the machines, air cushion and trimmers is expected to allow him to stock, interchange and/or cannibalise parts so extending life and reducing overall cost.

For trimming around trees and other areas where mowers cannot go the club has two E P Barrus Lawnflite SS2590s with Kawasaki motors and an Allen Pro 43 with a 41.5cc Zenoah motor. However Paul does use the chemical Touchdown to reduce the workload, he commented that it was also good arboricultural practice to have a vegetation free area around each tree. Various types of trimmer head have been tried, unfortunately not all are interchangeable between differing makes or models, but Paul said that his preference is for manual line adjustment where each line can be adjusted independently rather than the automatic or central release systems as in his experience if you snag the line it breaks off at the drum and then with no line exposed it cannot pull out by centrifugal force, thus you have to dismantle the unit to get more string out.

Allen Echo trimmers at Marlborough Golf Club

Two machines do all the work of bank and bunker trimming as well as hedge and sundry cutting at Marlborough. Danny Dobie, Head Greenkeeper, manages to make these machines last for about three seasons, but he admitted that they do look after them and use the heavy duty machine for the heavy work. They have had very little trouble and apart from regular replacement of plugs little had been needed in terms of maintenance. Danny did comment that using good clean two stroke mix at the right strength was vital. He also tends to replace rather than repair as parts and labour can often exceed the cost of new. The club has very limited hedge to trim, and what they have is soft privet, so the smaller machine is used regularly with either line or blade to cut it.

Stihl FS220 Brushcutters at Wanstead Golf Club - N London

Course Manager, Peter Dawson’s machinery fleet at Wanstead, includes two Stihl brushcutters and a HS61 hedgecutter as well
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For optimum performance in Local Authority work, forestry and landscape, whether your choice is clearing saw or brushcutter, there is only one decision to make — which STIHL. Stihl, the number one name in chainsaws, also engineer a range of ten powerful, reliable and robust professional brushcutters and clearing saws from 25cc to over 56cc which provide foresters, contractors or local authority parks departments with the ultimate cutting machine for everything from thinning young stands up to 7cm or more in diameter or clearing tough undergrowth, coarse scrub or matted weeds and grass. If you are looking for lasting quality, reliability and the full backing of expert service and spares availability the choice can only be STIHL.

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as a chainsaw and two blowers from the same maker and two Flymo GT2 air cushion mowers. Life expectancy for the brushcutters is about four years, however they are not expected to edge bunker banks or cut large amounts of bank for which there are specific tools. In fact, not having found a really satisfactory means of trimming edges, these are still cut, about once a month, using traditional hand edging shears. Peter also sprays around his trees with a long acting herbicide so avoiding the need to trim these areas. Thus most of the trimming work is tidying up path edges and around posts and fences.

The trimmer heads are of the two string type with a screw release for manually extending the line. The Stihl machinery has all proved extremely reliable only requiring spark plug and filter cleaning or replacement. Peter expressed himself perfectly satisfied with the performance of the Flymos – both are 21 inch professional rated JLO engine. Cutting these banks is a monthly task for one man and one machine. However, there are also a few other areas within the Golf and Country Club jurisdiction which have to be hand mown. The club has a limited length of hedge to cut.

**Exeter is exceptionally well organised in using its brushcutters, it has four machines of which the oldest is about five years old, and the policy is to change one every other year – thus giving a life expectancy of up to eight years.**

**Head Greenkeeper is John Parr and he said that the club is very disciplined in its use of the machines. For a start it has a full time mechanic and a spare machine so that he is able to maintain the machines on a regular basis and keep all in A1 condition. John commented that previously brushcutters at Exeter had short lives and less reliability, however he is happy that this is in the past, and that the current machines will have a long and virtually trouble free life.**

Possibly another reason for this change is the disciplined system of use, John sends two people out with two machines when trimming round the course, they work a two hour shift when they are relieved by two other greenkeepers with the extra machine. All four machines are fitted with monofilament two line heads with manual (screw lock) string advance. Very little work is carried out with a blade – perhaps only 1% in total. The machines are used around trees and on tee banks and similar, but not for bunker edges for which hand edging shears are used exclusively – Exeter buy two sets a year and consider this a cheap investment.

Outside bunkers and on other banks air cushion and hover mowers are used, all three machines using the professional rated JLO engine. Cutting these banks is a monthly task for one man and one machine. However, there are also a few other areas within the Golf and Country Club jurisdiction which have to be hand mown. The club has a limited length of hedge to cut.

**Allen Power Reciprocators at Chippenham Golf Club.**

Chris Sealey at Chippenham uses the Reciprocator for trimming his bunker edges, approximately monthly. This machine is a purpose made tool which has two star shaped blades one of which reciprocates to give it a shearing action.

The unit is three or four years old and has further life ahead of it. The motor is a 22.5cc Zenoah which has proved itself reliable and of sufficient power. The blades are normally moved around to present new cutting edges every few holes, there are four positions, and once all four sectors are blunt the blades are removed and resharpened.

Chris reckons to replace these cutters annually – at a cost of about £30.

“What I like about the machine,” Chris said, “is that it gives a definite and very clean cut.”

For general trimming the club has two Allen Zenoah brushcutters and its banks are cut with Allen JLO engined hover mowers.
Course managers such as you have to wonder why anyone would introduce a utility vehicle to compete with the Turf-Truckster®. No matter how far the other guys go, they'll always be 30 years behind.

Cushman® Turf-Truckster.

The Cushman® Turf-Truckster® didn't get to be a market leader by accident. For more than 30 years, course managers have loaded it down with responsibilities and the Turf-Truckster has performed as promised. The Turf-Truckster continues to outpower and outperform the competition by offering greater payload capacity, more vehicle configuration choices, superior maneuverability, ease of service and the industry's most accurate ground speed governor. Plus, there is an entire system of attachments designed specifically for the Turf-Truckster. No other work vehicle has as much to offer. Thirty years of proven performance mean two things: the Turf-Truckster won't let you down and the competition is going to have to eat a lot of dust. For a free demo, call 0500 026208.
May Day celebration for eighth annual Westurf exhibition

A total of 67 exhibitors will be there to pass on information or display products. They are:

- Amenity Technology
- Avoncrop Amenity Products
- Barenbrug
- Bennett Engineering
- Better Methods Europe
- BIGGA South West and South Wales Region
- Bioseed
- RS Birds
- Bourne Amenity
- Bowcom Ltd
- Boyd Golf Course Accessories
- British Seed Houses
- BS Mowers
- Cannington College
- Complete Weed Control
- Course Care
- Devon Turfcare Equipment (Devon Garden Machinery)
- Encore Leisure
- Farmura Ltd
- Fleet (Line Markers) Ltd
- PJ Flegg Ltd
- Gannon UK Ltd
- GWilliam Kellands Ltd
- Handy Turf Machinery
- Hartpury College
- Headland Amenity Products
- IOG
- ISS (Irrigation Contracts) Ltd
- BS Mowers
- John Miller (Corsham) Ltd
- Levington Horticulture
- Lloyds & Co Letchworth Ltd
- Lubrication Engineers Midwest
- Lindum Seeded Turf
- Linemark (UK) Ltd
- Maxicrop International Ltd
- Mediland Sanders & Twose Ltd
- Miracle Professional Products
- Ocmis Irrigation (UK) Ltd
- H. Pattisson & CO Ltd
- Pencoed College
- Perryfields Holdings Ltd
- Pipewise UK Ltd
- Pro-Seed Equipment Ltd
- Range Servant UK Ltd
- Rhône-Poulenc Environmental Products
- Rigby Taylor Ltd
- Rochford Garden Machinery Ltd
- Roffey Brothers Ltd
- RS Birds
- Rufford Top-Dress Supplies
- Scotts UK Ltd
- Shelton Trenching Systems Ltd
- SISIS Equipment (Macclesfield) Ltd
- Sparsholt College
- Sta-Brite Supplies
- STRI
- Supaturf Products Ltd
- Symbio
- TH White Ltd
- Ted Hopkins
- Tildenet Ltd
- Tonick Watering
- Turf Irrigation Services Ltd
- Vitax Ltd
- Wessex Horticultural Products Ltd
- Western Trailers
- White Horse Contractors
- Woodward's Gardenware

A visit to the new look Westurf '96 Exhibition should be incorporated into the May Day celebrations of everyone within striking distance of the Little Ashton GC involved in the turf maintenance industry on May 1.

While May Pole dancing might not be on the agenda there is plenty which is and the new layout of the eighth Westurf Show makes it far more user friendly for exhibitor and visitor alike.

The Demonstration Area has been been moved into the centre of the site to become more of a focal point of the show with a PA system being used to announce demonstrations and give product information.

Many of the new products first launched at BTME 96 will be demonstrated publicly for the first time at Westurf.

Among them are the Ransomes T-Plex 185 and Ransomes Fairway 305; the Hayter Greens mower PH514 and the Toro 6500 Fairway Mower and Toro 3200.

Last year Pro-Seed Equipment launched and sold a brand new Core Harvester at the Show while another company Roffey Brothers took more than £30,000 worth of orders.

Don't forget to pop into the South West and South Wales Region's tent and enter the free raffle, you could be walking away after the show with £200 worth of travel vouchers. Just follow the RAC signs from the motorway and when you arrive parking and admission is free.

All the main local and national dealers will be there to answer questions and take your orders, with all the latest turf care products on show.

You can't afford to miss Westurf '96.

"It is always one of the friendliest dates on the calendar and we are looking forward to meeting many old friends and having an excellent show," said Marion Child.
Tee-to-Green Quality from John Deere

The John Deere line of golf equipment will literally take you from tee to green.

**2653**
Superior performance on rugged terrain with a precision cut, hydraulic reel drive and 66-cm (26-in.) ESP cutting units.

**GATOR**
Your best choice for a low cost, low-ground-pressure go anywhere vehicle. 4- and 6-wheel models available.

**3235**
Delivers ground-hugging fairway mowing performance with five John Deere-manufactured 56-cm (22-in.) ESP cutting units.

**955**
Choose from a complete line of gear- and hydrostatic-drive compact utility tractors. Plus front-, mid- and rear implements.

**1200A**
Excellent pulling and pushing power. Opens up a whole new era of bunker rake design. Many attachments available.

**3365**
Five 76-cm (30-in.) ESP cutting units combine to deliver the highest quality of cut over wide areas - from fairways to roughs.

**220**
This new walk-behind Greens Mower features an operator-presence safety system, more power, and a precision cut with 11-bladed reel.

**2243**
Petrol and diesel models both feature 13.4-kW (18-hp) engines and John Deere cutting units, for an exceptional quality of cut on your greens.

Count on us for world-class parts and dealer support as well.

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1. THE EFFECT OF EXPOSURE TO HIGH NOISE LEVELS

The main difference between mankind and animals is our advanced ability to communicate. Language and speech intelligibility would be impossible without a very intricate hearing mechanism. Our ability to convert the minute variations of the dynamic air pressures and frequencies of speech into electrical impulses to the brain is a wonderful process. It is without doubt one of the most important human faculties. This priceless process is at risk for millions of people who are working in a noisy environment.

Exposure to high levels of noise can permanently damage hearing. It is an insidious process because it is so gradual and frequency selective. Victims of noise induced hearing loss (NIHL) are not conscious of a general lowering of the overall sound which they hear. NIHL causes a severe notch in our hearing sensitivity in a very narrow frequency band. The overall sound in the form of signals to the brain has only reduced by a very small amount and does not give a warning of deafness. Unfortunately the permanent damage occurs in a critical frequency band for the intelligibility of speech. Very often those who have had their hearing damaged blame the speaker for not speaking clearly. By the time they realise that their hearing is irreversibly damaged they have a severe injury which many sufferers consider to be as bad as loss of vision. Restricted ability to communicate can deprive people of the things which give them the greatest happiness and satisfaction in life. It can also detrimentally affect their work, family life and general health.

At The Noise and Man International Conference in 1993, Willy Passchier-Vermeer stated that 50% of industrial workers are exposed to potentially hazardous equivalent sound pressure levels of 80 dB(A) or above, and that similar noise exposures occur in other occupational situations. According to ISO 1999, long term exposure to these sound levels could cause permanent hearing damage. It is absolutely right that medical doctors, scientists and concerned people should campaign to make our elected representatives legislate to protect the hearing of employees by all reasonable means.

2. THE LAW

The main noise legislation which affects those responsible for golf courses, parks, grass verges etc are:

• The Noise at Work Regulations (1989);
• The Management of Health and Safety at Work Regulations (1992);
• The Supply of Machinery (Safety) Regulations (1992).

2.1 The Noise at Work Regulations (1989).

The most important requirements for employers in the Noise at Work Regulations are as follows:

• Employers must do everything reasonable and practicable to reduce the exposure of employees to high sound levels so that hearing protection is not required;
• Noise assessments and investigations to reduce noise must be carried out by a competent person where there is a risk of hearing damage;
• A suitable person must be delegated to have responsibility for ensuring compliance with the legislation, including keeping records, instructing employees on ways to reduce the risk of NIHL, checking hearing defenders, etc.;
• Action levels (85 and 90 dB(A) daily exposure levels and 130 dB peak sound pressure level) are specified to control the use of hearing defenders for the protection of personnel as a means of protecting employees pending noise reduction to acceptable sound levels;
• If the first action level is exceeded employees must be warned of the NIHL risks and

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advised to wear hearing defend-
ers which must be available;
• If the second action level is
exceeded employees must be be
instructed that hearing defenders
must be worn in the designated
ear protection zone or while
operating the machine; records
must be kept and be available for
inspection;
• Personnel should seek advice
from a medical doctor before
using hearing defenders if they
have an ear infection or earache;
• HSE, in items 31 and 32 of
their Noise Guide No.1 state that
new machinery, and that the
assessments should be a maxi-
num of about two years.
The full details of the require-
ments for employers and employ-
ees are contained in the Health
and Safety Executive (HSE) Noise
Guides.

2.2 The Management of Health
and Safety at Work Regulations
(1989).
Under the Management of Health
and Safety at Work Regulations
(1992) employees exposed to
high noise levels should be pro-
vided with health surveillance.
The main objectives, concerning
noise, of this legislation are to
monitor the hearing health of
employees and to take early pre-
cautions to reduce injury.

Health surveillance is not a
substitute for measures to reduce
control noise and to inform
and protect employees, as
required by the Noise at Work
Regulations. It is a very useful
part of a hearing conservation
programme and an important
indication for putting into place
further measures to reduce noise.
More detailed information on
audometric testing can be obtained from the HSE publica-
tions listed at the end of this arti-
cle. The HSE do not consider that it is compulsory for employers to
provide health surveillance. They
do, however, consider that it is
good practice and serves the best
interests of employees and
employers.

2.3 The Supply of Machinery
(Safety) Regulations (1992)
The Supply of Machinery (Safety)
Regulations (1992) and 1994
Amendments apply to the manu-
facturers, suppliers and importers
of machinery for the maintenance
of golf courses and parks. The
instructions for the machines
must give the following informa-
tion concerning airborne noise
emitted by the machinery:
• The equivalent continuous A-
weighted sound pressure level at
workstations, where this exceeds
70 dB(A); where this level does
nor exceed 70 dB(A), this fact
must be indicated;
• Peak C-weighted instantaneous
sound pressure value at worksta-
tions, where this exceeds 130 dB
re 2 X 10-5 Pa;
• The original requirement to
publish acoustic performance data
in sales literature was deleted in the 1994 Amendment.

The acoustic performance data
must be in the machine instruc-
tions before authority to use the
CE mark can be obtained. With-
out the CE mark the equipment
can be prevented from being sold
in the enormous EU market area.
The calculation of octave bands. Hence even
if the assumed mean octave values
minus the standard deviation
could over-estimate the actual
attenuation by several decibels
could damage their hearing and
are therefor reluctant to wear
hearing defenders.

• Operators using hearing
defenders may not hear urgent
warnings of pending danger.
• Most people find wearing ear
muffs or plugs very uncomfort-
able, especially for long periods
in hot weather.
• Ear muffs are not suitable for
people with glasses or long hair.
• Ear plugs could be a risk to
health if very careful hygiene pre-
cautions are not always adopted.


3. HEARING DEFENDERS
Hearing defenders – muffs or
plugs – can protect the delicate
hearing mechanism from dam-
gage caused by exposure to high
sound levels. However, they have
many disadvan-
tages, shortcomings and failings, includ-
ing the following:
• It is not always possible for
man-
gers or supervisors to
ensure that employees wear
hearing defenders in
conditions when the
second action level
is breached. This is a
particular diffi-
culty for golf course, park
and
grass verge maintenance staff
who may be working out of sight
of the machinery. It is wrong for a manager to
instruct all ground maintenance
staff to wear hearing defenders
while operating all the noisy
machines. It is not possible to
determine which machines
breach the first or second action
levels without careful sound mea-
surements and an exposure
assessment based on the maxi-
mum operating time per day.
Taking this arbitrary approach
could be forcing operators to
wear ear muffs for very long peri-
dends when it is not necessary. This
flawed administration policy
undermines the basic strategy of
the legislation.

4. GENERAL COMMENTS
It is a fallacy, and dangerous mis-
conception, to think that the
responsibilities of managers, com-
munity members and senior exec-
utives are upheld by buying
hearing defenders and telling the
ground maintenance staff to use
them.

To comply with the noise legis-
lation, to make a positive con-
tribution to noise reduction and to
reduce the risks of hearing dam-
gage to acceptable levels require
not just a technician who can
3-2-1 - GO!

The new SISIS 321 tractor has been designed specifically for the maintenance of turf and artificial playing surfaces and is ideal for golf clubs, local authorities and sports complexes.

- Versatility
  - Operates range of more than 30 pto and towed attachments
  - Patented weight-transfer system
- 4-wheel drive
  - Permanent drive to all 4 wheels
  - Built-in hydraulic differential
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- Excellent manoeuvrability
  - Power-assisted steering
  - Pivot-steer chassis
- Deluxe safety cab
- Versatility
  - Operates range of more than 30 pto and towed attachments
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SISIS CENTRE IN USA, SISIS Inc., Florida
read a sound level meter, but a qualified engineer with in depth acoustic experience.

The fact that the sound pressure levels generated by many grass maintenance machines are still very high, is directly related to a poor feedback by users to the manufacturers who therefore do not consider noise to be an important factor in product sales. If HSE had sufficient funding and resources adequately to enforce the legislation, the market driven manufacturers would soon get the message and invest in research to improve the acoustic performance of their machines. They would also speed up the development of battery powered electrical machinery which is much quieter and more environmentally friendly.

The average equivalent sound pressure level at the operators head for twenty recently tested brush cutters (strimmers) was 99 dB(A). It would only take operation for one hour for the second action level (90 dB(A)) to be breached with this average sound level. For the highest measured value of 101.4 dB(A) the exposure time to breach the second action level reduces to thirty six minutes!

Many types of strimmers, fly-mos, hedge cutters, chain saws, pedestrian mowers, tractors, triple mowers, turf cutters, soil shredders, aerators, top dressers, quad bikes, edgers, blade grinders, hammer drills, disc grinders, etc. cause a breach of the second action level. The operators of these machines are vulnerable to permanent hearing damage. Their risk of NIHL would be considerably decreased by properly conducted noise assessments.

Equivalent sound pressure levels should be measured near the operator's head with each noisy machine at normal speed over grass. If fitted, blades should be rotating. For at least one of each type, octave band sound pressure levels should be recorded to ensure that the hearing defenders, if required, attenuate the sound to a level which eliminates the risk of hearing damage. Unusual or inconsistent sound measurements should be investigated.

After the supervisors have had time to read and study the comprehensive report, the acoustician/engineer consultant should spend some time explaining the results and analysis to those concerned.

The noise consultant should also provide a telephone advice service for the managers and supervisors.

It is essential that the noise consultant convinces the user to rate acoustic performance as a crucial parameter in the decisions on which machines to phase out and on which machines to buy.

For normal golf courses the first noise assessment project would cost about one pound for each club member. Two years later the cost of a recheck noise assessment project would cost about one pound for each club member.

Two years later the cost of a recheck noise assessment project would cost about one pound for each club member.

Advanced planning and decision making on noise is not only a responsible social attitude, it is also good business practice and a substantial cost saving strategy in the long term.

IF I WASN'T A GREENKEEPER I WOULD PROBABLY HAVE BEEN:

"A motor racing driver."

- Darren Homer, Forest of Arden Golf and Country Club

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