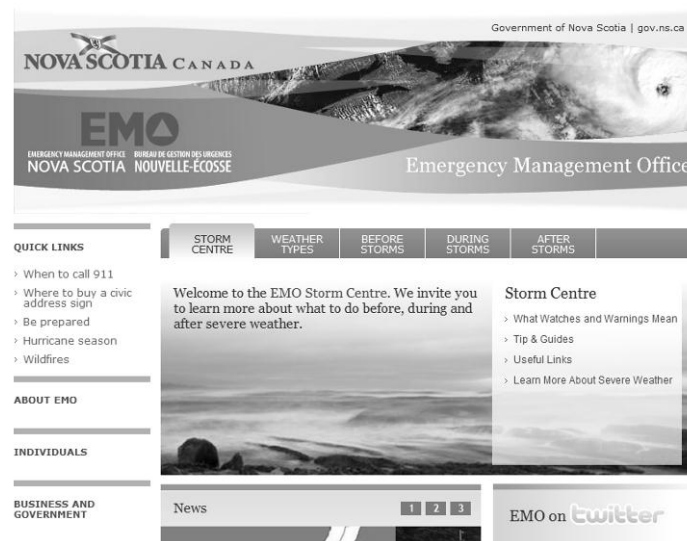


Figure Six: Nova Scotia EMO Website

11.0 Moving Forward

The rural communities and the farm business community in the UK can learn a great deal from the Maritime Provinces. The farmer and commodity organisations have clearly taken the lead on developing appropriate business planning and gone a step further to develop an emergency management system themselves. As subject matter experts they are part of the overall EMO system and are valued as such. The result of direct industry involvement has been to bolster the on-farm preparedness – as now the documentation produced for the 72 hour programme is contextualised and its importance is recognised. Most of all it builds upon the natural resilience and independence of rural communities –this is by far the greatest asset in an event.

In summary it may be worth the UK agricultural industry considering leading on developing a range of resilience packages across the various sectors. In particular the dairy sector is most vulnerable to disruptions in its producer chain and as such may be the ideal one to begin with. In terms of general business continuity they needs to be some form of governmental underpinning (in an ideal world) to enable this key area of infrastructure to build capacity. If the authorities are serious about food security this would be a

clear demonstration of the value of the UK food producers in terms of improving their ability to function and deliver to market. Additional strategies may be best placed to;

- Identify the risks and costs posed by extreme weather events, industrial action and animal disease to the agricultural industry and food security.
- Enhance awareness of measures individuals may take to prepare for extreme events by;
 - boosting community involvement in decision making through investment in social media.
 - developing appropriate emergency preparedness advice – especially utilising the internet.
- Explore foreign animal disease awareness within hobbyists and smallholders.
- Investigate the potential of geographical areas for carcass disposal methods prior to outbreak.
- Develop the capabilities and skills of rural first responders rather than focussing principally on urban areas in particular in relation to assisting commercial and domestic animals.
- Work towards a culture whereby resilience becomes part of everyday good management practice rather than a burden – it clearly should not be part of any regulatory regime.

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