

돌연변이 육종을 위한 야콘의 최적 감마선 조사량

김수정^{1*}, 손황배¹, 김을호², 남정환¹, 이종남³, 장동철⁴, 서종택³

¹국립식량과학원 고령지농업연구소, 농업연구사, ³농업연구관,
²국립식량과학원 중부작물과, 농업연구관, ⁴농촌진흥청 국외농업과, 농업연구사

Gamma-ray Irradiation on Radio Sensitivity in Yacon (*Samallanthus sonchifolius* (Poepp. & Endl.) H. Robinson) Breeding

Su Jeong Kim^{1*}, Hwang Bae Sohn¹, Yul Ho Kim², Jung Hwan Nam¹,
Jong Nam Lee³, Dong Chil Chang⁴ and Jong Taek Suh³

¹Researcher and ³Senior Researcher, Highland Agriculture Research Institute, National Institute of Crop Science, Rural Development Administration, Pyeongchang 25342, Korea

²Senior Researcher, Central Area Crop Breeding Division, National Institute of Crop Science, Rural Development Administration, Suwon 16429, Korea

⁴Korea Program for International cooperation in Agricultural technology (KOPIA), Rural Development Administration, JeonJu 54875, Korea

Yacon [*Samallanthus sonchifolius* (Poepp. & Endl.) H. Robinson], a member of Compositae plants, has sweet taste and crisp texture. Unlike other Andean root crops such as potato and sweet potato, the cultivation area of yacon has increased recently, since it is known to have large content of fructooligosaccharides (FOS). Since there are no yacon varieties bred in Korea, we have been trying to create new genetic resources using gamma-ray. The optimal gamma-ray dosage for mutation breeding in yacon was investigated. Crown bud and green bud of yacon were exposed to doses of gamma rays from 20 Gy to 80 Gy, and subsequently planted in a greenhouse. After 50 days of sowing, the survival rates and growth decreased rapidly at doses above 40 Gy, while all of crown bud individuals died above 60 Gy. The median lethal dose (LD50) of crown bud and green bud was 22.4 and 36.6 Gy, and the median reduction doses (RD50) for plant height, fresh weights, and tuberous root weight were 20-40 Gy, respectively. A dose of 20-40 Gy was found to be optimal for mutation breeding in yacon. Considering the growth factors, the optimum doses were determined to be within the range of 20-40 Gy for the selection of useful mutant lines. M2-M3 mutant lines were obtained from 20-60 Gy gamma-ray-irradiated M1 plants through clonal propagation. These mutant lines will be used for the development of a new variety of yacon plant with high FOS and no crack tuberous root.

Key words: mutant, gamma-ray, crown bud

[본 연구는 농촌진흥청 연구사업(No. PJ014799032021)의 지원에 의해 이루어진 결과로 이에 감사드립니다.]

*(Corresponding author) sjkim30@korea.kr Tel: +82-33-330-1820