new horizons

Ideal aerial application of pesticides must meet definite criteria. For example, the cost must be minimal and the toxicant confined to the target area. Eventually, the pest population should be reduced to the desired level with no residual chemical effects. One of the more serious spraying problems involves drift of the chemicals. Among the factors which control the relative magnitude of this drift are wind speed and direction, height of release, air turbulence, humidity and droplet size. How far it drifts, and how rapidly its concentration in the atmosphere decreases, will also depend on losses in mass by evaporation of water or other volatile solvent within the droplets. Studies have shown, for example, that under typical Canadian prairie conditions during herbicide application, droplets initially of 100 μ m in diameter can lose nearly their entire water content (as much as 99 per cent of their mass) in a few seconds. Consequently, they may drift several hundred metres before reaching the ground.

In addition to pesticide and herbicide applications, aerial spraying is now widely used to re-forest specific land areas. The Cumberland Mountains of Eastern Kentucky, scarred by decades of strip mining operations, are the site of an experiment to assess the practicality of reclaiming mined-out land by air. For example, in a day-and-a-half of flying, a pilot can dispense 6,600 lbs (2 970 kg) of seed and 20 tons (18 t) of fertilizers over 200 acres (80 ha) of mountainside. By contrast, a similar operation requires eight days of laborious hand seeding, occasionally on slopes too steep to stand on. Such aerial seeding programs prevent soil erosion and provide cover and food for the reintroduction of wildlife.

To withstand the rigors of agricultural and forestry work, rugged and versatile aircraft are required. Since the most critical economic factor in these operations is utility, an aircraft must provide long periods of service between overhauls and be useful in a variety of other functions.

Because they were cheap and plentiful, surplus service aircraft from World War I were used during the industry's infancy. At the end of World War II, another injection of these surplus military aircraft further assisted the development of the industry. Notable among wartime aircraft converted to peacetime roles in Canada are the Canso patrol bomber and Avenger torpedo bomber, many of which are still flying today. More recently, several manufacturers have developed specialized aircraft which incorporate features of utility, ruggedness and pilot safety not possible with the older converted designs.

The primary objective of the Associate Committee on Agricultural and Forestry Aviation is to outline a basic framework of research and development programs within which this important Canadian industry can evolve in a way best suited to the needs of the Canadian people.



A Cessna Agwagon "B" is shown being loaded with insecticide. On the right, a view of the spray nozzles mounted along the wing trailing edge.



Remplissage du réservoir de produits antiparasitaires d'un avion Cessna "Agwagon B". A droite, vue des tuyères de pulvérisation montées au bord de fuites des ailes.