

NATIONAL PARK SERVICE RESEARCH PROJECT

Acadia National Park, ME

A Brief Summary of Research Conducted by

Boyce Thompson Institute at Cornell University

OBJECTIVE: expose selected species of native vegetation to controlled levels of ozone and assess effects on foliage, photosynthesis, and development

PROCEDURES:

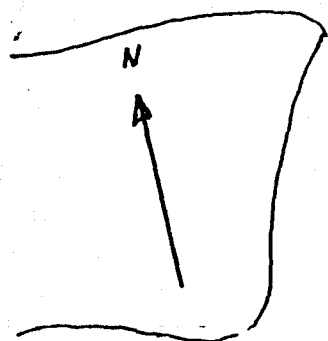
1. construct open-top chambers on-site at Acadia National Park; transported 12 chambers to Maine from Ithaca, NY
2. conduct daily exposures 8am to 6pm; initiated 20 June; treatments are charcoal-filtered air, non-filtered air, and ozone additions to create 1.5 and 2.0 times the ambient level of ozone; ambient plots are also in place
3. perform periodic assessments of foliar integrity and rates of photosynthesis; BTI staff are at the site at approximately biweekly intervals

INITIAL OBSERVATIONS:

1. symptoms of ozone injury appeared first on gray birch, and subsequently on red oak & ~~ASTER~~.
BROWNING ON BIRCH: PREMATURE SENESENCE.
2. observations of injury on other species are somewhat confounded by general foliar condition
3. assessments of rates of photosynthesis conducted on gray birch, white birch, and big-leaf aster; results thus far are equivocal, but appear to provide some indication of a decrease in photosynthesis with increased levels of ozone

CONTINUATION:

1. controlled exposures will continue through first frost
2. assessments of foliar injury and photosynthesis will continue for duration of exposure period
3. it is anticipated that the effects of the treatments on the plants should become more evident as the growing season progresses



ROAD

Blk 1

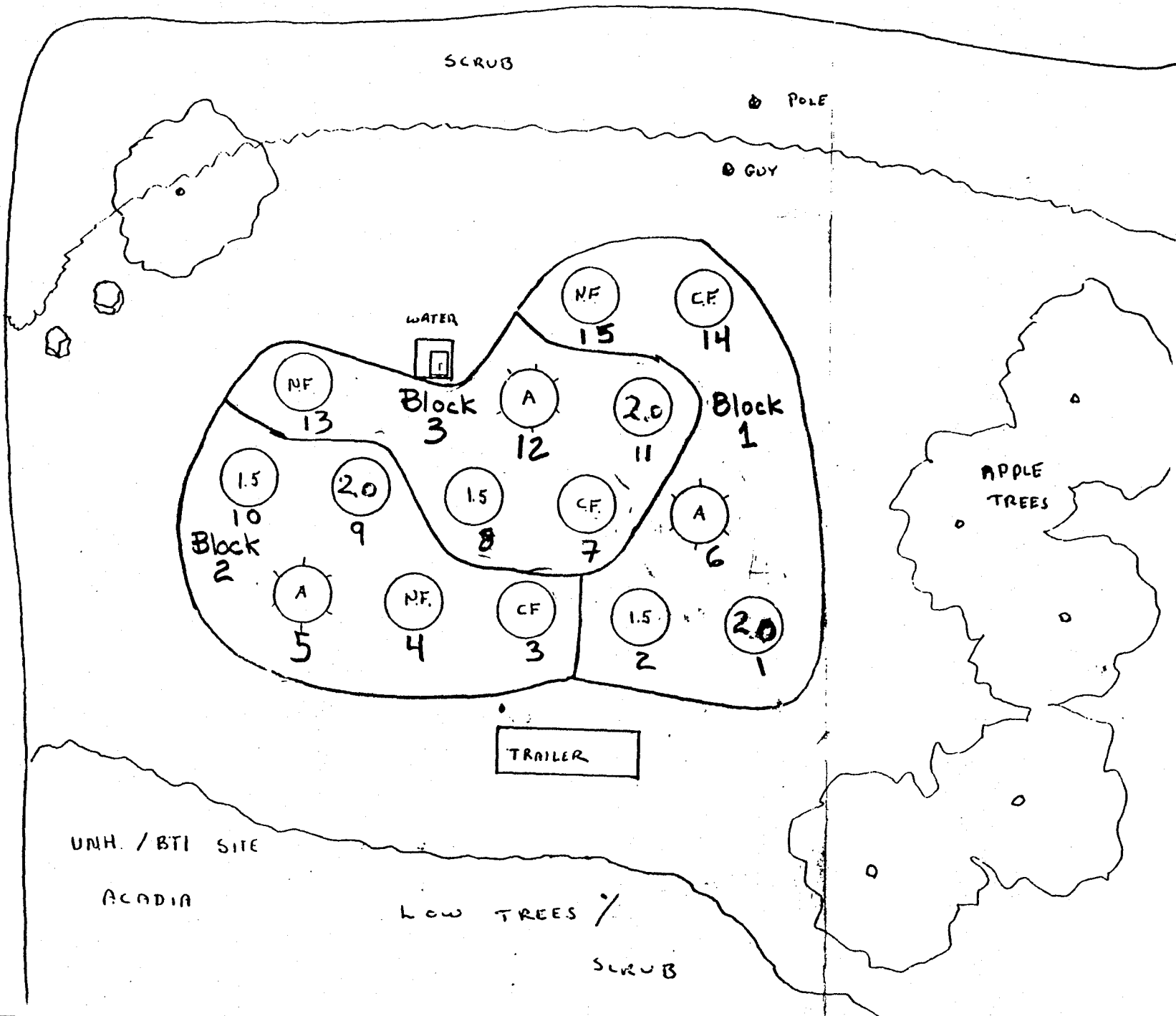
Ch	Tmt.
1	2X
2	1.5
6	A
14	CF
15	NF

Blk 2

Ch 3	CF
4	NF
5	A
9	2X
10	1.5

Blk 3

Ch 7	CF
8	1.5
11	2X
12	A
13	NF



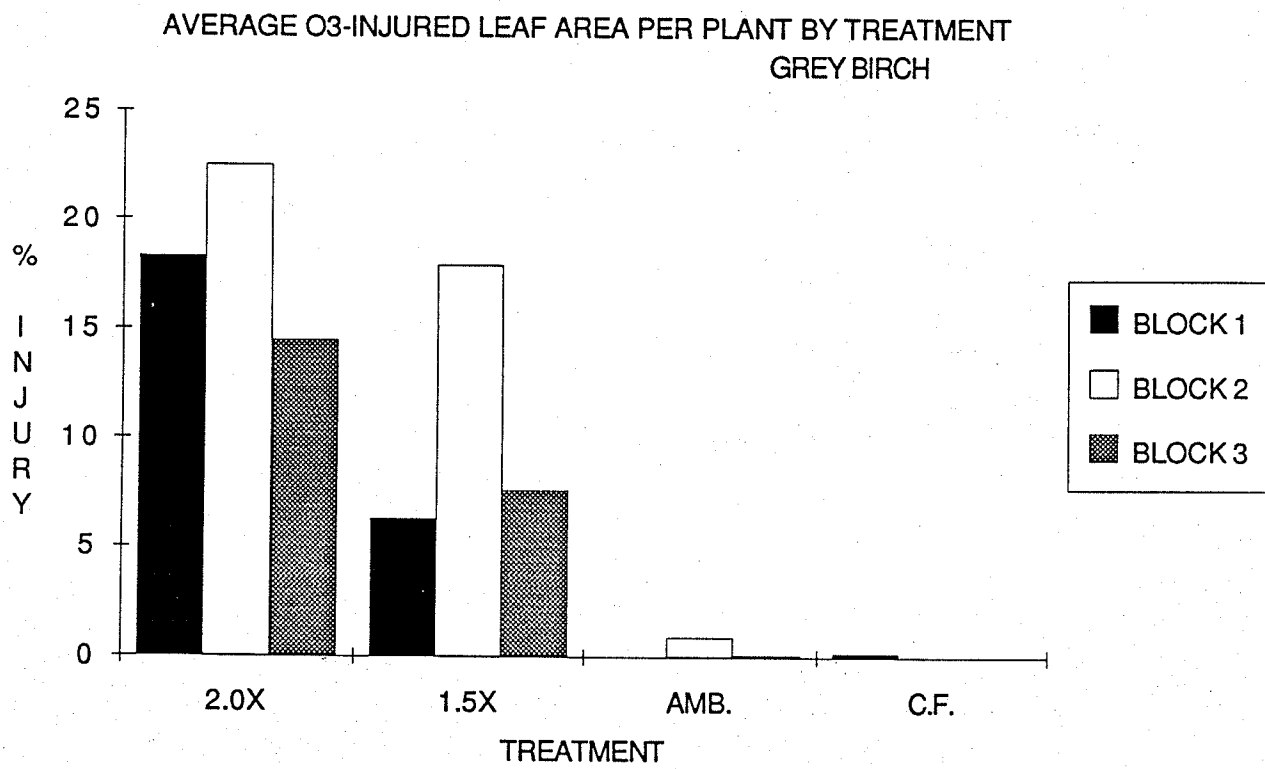
UNH. / BTI SITE

ACADIA

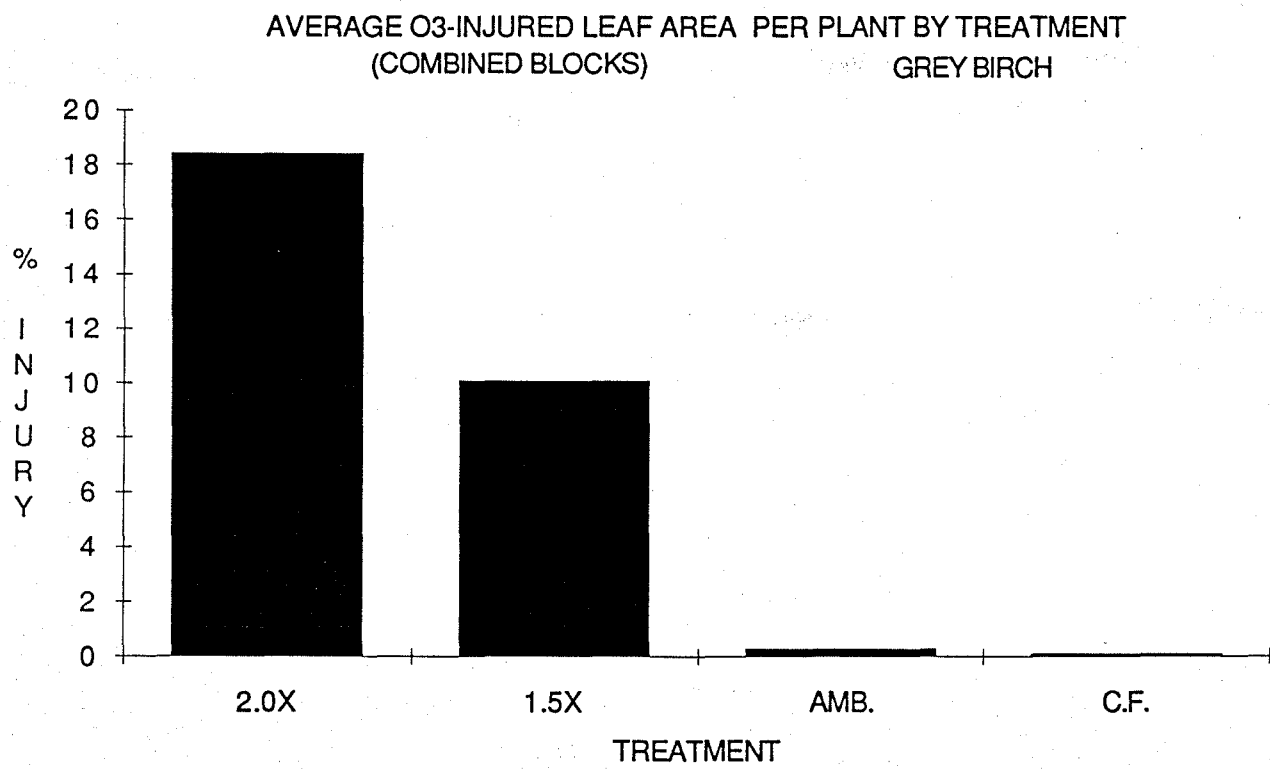
LOW TREES /

SCRUB

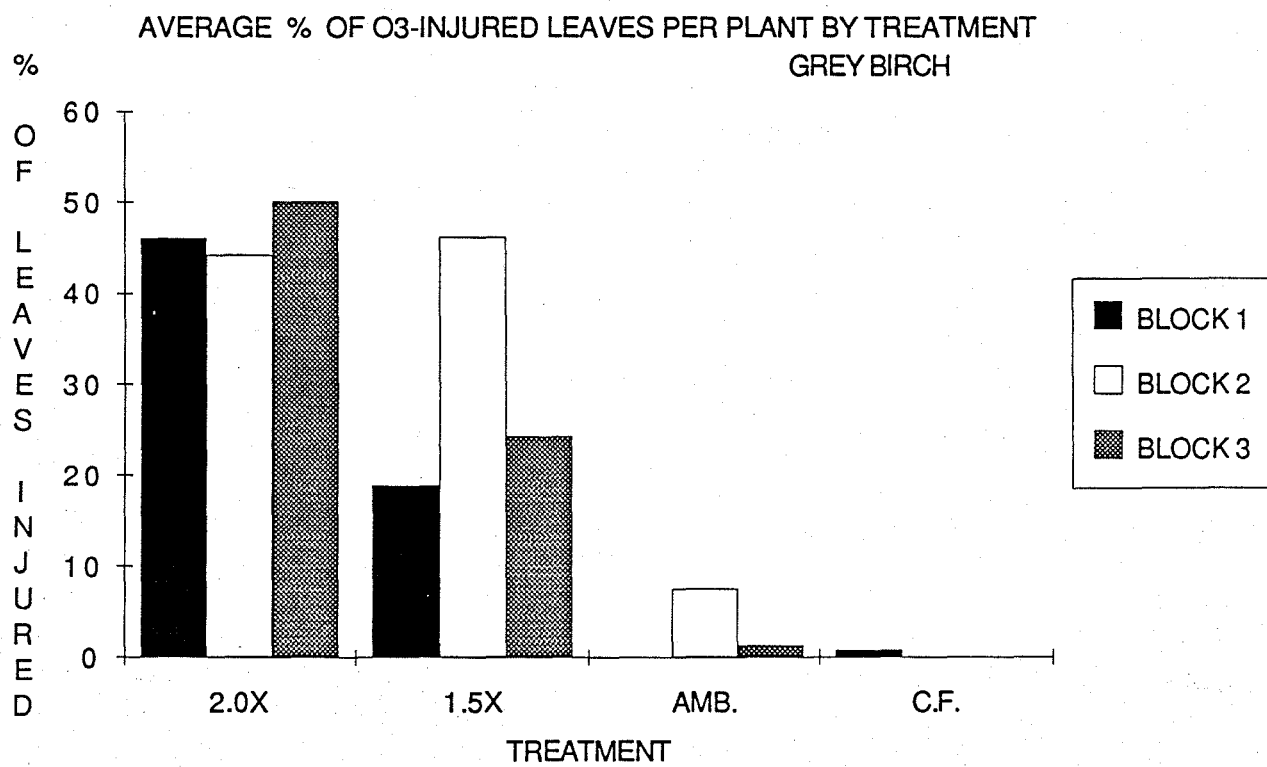
INJ. ASSESS JULY CHART 1



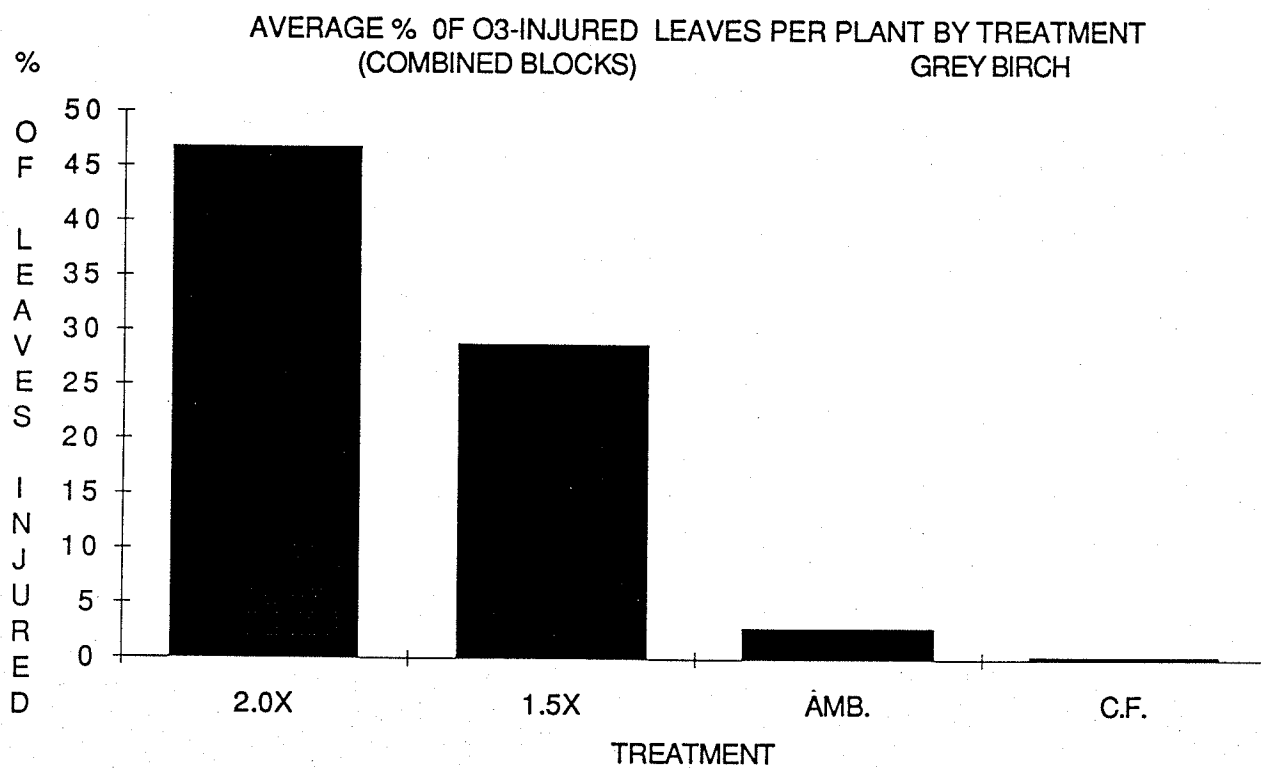
INJ. ASSESS JULY CHART 3

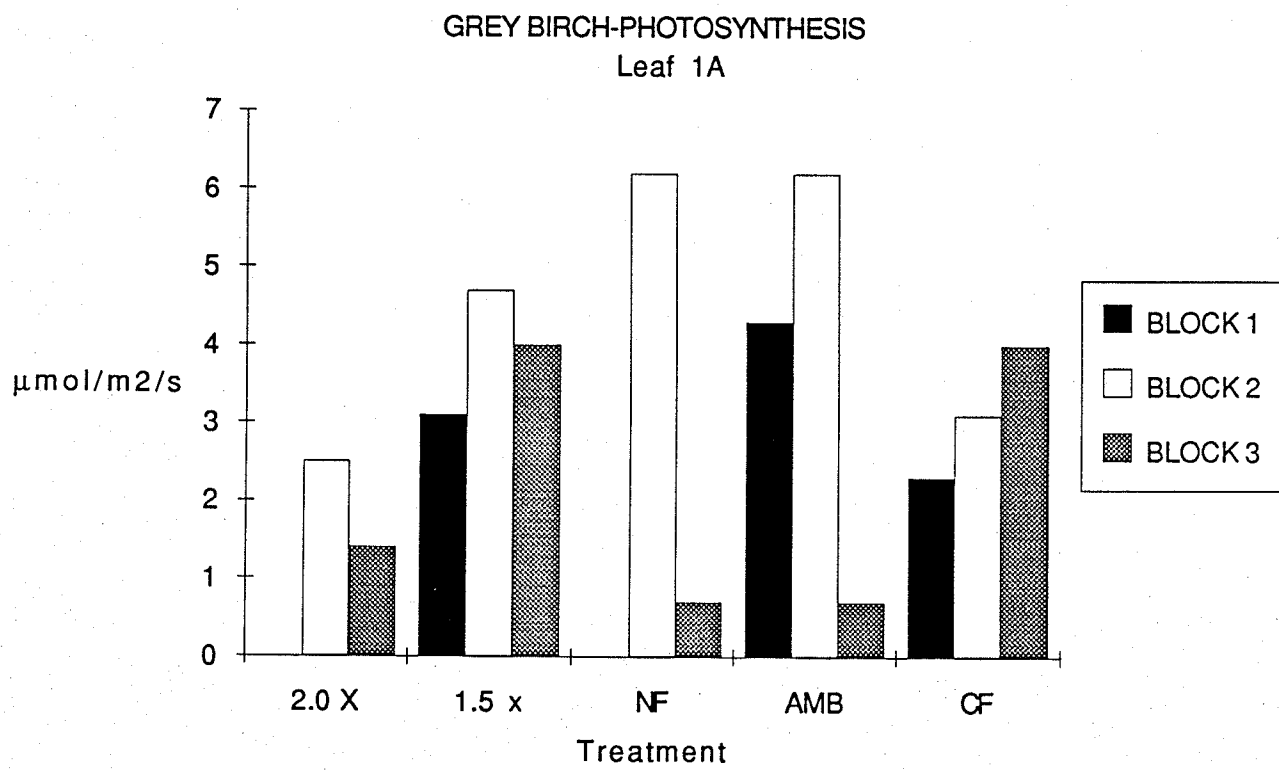


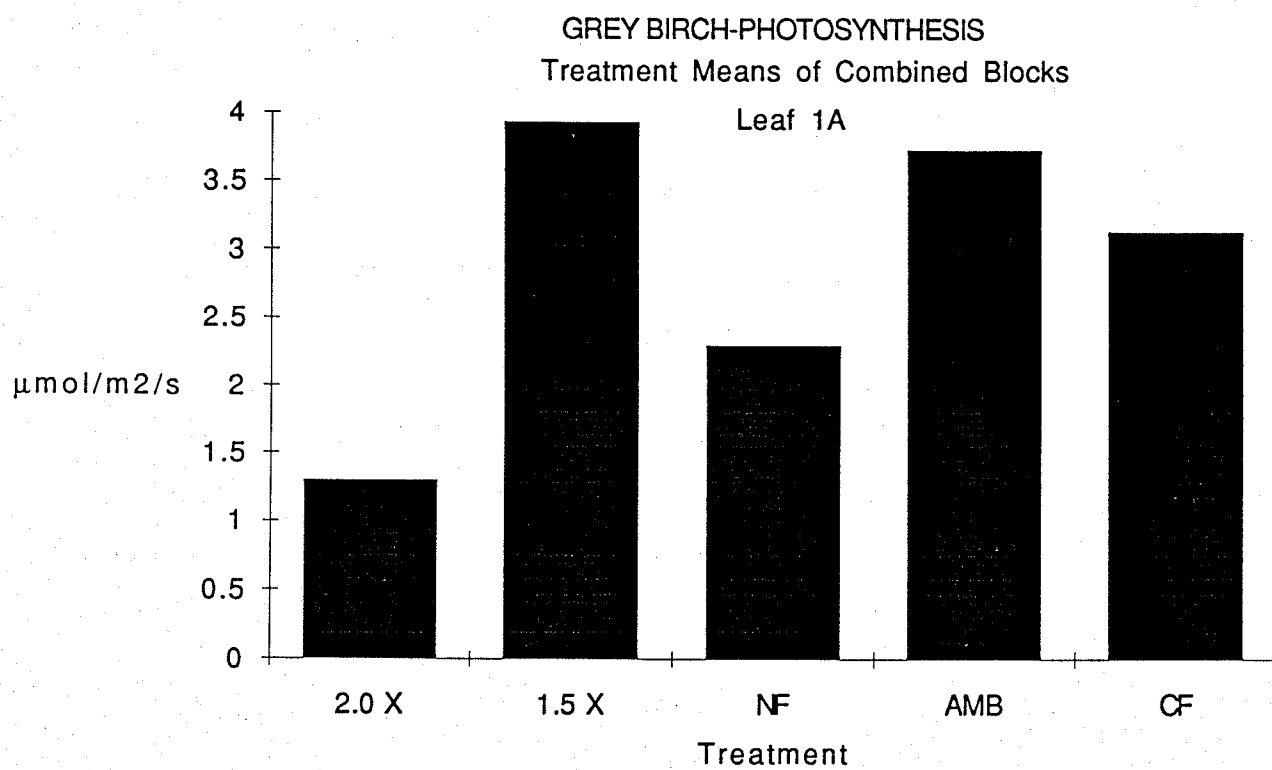
INJ. ASSESS JULY CHART 2

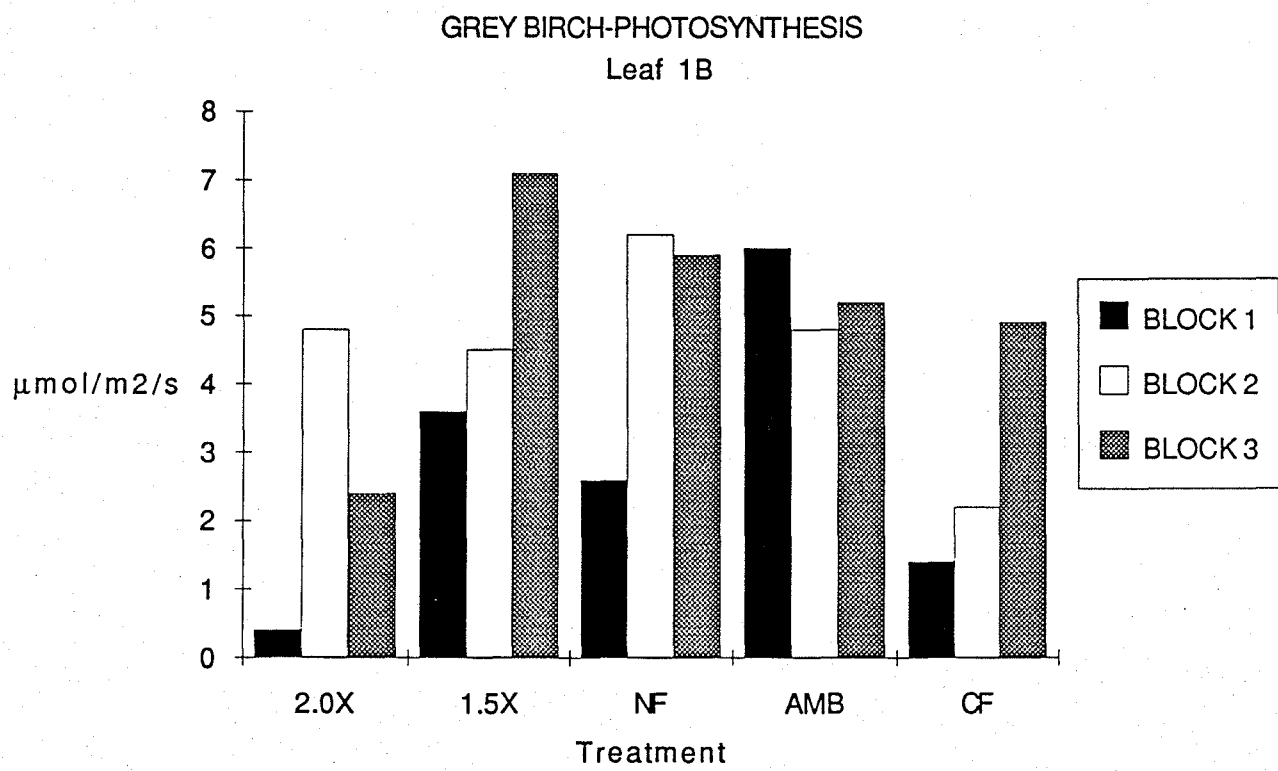


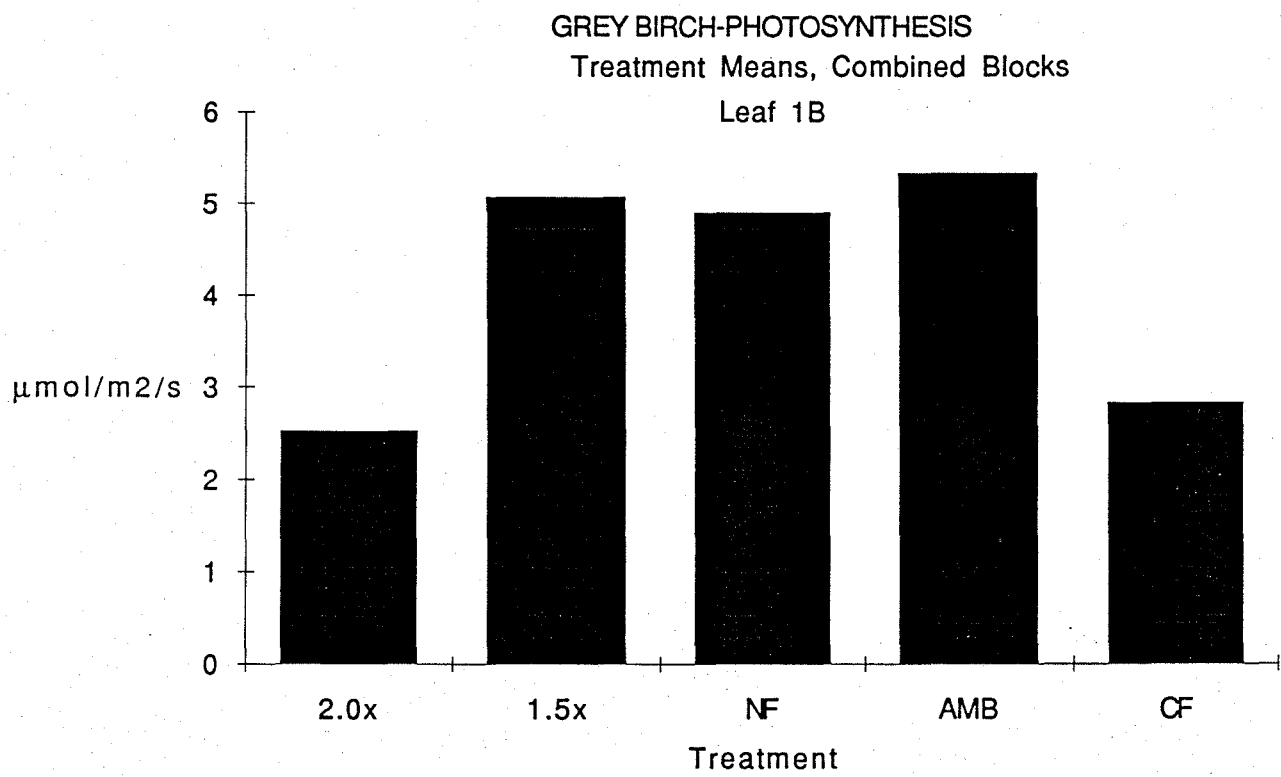
INJ. ASSESS JULY CHART 4

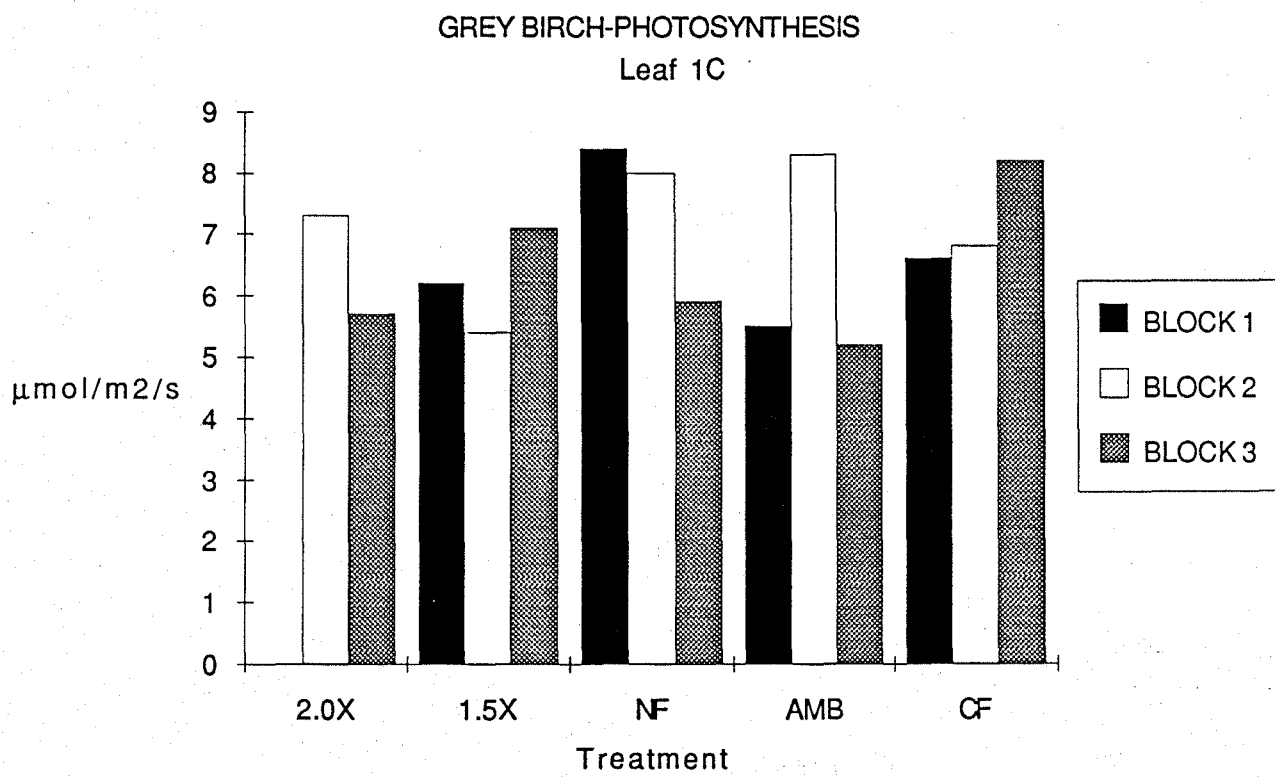


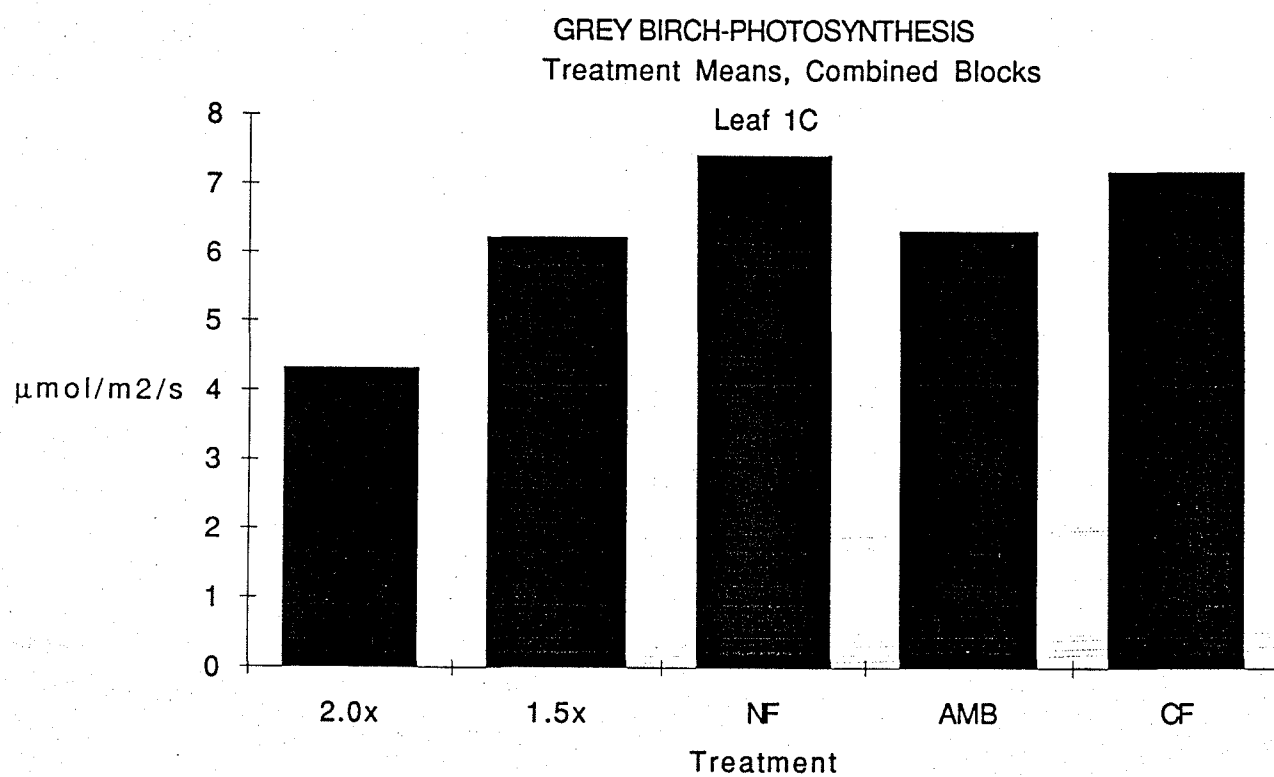


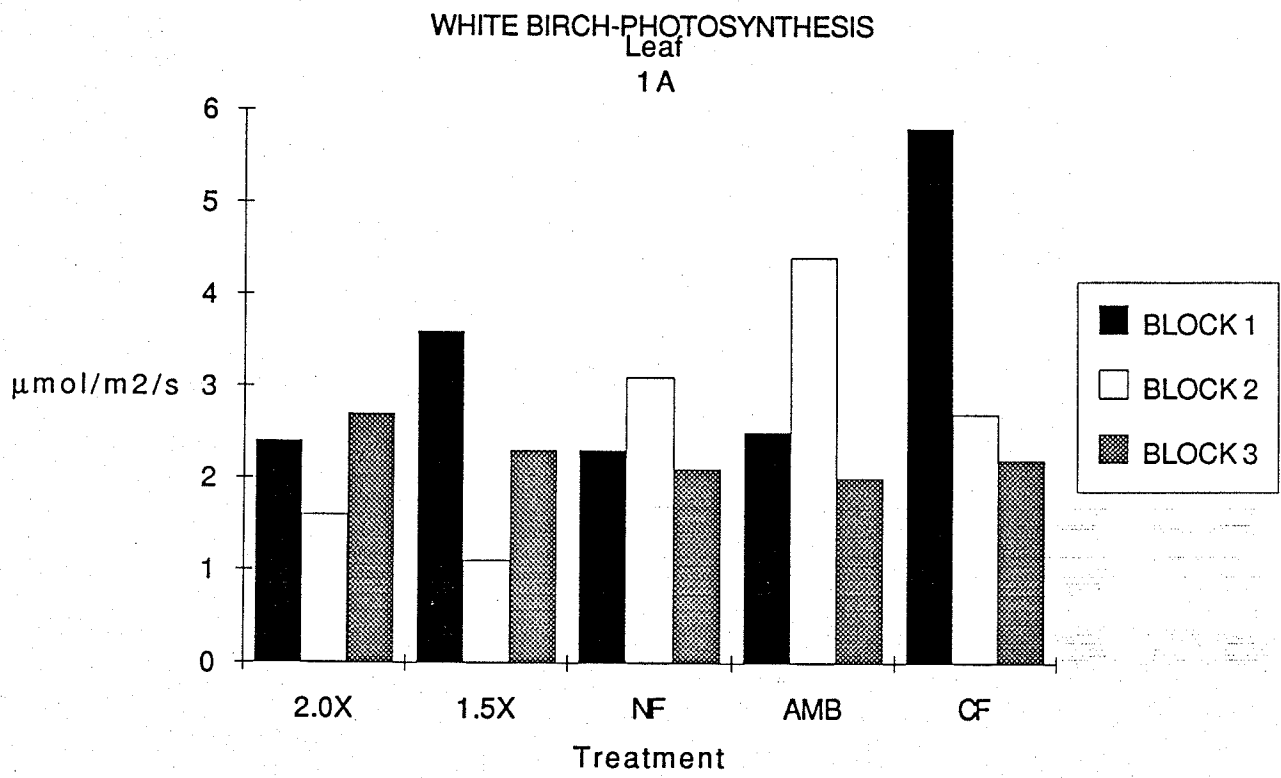


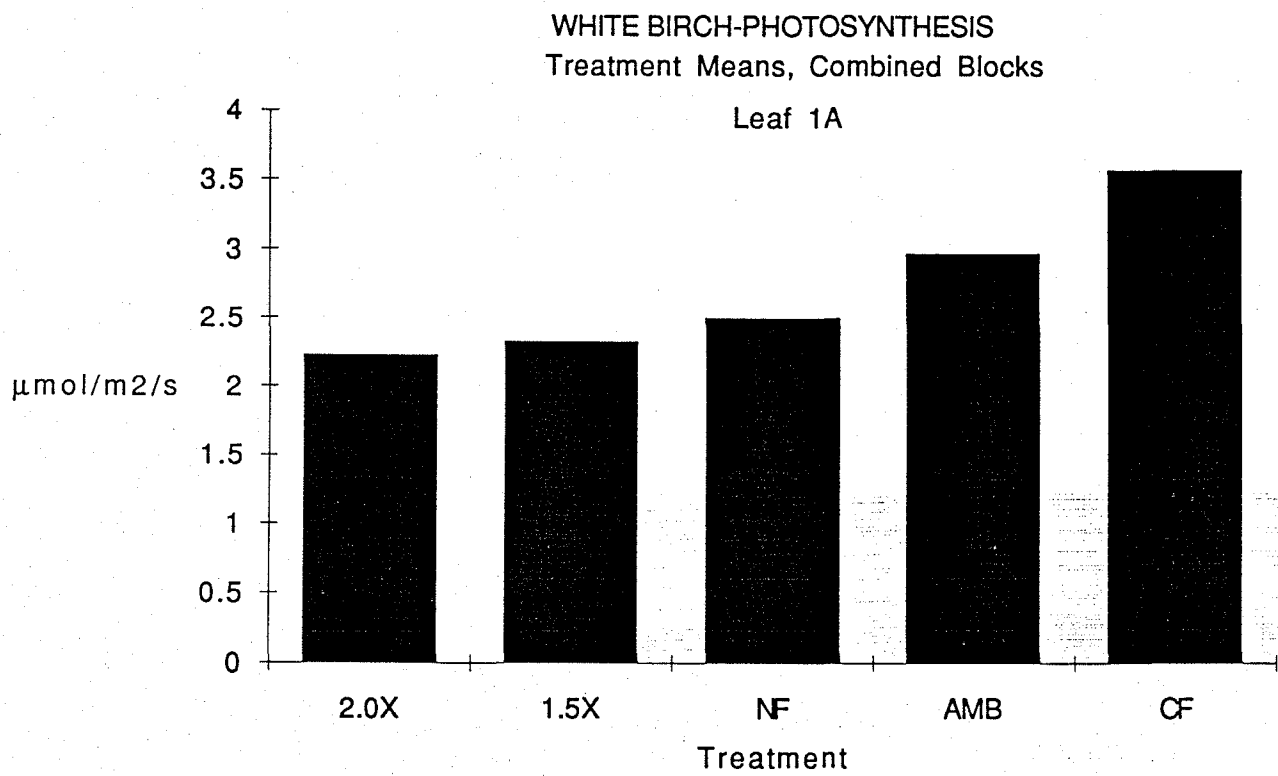


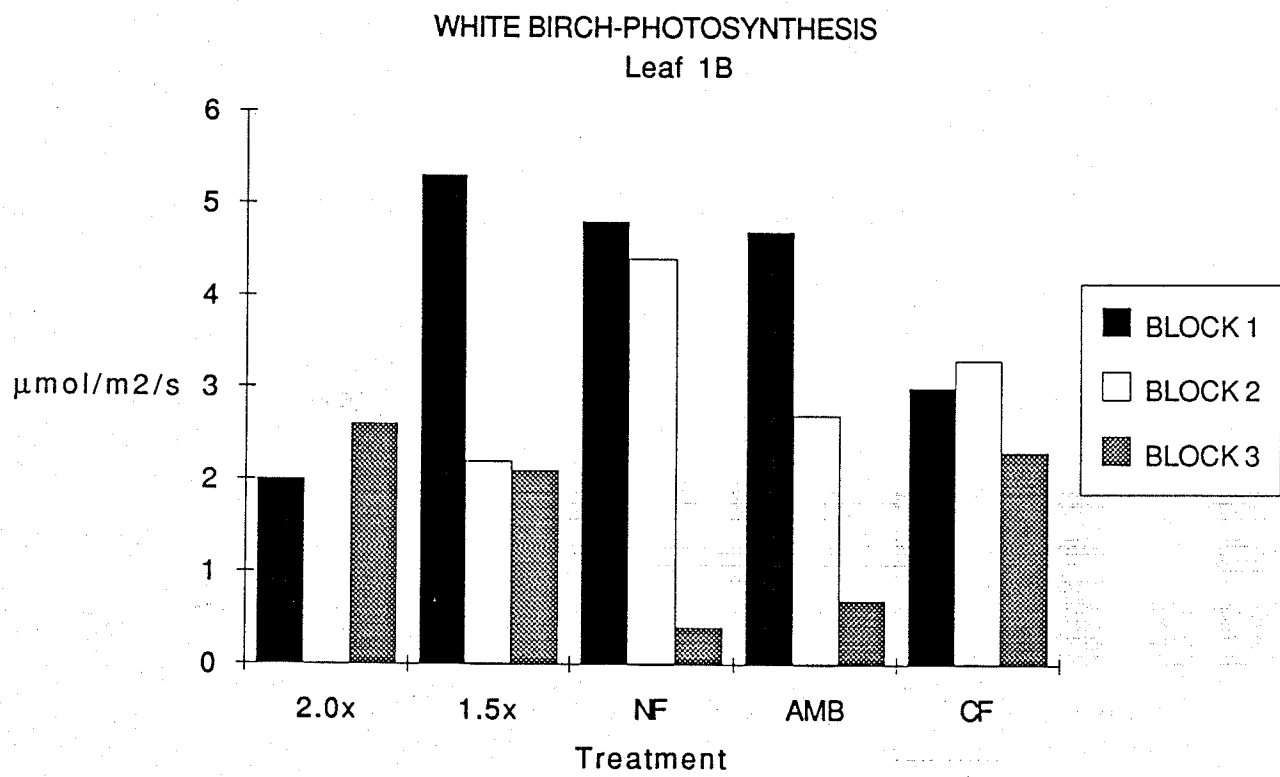


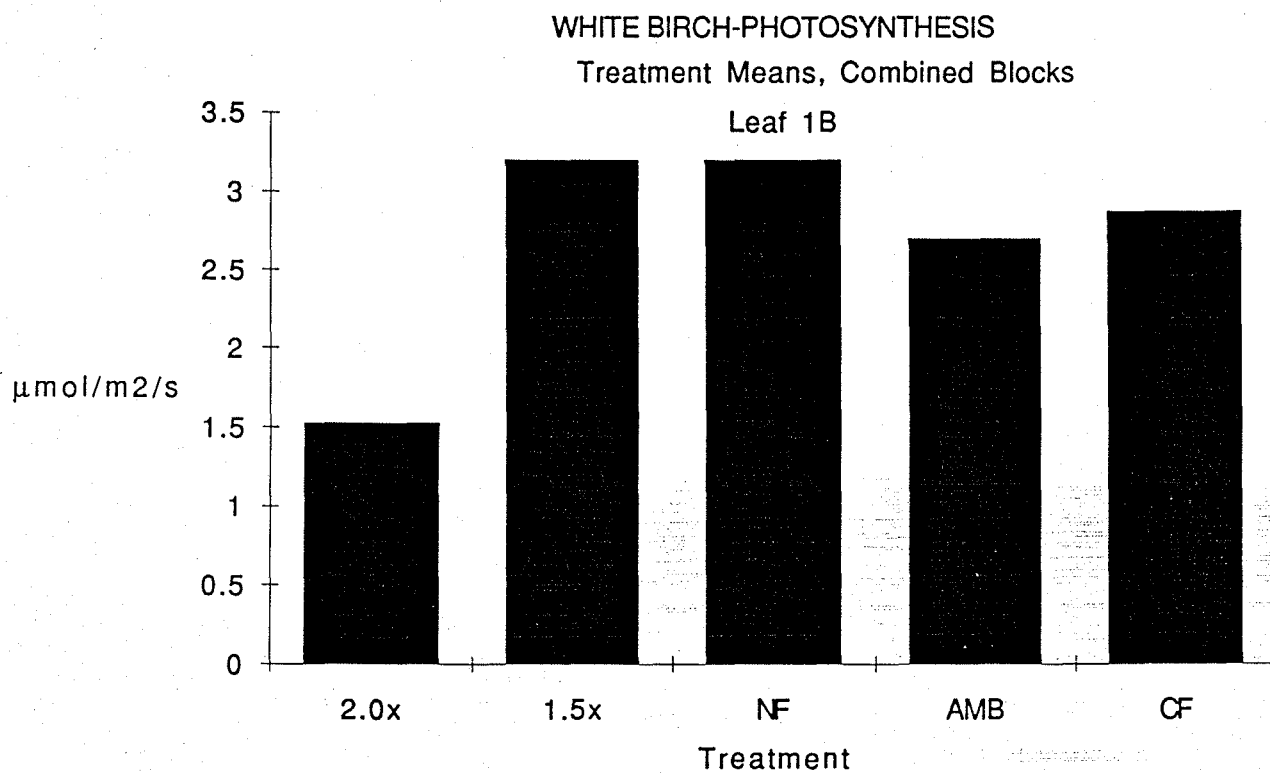


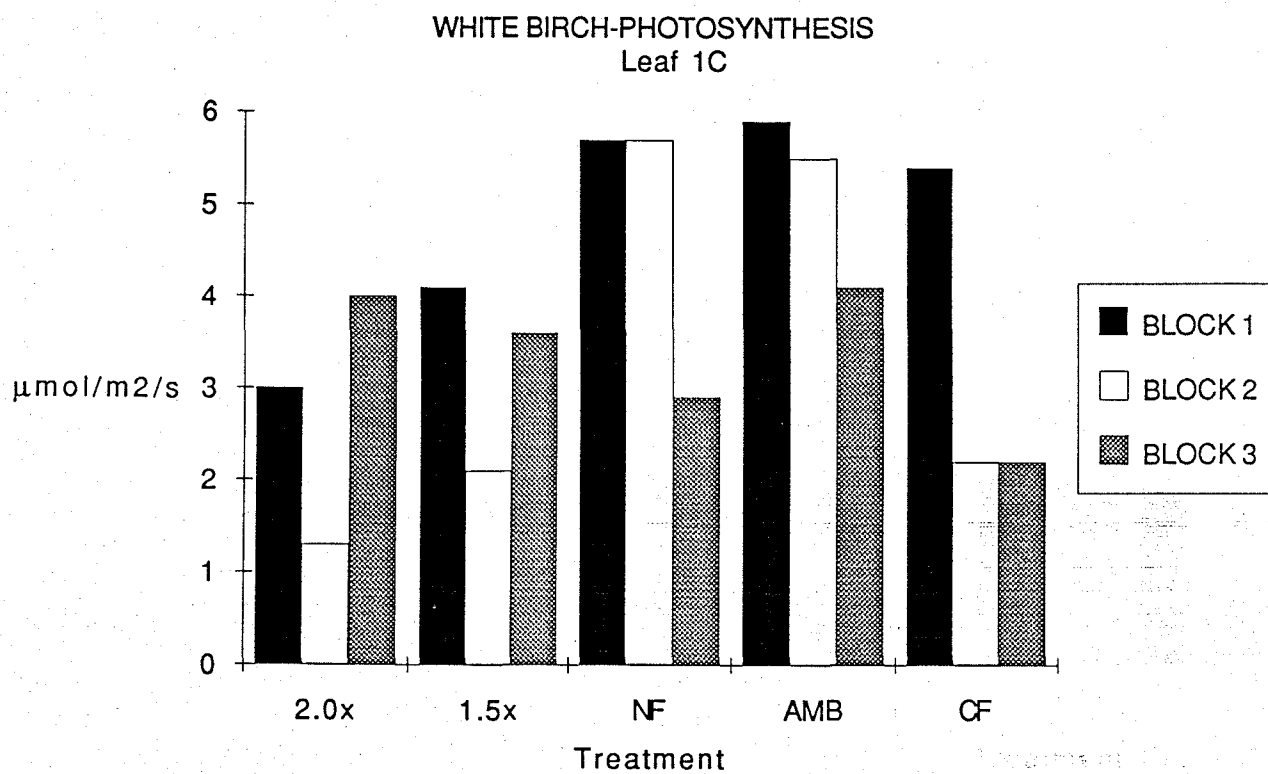


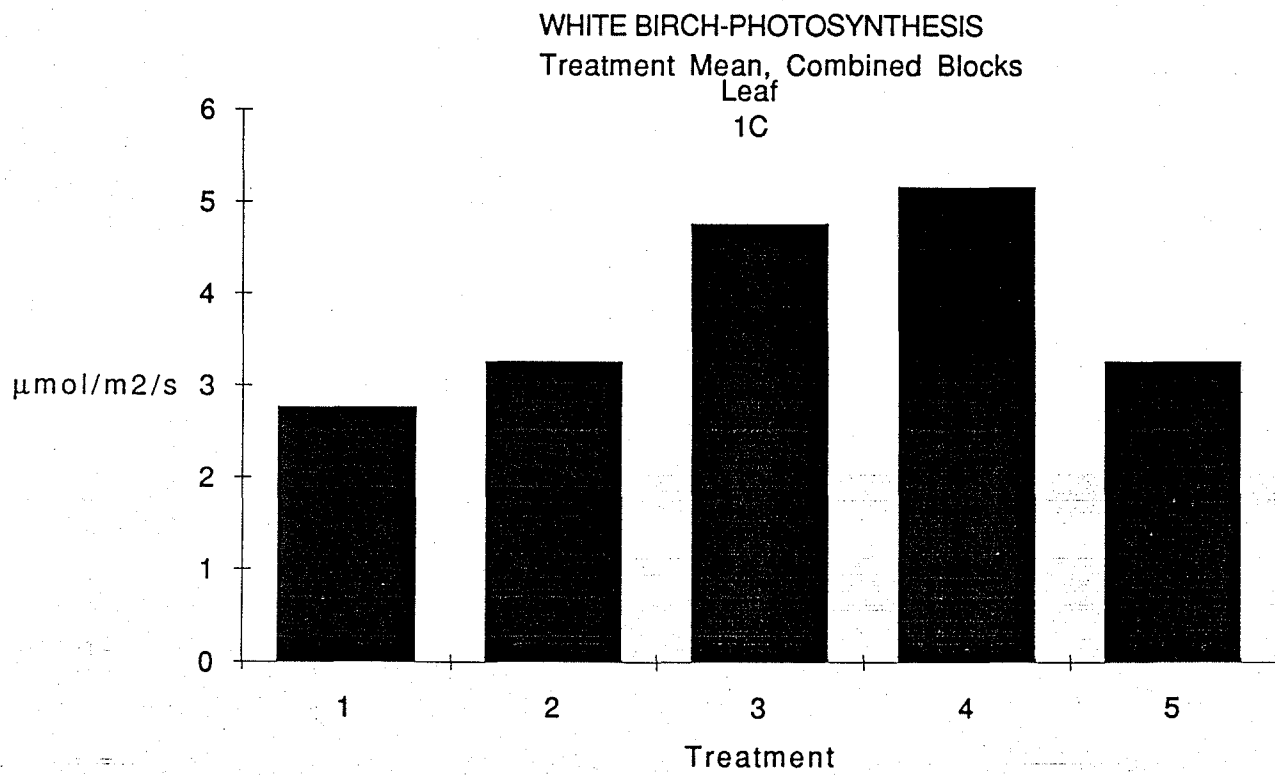


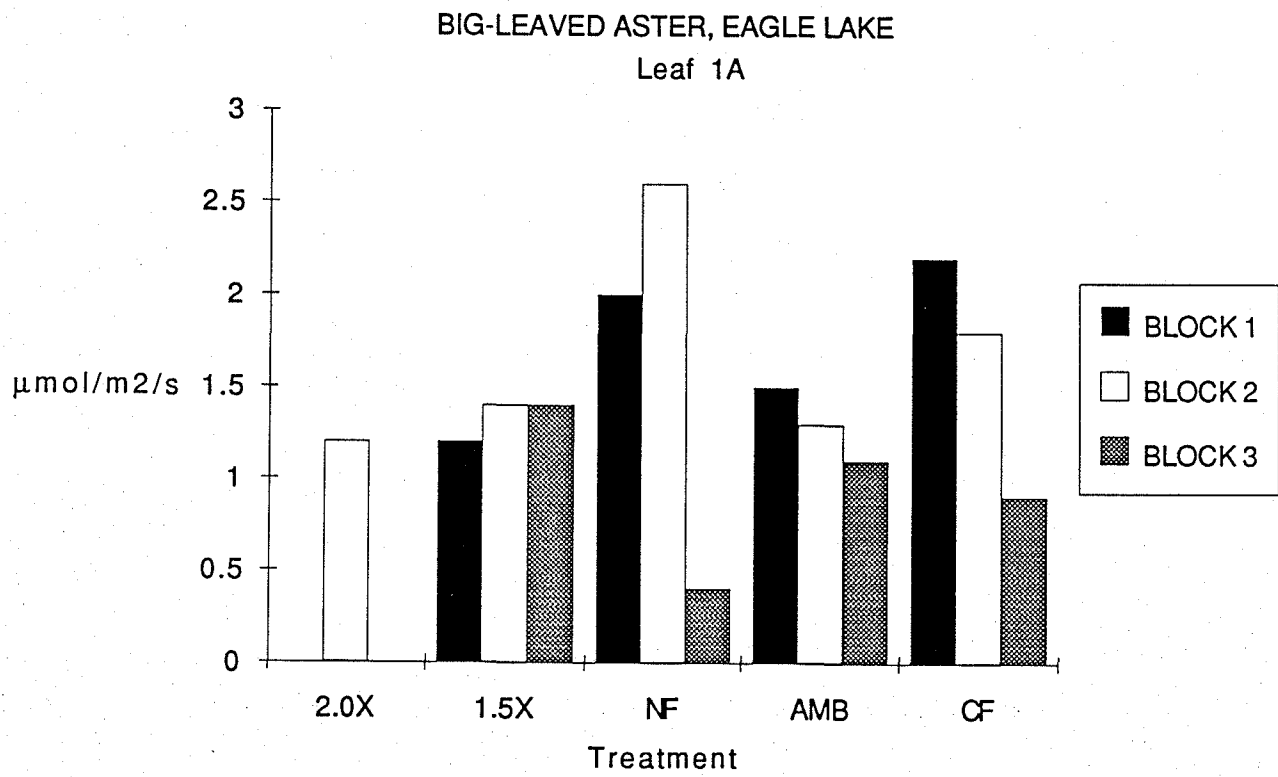


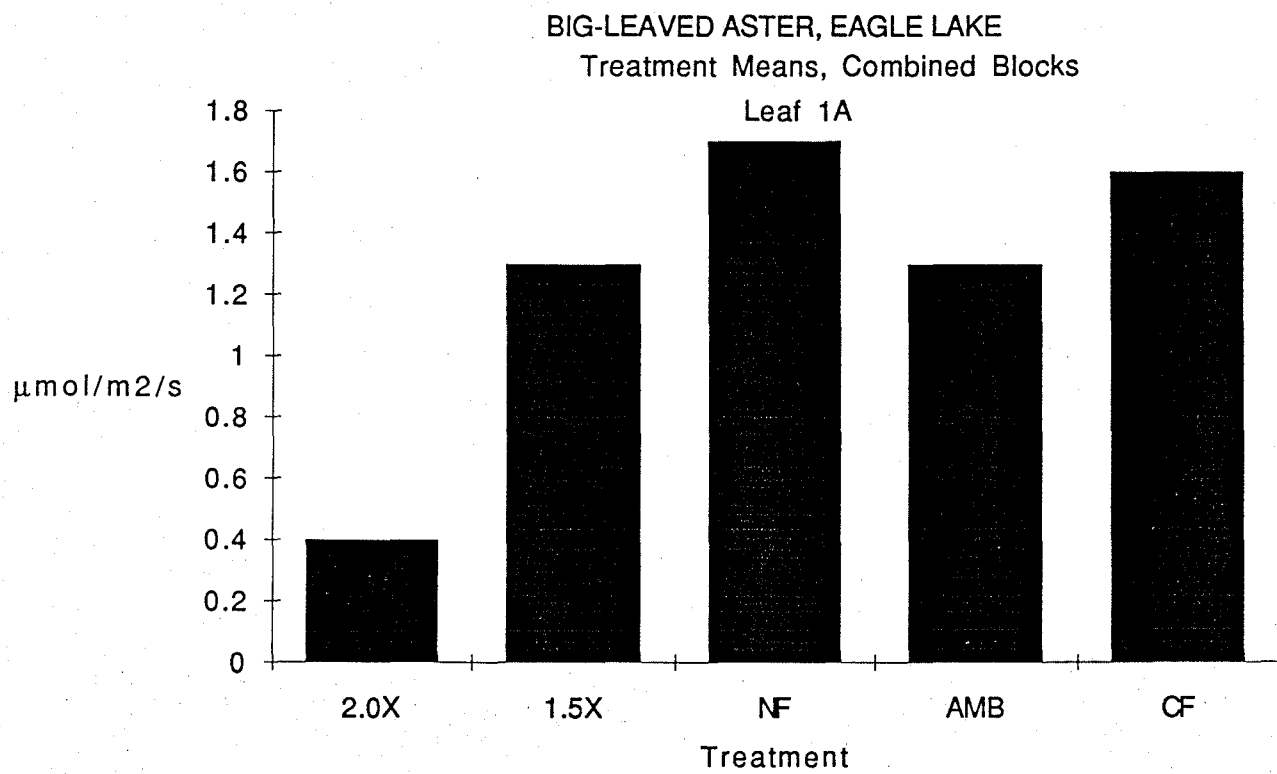




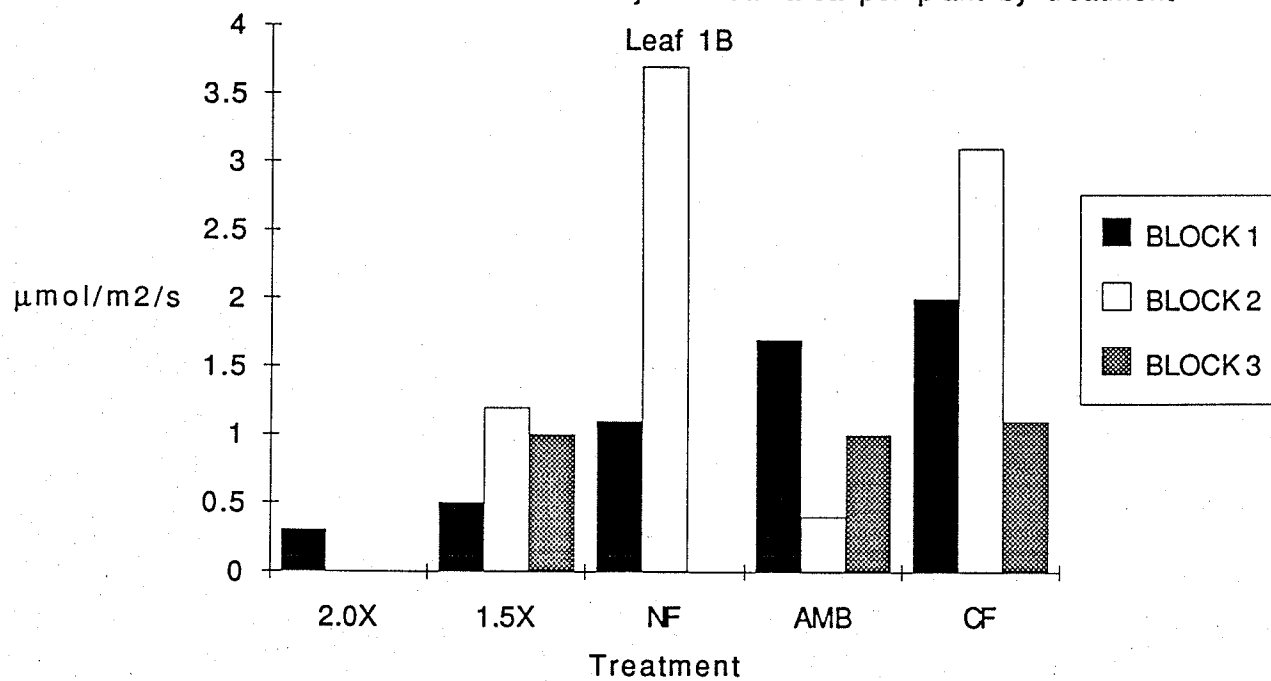








BIG-LEAVED ASTER, EAGLE LAKE
Means of O₃-injured leaf area per plant by treatment



Big-Leaved Aster, Eagle Lake
Means of O₃-injured leaf area per plant by treatment
Leaf 1B

