



# Grassland Management for Wildflowers: Kingarrock GC

**INTRODUCTION:** Kingarrock Golf Course is the only remaining Hickory Golf Course in the UK, first established in 1924. This unique 9-hole 2022 Yard Course on National Trust for Scotland's stunning Hill of Tarvit Estate was restored and reopened to the public in 2008 and offers a unique golfing experience that supports Scotland's Heritage.

## THE ISSUE

The golf course at Kingarrock in the Hill of Tarvit estate was, like many other golf courses formally abandoned to support the war effort in 1939 to be used for crop growing and animal pasture. This increased the fertility of the soil and hence led to the rank growth of grasslands.

The creation of wildflower grasslands has the greatest chance of success on soils of low fertility, such as shallow soils and upper slopes. Wildflower grassland creation on fertile soils requires more work to control undesirable species and maintain the balance of sown wildflower species. Coarse grasses such as cocksfoot, false oat grass, Yorkshire fog and rye-grass are too fast growing to co-exist with the majority of wildflowers and out-compete them for sun and space. Sowing seed into an established sward is also rarely successful. The establishment of 'traditional' flower-rich meadows can be difficult and the results often disappointing, particularly on fertile soils recently taken out of cropping.

## THE SOLUTION

If the grass is rank or flattened the turf should be stripped. 10-14 days after removing the turf, plough or rotovate the soil and consolidate the seedbed. Dormant seed will then germinate. Harrowing the area concerned once the 'weeds' are clearly visible will kill them off. The process needs to be repeated until the dormant seed diminishes. The ground is now ready for wildflower grassland seed mix. This process obviously takes time and can be visibly obtrusive due to the stripping of turf.

## AT A GLANCE...

>> The fertile soils at Kingarrock support coarse grasses which out-compete wildflowers in grassland areas.

>> Kingarrock use Yellow Rattle flowers as a natural alternative to turf stripping or using herbicides, to thin out the coarse grasses allowing wildflowers to establish.

>> The resulting wildflower grasslands support a range of insects, particularly butterflies and moths. They also provide a good nesting habitat for ground nesting farmland birds such as skylark.



Kingarroch decided to use an alternative method, one involving no turf stripping or herbicides to kill unwanted rank grasses or ‘weeds’. This process involved the sowing of Yellow Rattle (*Rhinanthus minor*) seed. It is a very useful species which is hemi-parasitic on grasses, but not on flowers. This feature means that it can be used as a tool to manipulate the balance between grass and flower species in established grassland or new sowings.

Yellow Rattle is an attractive flower that was once widespread in hay meadows. It is an annual, shedding seed in July. Traditionally, farmers would watch for the seeds becoming dry. Once they could be ‘rattled’ within the seed pod, it was time to commence the hay harvest – hence the flowers name ‘hay rattle’.

By using Yellow Rattle in a wildflower mix or sowing yellow rattle alone prior to wildflower seed, a diverse, open attractive sward can be grown which will support a range of insects, particularly butterflies and moths. It also provides a good nesting habitat for ground nesting farmland birds such as skylark.



*Yellow Rattle in flower*

## OUTCOMES



*Map1: Transects monitored for Yellow Rattle success – wildflower density and diversity*

Scottish Golf Environment Group (SGEG) Environmental Adviser, Lynn Jopling monitored the success of the Yellow Rattle sowing through identification and analysis of the wildflower populations along each transect shown on Map 1 above.



*Greenkeeper Colin Smith harvesting the Yellow Rattle seed*



*Wildflower grassland area*



| Transect | Yellow Rattle Seed Sown | Yellow Rattle Seed Harvested | Wildflowers Observed   |
|----------|-------------------------|------------------------------|--|
| A        | 2009                    | 2011                         | marsh orchids  |
| B        | 2010/11                 | 2011                         | lady's smock, cowslips, yarrow, knapweed, red/white clover, burnet saxifrage, lady's bedstraw, selfheal, devil's bit scabious, birds foot trefoil, sweet vernal grass, meadow foxtail, yellow rattle |
| C        | 2011                    | not harvested                | scabious, clover, yellow rattle  |
| D        | 2009/11                 | 2010/11                      | scabious, clover, yellow rattle  |
| E        | 2009/2010/2011          | not harvested                | scabious, clover, yellow rattle  |

**Table 1: Sowing dates and wildflowers observed**

The transects all show an increase in species diversity through the use of Yellow Rattle. Transect area B is performing best at present. Yellow rattle is effective but best when sown at 3g/m<sup>2</sup> rather than 1 or 2g/m<sup>2</sup> whereas, 6g/m<sup>2</sup> may be too severe and much more expensive.

## THE FUTURE

Continuous monitoring of these areas by The National Trust will result in further analysis of the Yellow Rattle success. Species present in B are mostly from a meadow seed mix rather than natural colonisation. General cover of grasses throughout all areas was 80% and flowers 20%, with good overall cover in B. All species are native and appropriate for pollinating insects particularly moths and butterflies. This has been shown further through an event run by Fife Council Biodiversity Team known as a Bioblitz in June 2013 where monitoring and biological recording on the course noted 18 different species of moth and 22 species of flowering plants.

The images above illustrate the beauty of using a traditional method of grass thinning. Yellow Rattle is visually attractive to the golfer and acts as a pollen hotspot for bees, butterflies and other pollinating insects.

## FIND OUT MORE

If your club would like to promote its business success story or require support in this area, please contact your Club Development Officer or Environment Manager Carolyn Hedley [c.hedley@scottishgolf.org](mailto:c.hedley@scottishgolf.org)



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