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| Table S1. Analysis of variance *P*-values for rice injury, relative groundcover, relative heading, and relative yield of quizalofop-resistant cultivars for the planting date experiments conducted at the Rice Research and Extension Center, Stuttgart, AR, in 2020 and 2021. |
| Factor | *P*-valuea |
| Injury 5-leaf stage |  | Injury14 DAFTb |  | Injury28 DAFT |  | RGC 5-leaf stage |  | RGC14 DAFT |  | RGC28 DAFT |  | Relativeheading |  | Relativeyield |
| Year | 0.0008\* |  | 0.0611 |  | 0.0005\* |  | 0.0340\* |  | 0.0150\* |  | 0.0348\* |  | 0.3162 |  | 0.0842 |
| Planting | 0.0012\* |  | 0.0238\* |  | 0.0072\* |  | 0.1095 |  | 0.0106\* |  | 0.8183 |  | 0.0069\* |  | 0.0183\* |
| Cultivar | 0.0009\* |  | <0.0001\* |  | <0.0001\* |  | <0.0001\* |  | <0.0001\* |  | 0.0074\* |  | 0.0034\* |  | 0.0103\* |
| Rate | 0.0774 |  | <0.0001\* |  | <0.0001\* |  | 0.0055\* |  | 0.0050\* |  | 0.2630 |  | <0.0001\* |  | 0.0066\* |
| Year × Planting | 0.2024 |  | 0.0023\* |  | 0.1357 |  | 0.1386 |  | 0.9298 |  | 0.2915 |  | 0.0546 |  | 0.2013 |
| Year × Cultivar | 0.0026\* |  | 0.2807 |  | 0.0347\* |  | 0.0008\* |  | 0.7037 |  | 0.7627 |  | 0.3797 |  | 0.0901 |
| Year × Rate | 0.8555 |  | 0.0025\* |  | 0.1220 |  | 0.9137 |  | 0.9577 |  | 0.4103 |  | 0.4534 |  | 0.8887 |
| Planting × Cultivar | 0.2032 |  | 0.6317 |  | 0.3831 |  | 0.0021\* |  | 0.0967 |  | 0.4576 |  | <0.0001\* |  | 0.6000 |
| Planting × Rate | 0.8601 |  | 0.0222\* |  | 0.0012\* |  | 0.8945 |  | 0.0316\* |  | 0.1359 |  | 0.0061\* |  | 0.0200\* |
| Cultivar × Rate | 0.5350 |  | 0.8838 |  | 0.1724 |  | 0.9348 |  | 0.0004\* |  | 0.1159 |  | 0.0081\* |  | 0.2341 |
| Year × Planting × Cultivar | 0.6800 |  | 0.2881 |  | 0.0004\* |  | 0.0129\* |  | 0.4893 |  | 0.8185 |  | 0.1294 |  | 0.0080\* |
| Year × Planting × Rate | 0.3381 |  | 0.7037 |  | 0.9568 |  | 0.4143 |  | 0.2506 |  | 0.9062 |  | 0.5255 |  | 0.8573 |
| Year × Cultivar × Rate | 0.4669 |  | 0.3547 |  | 0.0194\* |  | 0.3812 |  | 0.9479 |  | 0.6215 |  | 0.6603 |  | 0.0073\* |
| Planting × Cultivar × Rate | 0.8650 |  | 0.9676 |  | 0.3772 |  | 0.0284\* |  | 0.2153 |  | 0.8686 |  | 0.0425\* |  | 0.4932 |
| Year × Planting × Cultivar × Rate | 0.8867 |  | 0.4522 |  | 0.4627 |  | 0.0235\* |  | 0.8317 |  | 0.3507 |  | 0.7152 |  | 0.0392\* |
| a*P*-values followed by \* are significant at α level of 0.05.bAbbreviations: DAFT, days after final treatment at 5-leaf stage; RGC, Relative groundcover compared to the nontreated control. |

**Supplementary Material**

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| Table S2. Analysis of variance *P*-values for visual rice injury, relative groundcover, relative height, and relative biomass of quizalofop-resistant cultivars after sequential quizalofop applications at differing soil moisture levels for the greenhouse experiments conducted at the Milo J. Shult Agricultural Research and Extension Center, Fayetteville, AR, in the fall of 2021. |
| Factor | *P*-valuea |
| Rice injury |  | RGC5-leaf stage |  | RGC28 DAFTb |  | RH5-leaf stage |  | RH28 DAFT |  | Relative biomass |
| Cultivar | <0.0001\* |  | 0.0073\* |  | <0.0001\* |  | 0.0023\* |  | <0.0001\* |  | <0.0001\* |
| Moisture | <0.0001\* |  | 0.0002\* |  | <0.0001\* |  | <0.0001\* |  | <0.0001\* |  | <0.0001\* |
| Cultivar × Moisture | 0.0164\* |  | 0.0312\* |  | 0.0044\* |  | 0.0096\* |  | 0.0134\* |  | 0.0147\* |
| Rating timing | <0.0001\* |  | - |  | - |  | - |  | - |  | - |
| Cultivar × Rating timing | <0.0001\* |  | - |  | - |  | - |  | - |  | - |
| Moisture × Rating timing | 0.1585 |  | - |  | - |  | - |  | - |  | - |
| Cultivar × Moisture × Rating timing | 0.3328 |  | - |  | - |  | - |  | - |  | - |
| aP-values followed by \* are significant at α level of 0.05.bAbbreviations: RGC, relative groundcover compared to nontreated control; DAFT, days after final treatment at 5-leaf stage; RH, relative height compared to nontreated control. |

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| Table S3. Analysis of variance *P*-values for rice injury, relative groundcover, relative height, and relative biomass of quizalofop-resistant cultivars response to quizalofop applications at differing air temperature and light conditions from the growth chamber study conducted at the Crop Science Research Center, Fayetteville, AR. |
| Factor | *P*-valuea |
| Rice injury |  | RGC5-leaf stageb |  | RGC28 DAFT |  | RH5-leaf stage |  | RH 28 DAFT |  | Relative biomass |
| Temperature | 0.0303\* |  | 0.1028 |  | 0.1030 |  | 0.1923 |  | 0.3542 |  | 0.0566 |
| Light | 0.0447\* |  | 0.2304 |  | 0.0211\* |  | 0.1367 |  | 0.1175 |  | 0.0620 |
| Cultivar | <0.0001\* |  | <0.0001\* |  | <0.0001\* |  | <0.0001\* |  | <0.0001\* |  | <0.0001\* |
| Temperature × Light | 0.8088 |  | 0.1051 |  | 0.0708 |  | 0.3714 |  | 0.2925 |  | 0.1421 |
| Temperature × Cultivar  | 0.0151\* |  | 0.7219 |  | 0.0015\* |  | 0.6392 |  | 0.0188\* |  | <0.0001\* |
| Light × Cultivar | 0.5805 |  | <0.0001\* |  | <0.0001\* |  | 0.0037\* |  | <0.0001\* |  | <0.0001\* |
| Temperature × Light × Cultivar | 0.5171 |  | 0.5014 |  | 0.0951 |  | 0.5021 |  | 0.0332\* |  | 0.0042\* |
| Rating timing | <0.0001\* |  | - |  | - |  | - |  | - |  | - |
| Temperature × Rating timing | 0.0787 |  | - |  | - |  | - |  | - |  | - |
| Light × Rating timing | <0.0001\* |  | - |  | - |  | - |  | - |  | - |
| Cultivar × Rating timing | 0.0036\* |  | - |  | - |  | - |  | - |  | - |
| Light × Cultivar × Rating timing | 0.7166 |  | - |  | - |  | - |  | - |  | - |
| Temperature × Light × Rating timing | 0.7138 |  | - |  | - |  | - |  | - |  | - |
| Temperature × Cultivar × Rating timing | 0.0229\* |  | - |  | - |  | - |  | - |  | - |
| Temperature × Light × Cultivar × Rating timing | 0.1065 |  | - |  | - |  | - |  | - |  | - |
| a*P*-values followed by \* are significant at α level of 0.05.bAbbreviations: RGC, Relative groundcover compared to nontreated control; DAFT, days after final treatment at the 5-leaf stage; RH, relative height compared to nontreated control. |